Lift Controller

PLAYBOARD III

User Manual

(Rel. 2.4 – English)

PITAGORA III

SAFETY NOTES

INSTALLATION

The control panel must be installed internally with a degree of pollution of not more than 2.
The cabinet has an IP2X degree of protection.

The controller setup and maintenance has to be made by qualified technicians after having carefully read the documentations and electrical schemes provided with the controller.

Protection toward indirect contacts has to be realized through magnetothermic and differential switches and a grounding system. Unless otherwise specified, the customer is requested to provide these protections.

Please refer to the wiring diagram supplied with the control panel for the following protection circuits:

- magnetotermic protection of the motor circuit
- magnetotermic protection of the safety circuit
- protection fuses of all other circuits

Protection measures against electric shock:

- The control panel case of the is metallic and must be grounded as indicated in the circuit diagram supplied with the control panel.
- The command and control circuits (24V) are galvanically separated from the main power supply as indicated in the wiring diagram supplied with the control panel.
- The safety circuit is galvanically separated from the main power supply as indicated in the wiring diagram supplied with the control panel.

MAINTENANCE

For control panel's maintenance, please refer to the manual supplied with the control panel. During periodic inspections of the system, check the alarm circuits' battery status of the and the floor return circuit (if present).

Refer to the packaging instructions to handle and move the control panel.

Document references

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Document changes

The changes listed in the following table refer to the previous release of this document:

Changes description	References
New Release Pitagora III	Rel. 1.1
Review Chapter 5 and Self learning feature	Rel. 1.2
Appendix – Time diagram	Rel. 1.3
Review VVVF parameters + electronic board list	Rel. 1.4
Added “Ambient control temperature” parameter (Special Features menu)	Rel. 1.5
Updated table of parameters (menu “I/O Status”, “Signals”, “Special features”, “VVVF”)	Rel. 1.6
Review Paragraph: 1.4, 2.5, 2.7, 3.5, 3.7, 3.8, 3.9, 3.10 Added: Appendix B – Fire operation programming procedure Appendix C – Multiplex Parameter	Rel. 1.7
Review Paragraph: 2.4, 2.5, 2.9, 3.1, 3.3, 3.4, 3.5, 3.6, 3.8, 3.10, 4, appendix A Added: Paragraph: 2.6, 2.7 Appendix D – Test and measures Appendix E – UCM Appendix F – Instructions for Software update from SD card	Vers. 2.0
Review Paragraph: 2.5.1, 3.5, 3.8, 4	Vers. 2.2
Review Paragraph: 3.4, 3.5, 3.6, 3.8, 3.9, 3.10, 4, appendix C, appendix E	Vers. 2.3
Review Paragraph: 2.8, 3.4, 3.8, 3.9, 4, appendix B / D / E	Vers. 2.4

Contents

1. Description of the Playboard Modular Controller

The lift controller *Playboard R3* is based on the 32 bit CAN Open electronic technology.
This User Manual covers the typical configurations of the *Playboard R3* controller: traction (2 speeds and with VVVF driver) and hydraulic. Possible construction variations due to different installations features are described in the following chapters, where necessary.
The *Playboard R3* controller is fully compliant to pre-wired electric system *Pitagora III*.

1.1 Technical Features

- 2 speeds, hydraulic direct start, hydraulic star/delta, Soft Starter
- VVVF driver open or closed loop up to 22 kW
- Car speed up to 1,6 m/s (magnetic/optical positioning system); 2,0 m/s (with ENCODER)
- Power supply 220÷240 and 380÷415V
- Contactors 18 A ÷ 40 A
- SAPB (fully automatic), down collective, full collective
- Simplex to Quadruplex (no extra cards)
- Traditional wiring or prewiring type PITAGORA
- 2 to 16 floors with traditional wiring with screw terminal (28 with Pitagora prewiring and BDU)
- Safety chain 48 ÷ 230 V AC/DC (controlled on 4 different points)
- Battery 12V at 1,2Ah with integrated battery charger
- Door type: manual, automatic, regulated, independent

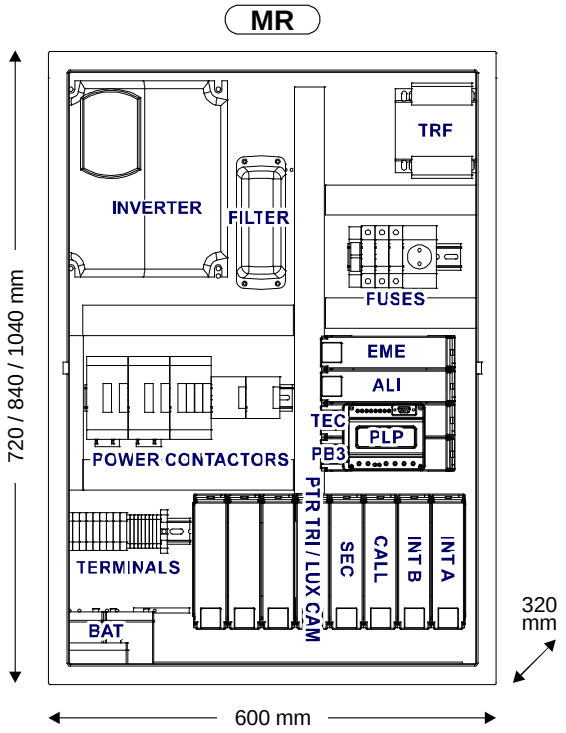
1.2 Main functions

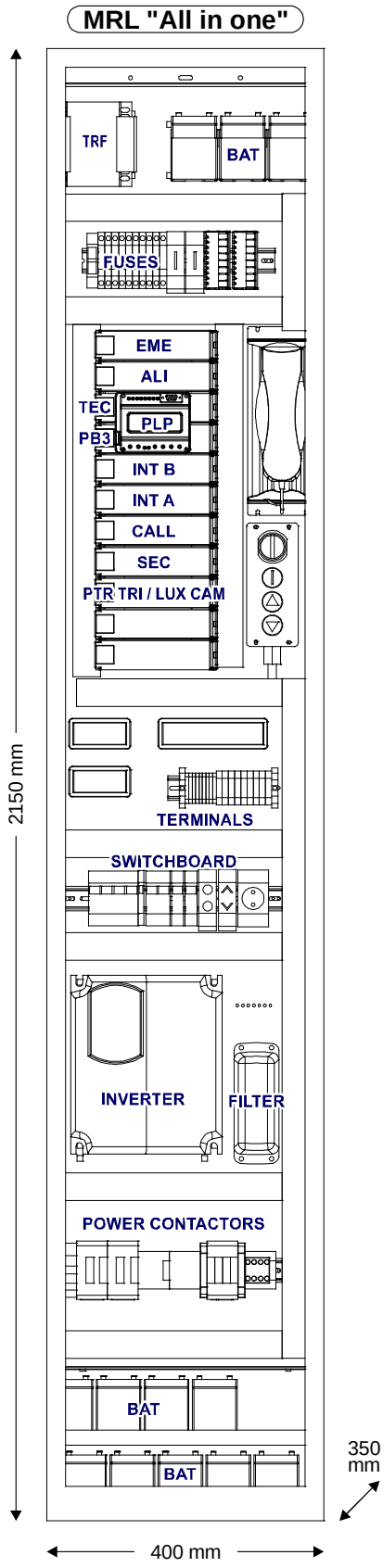
- Re-levelling with open or closed doors
- Advanced door opening
- Fire-fighters operations (EN81-72), Priority operations, Out of Service operations
- Integrated emergency lowering system (VVVF and Hydraulic) with batteries
- Full load control, overload control, temperature control, phase sequence control
- Fire sensors inputs
- Retiring ramp control
- Permanent or temporised car light
- Photocell NO/NC contact control
- Independent deceleration adjustment at each floor (FAI/FAS version)
- Automatic floor detection feature (with DMG Encoder)
- Short floor option
- Double access control
- Programmable “Return to floor” feature (day / hour selection)
- Remote system management through telephone link

1.3 Signals and diagnostic

- Serial output for position indicators programmable characters at each floor)
- Busy/call registration signals (permanent or blinking)
- Out of service operations signal
- Car and landing gong with next direction acoustic signal
- Car / hall direction arrows and next direction arrows for hall indicators
- Floor alarm
- Detachable programming module with LCD screen and keypad
- Status of inputs/outputs and system diagnostics (last 60 errors) visibile on LCD screen
- More than 50 errors detected

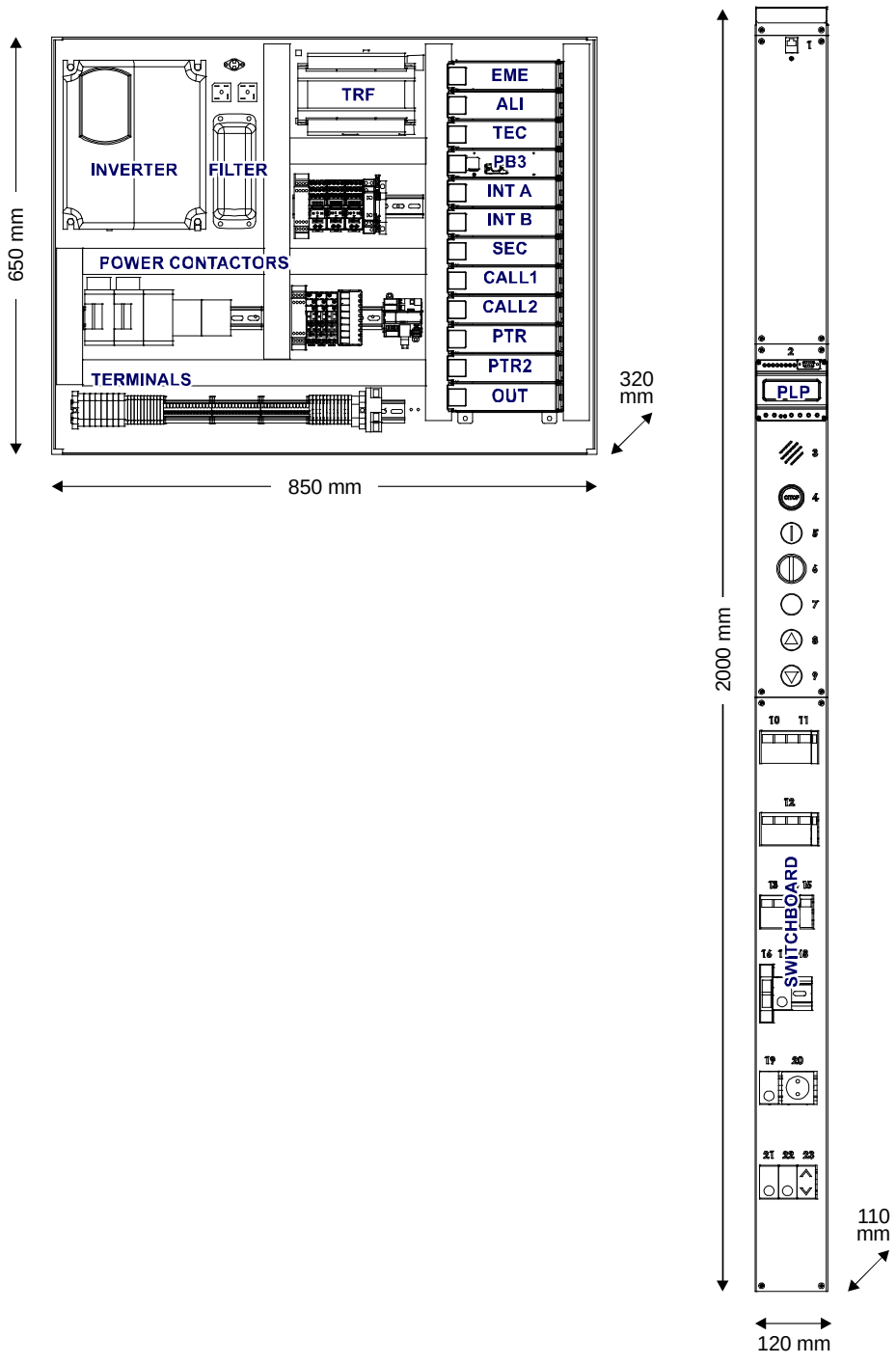
1.4 Controller Layout





Module	*Board*	*Description*
EME	EME	Emergency operations board
ALI	ALI	Power supply board
TEC	TEC 2V	Relay board for 2 speeds lifts
	TEC HYD	Relay board for hydraulic lifts
	TEC VVF	Relay board for VVVF lifts
PB3	PB3	Motherboard
PLP	PLP	“PLAYPAD” programming module
INT A	INT STD A	Interface Board A (wire terminals) to cabin
	INT PIT A	Interface Board A (Pitagora) to cabin
INT B	INT STD B	Interface Board B (wire terminals) to cabin
	INT PIT B	Interface Board B (Pitagora) to cabin
SEC	SEC	Safety Board
PTR	PTR TRI	Tri-phased Door Board
	PTR REG	Regulated Door Board
	LUX CAM	Light / Retiring Cam Board
CALL	CALL STD	Floors Interface Board(s) (wire terminals)
	CALL PIT	Floors Interface Board(s) (Pitagora)
BAT	BAT	12V/24V Batteries

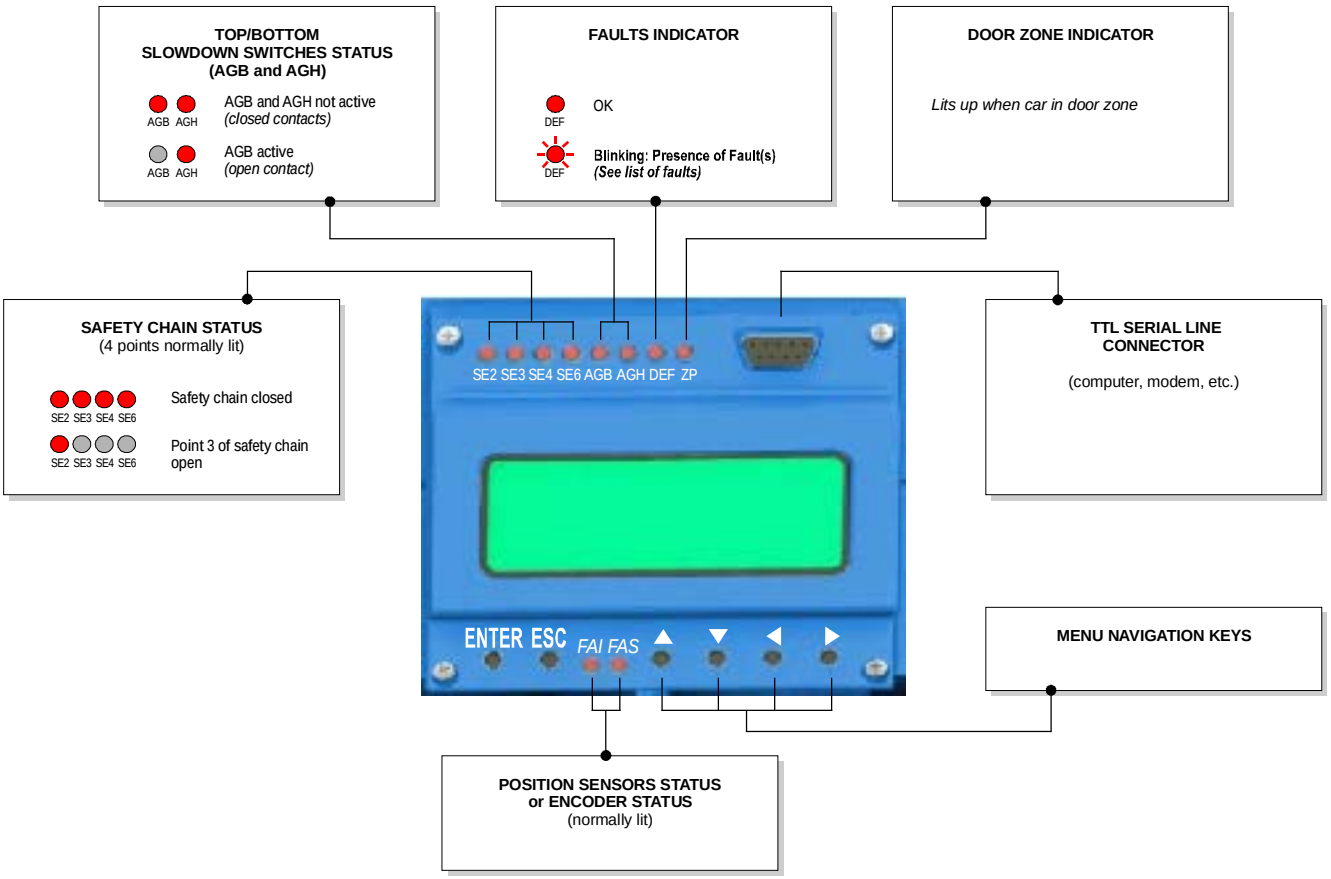
MRL "Shaft + Door frame"



1.5 Description of PC Boards

1.5.1 Playboard R3 Motherboard / PLAYPAD module

The motherboard contains the software, which controls the functioning logic of the Playboard R3 modular controller. The programming module *Playpad*, equipped with buttons and LCD, allows to manually modify every parameter of the controller.



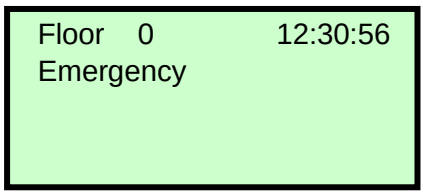
1.6 Emergency Lowering System

If requested by the customer, the Playboard controller can be equipped with a battery-powered emergency lowering system which brings the car down to the nearest floor in case of main power supply failure. This systems is based on the optional Emergency Board (EME) and on a set of 12V Batteries.

When a geared or gearless motor is in place, the controller is supplied by the Emergency board and the Inverter is supplied by the battery pack. The resulting applied torque is used to bring the cabin down to the nearest floor at very low speed. Potential overspeed during emergency operation will be checked as in normal operation. The speed of the car during emergency is roughly 10% of nominal speed as only 10% of tension and power is applied to the motor during emergency operation. This is mandatory in order to keep the number of emergency batteries to a reasonable number (8 batteries provided).

When the car reaches for the nearest floor in emergency, the controller opens the doors and stay active for 30 seconds, then switches off (same for car emergency lamp).

During the emergency procedure, all position indicators show the letter “E-” while the *Playpad* screen on the controller displays the following:



The charge of 2 batteries Emergency board is tested every 24 hours. In case of low battery charge or Emergency board not working, an acoustic signal is issued.

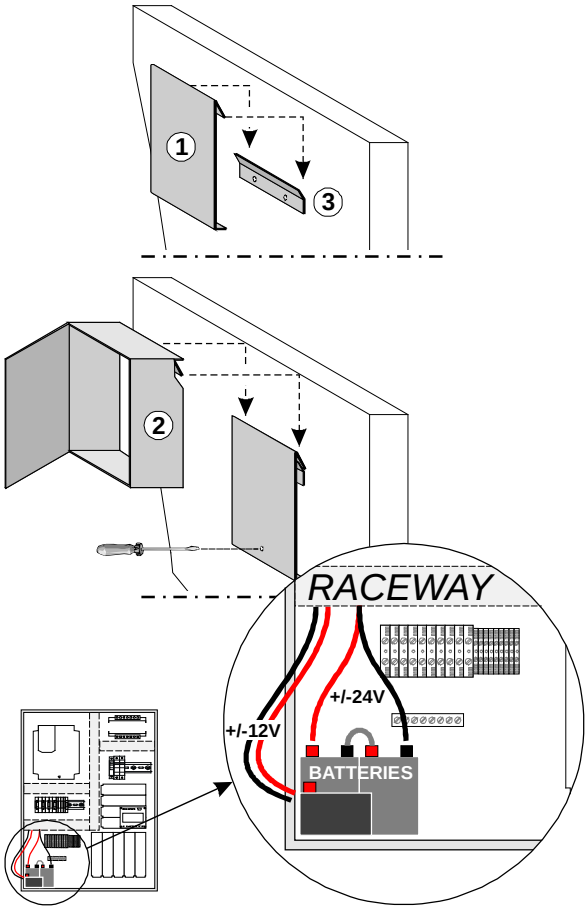
2. Quick installation guide

For the first installation of the *Playboard* controller read the following instructions:

2.1 Mounting the controller in the machine-room

The Playboard controller is composed of a back plate ①, on which all the electric components are mounted, and of a cabinet with hinged door ②, which can be fixed to the back plate. To install the controller:

- Fix the metal clamp to the wall ③
- Fix the back plate ① to the clamp
- Make all connections (see following paragraphs)
- Fix the cabinet ② to the back plate



2.2 Mounting the controller at floor (MRL "All in one" version)

The Machine-Room-Less "All in one" version of the Playboard controller is composed of one back plate with all the components and of a cabinet with hinged door, which must be inserted in the wall near the lift entrance.

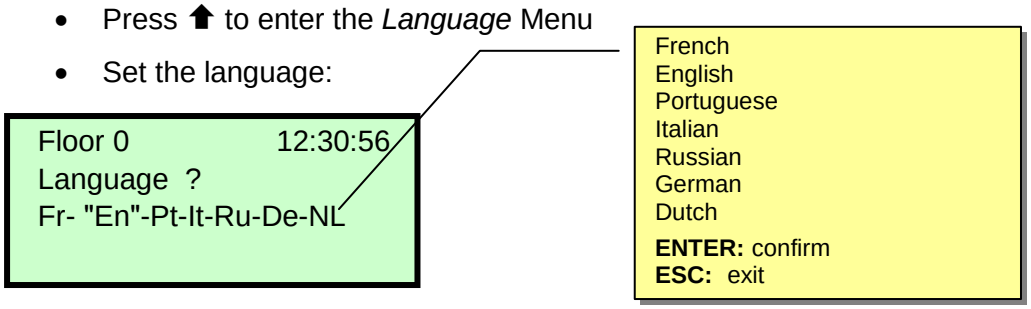
2.3 Mounting the controller in the shaft (MRL Shaft + Door frame version)

The Machine-Room-Less "Shaft + Door frame" version of the Playboard controller is composed of one back plate with part of the electric components, of a cabinet which can be fixed to the back plate and of a locker with the remaining components to be installed on the door frame. The locker can either mounted inside the door frame or outside with surface mounting fastening.

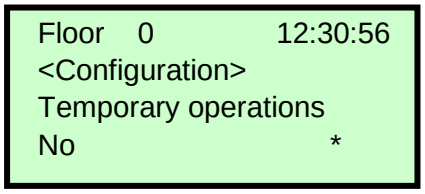
2.4 Main connections and Temporary Operations

To make the main connections and run the installation in temporary operation, make the following:

1. According to the wiring diagram in the following page[1]:
   - Connect the main power supply
   - Connect the traction motor / hydraulic pump
   - Connect the brake / valves
   - Connect the temperature sensor
   - Connect the inspection box for temporary operations (to be connected to the screw terminals of the INT and SEC boards as indicated in figure)
2. Switch on main power
3. Check the language settings on the programming module; if you need to change the language, use the *PLAYPAD* as follows:
   - In the Main Menu press **[ENTER]**
   - Press ⬆ to enter the *Language* Menu
   - Set the language:



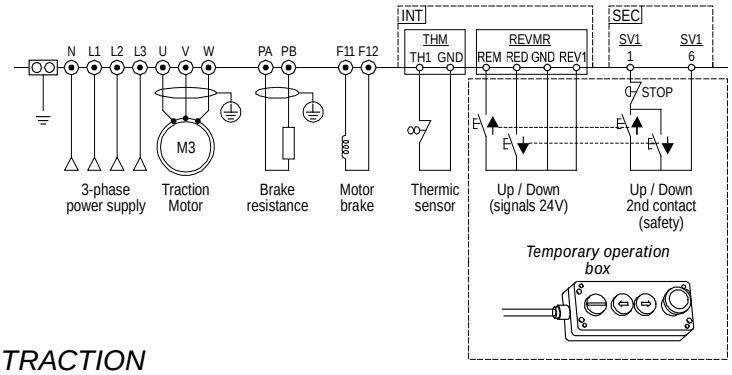
   - Press **[ENTER]** to confirm and exit the menu
   - After selecting the desired language is necessary to perform the software upgrade from SD Card (Appendix F)
4. Enter the “Temporary Operations” mode using the *Playpad* module and press **[ENTER]** twice to modify the parameter “Temporary Operations”:



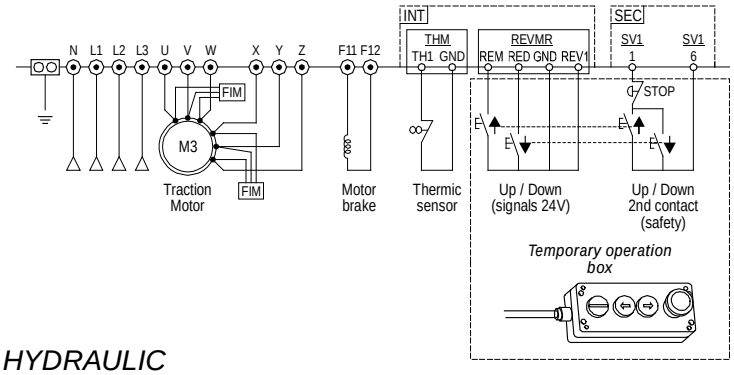
   - Press ➡ to select “Yes” and press **[ENTER]** to confirm
5. Switch off and then on power supply to run the installation in temporary operations mode; then make sure “Temporary Operations” appears on the display.

[1] The indicated diagram shows the typical connections of hydraulic installations (direct start and star/delta) and electric installations (2 speeds and with VVVF driver), the latter equipped with one-phase brake. For different installations, always refer to the wiring diagram delivered with the controller.

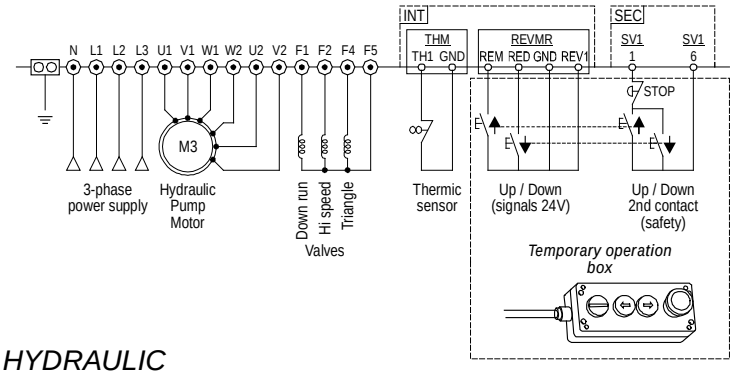
TRACTION
(MRL - VVVF - open or closed loop - monophased brake)



TRACTION
(2 speeds - monophased brake)



HYDRAULIC
(Star Triangle)



HYDRAULIC
(Direct)

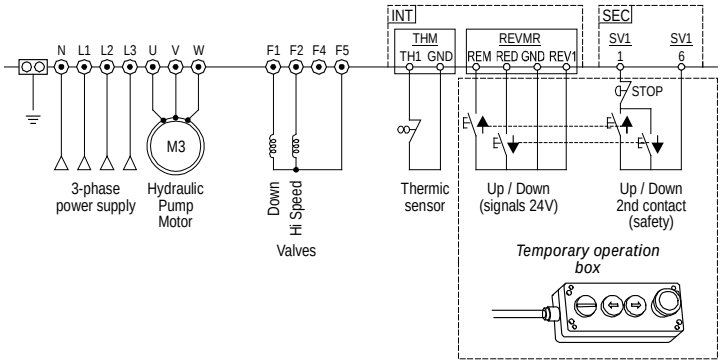


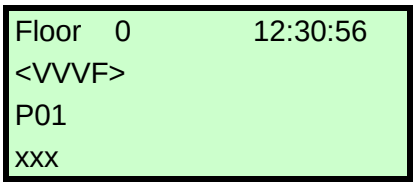
Fig. 2.1 – Wiring diagram for temporary operation connections

2.5 Autotuning feature (VVVF Controller with Frenic Lift Inverter)

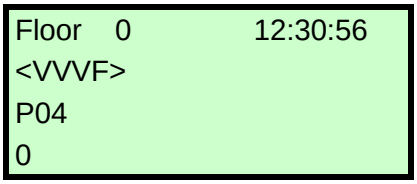
In case of Controller equipped with electric inverter Fuji FRENIC Lift you must perform the self-learning procedure of motor data ("Tuning "), in order to align the functioning of the drive to the electrical characteristics of the motor on site. The tuning procedure must be done in temporary operation.

2.5.1 Tuning procedure for Asynchronous Motor ***(Geared)*** - AUTOTUNING:

1. Make sure that the system is in “TEMPORARY OPERATION”.
2. Access menu “VVVF”.
3. Select the parameter P01 (number of motor poles) and insert the data carried on the motor nameplate.
4. Insert in F03 (maximum speed in revolutions / minute) the value specified on the motor nameplate.



5. Insert in F04 (Rated speed in Hz) the value specified on the motor nameplate.
6. Insert in F05 (Rated voltage in V) the value specified on the motor nameplate.
7. Only for closed loop system (motor with Encoder), select the parameter L02 (Encoder resolution) and enter the value specified on the nameplate of the motor Encoder.
8. Insert in P03 (Rated motor current in A) the value specified on the motor nameplate.
9. Insert in P02 (Motor power in kW) the value specified on the motor nameplate.
10. Set the installation speed (Hz):
    - High speed C11 (value specified on the motor nameplate, typically 50 Hz)
    - Inspection/intermediate speed C10 (typically 50% of C11)
    - Low speed C07 (typically 10% of C11)
11. Select the parameter P04 (auto-tuning) and start the self-learning process by entering the value 3.
12. Immediately press and hold the "UP" or "DOWN" push button on the TEMPORARY OPERATION box or on the EMERGENCY OPERATION box for all the duration of the auto-tuning procedure (about 30 seconds). The procedure ends when the parameter P04 value comes back to 0.



Check that in the ERRORS MENU the error "Error 52 = er7 VVVF" does not appear. Should Error 52 be present, the procedure has not been correctly ended. If so, clear all errors and repeat the procedure.

At the end of the procedure, press the up/down button and check the correct car movement direction; if not correct, invert values of parameters E98 and E99.

For closed loop installations, in the <I/O Status>, VVVF IN/OUT menu, check that the VVVF motor encoder value (4/4) is positive (+) during up movement and negative (-) during down movement when the FWD (1/4) command is activated. If not, invert a channel in the motor encoder of the VVVF.

In old motors the auto-tuning type 2 may fail: in these cases the auto-tuning type 1 (at point 10 select P04 = 1) can be executed but in this case the values P06 and P12 must be manually entered.

Typical values of P06 are between 30% and 70% of P03. The calculation formula is:

$$P06 = \sqrt{(P03)^2 - \left(\frac{P02 * 1000}{1.47 * F05}\right)^2}$$

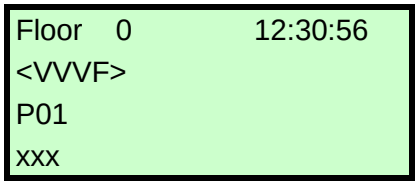
Acceptable values of P12 are between 0.5 and 5 Hz and the calculation formula is:

$$P12 = Frequency_{RATED} * \left(\frac{Speed_{SYNCHRONOUS} - Speed_{RATED}}{Speed_{SYNCHRONOUS}}\right) * 0{,}7$$

For instance, for a 4-pole motor, the Rated Frequency is 50 Hz, the synchronous speed is 1500 rpm and the Rated Speed is on the motor nameplate (always in revolutions per minute).

2.5.2 Tuning procedure for Synchronous Motor ***(Gearless)*** - POLETUNING:

1. Make sure that the system is in the state “TEMPORARY OPERATION”.
2. Access menu “VVVF”.
3. Select the parameter P01 (number of motor poles) and insert the data carried on the motor nameplate.
4. Select the parameter F03 (maximum speed in revolutions / minute) and insert the value specified on the motor nameplate.
5. Select the parameter F04 (Rated speed in Hz) and insert the value specified on the motor nameplate.
6. Select the parameter F05 (Rated voltage in V) and insert the value specified on the motor nameplate.
7. Select the parameter P08 (% X) and insert 10%.
8. Select the parameter P07 (% R1) and insert 5%.
9. Select the parameter P06 (no-load current in A) and insert 0 Ampere.
10. Select the parameter P03 (rated motor current in A) and insert the value specified on the motor nameplate
11. Select the parameter P02 (rated motor power in kW) and insert the value specified on the motor nameplate.
12. Set the installation speed (Hz):
    - High speed C11 (value specified on the motor nameplate, typically between 10 and 15 Hz)
    - Inspection/intermediate speed C10 (typically 50% of C11)
    - Low speed C07 (typically 10% of C11)
13. Select the parameter L01 (Encoder type) and enter the value corresponding the type of motor encoder according to the following table:



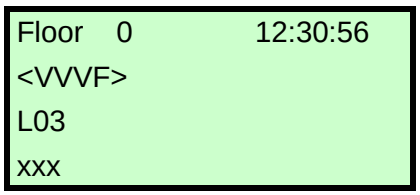
	A/B output channels	Absolute Signal	**Note**
0		None	Choice is not possible because for Asynchronous motors
1	12/15V Complementary; 12/15V Open Collector; 5V Line Driver	Z	For Encoder 5V Line Driver required optional board OPC-LM1-IL

2	5V Line Driver	3 bit code (segnale U, V, W)	Required optional board OPC-LM1-PP
3	5V Line Driver	4 bit gray code	Required optional board OPC-LM1-PP
4	Sinusoidal Differential Voltage 1 Vp-p	EnDat 2.1 (ECN1313 compatible)	Required optional board OPC-LM1-PS
5	Sinusoidal Differential Voltage 1 Vp-p	Sinusoidal Differential Voltage 1 Vp-p (ERN1387 compatible)	Required optional board OPC-LM1-PR

14. Select the parameter L02 (encoder resolution) and enter the value specified on the nameplate of the motor Encoder.

15. Select the parameter L03 (p.p. tuning) and start the learning process by entering the value 1.

16. Immediately press and hold the "UP"or "DOWN" push button on the TEMPORARY OPERATION box or on the EMERGENCY OPERATION box for all the duration of the pole-tuning procedure (about 20 seconds). The procedure ends when the parameter L03 value for gearless motors comes back to 0.



The drive will store the OFFSET value in the parameter L04 (electrical degrees), or in case of problems will show a "Error 52 = er7 Error VVVF" in the MENU ERRORS. In this case please check the connections of the motor encoder, clear the errors in the "Errors" menu and repeat the poletuning procedure from the point 14.

At the end of the procedure, press the up/down button and check the correct car movement direction; if not correct, invert values of parameters E98 and E99.

After the poletuning procedure try to move the elevator in maintenance in up and down for some motor revolutions (to avoid vibrations disable the load compensation parameter entering 0 value in the parameter L65). If it moves correctly the procedure is over otherwise in the event of an error of the VVVF (ere or Ocx or Os), reverse the two motor phases, clear the errors in the "Errors" menu and repeat the poletuning procedure from the point 15.

Note: When the values of the motor are not known with precision, you must also set the speed as follows:

1. Select parameter C11 and enter the value of the nominal speed in Hz (typically equal to F04)
2. Select the parameter C10 (Inspection speed in Hz) and enter a value, typically 1 / 2 or 1 / 3 of the parameter C11. These values are approximate and depends on the value of the high speed, however, must not make to exceed the speed in inspection of 0.6 m / s.
3. Select the parameter C07 (Creep speed in Hz) and enter a value, typically 1 / 10 of C11. This value, however, is indicative and may be adjusted depending on the characteristics of the elevator.

   These speeds are active only if F01 = 0.

In the <I/O Status>, VVVF IN/OUT menu, check that the VVVF motor encoder value (4/4) is positive (+) during up movement and negative (-) during down movement when the FWD (1/4) command is activated. If not, invert a channel in the motor encoder of the VVVF.

2.6 Rollback control and comfort adjustments (closed-loop VVVF Controllers)

When Playboard controller is applied to installations equipped with closed loop gearless machines, specific care shall be put to optimize the comfort and precision of the lift travel and to avoid undesired effects such as rollback (typical of lifts with unbalanced load).

The following parameters can be adjusted to achieve optimal setting for your installation. It is suggested to follow the procedure from start to end in the proposed sequence.

2.6.1 Starting phase adjustments

Step 1: Enter "VVVF" Menu and set Parameter L65 to 1 to enable Rollback control (RBC)

Notes: *L65 specifies whether to enable or disable the unbalanced load compensation (Rollback control). By default, it is set to 1 (Rollback control active). Speed is kept at zero when brakes are released to avoid rollback effect.*

Step 2: adjust the following Parameters to compensate for other undesired effects

PARAMETER	DESCRIPTION	DEFAULT	SUGGESTED ADJUSTMENTS
F24	Starting speed holding time	0	Do not change this value, unless the installation is equipped with digital positioning system (Magnetic detectors – See 2.6.5)
H64	Zero speed control time	0,7	Set value between 0,7 and 0,8 then increase to soften start phase ramp ***Important:*** Enter the "Positioning" Menu and *check parameters* **DIR-BRK** (must be kept low: 0,1-0,2) and **BRK-S** (must be kept higher than H64)
H65	Soft Starter activation	0,1	Enter same value as in DIR-BRK ("Positioning" Menu)
L66	RBC activation time at zero speed *(Specifies the maximum time length for estimating an unbalanced load)*	2 s	Do not change this value
L68	RBC Proportional Gain (P constant) *(specifies the P constant of the Automatic Speed Regulator to be used during RBC calculation time)*	2,5	**Motor overshoots:** increase value by **0,25** **Vibrations:** decrease value by **0,25**
L69	RBC Integral Time (I constant) *(specifies the I constant of the Automatic Speed Regulator to be used during RBC calculation time)*	0,003 s	**Motor overshoots:** decrease value by **0,001** **Vibrations:** increase value by **0,001**
L73	Unbalanced load compensation *(specifies the I constant of the Automatic Position Regulator to be used during RBC calculation time)*	0	**Motor overshoots:** increase value by **0,50** **Vibrations:** decrease value by **0,50**
L80	Brake Control (Mode)	1	Do not change this value
L82	ON delay time *(specifies the delay time during which the inverter main circuit is kept activated)*	0,2 s	**Larger Brakes:** decrease value by **0,1** **Smaller brakes:** increase value by **0,1**

2.6.2 High speed phase adjustments

High speed “P” gains and “I” times constants are used by the Auto Speed Regulator (ASR) of the inverter during high speed lift travel. These constants can be adjusted as follows:

PARAMETER	DESCRIPTION	DEFAULT	SUGGESTED ADJUSTMENTS
L36	“P” Gain constant at high speed	2	**Speed fluctuations:** increase value by **0,25** **Vibrations:** decrease value by **0,25**
L24	“S” Curve setting 6	25%	**Speed fluctuations:** increase value by **5**
L37	“I” Time I constant at high speed	0,100 s	**Speed fluctuations:** decrease value by **0,01** **Vibrations:** increase value by **0,01**

Notes:

Increasing the P constant makes response from machinery faster but may cause overshooting or hunting in motor. Further, due to resonance of machinery or overamplified noise, machinery or motor may produce vibration noise.

On the contrary, decreasing the P constant excessively delays response and may cause speed fluctuation in a long cycle, taking time to stabilize the speed.

“I” times values (L37 and L39) normally do not need to be changed, unless “P” gains are not enough to achieve optimal comfort. Setting a small “I” Time constant shortens the integration interval, making a faster response. On the contrary, setting a large “I” Time constant lengthens it, having a less effect on the ASR. This may help in case of resonance of machinery generating abnormal mechanical noise from the motor or gears

2.6.3 Low speed phase adjustments

Low speed “P” gains and “I” times constants are used by the Auto Speed Regulator (ASR) of the inverter during low speed lift travel. These constants can be adjusted as follows:

PARAMETER	DESCRIPTION	DEFAULT	SUGGESTED ADJUSTMENTS
L38	“P” Gain constant at low speed	2,5	**Motor stops:** increase value by **0,25** **Vibrations:** decrease value by **0,25**
L26	“S” Curve setting 8	25%	**Motor stops:** increase value by **5**
L39	“I” Time I constant at low speed	0,100 s	**Motor stops:** decrease value by **0,01** **Vibrations:** increase value by **0,01**

2.6.4 Stopping phase adjustments

Use low speed “P” gains and “I” times constants to perform final adjustment for the stopping phase:

PARAMETER	DESCRIPTION	DEFAULT	SUGGESTED ADJUSTMENTS
F20 F21 F22 F25	DC Brake Parameters • *Starting Speed* • *Braking Level* • *Braking Time* • *Stop Speed*	0	**Do not change**
L38	“P” Gain constant at low speed	2,5	**Car unable to stay at floor:** increase value by **0,25** **Vibrations:** decrease value by **0,25**
L39	“I” Time I constant at low speed	0,100 s	**Car unable to stay at floor:** decrease value by **0,01** **Vibrations:** increase value by **0,01**
H67	Stop speed holding time	0,5 s	**Car unable to stay at floor:** increase value by **0,25** (Max: 1,0 s) ***Important:*** *Enter the “Positioning” Menu and check parameters **BRK- DIR** (must be kept at 2 s) and **Stopping Boost** (set between 1% and 2%)*
L83	Brake Control (OFF delay time) *(specifies the delay time between stop speed and turning off of the brake signal)*	0,3 s	**Larger Brakes:** decrease value by **0,1** **Smaller brakes:** increase value by **0,1**
E16	Deceleration time # 9 (Last deceleration ramp)	1,80 s	Increase value by **0,5** to soften last ramp (max suggested value: 3 sec)

Notes:

In order to let the inverter perform the stopping phase correctly, make sure that operating contactors open at least 2 sec after brake contactor. If operating contactors open in advance, a shock on the machine may be heard.

2.6.5 Case VVVF controllers with non-encoder based positioning systems

If a digital position system is used in the installation (i.e.: digital signal from magnetic detectors), some additional parameters must be used:

PARAMETER	DESCRIPTION	DEFAULT	SUGGESTED ADJUSTMENTS
F24	Starting speed holding time	0,7	Set value between 0,7 and 0,8
H64	Zero speed control time	0	Set value to 0
E12	Acceleration at high speed	2	**Speed fluctuations:** increase value by **0,25**
E13	Acceleration at low speed	2	**Motor stops:** increase value by **0,25**
C07	Creep Speed (5-10% of high speed)		**Motor stops:** increase value by **0,1** **Vibrations:** increase/decrease value by **0,1**
C11	High Speed	See Nominal Value on the motor plate	*If the car is unable to keep floor level, make sure the low speed phase is performed correctly by reducing high speed C11 to half of its value to check that low speed is kept for few seconds, then slowly increase C11*

2.7 Normal Service mode connections

To put the lift into normal operating mode, disconnect the inspection box and follow the instructions below:

- for controllers with prewiring system *Pitagora*, refer to the *Pitagora III User Manual*;
- for controllers with traditional wiring (screw terminals), please refer to the wiring diagram delivered with the controller following the table here under:

Element of the system	Reference document
Machine-room operating panel (emergency operation)	Safety chain wiring diagram (SEC)
	Signals wiring diagram (INTx)
Machine-room safety chain	Safety chain wiring diagram (SEC)
Inspection operating panel on Top of car	Safety chain wiring diagram (SEC for standard controllers, TOC SEC for Pitagora controllers)
	Signals wiring diagram (INTx for standard controllers, TOC SEC for Pitagora controllers)
Top of car safety chain	Safety chain wiring diagram (SEC)
• Position sensors FAI/FAS N°2 NC magnetic sensors and related magnets or n°1 double beam optical sensor and related flags for shaft counting /deceleration /stop	User Manual Playboard R3
	Signals wiring diagram (INTMA for standard controllers, TOC CAN for Pitagora controllers)
• Encoder positioning system	Wiring diagram
Position sensors AGB/AGH N°2 magnetic bistable sensors and related magnets or n° 2 mechanic switches and related reset cams / inspection limit switch / high speed limit switch	User Manual Playboard R3
	Signals wiring diagram (INTMA for standard controllers, TOC CAN for Pitagora controllers)
	Wiring diagram
Position sensors CIA/CIB (hydraulic lifts or traction lifts with advanced opening) N°2 NO magnetic sensors and related magnets for re-levelling with open door or for anticipated door opening	Wiring diagram (wire terminals for standard controllers, TOC CAN for Pitagora controllers)
Door Zone position sensors N° 1 NO magnetic sensor using the same magnets of re-levelling	Wiring diagram
Door Operator Wiring to the power supply, the operation commands, limit switch and photocell	Wiring diagram
Car Light	Wiring diagram
Car and Landing Operating Panel	Wiring diagram
Shaft safety chain	Wiring diagram (SEC)

WARNING: Before running the installation in normal operations mode, do not forget to disconnect the shunts you have made for temporary operations.

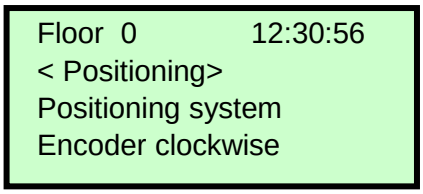
2.8 Self-learning feature

When the Playboard controller is equipped with DMG Encoder, it is possible to take advantage of the floor position self-learning feature, which allows for a faster system configuration and fine tuning.

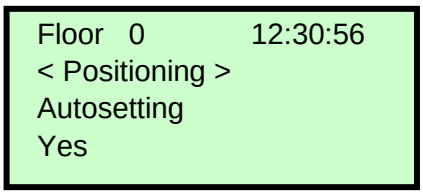
After the installation and during the TEMPORARY OPERATION mode, the controller performs a number of upward/downward test runs (high speed first, then low speed with stops at floors) with the purpose of learning exact floor positioning.

Self Learning Procedure:

1. Make sure the installation is in the “Temporary operation” mode
2. Make sure that the encoder traces the correct direction of run, (increasing distance when upward, decreasing quote downward); if necessary, in the *“positioning”* menu set parameter *Positioning system* from *clockwise* to *counterclockwise* (or vice versa) and save the new setting



3. Check the correct reading of ZP (door zone) input (ZP red LED on the PLAYPAD module must be lit up when in door zone)
4. Check the correct reading of AGB/AGH (deceleration limit switches) inputs (AGB/AGH red LEDs on the PLAYPAD module must be switched off when in deceleration limit positions)
5. Make sure the cabin is at the bottom floor (AGB LED off, ZP LED on)
6. Enter the “*Positioning” menu*, select the *Auto setting* parameter and enter:



- On the DMG encoder: the encoder resolution (64 pulse number), then the length of floor magnets. (Door Zone length). Confirm the total floor number, set the elevator nominal speed and the learning speed (same as nominal unless set otherwise) , then press “Yes” to start the procedure.
- On the motor encoder: the encoder resolution, the motor ratio, the traction pulley, and the roping. Confirm the total floor number, set the elevator nominal speed and the learning speed (same as nominal unless set otherwise) , then press “Yes” to start the procedure.
- On absolute encorder (ELGO): select value accordingly to shaft length:
- 1 impulse: up to 65 meters (1 mm resolution) 2 impulses: up yo 130 meters (2 mm resolution)

  then the length of floor magnets. (Door Zone length). Confirm the total floor number, set the elevator nominal speed and the learning speed (same as nominal unless set otherwise) , then press “Yes” to start the procedure.

7. Set the Inspection box selector on NORMAL (if present), otherwise make sure that the safety chain is closed.

The system performs the following automatic procedure:

- Upward to the terminal bottom floor door zone (ZP) signal deactivation
- Downward to the terminal bottom floor door zone (ZP) signal activation
- Upward run at the set speed and position detection for each floor (bottom edge of door zone magnets); the exact position of the bottom edge of the magnet is stored into the controller memory.
- When reaching the top deceleration point (AGH) the system switches to low speed and when reaching the top floor door zone (ZP) it stops.
- Downward run at the set speed and position detection for each floor (top edge of door zone magnets); the exact position of the top edge of the magnet is stored into the controller memory.
- When reaching the bottom deceleration point (AGB) the system swithes to low speed and when reaching the bottom floor door zone (ZP) it stops.
- Upward run with slowdown and stop at each floor (at ZP magnet level)
- Downward run with slowdown and stop at each floor (at ZP magnet level)

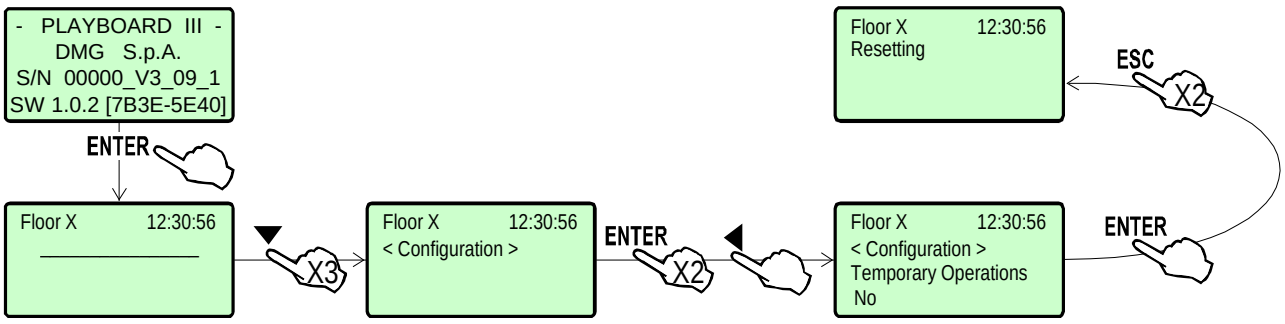
After the second set of runs (which ends at the lowest floor), the installation is ready to go into SERVICE mode.

At the end of the procedure, go to menu <Positioning> *Monitor Encoder* and check that the distances of AGB and AGH (4/5) are fine for your installation (compare distances shown on diagrams provided). It is always possible to set R1D (2/5) and R1S (3/5) slow down distances to improve deceleration comfort without changing the limit switches position and without repeating the self learning procedure.

NOTE: the self learning procedure must be performed every time either AGB/AGH limit switches and/or door zone magnets are moved from their original position.

2.9 Normal Service Mode

Once all above procedures are completed, it is possible to put the system into Normal Service mode:



By switching power off and then back on, the system performs a reset run and stops at the lowest floor. If no error occurred, it is possible to manually fine tune the precision of stop at each floor as indicated in § **5.3.1** (rope and pulley Encoder positioning system) or § **5.2.1** (Optical/Magnetic positioning system).

To ease checks and installation start-up, please refer to the menu "Configuration" > "Test" and the Appendix D.

2.10 Protection against noises

The Playboard controller is protected against various types of noises according to the requirements of the norm, against accidental mistakes and localization.

Nevertheless we advice to respect the following rules:

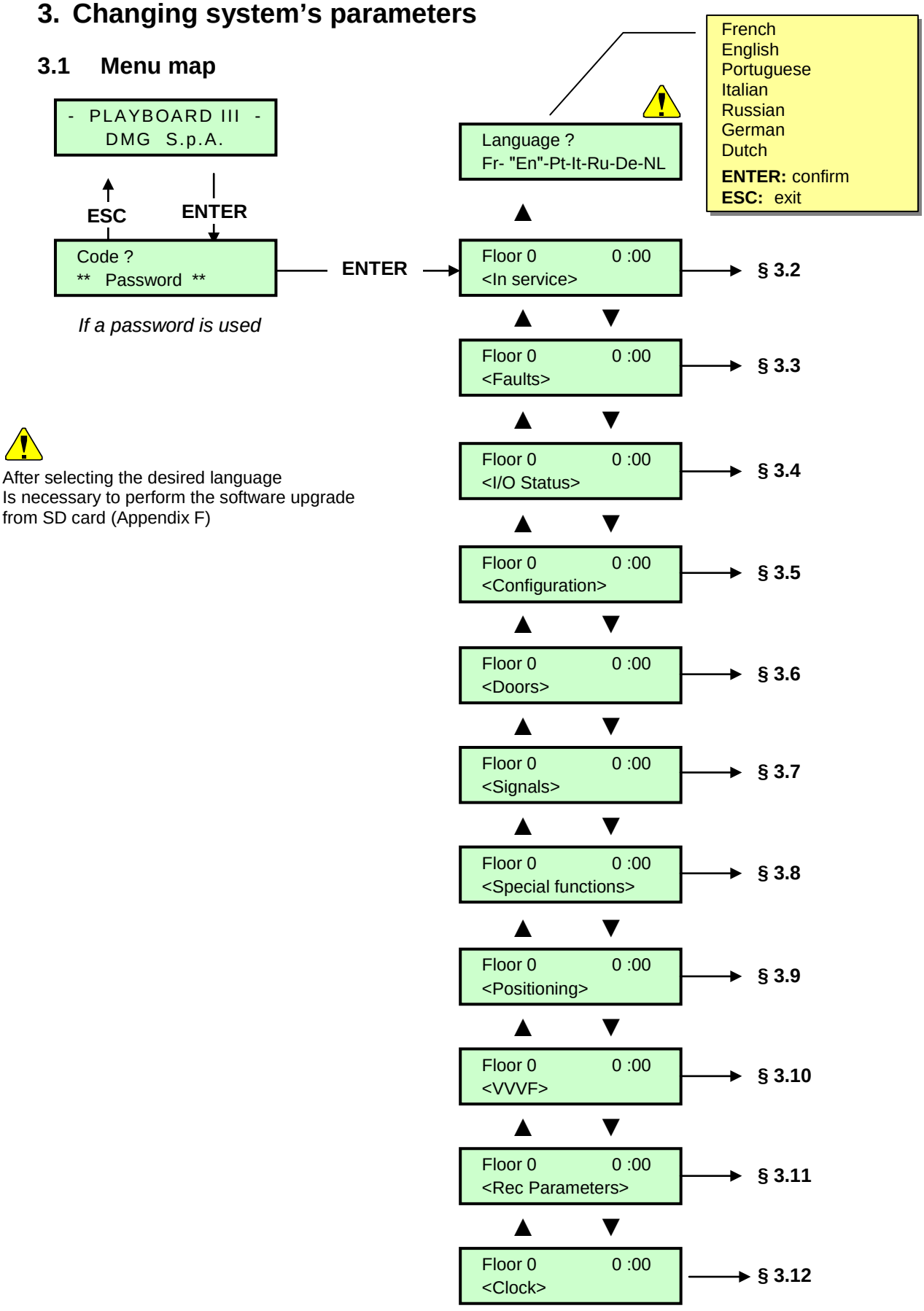
- Connect all metal masses to ground;
- Connect all unused conductors to ground (on the side of the cabinet);
- Connect the anti-noise filter delivered with the controller (inserted in the spare parts kit) in parallel to the brake coil (max 230VDC) and as close as possible to it;
- When the retiring ramp is present, connect the anti-noise diode delivered with the controller (spare parts kit) in parallel to the retiring ramp coil and as close as possible to it; make sure to connect the cathode (diode side marked with a white strip) to the power supply common "P+" and the anode to the negative "P-";
- For the wiring towards the lift car, in case signals and 12-24V power supply cables are present in the same travelling cable, make sure these are kept distant (safety chain circuit, doors or retiring ramp power supply, 230V etc.).

2.11 Circuits protection (printed circuits and components)

- The size of fuses MUST BE RESPECTED.
- It is advisable to use photocells supplied with 24V (not 220V) to avoid any problem of the 24V contact with other voltages.

3. Changing system's parameters

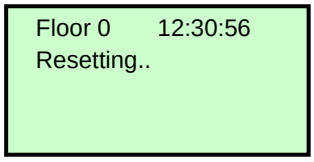
3.1 Menu map



If a password is used

After selecting the desired language
Is necessary to perform the software upgrade
from SD card (Appendix F)

3.2 Menu “System status”

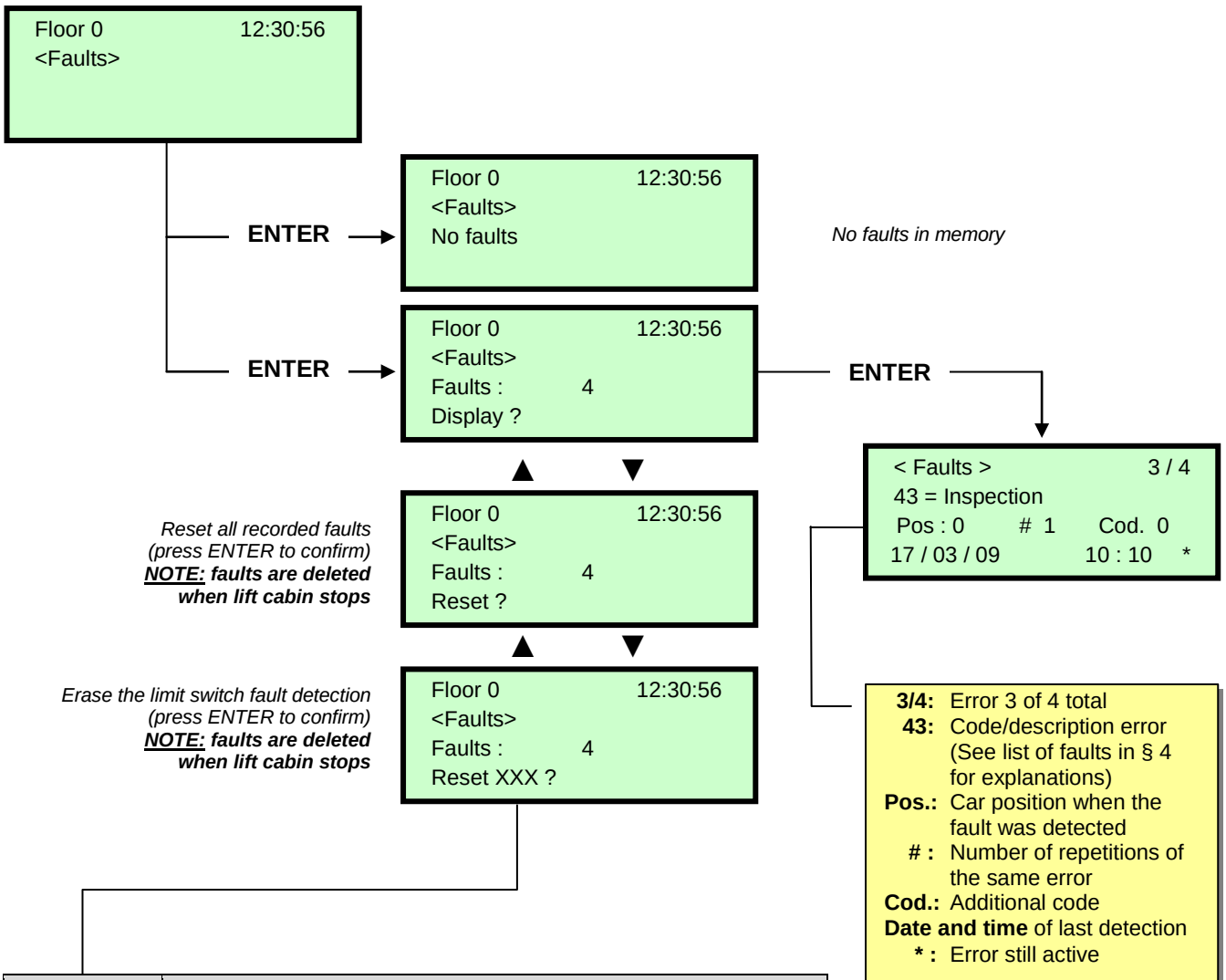


System Status	*Description*	*Visualization on Serial display*
Resetting	The system is performing the reset procedure	O -
In service	The system is normal operations mode	
Inspection	The system is in inspection mode	OR
Temp. Operat.	The system is in temporary operations mode	P
Out of service	The system is out of service	
Car Priority	The system is running in car priority mode (priority key switch activated)	
Fire-fighters	The system is operating in Fire-fighters mode (various operations)	
Emergency	The system is performing the emergency procedure	E
Drift control	The system is performing the car drift control procedure	
Upward oper.	The system is running upwards	
Downward oper.	The system is running downwards	
Re-levelling	The car is at floor level and is re-levelling	
Still at floor	The car is at floor level, with no registered calls	
High speed	The system is running in high speed mode	
Low speed	The system is running in low speed mode	
Door close	The door is completely closed	
Door open	The door is opened (or opening/closing)	
Car full load	The car has been fully loaded	
Photocell A	The input relevant to the photocell entrance A is active	
Photocell B	The input relevant to the photocell entrance A is active	
Light curtain A	The input relevant to the open door button of entrance A is active	
Light curtain B	The input relevant to the open door button of entrance B is active	

3.3 "Faults" Menu

This Menu lists the last 60 faults stored into the internal memory of the controller. All faults are described in the Troubleshooting section (§ 4).

WARNING: In case of black out, the internal memory is saved only if the battery is connected.



Fault	*Description*
Reset **FCO**	Limit switch fault; you can clear it only after disabling the FCO input.
Reset **82212**	Drift control
Reset **RSP**	RSP fault; for reduced pit and headroom, you can clear it only with E511 input closed.
Reset **UCM**	UCM fault; for A3 amendment
Reset **ISO**	ISO fault; problem detection in the operation monitoring of safety module for advanced door opening / re-leveling.

3.4 Menu “I/O Status”

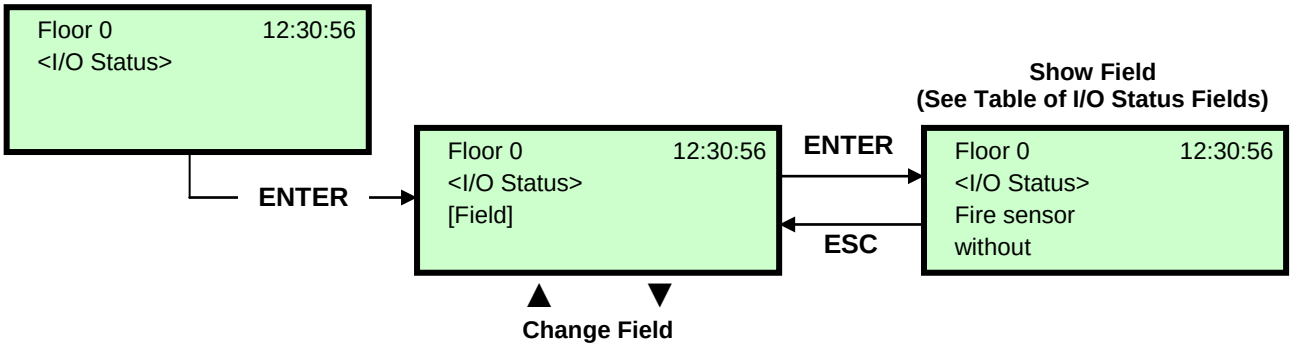


Table of Parameters

Field	Description	Navigation	Values (group of 12)					
Car call	Simulation of a car call	▲▼ Select floor ENTER Confirm ESC Exit						
Playboard IN-OUT	**System Inputs/Output** □ = Open contact ■ = Closed Contact	▲▼ Change group ENTER Exit ESC Exit	GROUPS					
			1/6	REM VHS SUR	RED PE COM	REV THM FCO	REV1 REV2 LTMP
			2/6	RMO BRK RDE	RGV RMV RPV	CAM ZP ISO	CCO CCOB TISO
			3/6	BRA FOA ROA	CEA FFA RFA	BRB FOB ROB	CEB FFB RFB
			4/6	HS BFR	PCA - I32	POM - O32	CPOM IEME OEME
			5/6	- FLM FLD	BIP GNGM GNGD	- SR1 SR2	DSA 212B E511
			6/6	PWR - ENAB	IN_A - IN_D	IN_B - -	IN_C - -
VVVF IN-OUT	**VVVF Inputs/Output** □ = Open contact ■ = Closed Contact	▲▼ Change group ENTER Exit ESC Exit	GROUPS					
			1/4	EN FWD REV	X1 X2 X3	X4 X5 X6	X7 X8 0,0 V	
			2/4	Y1	Y2	Y3	Y4	
				Y5A/C		30 A/B/C		
				ALM	RST	ACC	DEC	
			3/4	Fout =	0,00		Hz	
				Iout =	0,00		A	
				Vout =	0,00		V	
			4/4	Imax =	0□00		A	
				Enco□er	0		P/s	
				MAIN =				
Push buttons	**Status of call buttons** □ = button not activated ■ = button activated	▲▼ ◄► Change group cab/down/up ENTER Exit ESC Exit	GROUPS					
			Cabin side A	7 3	6 2	5 1	4 0	
			Cabin side B	7 3	6 2	5 1	4 0	
			Pushb. Down side A	7 3	6 2	5 1	4 0	
			Pushb. Down side B	7 3	6 2	5 1	4 0	
			Upward side A	7 3	6 2	5 1	4 0	
			Upward side B	7 3	6 2	5 1	4 0	

Fire sensors	**Status of fire inputs** □ = fire inputs off ■ = fire inputs on	▲▼ **ENTER** **ESC**	Change group Exit Exit	
BDU inputs	**Status of BDU inputs** □ = opened input ■ = closed input	▲▼ ◄► **ENT/ESC**	Change group key/fire/door Exit	
Call registration list	**Call registration list** □ = call not registered ■ = call registered	▲▼ ◄► **ENT/ESC**	Change group cab/down/up Exit	Same Groups as PUSHBUTTONS
Start = …	Run Counter	**ENTER** **ESC**	Reset and exit Exit	
Battery test	Time remaining before next battery test (24h)	**ENTER** **ESC**	Reset and exit Exit	
RS-485 Line	Diagnostic serial line RS485 (BDU / Display)	**ENTER** **ESC**	Reset Exit	
CAN BUS Line	Diagnostic serial line CAN (TOC / Playpad)	**ENTER** **ESC**	Reset Exit	
RS 422 Line	Diagnostic serial Multiplex	**ENTER** **ESC**	Reset Exit	1/6 Multiplex communication 2/3 Linked systems' configuration 3/3 Linked systems' state and position

Playboard IN-OUT table description parameters

Input	***Description***
SE2	Safety chain input: car and pit emergency stop
SE3	Safety chain input: final limit switch, safety gear, speed governor, inspection
SE4	Safety chain input: hall doors preliminary contacts
SE6	Safety chain input: car doors contacts and hall door interlocks
CCO CCOB	Input - power contactors control
FCO	Input - final limit switch control (2nd contact)
AGH	Input - top deceleration switch
AGB	Input - bottom deceleration switch
BFR	Input - door close button
PCA	Input - car priority function
POM	Input - Fire-fighters operations (Hall key switch)
CPOM	Input - Fire-fighters operations (Car key switch)
SUR	Input – Overload control
COM	Input – Full load control
HS	Input - out of service function
THM	Input - motor temperature sensor control
BRA	Input - door open button (entrance A)
CEA	Input - photocell entrance A
FOA	Input - door open limit switch entrance A
FFA	Input - door close limit switch entrance A
BRB	Input - door open button (entrance B)
CEB	Input - photocell entrance B
FOB	Input - door open limit switch entrance B
FFB	Input - door close limit switch entrance B
REV	Input - inspection function (machine room)
REV1	Input - inspection function (top of car)
REV2	Shaft bottom inspection input (EN 81-20) REV1 clamp of INT B's REVMR terminal For systems without TOC boards, it is the same as REV1 signal

REM	Input - up command in inspection
RED	Input - down command in inspection
ZP	Input - door zone signal
IEME	Input - Emergency (power supply failure)
E511	Optional input for *Norme 511* (France)
PE	Input - ground fault control
TISO	Input – ISO control
VHS	Output - out of order illumination
RMV	Output – intermediate speed command
BRK	Output - Brake command (JBR)
ISO	Output - Re-levelling command
RGV	Output - high speed command
RPV	Output - low speed command
RMO	Output - up travel command
RDE	Output - down travel command
LTMP	Output - time limited car light command
CAM	Output - retiring ramp command
OEM	Output - emergency command
ROA	Output - door open command (entrance A)
RFA	Output - door close command (entrance A)
ROB	Output - door open command (entrance B)
RFB	Output - door close command (entrance B)
DSA	Output - alarms de-activation
SR1	Output - Norm 511 Buzzer
SR2	Output - Norm 511 Light
212B	Output - Norm 212 Buzzer
FLD	Output - down arrows command
FLM	Output - up arrows command
GNGD	Output - upward gong command
GNGM	Output - downward gong command
BIP	Output – BIP signalization in the cabin
PWR	UCM module power command
ENAB	UCM module enabling command
IN_A	Input - UCM module command
IN_B	Input – Brake 1 monitor
IN_C	Input – Brake 2 monitor
IN_D	Input – UCM module safety relays monitor

VVVF IN-OUT table description parameters

Input	*Description*
EN	enable digital input (screw terminal EN)
FWD	Upward digital input (screw terminal FWD)
REV	Downward digital input (screw terminal REV)
X1	High speed digital input (screw terminal X1)
X2	REV speed digital input (screw terminal X2)
X3	Low speed digital input (screw terminal X3)
X4	digital input (screw terminal X4)
X5	digital input (screw terminal X5)
X6	digital input (screw terminal X6)
X7	digital input (screw terminal X7)
X8	Emergency digital input (screw terminal X8)
0,0 V	VVVF analog input (screw terminals 11-12)
Encoder	Encoder VVVF input (closed loop)
MAIN	VVVF firmware version
Y1	Digital output (screw terminal Y1)
Y2	Digital output (screw terminal Y2)
Y3	Digital output (screw terminal Y3)
Y4	Digital output (screw terminal Y4)
Y5A/C	Brake command relays (screw terminals Y5)
30 A/B/C	Safety chain relays (screw terminals 30 A/B/C)
ALM	Alarm VVVF signalisation
RST	Reset VVVF
ACC	Acceleration
DEC	Deceleration
Fout	Output Frequency
Vout	Output Voltage
Iout	Output current
Imax	Maximum output current

3.5 "Configuration" Menu

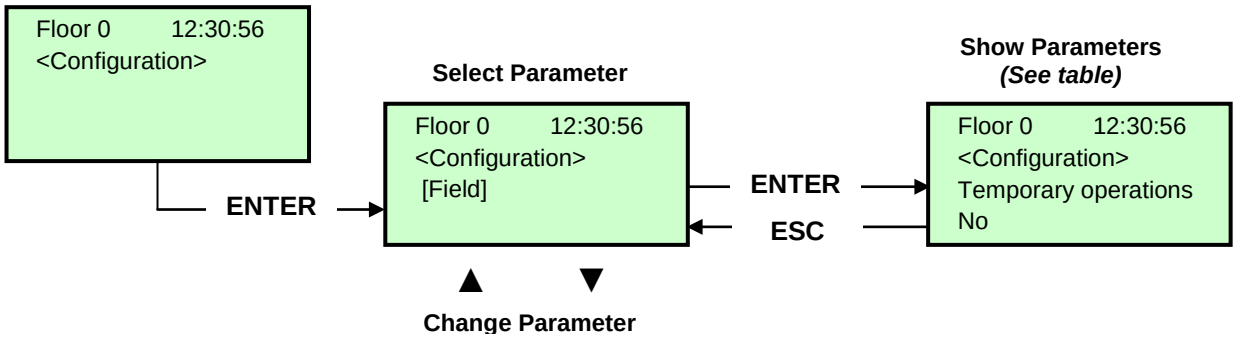


Table of Parameters

	Parameter	Description	Navigation		Values	Default value
	Temporary operations	Temporary operations mode of the system	◄►	Choice	No; Yes	No
	Test	To ease checks and installation start-up. For description, refer to Appendix D.	▲▼			
	Code ?	Password protection to access programming	◄► ▲▼	Change charact. Select charact.	8 characters (0 - 9; A - Z; a - z)	no password
	Configura-tion	Type of wiring configuration: -) Standard wire terminals (Car and floors); -) Serial comm. in the car, 1 line/floor connectors at floors; -) Wire terminals in the car, Serial communication at floors (BDU modules); -) Serial communication for car and floors	◄►	Choice	Car & Fl. STD; Car SER. / Fl. RJ45; Car STD. / Fl. BDU; Car SER. / Fl. BDU	Car SER / Fl. RJ45
	Type of control	Type of control for the lift	◄►	Choice	-SAPB; -SAPB record -SAPB constant pressure -Down collective; -Full Collective;	SAPB;
	Drive	Traction type (Traction 2 speeds / VVVF or Hydraulic)	◄►	Choice	Hydraulic; Traction	Traction
	No. of floors	Number of floors of the installation	▲ ▼	Increase Decrease	2 <-> 16 (std.) 2 <-> 32 (BDU only)	2
	Re-levelling	**Not present**: No Re-levelling **Type 1:** (open or close door). This setting is indicated for traction installations for good stopping accuracy. Re-levelling is triggered cabin lefts its position "exactly at floor" (one of the two beams (with encoder=1cm) interrupted). Re-levelling ends when both beams are free. WARNING: this setting is not suitable to hydraulic installations due to the risk of "pumping" effect (car drifts down after stopping) **Type 2:** (open or close door). This setting is indicated for hydraulic installations and operates as in Type 1, except that the two beams (with encoder=2cm) must be interrupted before the re-levelling starts. Re-levelling ends when the two beams are free. WARNING: the use of sensors with reduced distance between beams (TMS03 = 20 mm) is suggested. **Type 3:** Levelling 1 beam open door (with encoder=1cm), 2 beams closed door (with encoder=2cm). This setting allows the levelling 1 beam, floor door open (car light on) and levelling 2 beams, floor door closed (car light off). WARNING: to operate the levelling door open, no matter which option you have chosen, it is necessary to shunt the door safety, using an approved system. ***Note:** with the Encoder positioning system, distance of activation of the re-levelling is displayed*	◄►	Choice	Not present Type 1 Type 2 Type 3	Not present
	Main floor	Position of the main floor (all calls below this floor are served only upwards (only down collective)	▲ ▼	Increase Decrease	0 <-> Floor No.	0
	Low Speed	Time before activation of the Low Speed fault (low speed too long)	▲	Increase	7 s <-> 40 s	7 s

	Parameter	Description	Navigation		Values	Default value
	fault time		▼	Decrease		
	Running time	Time before activation of running time fault	▲ ▼	Increase Decrease	20 s <-> 45 s	20 s
	Type of Installation	Type of installation (Simplex / Multiplex)	◄►	Choice	Simplex; Multiplex	Simplex
	Multiplex configuration	Multiplex configuration: Lift No.(LN); Push-Buttons Line (PBL); Floors in multiplex; Offset. For description, refer to Appendix C.	◄► ▲▼	Select param. Change value	- Lift No (LN).: 1<->4 - PushButtons Line (PBL): 0(1 Line)<->3(4 Lines)	(LN).(PBL): 1.0
					- Floors: 2 <-> 16 [32] - Ofst 0 <-> N° floors	Flrs. : 2 Ofst : 0
	Multiplex Call	In multiplex installations a floor call can be differentiated with a long push-button pressure (more than 3 seconds) calling: a. The installation with lower "Lift No (LN)" parameter (for example if there is a duplex installation with big cabin for disabled and a smaller one, the greater must be setted as "1" and the other as "2"; b. In “asymmetric floor distribution” systems, is the installation that can reach the lowest/highest level. The number allows the choice of allocation calls: 0 => system with shorter waiting time (default). 1 => Closer car. 2 => Energy saving, assign the call to the lift with the shortest waiting time. 3 => Energy saving, assign the call to the lift having the closest running car (customer specific request).	◄►	Choice	No (0, 1, 2, 3); Yes (0, 1, 2, 3)	No (0)

3.6 "Doors" Menu

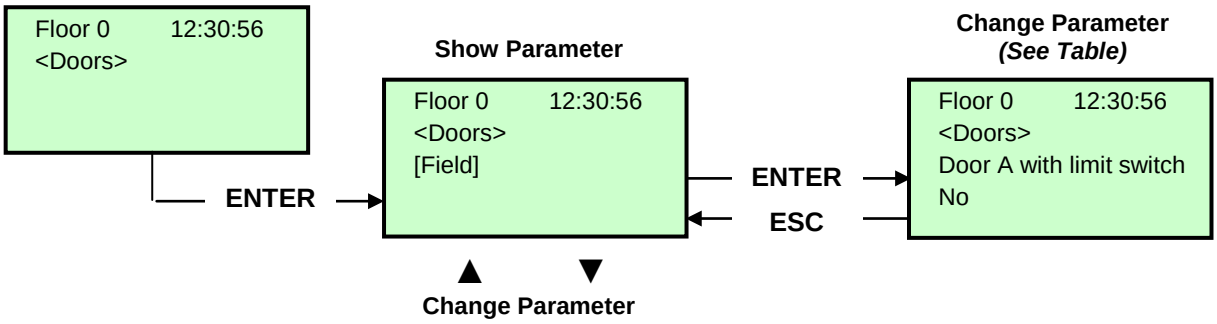


Table of Parameters

Cod.	Parameter	Description	Navigation	Values	Default value
	Ret. ramp on	Time before activation of the retiring ramp	▲ Increase ▼ Decrease	0,1 s <-> 9,9 s	0,1 s
	Ret. ramp off	Time before deactivation of the retiring ramp	▲ Increase ▼ Decrease	0,1 s <-> 9,9 s	0,1 s
	Lock fault time	Time before the activation of the lock fault	▲ Increase ▼ Decrease	2 s <-> 60 s	15 s
	Door open delay	Time before door opening – for automatic door	▲ Increase ▼ Decrease	0,1 s <-> 9,9 s	0,5 s
	Parking time with open door	Lift car parking time with open door (in sec.)	▲ Increase ▼ Decrease	1 s <-> 30 s	7 s
	Closing time with calls	Time (in sec.) before door closes in case of registered calls	▲ Increase ▼ Decrease	1 s <-> 60 s	2 s
	Doors Nb.	Number and type of doors	◄► Selection	-1 door -2 doors simult. -2 doors sel. -2 doors sel+through	1 access
	Type Door A	Selection of door type for entrance A: 1) *Manual / Not present:* manual doors at floors, car doors manual or not present; 2) *Car independent:* manual doors at floors, car doors independent; 3) *Car automatic:* manual doors at floors, car doors automatic; 4) *Combined auto:* automatic doors in the car and at floors	◄► Selection	Manual / not present; Car Independent; Car automatic; Combined Auto	Combined Auto
	Door A with limit switch	Presence of a limit switch for door A (not present for manual and independent doors)	◄► Selection	No; Yes	No
	Select door A at floor	Configuration of door A for each floor: set access to each floor and open or close door parking at floor (for automatic doors)	◄► Selection ▲▼ Change floor	No; Not Enabled; Pkg. Door close; Pkg. Door open	Pkg. Door close;
	Door A Open/Close time	Door A without limit switch: door opening/closing time	▲ Increase ▼ Decrease	1 s <-> 60 s	10 s
	Door A start delay	Door A manual: time before start	▲ Increase ▼ Decrease	0,1 s <-> 9,9 s	2,0 s
	Slipping Door A	Door A with limit switch: time before slipping fault	▲ Increase ▼ Decrease	1 s <-> 60 s	10 s
	Door A powered	Door A powered during the run. Not considered for manual or independent doors	◄► Selection	No Yes Yes AT40	No
	Type Door B	Selection of door type for entrance B (see Type Door A):	◄► Selection	Manual / not present; Car Independent; Car automatic;	Combined Auto

Cod.	Parameter	Description	Navigation	Values	Default value
				Combined Auto	
	Door B with limit switch	Presence of a limit switch for door B (not present for manual and independent doors)	◄► Selection	No; Yes	No
	Select door B at floor	Configuration of door B for each floor: set access to each floor and open or close door parking at floor (for automatic doors)	◄► Selection ▲▼ Change floor	No; Not Enabled; Pkg. Door close; Pkg. Door open	Pkg. Door close
	Door B Open/Close time	Door B without limit switch: door opening/closing time	▲ Increase ▼ Decrease	1 s <-> 60 s	10 s
	Door B start delay	Door B manual: time before start	▲ Increase ▼ Decrease	0,1 s <-> 9,9 s	2,0 s
	Slipping Door B	Door B with limit switch: time before slipping fault	▲ Increase ▼ Decrease	1 s <-> 60 s	10 s
	Door B powered	Door B powered during the run. Not considered for manual or independent doors	◄► Selection	No Yes Yes AT40	No
	Advanced opening	Parameter for door advanced opening (opening starts before car stop).	◄► Selection	No; Yes	No
	Photocell Type	Parameter to select the type of photocell: **NO photocell:** contact opens if the beam is free. The contact closes if the beam is interrupted. The shock, photocell and open door contacts must be wired in parallel. **NC photocell:** opposite of the NO photocell. The shock, photocell and open door contacts must be wired in series. *NOTE: The shock, photocell and open door contacts must all be of the same kind (NO or NC)*	◄► Selection	NO; NC	NO

3.7 "Signals" Menu

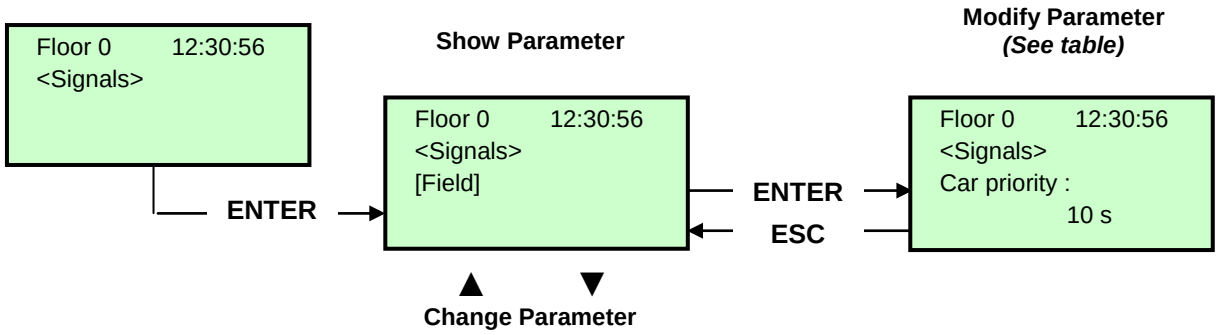


Table of Parameters

Cod.	Parameter	Description	Navigation	Values	Default values
	Car priority	Time of car at floor without direction before taking landing calls. In case of combined automatic doors, timing starts when doors have closed and the shock, photocell and re-opening contacts are not activated	▲ ▼ Increase Decrease	2 s <-> 30 s	10 s
	Floor call registration	Set the blinking for floor buttons upon registration	◀ ▶ Selection	Permanent; Blinking at floors	Permanent
	AUX output	Selection of the output type on the 16 relays board	◀ ▶ Selection	1 wire per floor; Car at floor; Floor light; Gray indicator; 9 segm. indicator; Lift is coming	1 wire per floor
	Automatic floor designation	Automatic setting of numeric characters for serial position indicators. The value increases/decreases automatically at each floor starting from Lowest floor	▲ ▼ Increase Decrease	-9 <-> 30	Lowest fl.: 0
	Manual floor designation	Manual setting of alphanumeric characters for serial position indicators. Setting must be done for each floor	◀ ▶ Field Selection ▲ ▼ Change value	- ; 0 <-> 9 ; A <-> Z	
	Trigger on PV	It is possible to start trigger (speech synthesiser / next direction arrows) on deceleration point (Yes) or to floor arrival (No).	◀ ▶ Selection	No yes	No
	Next direction arrows	In case of parameter activation, arrows outputs are activated only when lift stops at floor (or on slowing down if trigger parameter on PV is active).	◀ ▶ Choice	No; Yes	No

3.8 "Special Features" Menu

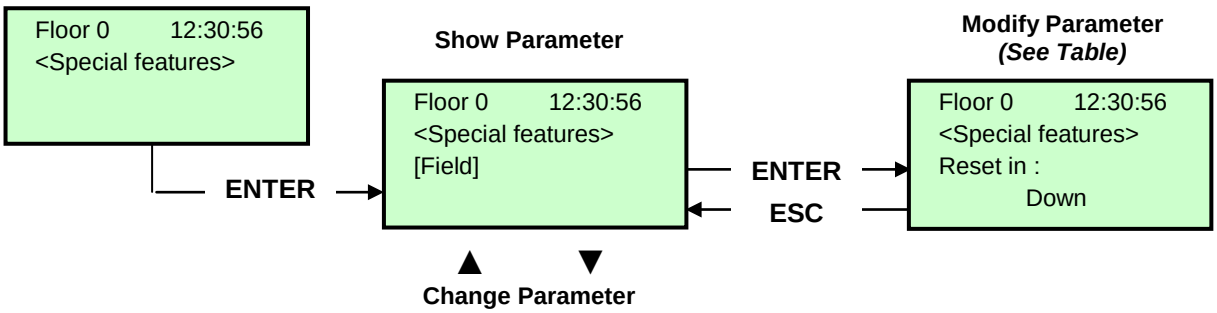


Table of Parameters

Parameter	Description	Navigation	Values	Default value
Reset in	Direction of travel during reset procedure	◀ ▶ Selection	Down; Up	Down
Travelling limits in inspection	Settings for the travelling limits during inspection mode. If travelling is programmed beyond the limits, the controller does not allow any movement beyond top/bottom floors.	◀ ▶ Selection	Up to AGB/AGH; Beyond AGB/AGH	Up to AGB/AGH
Fire-fighters	(Refer to Appendix B – Fire operation programming procedure) Type of fire-fighter operations (if present) and relevant parameters (fire service access level and side, POM and CPOM key contact type); choice of relevant applicable norm: -) Norm NF P82-207 (France); -) EN 81-72 (a): no car FF key switch; -) EN 81-72 (b): with car FF key switch; -) EN 81-73 -) DM 15/09/2005 (IT)	◀ ▶ Select field ▲ ▼ Change value	Not present; NF P82-207; EN 81-72 (a); EN 81-72 (b) EN 81-73 DM 15/09/2005 (IT)	Not present
Fire detection	Parameter for fire detection at floors. When a fire is detected: - if the lift is at a different floor than the one where fire was detected, all registered calls from/to this floor are cancelled; - if the lift is at the floor where fire was detected, the controller blocks door opening, closes doors (if open upon fire detection) and sends the car to a safe floor	◀ ▶ Selection	No; Yes	No
Ground fault	Parameter for the ground fault detection	◀ ▶ Selection	No; Yes	No
Stop button registration	The system registers the out of service mode (pressure of STOP button). It is also possible to set the delay to avoid simultaneous movement in installations powered with a generator.	◀ ▶ Selection	No; Yes	No
EN81-20	System setup accordingly with EN81-20	◀ ▶ Selection	No; Yes	No
Anti-nuisance fault	Parameter for the detection of the anti-nuisance fault (number of stops without photocell activation after which all car calls are cancelled)	◀ ▶ Selection ▲ ▼ No. calls	No; Yes 2 <-> 10	No 3
Out of service floor	Floor for out of service. Parking floor when HS input is enabled.	▲ ▼ Increase Decrease	0 <-> Floor No.:	0
Automatic return	Parameters for car automatic return at floor: Return floor and Minimum waiting time before automatic return	◀ ▶ Select parameter ▲ ▼ Change value	No 0 <-> Floor No.: 1 min <-> 60 min	No 0 15 min.
Return zones	Advanced settings for return at floor at planned hours / days: -) Day (0 = everyday, 1 = monday … 7 = sunday); -) Selected time interval (4 interval each day); -) Return floor; -) Start time; -) End time (max time: 7h 45 min);	◀ ▶ Select parameter ▲ ▼ Change value		
R. zone timing	Timing for selected return zones	◀ ▶ Selection	No; Yes	No

Parameter	Description	Navigation	Values	Default value
		▲▼ Change Value	1 s <-> 120 s	60 s
Call erasing at floor	Erasing all calls at floor where the car stops, with no control of the direction (only for full collective installations)	◀▶ Selection	No; Yes	No
Drift control (FR)	Drift control (France)	◀▶ Selection	None; Traction drive; Drum machine	None
Push-button code	It allows you to program a 4-digit code for Car calls. A 4-digit code may be assigned to each BCx car button input, corresponding to the car pushbutton inputs. Example: if the BC0 pushbutton is associated with the 0123 code, to reserv floor 0 from Cabin you can: a) - Press the floor 0 pushbutton; b) - Press in sequence the pushbuttons corresponding to the BC0, BC1, BC2, …, BC9 inputs; *Note:* Enter a code between 0 and 9 corresponding to the inputs BC0 ÷ BC9	◀▶ Select field ▲▼ Change value		
Controle Temperature ambient	Check the temperature in the engine room through the sensor (if present). If the temperature surpass the set thresholds for more than 30 seconds, the system stops at the floor and the error is recorded. The control is only active during normal operation or Cabin priority. After having set the two thresholds, pressing Enter you can perform the sensor calibration (immediately press Enter to retain the current calibration, otherwise set the room temperature value and then press Enter). The first threshold can be set between -10 ° C and +5 ° C while the second threshold can be set between +40 ° C and +75 ° C.	◀▶ Select field ▲▼ Change value	Without; +5°C <=> +40°C	Without
Automatic Calls	When lift is in normal mode, “Automatic calls” can be activated to perform a specific calls number (up to 120 calls or unlimited) programmable between 10 and 60 seconds. However is possible to enable or not the doors functionality (the system will also continue to accept floor calls simulating programmed calls, if enabled). The function ends automatically when the machineries are turned off or if the system is put in inspection mode.	▲▼ Increase Decrease ◀▶ Select Doors	0 <-> 120 ∞ 10 s <-> 60 s Yes - No	0 60 s Yes
Monitor UCM	A3 amendment. Configure type of monitor. For description, refer to Appendix E.	▲ Increase ▼ Decrease ◀▶ Choice		
UCM	A3 amendment. DMG UCM module. For description, refer to Appendix E.	▲ Increase ▼ Decrease ◀▶ Choice		
Forced Stop	If programmed, the installation will stop at a specific floor at each crossing (some hotels use this function).	▲ Increase ▼ Decrease ◀▶ Choice		
Protect floor	If a protected floor is programmed, when the car reaches the floor, the door does not open, instead the monitor will show images coming from the camera corresponding to that floor. Doors can be opened only by pressing the OPEN DOOR button; if this does not happen, the lift moves to the previous floor and then stops the protected floor mode (this operating mode is only possible with DMG’s monitoring system).	▲ Increase ▼ Decrease ◀▶ Choice		
LOP priority	Enabling the priority call from floor, with card 16 IN (or input keys from BDU)	◀▶ Choice	No; Yes	No
Enable floor	Enabling call (ex. CARD Reader). In combination with 16 IN board.	▲▼ Choice	No; Type 1	No

	Parameter	Description	Navigation	Values	Default value
		Type 1: Enabling LOP: to enable calls the corresponding input on the IN 16 board is required to be closed. Type 2: Enabling COP: to enable calls the corresponding input on the IN 16 board is required to be closed. Type 3: Enabling COP + LOP: to enable calls the corresponding input on the IN 16 board is required to be closed. (disabling of the floor calls).		Type 2 Type 3	
	Shaft Protection	Shaft and door protection. For description see Shaft Protection Appendix..	▲▼ Choice	No ; Type 1 Type 2 Type 3	No

3.9 "System Positioning" Menu

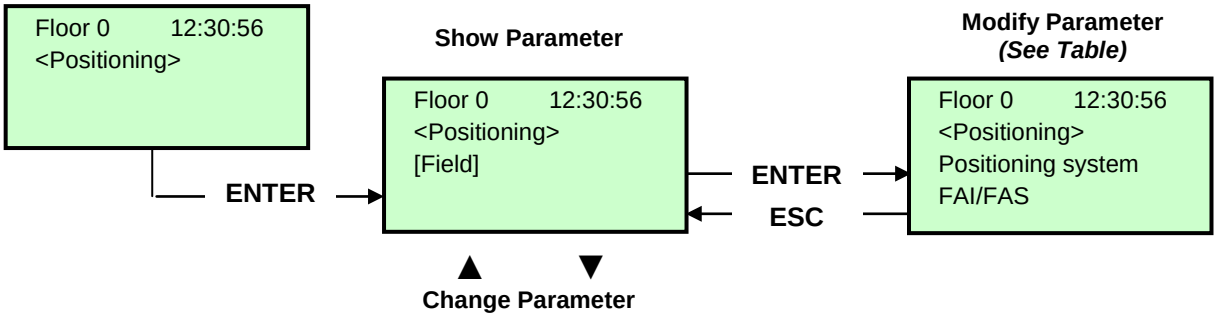


Table of Parameters (Optic/Magnetic positioning system)

Cod.	Parameter	Description	Navigation	Values	Default values
	Positioning system	Type of positioning system: with Encoder or traditional. ***Note:*** Can only be modified in Temporary Oper. mode	◄► Selection	FAI/FAS (vert.sensors); FAI/FAS (orizz.sensors) Encoder Clockwise; Encoder Counter clockwise	FAI/FAS (vert. sensors)
	Top PV	Position of the deceleration (passage in Low Speed) and number of entrances	▲ Increase ▼ Decrease	2 <-> 6	5
	PV at floors	Position of the specific deceleration for each floor	◄► Top PV Floor choice ▲▼	Short floor or 2<->6 0 <-> No. Floor	5 all floors
	Short level delay	Time before short level deceleration (only if a short level is programmed)	▲ Increase ▼ Decrease	0,00 s <-> 2,50 s	0,00s
	Top PV 2 Delay	Delay before passage to Intermediate speed	▲ Increase ▼ Decrease	0,00 s <-> 2,50 s	0,00 s
	Delay Dir.-BRK	VVVF: Delay between activation of travel direction and run command (BRK)	▲ Increase ▼ Decrease	0,0 s <-> 10,0 s	0,5 s - VVVF 0,0 s - Others
		OLEO: Star / Delta delay	▲ Increase ▼ Decrease	0,0 s <-> 10,0 s	0,5 s – VVVF 0,5 s – Star/Delta 0,0 s - Others
	Delay BRK-S	Delay between activation of BRK command and speed command	▲ increase ▼ decrease	0,0 s <-> 10,0 s	0,00 s
	Delay BRK-Dir.	Delay between deactivation of run command and deactivation of travel direction (arrive al piano)	▲ Increase ▼ Decrease	0,0 s <-> 10,0 s	1,5 s - VVVF 0,0 s - Others
	Inspection speed	Sets the speed of travel in inspection	◄► Selection	Low speed; High speed	Low speed
	Emergency BRK On	Emergency break modulation parameter (modify only if EME board is not present)	▲ increase ▼ decrease	0,0 s <-> 5,0 s	0,0s
	Emergency BRK Off	Emergency break modulation parameter (modify only if EME board is not present)	▲ increase ▼ decrease	0,0 s <-> 5,0 s	0,0s

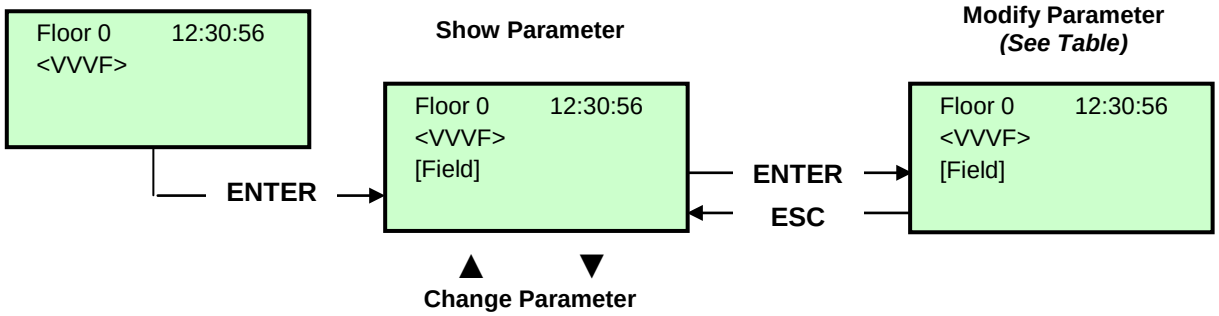
Table of Parameters (Encoder positioning system)

Cod.	Parameter	Description	Navigation	Values	Default values
	Positioning system	Type of positioning system: with Encoder or traditional. ***Note:*** Can only be modified in Temporary Oper. mode	◄► Selection	FAI/FAS (vert.sensors); FAI/FAS (orizz.sensors) Encoder Clockwise; Encoder Counter clockwise	Encoder Clockwise

Cod.	Parameter	Description	Navigation	Values	Default values
	Autosetting	Start of floor position self-learning procedure. Can only be modified in Temporary Operation mode. See §5 for details	◄► Selection	No; Yes	No
	Floor Position	Position value for each floor	▲ increase ▼ decrease ◄► Floor pos. selection		
	Accel. Time	Acceleration time. Time required to switch from start speed to travelling speed.	▲ increase ▼ decrease	1,0 s <-> 10,0 s	3,0 s
	Starting Boost	Starting speed	▲ increase ▼ decrease	0 % <-> 10 %	3 %
	Stopping Boost	Final (stopping) speed	▲ increase ▼ decrease	0 % <-> 10 %	4 %
	Max speed	Maximum speed during the travel	▲ increase ▼ decrease	5 % <-> 100 %	100 %
	Inspection speed	Travelling speed in inspection mode	▲ increase ▼ decrease	5 % <-> 100 %	50 %
	AGB/AGH speed	Travelling speed on AGB/AGH limit points. Same speed adopted during emergency operations	▲ increase ▼ decrease	1 % <-> 50 %	10 %
	Delay Dir.-BRK	VVVF: Delay between activation of travel direction and BRK command (start)	▲ increase ▼ decrease	0,0 s <-> 10,0 s	0,5 s - VVVF 0,0 s - Others
		OLEO: Star / Delta delay	▲ Increase ▼ Decrease	0,0 s <-> 10,0 s	0,5 s – VVVF 0,5 s – Star/Delta 0,0 s - Others
	Delay BRK-S	Delay between activation of BRK command and beginning of the analogic speed ramp	▲ increase ▼ decrease	0,0 s <-> 10,0 s	0,3 s - VVVF 0,0 s - Others
	Delay BRK-Dir.	Delay between deactivation of run command and deactivation of travelling direction (stop at floor)	▲ increase ▼ decrease	0,0 s <-> 10,0 s	1,5 s - VVVF 0,0 s - Others
	Emergency BRK On	Emergency break modulation parameter (modify only if EME board is not present)	▲ increase ▼ decrease	0,0 s <-> 5,0 s	0,0s
	Emergency BRK Off	Emergency break modulation parameter (modify only if EME board is not present)	▲ increase ▼ decrease	0,0 s <-> 5,0 s	0,0s
	Monitor Encoder	Contains information on: Encoder features, reading of slowdown heights (R1D / R1S), re-levelling (RRIPD / RRIPS) and stop of the cabin (RLD / RLS) where D indicates down while S means up; finally it contains info on reading AGB / AGH and ZP heights. Note: R1D and R1S heights can be modified pushing Enter without repeating self learning procedure (to let the slowing down distance be equal in rise and descent).			

NOTE: Please consult the time diagram at the end of this manual, to better understand some meaning parameters.

3.10 "VVVF" Menu



Note: Unlike other parameters, VVVF parameters are immediately stored into memory, there is no need to save the settings.

VVVF Basic menu list Parameters

Cod.	Parameter	Description	Navigation	Values	Default values
F03	Maximum speed	Max speed of the motor	◀ ▶ Selection ▲ ▼ Change Value	150-3600 RPM	1500 RPM
F05	Rated Voltage	Rated voltage of the motor driven by the inverter	◀ ▶ Selection ▲ ▼ Change Value	160-500 V	380 V
F07	Acc T1	Acceleration ramp (only with Optical/Magnetic positioning system)	◀ ▶ Selection ▲ ▼ Change Value	0,00-99,9 sec	1,8 sec (Opt/Magnetic) 0,01 sec (Encoder)
F08	Dec T2	Deceleration ramp (only with Optical/Magnetic positioning system)	◀ ▶ Selection ▲ ▼ Change Value	0,00-99,9 sec	1,8 sec (Opt/Magnetic) 0,01 sec (Encoder)
F42	Control Mode	Control Mode	◀ ▶ Selection ▲ ▼ Change Value	0-1-2	0 (Geared drives, closed loop) 1 (Gearless drives, closed loop) 2 (Geared drives, open loop)
E12	Acc/dec T5		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E13	Acc/dec T6		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E15	Acc/dec T8		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E16	Acc/dec T9		◀ ▶ Selection ▲ ▼ Change Value	0.00 – 99.9 sec	1,8 sec (FAI/FAS) 0,0 sec (Encoder)
C07	Creep Speed	Creeping speed (only with Optical/Magnetic positioning system)	◀ ▶ Selection ▲ ▼ Change Value		4,0 Hz
C10	Middle Speed	System speed under inspection mode (only with Optical/Magnetic positioning system)	◀ ▶ Selection ▲ ▼ Change Value		20 Hz
C11	High Speed	High speed for multistep speed change (Optical/magnetic positioning system)	◀ ▶ Selection ▲ ▼ Change Value		50 Hz
P01	M-Poles	Number of poles of the motor	◀ ▶ Selection ▲ ▼ Change Value		4 (see motor data)
P02	M-Rated Cap	Rated power of the motor	◀ ▶ Selection ▲ ▼ Change Value		Function of Inverter size (see motor data)
P03	M-Rated Cur	Rated current intensity of the motor	◀ ▶ Selection ▲ ▼ Change Value		Function of Inverter size (see motor data)
P04	M-Autotuning	Auto tuning of motor parameters (geared drives only)	◀ ▶ Selection ▲ ▼ Change Value		0 (2 to trigger the auto tuning procedure for geared drives)
P06	M-No-Load Curr.	Motor no-load current	◀ ▶ Selection		Automatically set during

Cod.	Parameter	Description	Navigation	Values	Default values
			▲▼ Change Value		Auto tuning
P12	M-Rated Slip	Rated slip frequency of the motor	◀▶ Selection ▲▼ Change Value	0-15Hz	Automatically set
L01	PG select	Specifications of a pulse encoder system to be used for speed detection: 0=12/15V open collector or 5V line driver with OPC-LM1-IL card (geared drives) 2=5V line driver 3 bit (U,V,W) with OPC-LM1-PP card (gearless drives) 3=5V line driver 4 bit gray code with OPC-LM1-PP card (gearless drives) 4=Sinusoidal differential 1Vp-p EnDat 2.1 with OPC-LM1-PS card (gearless drives) 5=Sinusoidal differential 1Vp-p SIN/COS with OPC-LM1-PR card (gearless drives)	◀▶ Selection ▲▼ Change Value	0-5	0 Geared drives 4 Gearless drives
L02	PG resolution	Resolution of the pulse encoder (Pulse/ Turn)	◀▶ Selection ▲▼ Change Value	360-60000 P/R	1024 Geared drives 2048 Gearless drives
L19	S-Curve 1	specify S-curve zones to be applied to operations driven by multistep speed commands with S-curve acceleration/deceleration.	◀▶ Selection ▲▼ Change Value		30 % (FAI/FAS) 20 % (Encoder)
L24	S-Curve 6		◀▶ Selection ▲▼ Change Value		25 % (FAI/FAS) 20 % (Encoder)
L25	S-Curve 7		◀▶ Selection ▲▼ Change Value		30 % (FAI/FAS) 20 % (Encoder)
L26	S-Curve 8		◀▶ Selection ▲▼ Change Value		25 % (FAI/FAS) 20 % (Encoder)
L27	S-Curve 9		◀▶ Selection ▲▼ Change Value		30 % (FAI/FAS) 20 % (Encoder)
L82	Brake On Delay	Delay from activation of BRKS output	◀▶ Selection ▲▼ Change Value	0,00-10,00 Sec	0,1 (FAI/FAS) 0,3 (Encoder)
L83	Brake Off delay	Delay from deactivation of BRKS output	◀▶ Selection ▲▼ Change Value	0,00-100 Sec	0,4 (FAI/FAS) 0,1 (Encoder)

VVVF Advanced menu list Parameters

Cod.	Parameter	Description	Navigation	Values	Default values
F01	Speed command	Command selection for speed variation	◀▶ Selection ▲▼ Change Value	0=MULTISPEED 1=Analogic NR (not polarized)	0 (with Optical/Magnetic positioning system) 1 (with Encoder)
F03	Maximum speed	Max speed of the motor	◀▶ Selection ▲▼ Change Value	150-3600 RPM	1500 RPM
F04	Rated speed	Rated speed of the motor (Frequency)	◀▶ Selection ▲▼ Change Value		50 Hz
F05	Rated Voltage	Rated voltage of the motor driven by the inverter	◀▶ Selection ▲▼ Change Value	160-500 V	380 V
F07	Acc T1	Acceleration ramp (only with Optical/Magnetic positioning system)	◀▶ Selection ▲▼ Change Value	0,00-99,9 sec	1,8 sec (Opt/Magnetic) 0,01 sec (Encoder)
F08	Dec T2	Deceleration ramp (only with Optical/Magnetic positioning system)	◀▶ Selection ▲▼ Change Value	0,00-99,9 sec	1,8 sec (Opt/Magnetic) 0,01 sec (Encoder)
F09	TRQ Boost	Torque increase	◀▶ Selection ▲▼ Change Value	0,0-5,0	0,0
F10	Electronic OL	Overload electrical protection	◀▶ Selection ▲▼ Change Value	1 - 2	2
F11	Overload Level	Electronic Thermal Overload Protection for Motor (Value in Ampere equal to the	◀▶ Selection ▲▼ Change Value	1 to 200% of the rated current	100 % of the rated current

Cod.	Parameter	Description	Navigation	Values	Default values
		inverter size)			
F12	Overload time	Thermic time constant	◀ ▶ Selection ▲ ▼ Change Value	0.5 – 75.0 min.	5.0 (up to 22 kW) 10.0 (up to 30 kW)
F20	DCBrake speed	Frequency threshold for DC INJECTION	◀ ▶ Selection ▲ ▼ Change Value		1,0 Hz
F21	DC Brake level	Intensity threshold for DC INJECTION	◀ ▶ Selection ▲ ▼ Change Value		45 %
F22	DC Brake T	DC INJECTION time	◀ ▶ Selection ▲ ▼ Change Value		0,8 sec
F23	Starting Speed	Starting speed (in Hz) for the inverter	◀ ▶ Selection ▲ ▼ Change Value	0,00-150	0,5 Hz (FAI/FAS) 0,1 Hz (Encoder)
F24	Holding Time	Holding time of running at starting speed for the inverter	◀ ▶ Selection ▲ ▼ Change Value	0,00-10 Sec	0,0 sec (FAI/FAS) 0,3 sec (Encoder)
F25	Stopping Speed	Stopping speed (in Hz) for the inverter	◀ ▶ Selection ▲ ▼ Change Value		0,0 sec (FAI/FAS) 0,1 sec (Encoder)
F26	Motor Sound	Carrier frequency)	◀ ▶ Selection ▲ ▼ Change Value		15 KHz
F42	Control Mode	Control Mode	◀ ▶ Selection ▲ ▼ Change Value	0-1-2	0 (Geared drives, closed loop) 1 (Gearless drives, closed loop) 2 (Geared drives, open loop)
F44	Current Limiter	Activation level of the current limiter. If 999 value means no current limitation	◀ ▶ Selection ▲ ▼ Change Value	% to the rated current of the inverter	200 %
E04	Command X4	Input X4 not used	◀ ▶ Selection ▲ ▼ Change Value		8
E05	Command X5	Input X5 not used	◀ ▶ Selection ▲ ▼ Change Value		60
E06	Command X6	Input X6 not used	◀ ▶ Selection ▲ ▼ Change Value		61
E07	Command X7	Input X7 not used	◀ ▶ Selection ▲ ▼ Change Value		62
E08	Command X8	Input X8 not used	◀ ▶ Selection ▲ ▼ Change Value		63
E10	Acc/dec T3		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E11	Acc/dec T4		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E12	Acc/dec T5		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E13	Acc/dec T6		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E14	Acc/dec T7		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E15	Acc/dec T8		◀ ▶ Selection ▲ ▼ Change Value		1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E16	Acc/dec T9		◀ ▶ Selection ▲ ▼ Change Value	0.00 – 99.9 sec	1,8 sec (FAI/FAS) 0,0 sec (Encoder)
E20	Signal Y1	Output Y1 (transistor) not used	◀ ▶ Selection ▲ ▼ Change Value		10
E21	Signal Y2	Output Y2 (transistor) not used	◀ ▶ Selection ▲ ▼ Change Value		25
E22	Signal Y3	Output Y3 (transistor) not used	◀ ▶ Selection ▲ ▼ Change Value		2
E23	Signal Y4	Output Y4 (transistor) not used	◀ ▶ Selection Change Value		57

Cod.	Parameter	Description	Navigation	Values	Default values
			▲▼		
E30	Speed Arr. Hyst	Not used	◀▶ Selection ▲▼ Change Value		0,5
E31	Speed Det.Lev	Not used	◀▶ Selection ▲▼ Change Value		50,00
E32	Speed Det Hyst	Not used	◀▶ Selection ▲▼ Change Value		0,51
E39	RRD Level	Recommended direction in emergency (Not used)	◀▶ Selection ▲▼ Change Value		0%
E61	Analog Input 12	Function of analog input 12	◀▶ Selection ▲▼ Change Value	0-2	0 sec (FAI/FAS) 2 sec (Encoder)
E98	Command FWD	Function for screw terminal FWD	◀▶ Selection ▲▼ Change Value		98
E99	Command REV	Function for screw terminal REV	◀▶ Selection ▲▼ Change Value		99
C01	BATRY TL I	Torque limitation in emergency (999 value means that the limit is like F44)	◀▶ Selection ▲▼ Change Value		999
C02	BATRY TL T		◀▶ Selection ▲▼ Change Value		0 Sec
C03	Battery Speed	Speed during emergency run	◀▶ Selection ▲▼ Change Value		5,68 Hz
C07	Creep Speed	Creeping speed (only with Optical/Magnetic positioning system)	◀▶ Selection ▲▼ Change Value		4,0 Hz
C10	Middle Speed	System speed under inspection mode (only with Optical/Magnetic positioning system)	◀▶ Selection ▲▼ Change Value		20 Hz
C11	High Speed	High speed for multistep speed change (Optical/magnetic positioning system)	◀▶ Selection ▲▼ Change Value		50 Hz
P01	M-Poles	Number of poles of the motor	◀▶ Selection ▲▼ Change Value		4 (see motor data)
P02	M-Rated Cap	Rated power of the motor	◀▶ Selection ▲▼ Change Value		Function of Inverter size (see motor data)
P03	M-Rated Cur	Rated current intensity of the motor	◀▶ Selection ▲▼ Change Value		Function of Inverter size (see motor data)
P04	M-Autotuning	Auto tuning of motor parameters (geared drives only)	◀▶ Selection ▲▼ Change Value		0 (2 to trigger the auto tuning procedure for geared drives)
P06	M-No-Load Curr.	Motor no-load current	◀▶ Selection ▲▼ Change Value		Automatically set during Auto tuning
P07	M-%R1	Motor (%R1)	◀▶ Selection ▲▼ Change Value		Automatically set during Auto tuning
P08	M-%X	Motor (%X)	◀▶ Selection ▲▼ Change Value		Automatically set during Auto tuning
P09	M-Slip driving	Slip compensation gain in percentage to the rated slip (P12) at the driving sides	◀▶ Selection ▲▼ Change Value	0,0-200%	
P10	M-Slip braking	Slip compensation gain in percentage to the rated slip (P12) at the braking sides	◀▶ Selection ▲▼ Change Value	0,0-200%	
P11	M-Slip T	Slip compensation time value (fixed)	◀▶ Selection ▲▼ Change Value		0,2 sec
P12	M-Rated Slip	Rated slip frequency of the motor	◀▶ Selection ▲▼ Change Value	0-15Hz	Automatically set
H04	Auto reset Times	Auto-resetting (Number of times)	◀▶ Selection ▲▼ Change Value		10
H05	Auto reset int	Auto-resetting (Reset interval)	◀▶ Selection ▲▼ Change Value		0,5 sec

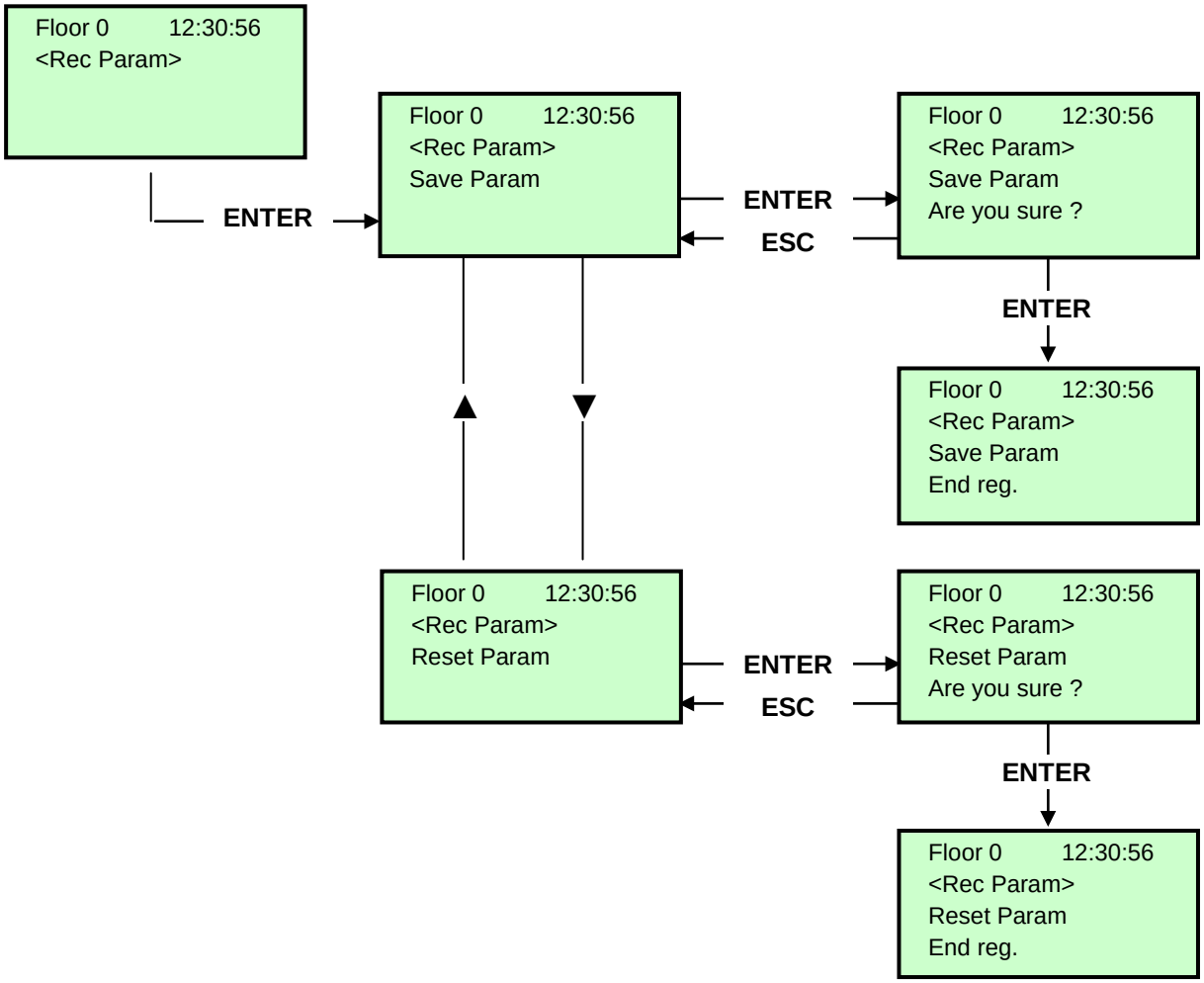
Cod.	Parameter	Description	Navigation	Values	Default values
H06	Cooling Fan CTRL	Delay on Cooling Fan turning off (999 value means that there is no limit on fan control; fan is always turned on)	◀ ▶ Selection ▲ ▼ Change Value		5 min
H57	S-Curve 11	Curve to S-11	◀ ▶ Selection ▲ ▼ Change Value	0 – 50 %	20 %
H58	S-Curve 12	Curve to S-12	◀ ▶ Selection ▲ ▼ Change Value	0 – 50 %	20 %
H64	Zero Hold Time		◀ ▶ Selection ▲ ▼ Change Value		0,8 sec (FAI/FAS) 0,2 sec (Encoder)
H65	Soft Start Time		◀ ▶ Selection ▲ ▼ Change Value		0,4 sec (FAI/FAS) 0,2 sec (Encoder)
H67	Stop Hold Time		◀ ▶ Selection ▲ ▼ Change Value		1 sec
L01	PG select	Specifications of a pulse encoder system to be used for speed detection: 0=12/15V open collector or 5V line driver with OPC-LM1-IL card (geared drives) 2=5V line driver 3 bit (U,V,W) with OPC-LM1-PP card (gearless drives) 3=5V line driver 4 bit gray code with OPC-LM1-PP card (gearless drives) 4=Sinusoidal differential 1Vp-p EnDat 2.1 with OPC-LM1-PS card (gearless drives) 5=Sinusoidal differential 1Vp-p SIN/COS with OPC-LM1-PR card (gearless drives)	◀ ▶ Selection ▲ ▼ Change Value	0-5	0 Geared drives 4 Gearless drives
L02	PG resolution	Resolution of the pulse encoder (Pulse/ Turn)	◀ ▶ Selection ▲ ▼ Change Value	360-60000 P/R	1024 Geared drives 2048 Gearless drives
L03	P.P.Tuning	Magnet pole Position Offset: Auto tuning of motor parameters (gearless drives only)	◀ ▶ Selection ▲ ▼ Change Value	0=disables tuning 1=enables tuning 2=tuning with link control 3=tuning with accuracy control 4=excluded	0 (2 to trigger the auto tuning procedure for gearless drives)
L04	P.P.Offset	Magnetic Pole Position Offset (Offset angle) for gearless drives	◀ ▶ Selection ▲ ▼ Change Value		Automatically set during Auto tuning (L03)
L05	ACR P gain		◀ ▶ Selection ▲ ▼ Change Value		1,5
L19	S-Curve 1	L19 to L28 specify S-curve zones to be applied to operations driven by multistep speed commands with S-curve acceleration/deceleration.	◀ ▶ Selection ▲ ▼ Change Value		30 % (FAI/FAS) 20 % (Encoder)
L20	S-Curve 2				30 % (FAI/FAS) 20 % (Encoder)
L21	S-Curve 3				30 % (FAI/FAS) 20 % (Encoder)
L22	S-Curve 4				30 % (FAI/FAS) 20 % (Encoder)
L23	S-Curve 5				30 % (FAI/FAS) 20 % (Encoder)
L24	S-Curve 6				25 % (FAI/FAS) 20 % (Encoder)
L25	S-Curve 7				30 % (FAI/FAS) 20 % (Encoder)
L26	S-Curve 8				25 % (FAI/FAS) 20 % (Encoder)
L27	S-Curve 9				30 % (FAI/FAS) 20 % (Encoder)
L28	S-Curve 10				30 % (FAI/FAS) 20 % (Encoder)
L29	SFO Hold T	Short Floor Operation (Holding time) – NOT USED	◀ ▶ Selection ▲ ▼ Change Value		0,00 sec

Cod.	Parameter	Description	Navigation	Values	Default values
L30	SFO Speed	Short Floor Operation (Allowable speed) – NOT USED	◀ ▶ Selection ▲ ▼ Change Value		0,00 sec
L36	ASR P Gain High	Not used	◀ ▶ Selection ▲ ▼ Change Value		30 (FAI/FAS) 10 (Encoder)
L37	ASR I Gain High	Not used	◀ ▶ Selection ▲ ▼ Change Value		0,1 (FAI/FAS) 0,1 (Encoder)
L38	ASR P Gain Low	Not used	◀ ▶ Selection ▲ ▼ Change Value		40 (FAI/FAS) 30 (Encoder)
L39	ASR I Gain Low	Not used	◀ ▶ Selection ▲ ▼ Change Value		0,09 (FAI/FAS) 0,1 (Encoder)
L40	Switch Speed 1	Not used	◀ ▶ Selection ▲ ▼ Change Value		5 (FAI/FAS) 5 (Encoder)
L41	Switch Speed 2	Not used	◀ ▶ Selection ▲ ▼ Change Value		10 (FAI/FAS) 10 (Encoder)
L42	ASR-FF Gain		◀ ▶ Selection ▲ ▼ Change Value	0.000 – 10.000 sec	0.000 sec
L55	TB Start time		◀ ▶ Selection ▲ ▼ Change Value	0.00 – 1.00 sec	0.20 sec
L56	TB End time		◀ ▶ Selection ▲ ▼ Change Value	0.00 – 20.00 sec	0.20 sec
L64	TB Digital 3		◀ ▶ Selection ▲ ▼ Change Value	-200 - +200 %	0 %
L65	ULC operation	Unbalanced load Compensation	◀ ▶ Selection ▲ ▼ Change Value	0-1	0 (FAI/FAS) 0 (Encoder)
L66	ULC activation	Unbalanced load compensation (Activation time)	◀ ▶ Selection ▲ ▼ Change Value	0,01-2 Sec	0,5 (FAI/FAS) 0,5 (Encoder)
L68	ULC ASR P gain	Not used	◀ ▶ Selection ▲ ▼ Change Value		10 (FAI/FAS) 10 (Encoder)
L69	ULC ASR I gain		◀ ▶ Selection ▲ ▼ Change Value		0,01 (FAI/FAS) 0,01 (Encoder)
L73	APR P gain zero		◀ ▶ Selection ▲ ▼ Change Value		0 (FAI/FAS) 0 (Encoder)
L74	APR D gain	Unbalance load compensation (APR D constant)	◀ ▶ Selection ▲ ▼ Change Value		0.0
L75	Filter Time	Unbalance load compensation (Filter Time Constant for Detected Speed)	◀ ▶ Selection ▲ ▼ Change Value		0.000 sec
L76	ACR P constant	Unbalance load compensation (Start compensation)	◀ ▶ Selection ▲ ▼ Change Value		0.00
L80	Brake mode	Brake Control (BRKS) output mode	◀ ▶ Selection ▲ ▼ Change Value	1-2	2
L81	Brake On Level	Output current that turns the BRKS signal ON when L80 = 2.	◀ ▶ Selection ▲ ▼ Change Value	0,-200% of motor no-load current	30 %
L82	Brake On Delay	Delay from activation of BRKS output	◀ ▶ Selection ▲ ▼ Change Value	0,00-10,00 Sec	0,1 (FAI/FAS) 0,3 (Encoder)
L83	Brake Off delay	Delay from deactivation of BRKS output	◀ ▶ Selection ▲ ▼ Change Value	0,00-100 Sec	0,4 (FAI/FAS) 0,1 (Encoder)
L84	BRKS check t	Allowable time between BRKS output and BRKE input (Er6)	◀ ▶ Selection ▲ ▼ Change Value	0,00-10 sec	0,0 sec
L99	ACTION SEL	Not used	◀ ▶ Selection ▲ ▼ Change Value		0

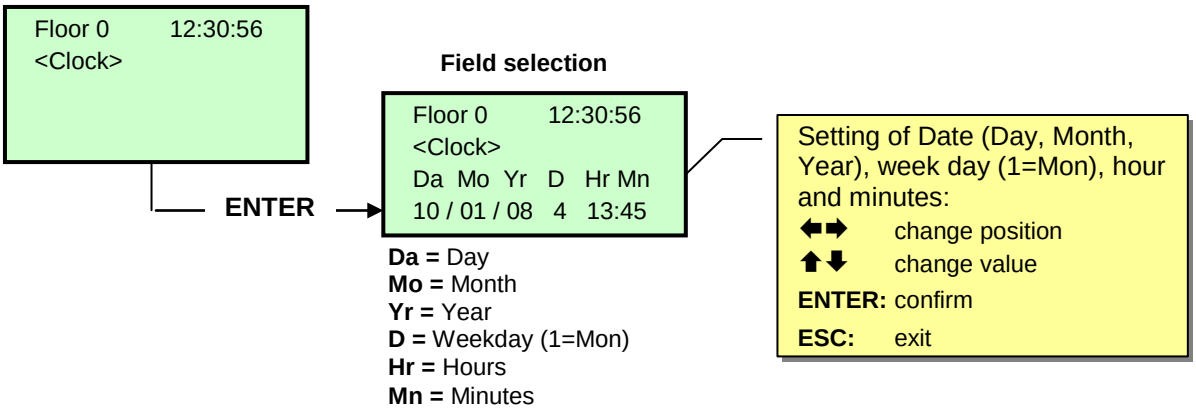
NOTE: Please consult the time diagram at the end of this manual, to better understand some meaning parameters.

3.11 "Rec Parameters" Menu

Note: parameters must be saved when the system is not moving.



3.12 "Clock" Menu



WARNING: In case of system shutdown, time is saved only if the battery is connected

4. Troubleshooting

N.	Fault	Type	Description	Cause	Remedy
1	Reset		Power supply failure: the controller is not powered	Power failure or black-out	
2	Contactors blocked		One or more NC contacts associated to the power contactors and connected in series on the input CCO remain open after the car stop. Cod. 0 CCO open Cod. 1 CCOB open Cod. 2 CCO+CCOB open	Blocked contactors	Check the series of the power contactors
3	Low speed too long		Car moving at low speed for too long	Deceleration distance too long or Low Speed fault time too short	Check low speed contactor and the parameter “Low Speed fault time” and increase time if necessary
4	Overload		Overload input (SUR) activated (NO contact)	Too much weight in the car	1 - Release input SUR 2 - SUR not working
5	Positioning fault		This error shows a difference between the performed theoretical counting and the real position detected: FAI/FAS: at the activation of the AGB/AGH limit contacts; ENCODER: at the activation of the AGB/AGH limit contacts (cod 0) or at the activation of ZP magnet floor (cod 100) or at the activation of ZP stop floor magnet (cod 200)	One or more missing magnets/flags (or inversed magnets); Distance between deceleration limit switch and magnet/flag too short; FAI/FAS sensors defective	Check correct position of magnets/flags; Check distance between deceleration limit switch and magnet / flag; Check 24V tension on the switches
6	Direction fault		The controller detects the wrong direction of travel	1 – Inverted beams (FAI/FAS). 2 – Inverted safety limit switches (AGB/AGH). 3 – Too short or too close sensors	1 – Inverse the beams 2 - Inverse inputs of AGH and AGB 3 - Use longer flags or increase distance between floors
7	Safety 3 open at stop		Safety chain open before Input SE3 while car parked at floor. Lift is not working and all calls are cancelled	Safety circuit open in one or more points before point SE3	Check all contacts before SE3 (stop, safety gear, trap door, etc.)
8	Ground fault		Connection to ground of 24V supply or GND.	Screw terminal(s) «24V», «GND» connected to ground (PE).	1- Disconnect ground 2- Separate the 24V from other tensions in the shaft wiring 3- Connect all additional wires to ground 4- Check the ground connection of the lift

N.	Fault	Type	Description	Cause	Remedy
9	Door lock fault		Safety chain open at point SE6 when a call is registered COD 4: SE4 open COD 6: SE6 open *With automatic door:* door re-opens and then closes (3 times, after which all calls are cancelled). *Other door types:* after a few seconds all calls are cancelled	A door is open or one of the locks is defective	SE4 open Check all the terminal blocks on the SEC board (and their connection) between terminal SV1.3 and SV1.4 SE6 open Check door lock contacts and their connection; Check the presence of objects jamming the doors at the indicated floor
10	Door A opening slippage		Only doors with limit switch: door does not open within the planned time. In case of slippage during door opening, the door is considered open	Mechanical problem on doors; Door operator not powered; Door limit switches defective	Check: 1- Door open limit switch (FOA) and its wiring; 2- door operator power supply and fuses; 3- door open contactors (ROA)
11	Door A opening slippage		Same as door A, for second entrance		Same as A, but signals (FOB) and (ROB).
12	Safety 3 open during travel		Safety chain open before Input SE3 while car travelling . Car stops and all car and landing calls are cancelled	Safety circuit open in one or more points before point SE3	Check all contacts before SE3 input (stop, safety gear, trap door, etc.).
13	Motor temperature sensor		Input THM of motor temperature is activated (NC contact)	Sensor not connected; Overheated motor	Check input (THM) and sensor connections
14	Parameters memory	STOP	Fault in the parameters memory	Faulty or incorrectly programmed electric memory	Re-program electric memory
15	Final limit switch	STOP	When the top/bottom final limit switch is reached, input FCO is active (NO contact). The fault remains active also after releasing the input (“FCO” fault must be manually cancelled in the “Faults” menu)	Lift in top/bottom final limit	Release the final limit switch (FCO) and cancel parameter FCO in the “Error” Menu
16	Fire detection.		In case of fire sensors installed, this fault indicates that one or more sensors are active	Fire input(s) active	Check fire sensor input(s)
17	Safety 4 open during travel		Safety chain open before Input SE4 while car travelling	One or more hall door preliminary contacts open	Check all relevant door preliminary contacts
18	Safety 6 open during travel		Safety chain open before Input SE6 while car travelling	Car / Hall door lock contacts open during car travel	Check the contacts at the indicated floor and in the car
19	Low tension during movement		Motherboard power below 17V (this fault disappears when the 24V is restored)	Low or missing power supply to the motherboard	Check the presence of 24V
20	Travel interrupted		Contactors get activated during car travel COD 0/255 Connectors (hydraulic) COD 100 Engine connectors COD 200 Brake connectors	Micro-interruptions of safety chain	Check the contacts at floors and in the car

N.	Fault	Type	Description	Cause	Remedy
21	Input CCO blocked	STOP	The contactors control circuit (Input CCO) remains closed after travel command is given Cod. 100 CCO Cod. 200 CCOB Cod. 250 CTF not activated	Contactors blocked or damaged	Check status of contactors
22	Low tension at stop		Motherboard power below 17V (this fault disappears when the 24V is restored)	Low or missing power supply to the motherboard	Check the presence of 24V
23	AGB blocked		The expected operation of AGB (NC) contact is not checked because of contact opening failure at the lowest floor (cod 200, installation locked) or because of contact closing failure at other floors (cod 100, downward calls erased).	AGB NC contact blocked	Check the condition of AGB contact
24	AGH blocked		The expected operation of AGH (NC) contact is not checked because of contact opening failure at the highest floor (cod 200, installation locked) or because of contact closing failure at other floors (cod 100, upward calls erased).	AGH NC contact blocked	Check the condition of AGH contact
25	AGH and AGB simultaneously		After a simultaneous activation of the two safety switches, one of the 2 inputs must be released to run the lift in reset procedure	Both inputs AGH and AGB are active at the same time (NC contacts)	Check the condition of AGH and AGB contacts and their wiring
26	Running time Up	STOP	No change in the beam status for motion sensors (ZP sensor in case of encoder) for more than planned during car travel. For systems with encoder it is also verified the operation of the encoder with the same time, which is reduced to 1s after the limits AGB / AGH	Car not moving or defective sensors	Check contactors, brake, motor power supply, FAI/FAS sensors (ZP or encodeur. Check “X1” and “12” inputs of the VVVF. Anti-slippage test: See Appendix D.
27	Running time Down	STOP	See above	See above	See above
28	Door A closing slippage		Only doors with limit switch: Door A does not close within programmed time. 3 complete opening/closing cycles are performed, then all registered calls are cancelled	Mechanical problem on doors; Door operator not powered; Door limit switches defective	Check: 1- door close limit switch (FFA) and wiring 2- door motor power supply and fuses 3- door close contactors (RFA)
29	Door B closing slippage		Same as door A, for second entrance		Same as door A, but signals (FFB) and (RFB)
30	Out of service switch		If the relevant parameter has been programmed, it indicates that the system has been put out of service through the activation of input HS	Installation out of order through the activation of input HS	Check input HS (NO contact)

N.	Fault	Type	Description	Cause	Remedy
31	FAI-FAS error		Simultaneous variation of FAI/FAS positioning sensors. POS [n] indicates that the error occurred at floor [n]. POS 100 indicates a wrong sequence of beams	Defective sensors (POS 100) or too close; Momentary lapse of power supply to sensors; Optical sensors blinded by daylight	Check power supply to sensors; Check sensors
32	Temporary op. without insp.		During temporary operations the input REV must be active or the lift will not move.	Input REV (NC contact) not active during temporary operations	Check input REV
33	Stopping accuracy		When the lift stops at floor, the two FAI/FAS LEDs are on. If within 2 seconds from the stop one of the beams is interrupted, this fault gets on	Inaccurate car stopping at floor	Check position of the magnets (or flags); check deceleration distances; check motor brake
34	Anti-nuisance		It appears after a call cancellation and if the parameter “Anti-nuisance” has been programmed.	Too many calls frfom the car without the cell being cut (in case of combined doors) or without landing doors opening (other door types)	Change number of unwanted calls in the Anti-nuisance parameter
35	Lift not avalaible		For multiplex systems only: the lift cannot take calls and is not considered for call dispatching. After 3 closing door cycles, the lift is considered unavailable for 1 minute Cod. 100 Photocell or door opener active for a time bigger than twice the open door stationing time Cod. 200 Door lock opened for a time bigger than twice the door lock fault time	Pos [floor]: Car complete or slipping autom. doors; Pos 100+[floor]: 15s with open doors and open cellule or door open button activated; Pos 200+piano: 30 s with hall doors open (SE4) and active call(s)	
36	Phase sequence		Wrong sequence in input phases	Loss of one phase or wrong sequence	Check the right sequence of phases or swap two phases on input terminals R-S-T
37	Low battery		Low charge on 12V battery		Test battery charge or change battery
38	SE2 open		Safety chain totally open	Safety circuit not powered	Check inputh phases presence and sequence; Check the inverter and the safety magneto-thermic switch (DIS);
39	Ambient temperature		This error indicates that the ambient temperature detected by the sensor is outside the set limits. Temperature below the lower threshold (code 100); temperatures above the higher threshold (code 200).		1 - Check the presence and connection of the temperature sensor. 2- Control activation, the threshold adjustment and sensor calibration can be made in the Special Features menu.
40	Fault RSP	STOP	For reduced pit and headroom, you can clear it only with E511 input closed.		Clear RSP parameter in the menu Faults (§ 3.3)

N.	Fault	Type	Description	Cause	Remedy
41	Fault ISO	STOP	Problem detected in the operation monitoring of safety module for advanced door opening / re-leveling. If activated, the installation goes in “out of service” mode at the top floor (electric) or bottom floor (hydro).		Check the alignment of CCIA/CCIB and ZP. Clear ISO parameter in the menu Faults (§ 3.3)
42	TOC Communication		No serial link between controller and car (in case of car serial link system configuration)	Fault on the CAN serial link	Check CAN link between controller and top of car board
43	Inspection		The system is in Inspection mode (NORM/ISP switch set to Inspection) WITHOUT EN81-20 Cod. 1/5 Machine room inspection Cod. 2/6 Cabin roof inspection Cod. 3/7 Cabin roof and machine room inspection WITH EN81-20 Cod. 11 PME inspection Cod. 12/13 Cabin roof inspection Cod. 14/15 Shaft bottom inspection Cod. 16/17 Cabin roof and machine room inspection		To exit the inspection mode move the NORM/ISP switch to Normal and close the safety chain to trigger the reset procedure
44	Re-levelling not completed		Hydraulic lifts: the re-levelling procedure was not completed within 10 seconds. All subsequent re-levelling requests at the same floor are inhibited	Problems with the Crouzet module and/or with its sensors CIA-CIB (NO contacts); Problems with FAI/FAS positioning sensors	Check the correct operation of the Crouzet module and of its sensors CIA-CIB. Check the FAI/FAS sensors
45	Fault ZP		Door zone contact stays open when the sensor is in door zone position	Problems with the ZP sensor and/or the magnet at floor; Inaccurate stop at floor (see Fault #33): sensor slides out of door zone limits	Check the correct operation of the ZP sensor (if present); See Fault # 33
46	Multiplex link interrupted		In multiplex systems, this fault indicates that the link between two or more controllers in the multiplex loop is missing. The MASTER controller considers the SLAVE controller unavailable to take calls. The SLAVE controller switches to SIMPLEX-like functioning.	Problems with RS-485 serial link or wrong settings of Multiplex parameters	Check the connection between the controllers; Check all multiplex settings
47	Faults memory		Errors in the faults memory	Electric memory defective or not correctly programmed	Erase all faults

N.	Fault	Type	Description	Cause	Remedy
48	BDU link unavailable		In case of serial communication with floors, indicates the loss of link between the controller and all BDU modules at floors	Problems with RS-485 serial link or wrong settings of system parameters	Check the connections between the controller and the closest BDU; check system configuration (<Configuration> Menu)
49	BDU fault		In case of serial communication with floors, indicates the loss of link between the controller and one or more BDU at floors. - Permanent red LED: BDU not working - Flashing red LED: BDU not addressed	Problems with the BDU board or BDU not addressed	Check BDU functions and its connections; Change defective BDUs; Repeat addressing procedure
50	Drift control		Under the French norm 82-212 (if activated), the lift goes out of service top an extreme floor in case of car drift detection	The system has performed 5 re-levelling procedures in less than 2 minutes	Reset FC parameter in the <Faults> menu
51	Wrong Password		If the system has a password, this fault appears after 3 wrong password entered.		
52	Fault VVVF		An fault occurred in the inverter	Check the VVVF fault table	
53	Fault UCM	STOP	Activation of the function UCM module monitor. See description of the additional code in Appendix E.		Clear UCM parameter in the menu Faults (§ 3.3)
54	Door detector	STOP	Monitor of the door detector for lifts without car doors.		Check functionality of the door detector.
55	SCS Error	STOP	Activating the monitor of the safety circuit. Refer to Shaft Protection Appendix. Cod. 4 SE4 shunt, A side Cod. 6 SE6 shunt, A side Cod. 14 SE4 shunt, B side Cod. 16 SE6 shunt, B side		SCS reset in Error menù (§ 3.3)
56	UAS Error	STOP	Activating the monitor of the shaft. Refer to Shaft Protection Appendix. Cod. 1 Cabin not at the floor or at a floor that is not the one with the unlocked doors. Cod. 2 Contact not coherent with cabin at the floor and opened door.		UAS reset in Error menù (§ 3.3)

STOP This symbol means a blocking fault: switch off main power and then switch it on again to put the lift back in service.

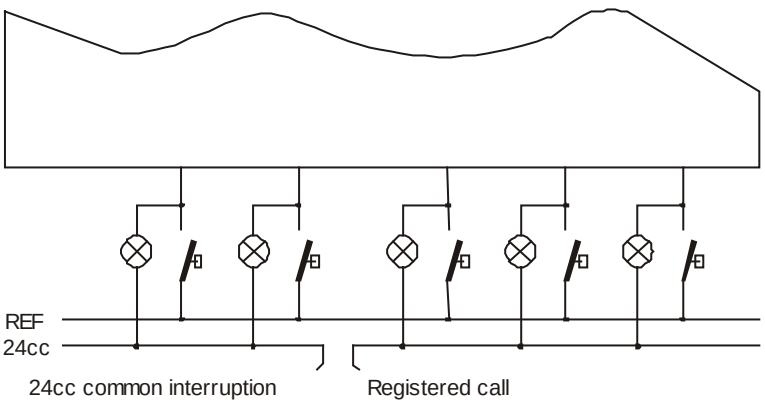
VVVF Fault Table

Code	Description	Code	Description
---	No alarm	0s	Over speed
0c1	Overcurrent (during acceleration)	p9	Broken wiring in the PG
0c2	Overcurrent (during deceleration)	er1	Memory error
0c3	Overcurrent (during constant speed operation)	er2	Keypad communications error
0u1	Overvoltage (during acceleration)	er3	CPU error
0u2	Overvoltage (during deceleration)	er4	Option communications error
0u3	Overvoltage (during constant speed operation or stopping)	er5	Option error
lu	Undervoltage	er6	Operation error
lin	Input phase loss	er7	Tuning error
0h1	Heat sink overheat	er8	RS485 communications error
0h2	External alarm	ere	Speed mismatching (Out of speed control)
0h3	Internal air overheat	erf	Data save error on insufficient voltage
0h4	Motor protection (PTC thermistor)	erh	LSI error (power PCB) Hardware error
0l1	Motor overload	ert	CAN bus communications error
0lu	Inverter overload	ecf	EN circuit fault

Faults not indicated by the display:

- *The lift accepts random calls*
  In collective operation, if a signal common disconnects, when one makes a car or hall call, the illumination of the lamps passes through other lamps and causes unwanted calls.

Remedy: Reconnect the disconnected common.

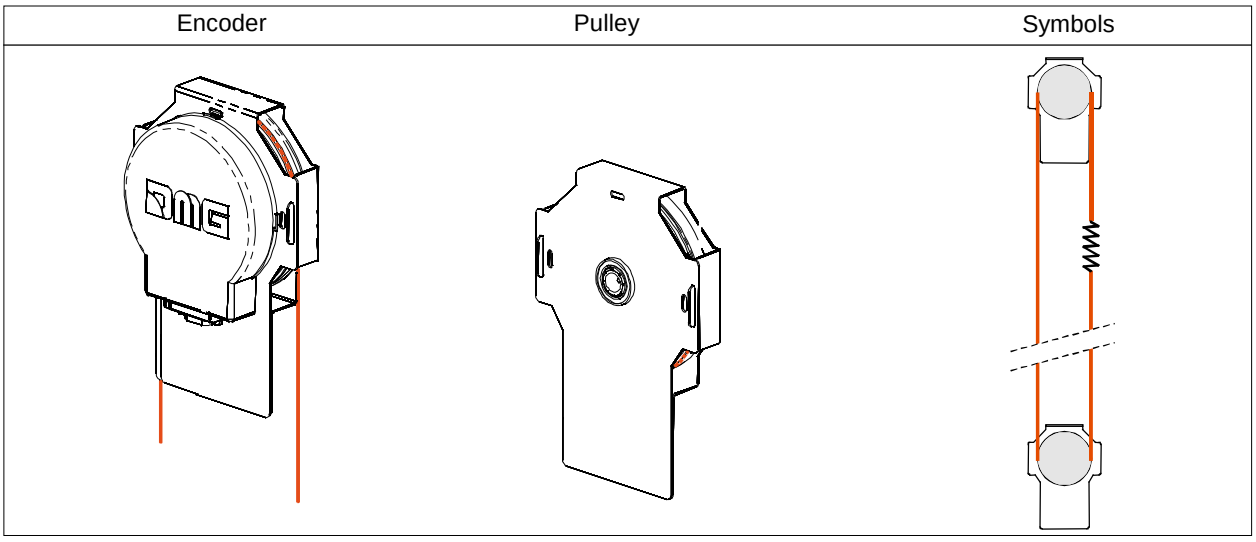


5. Car Positioning System and Stopping Accuracy

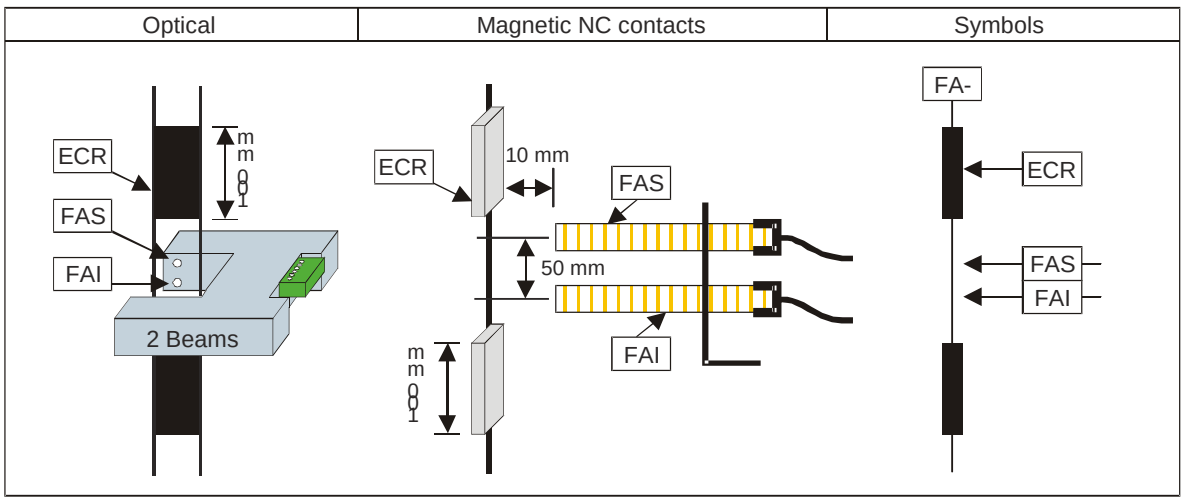
5.1 Definitions

Code	Description
ECR	Counting flags (or magnets)
EC1	Door zone magnets
EC2	Top/bottom floors deceleration flags (or magnets)
AGH	Limit switch for top deceleration or reset
AGB	Limit switch for bottom deceleration or reset
TOP PV	Deceleration point between two floors. See next pages for different types of TOP PV
B	Deceleration distance
B2	Deceleration distance at medium speed (VVVF installations)
ZP	Door Zone

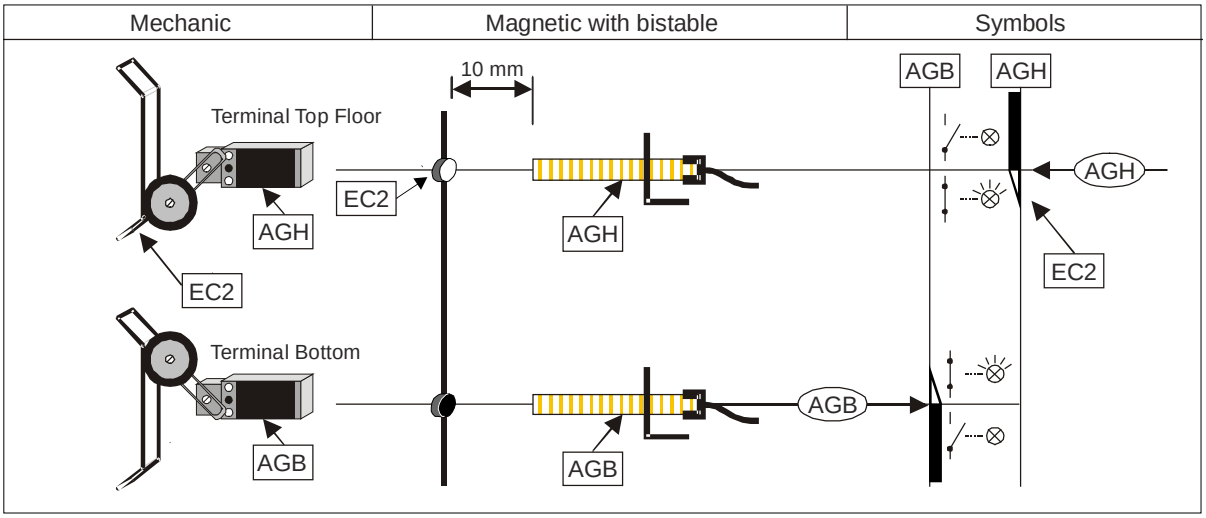
5.1.1 ENCODER positioning system



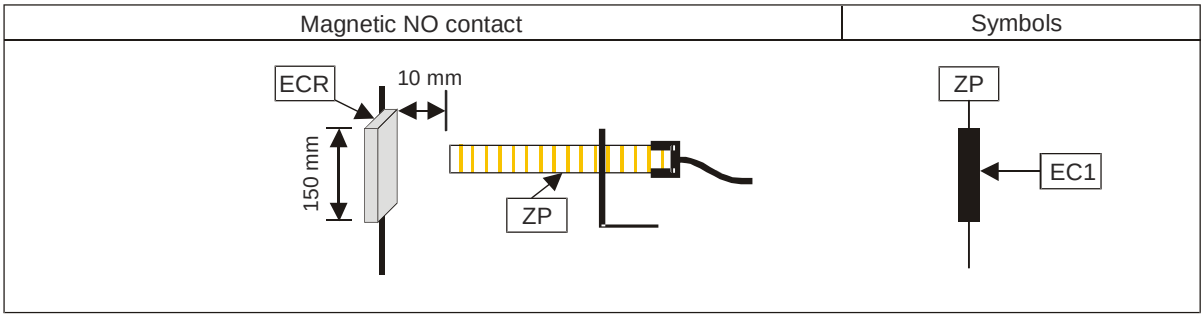
5.1.2 FAI / FAS Positioning system (Magnetic or Optical)



5.1.3 Top/Bottom deceleration limit switches AGH / AGB (Mechanical or Magnetic)



5.1.4 Door Zone detection system



5.2 Functioning of FAI / FAS positioning system (Optical / Magnetic)

Through the FAI/FAS sensors (two magnetic readers or optical reader), the Playboard controller detects car deceleration and stopping points.

In case of detection faults, these are detected and reset when AGB/AGH limits are detected.

An optional Door Zone reading sensor may be added to the system, especially when advanced door opening and/or relevelling features are selected. In such case, relevant magnets/flags must be centred at each floor level.

When present, the door zone sensor enables the door open command.

5.2.1 Fine tuning of stopping accuracy

To adjust floor stopping accuracy it is necessary to change the position of ECR magnets/flags nearest to the floor in the shaft. It may also be necessary to increase the deceleration distance by moving the ECRs positioned farther from the floor.

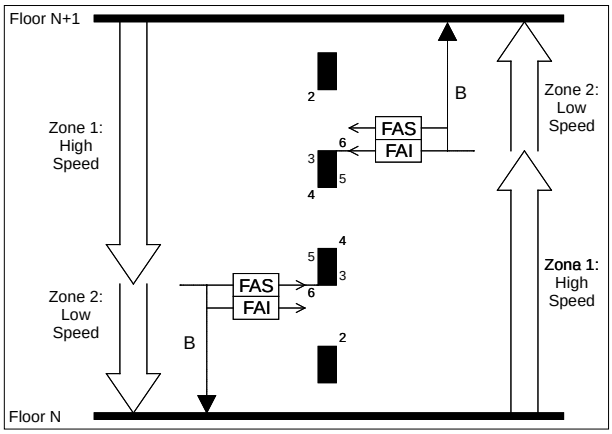
TOP PV (low speed) deceleration point can be independently adjusted between each pair of floors without the need to move the magnets/flags (ECR) in the shaft. Pay attention when changing the position of TOP PV points at extreme floors as it might be necessary to change the position of AGB/AGH contacts as well.

5.2.2 Switch to Low Speed at edge points 6, 5, 4, 3.

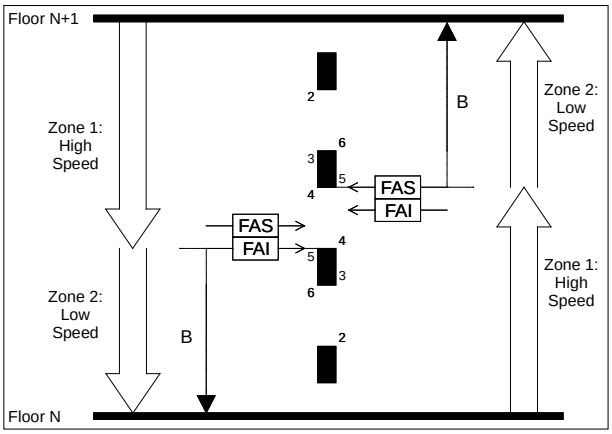
Deceleration at edge points 6, 5, 4, 3 is based on two zones, regardless of the floor where the cabin is coming from:

- Zone 1: cabin moves at high speed until the selected deceleration edge point is reached.
- Zone 2: cabin switches to low speed until the selected floor is reached. Magnets/flags shall be positioned so that Zone 2 is positioned at the deceleration distance B.

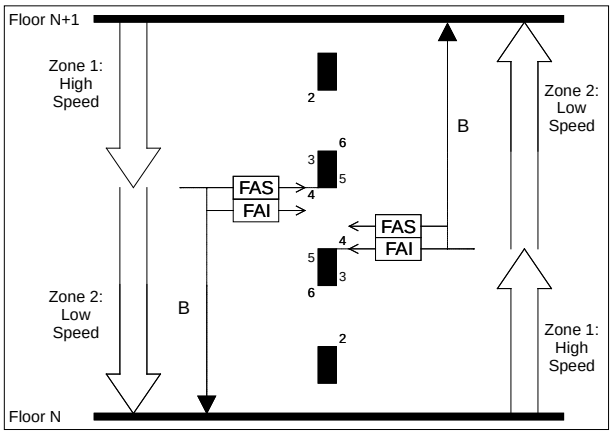
Deceleration between floors is triggered on the edge indicated by the TOP PV parameter: 6, 5, 4 or 3. See the following examples:



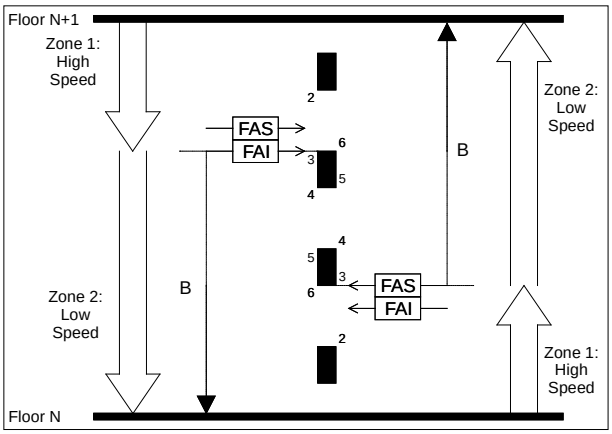
TOP PV 6



TOP PV 5



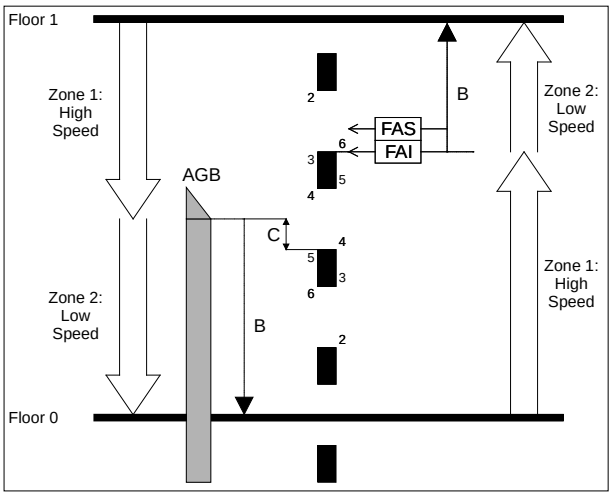
TOP PV 4



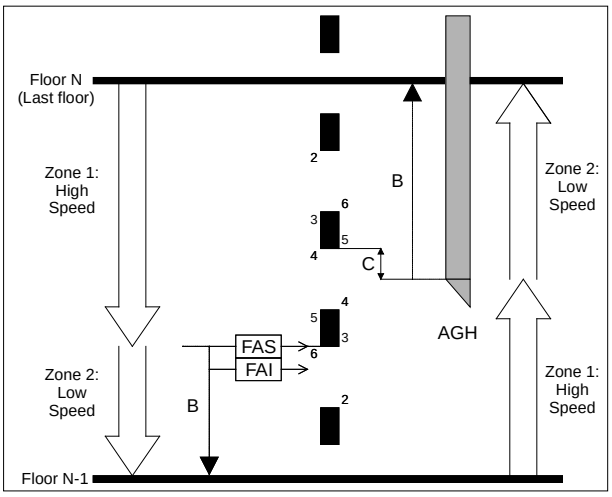
TOP PV 3

AGB/AGH deceleration limit switches at extreme floors must be positioned so that the relevant contacts open FAI/FAS sensors are not engaged by its magnets/flags.

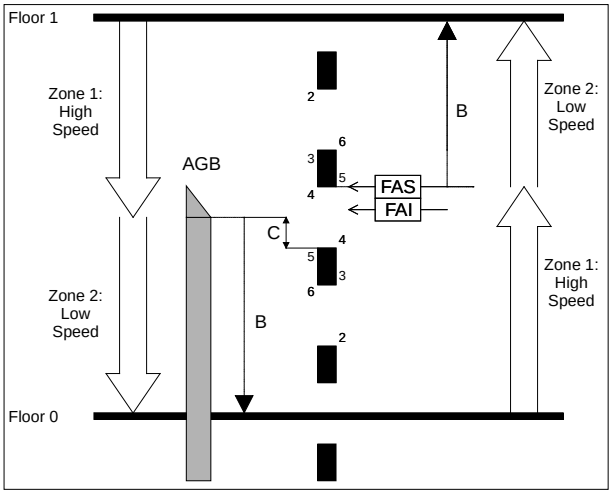
The following examples illustrate the correct positioning of both AGB/AGH deceleration limit switches and FAI/FAS positioning magnets/flags with respect to the selected TOP PV programming. Always make sure that the minimum distance (C=200mm) between extreme switches AGB/AGH and magnets/flags is respected, also checking that, in the points where AGB / AGH signals' switch, the FAI / FAS switches are not positioned in front of the ECR screens.



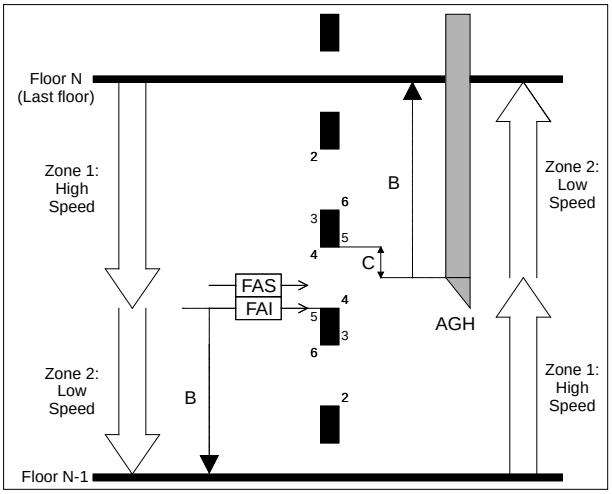
TOP PV 6 (Terminal Bottom Floor)



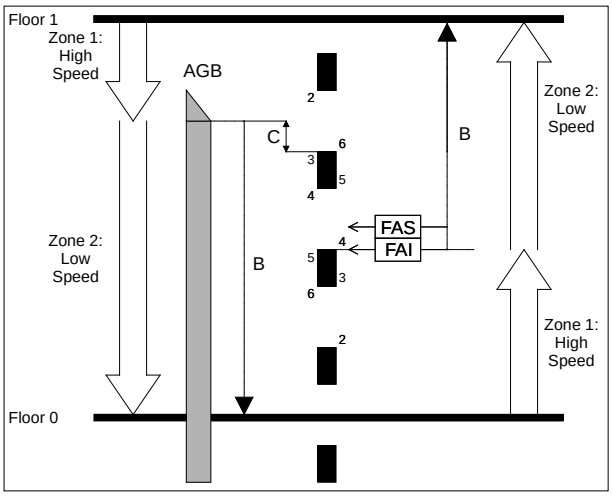
TOP PV 6 (Terminal Top Floor)



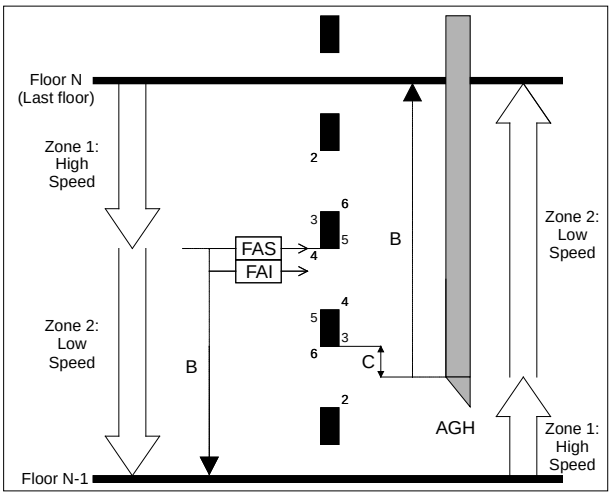
TOP PV 5 (Terminal Bottom Floor)



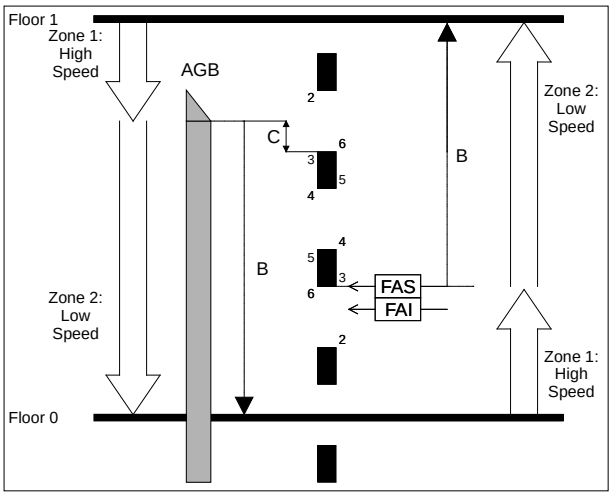
TOP PV 5 (Terminal Top Floor)



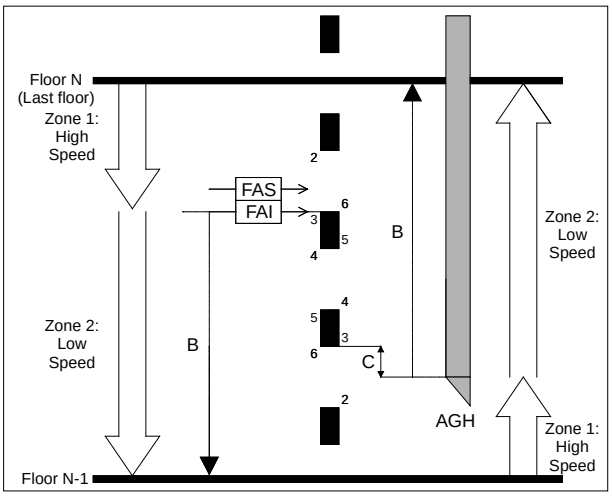
TOP PV 4 (Terminal Bottom Floor)



TOP PV 4 (Terminal Top Floor)



TOP PV 3 (Terminal Bottom Floor)

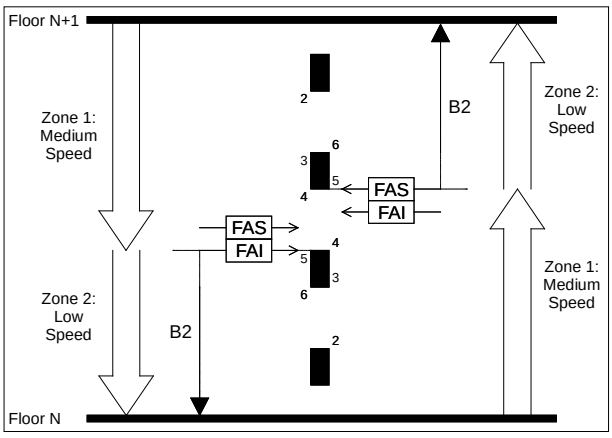


TOP PV 3 (Terminal Top Floor)

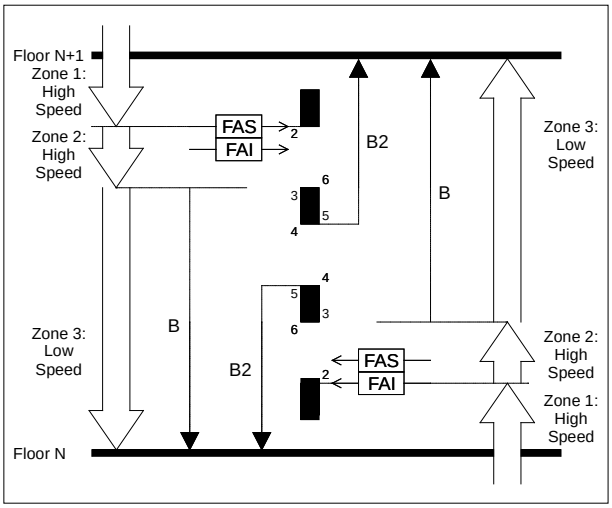
5.2.3 Switch to Low Speed at Edge point 2.

Two cases apply:

- Call between adjacent floors: cabin moves between floors N and N+1 at medium speed (Inspection speed) until it reaches edge point 5 (third magnet/flag), then switches to low speed until floor is reached. B2 indicates the deceleration distance in case of medium speed.
- Cabin arriving from other floors: three different zones are identified:
  - Zone 1: cabin moves at high speed until it reaches edge point 2;
  - Zone 2: after edge point 2, cabin moves on at high speed for the pre-set “TOP PV 2 Delay” time (but never beyond edge point 3); “TOP PV 2 Delay” must be set so that Zone 3 equals B distance.
  - Zone 3: cabin moves at low speed in this zone, until it reaches the floor.



TOP PV 2 (call between adjacent floors)

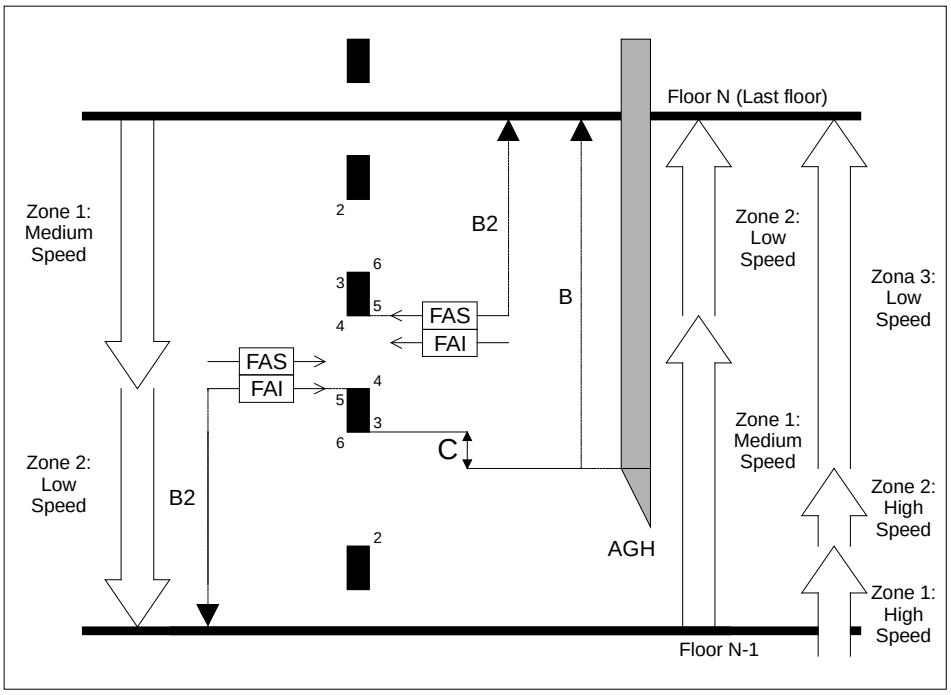


TOP PV 2 (cabin arriving from other floors)

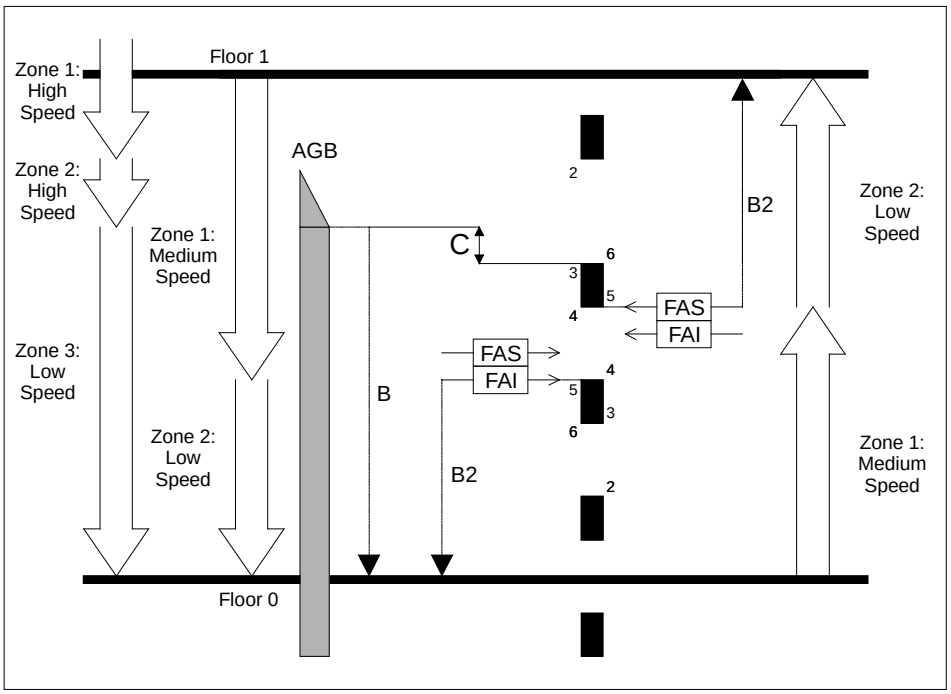
AGB/AGH deceleration limit switches at extreme floors must be positioned so that the relevant contacts open FAI/FAS sensors are not engaged by its magnets/flags.

In the following examples, the correct positioning of both AGB/AGH deceleration limit switches and FAI/FAS positioning magnets/flags with respect to the TOP PV 2 setting.

Always make sure that minimum distance (C=200mm) between extreme switches AGB/AGH and magnets/flags is respected, also checking that, in the points where AGB / AGH signals' switch, the FAI / FAS switches are not positioned in front of the ECR screens.



TOP PV 2 (Terminal Top Floor)

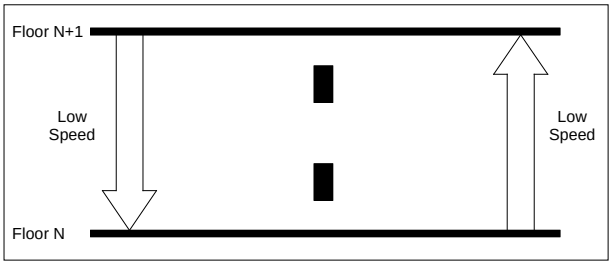


TOP PV 2 (Terminal Bottom Floor)

5.2.4 Short Floor

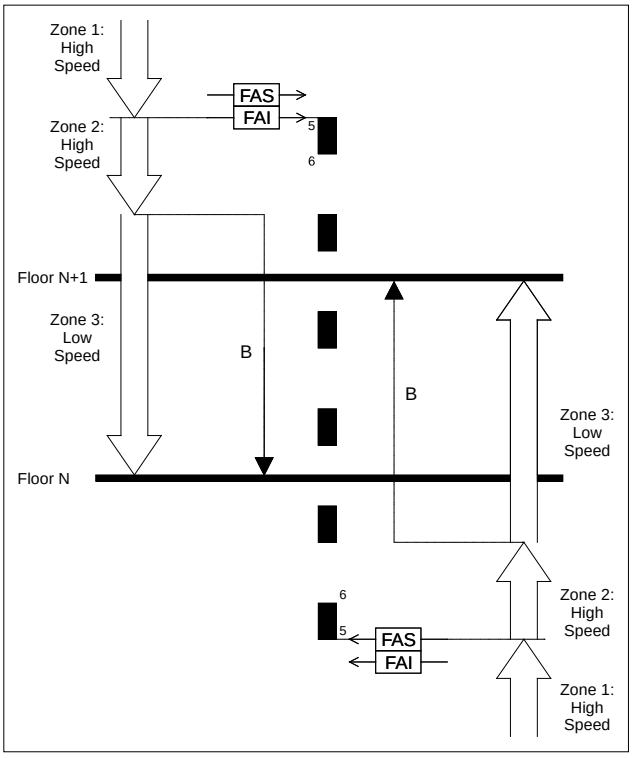
In case of very short distance between two floors, only 2 magnets/flags are present (as opposed to the usual four). For deceleration purposes, two different cases apply:

- Call between adjacent floors: due to the limited travelling distance, cabin moves between floors N and N+1 at low speed.



Short Floor (call between adjacent floors)

- Call from other floors: three different zones are identified:
  - Zone 1: cabin moves at high speed until it reaches the edge point set for the previous floor (edge point 5 in the example);
  - Zone 2: cabin moves on at high speed for the pre-set “Short Floor Time” parameter (adjustable to the tenths of second); once this interval expires (or if the last magnet/flag between floors is reached), Zone 3 applies;
  - Zone 3: cabin moves at low speed in this zone, until it reaches the floor.



Short Floor (cabin arriving from other floors)

Short Floor Time must be set so that Zone 3 equals deceleration distance B, according to the installation speed. As an example, with 20cm short floors and 2m/s speed, Short Floor Time must be set at 0,2 sec:

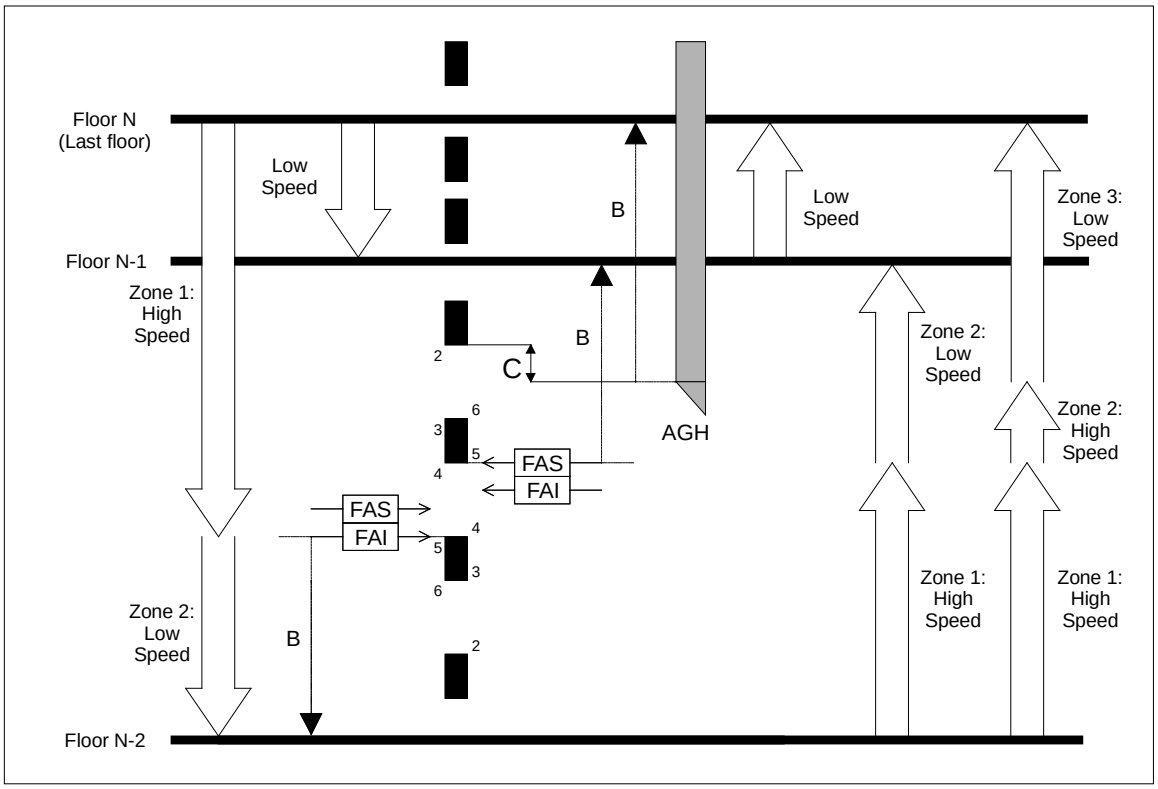
Short Floor Time = [Short floor distance] / [speed]

Short Floor Time allows for an unique value for the installation. All short floors in the installation should have the same distance between floors. Should this not be possible, one must adjust deceleration magnets/flags and use a high value for Short Floor Time.

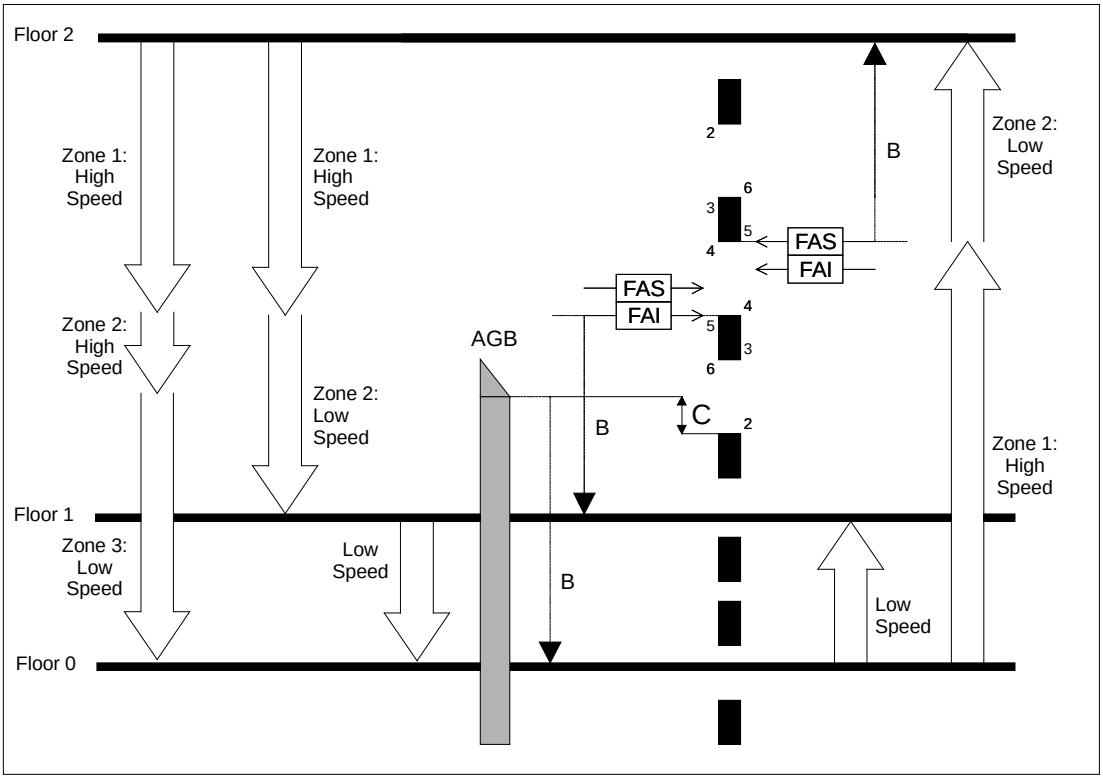
AGB/AGH extreme limit switches at top/bottom floors must be positioned so that the relevant contacts open FAI/FAS sensors are not engaged by its magnets/flags. Moreover, when a short floor apply, the extreme limit switch must be positioned between the previous pair of floors, after the relevant deceleration magnet/flag.

However, should the Short Floor Time be not expired, AGB/AGH contacts force the passage to slow speed (Zone 2 for calls from other floors).

In the following examples, deceleration edge point 5 applies (third magnet/flag), therefore the extreme switch must be positioned after this magnet/flag. Always make sure that minimum distance (C=200mm) between extreme switches AGB/AGH and magnets/flags is respected, also checking that, in the points where AGB / AGH signals' switch, the FAI / FAS switches are not positioned in front of the ECR screens.



Short Floor (Terminal Top Floor)

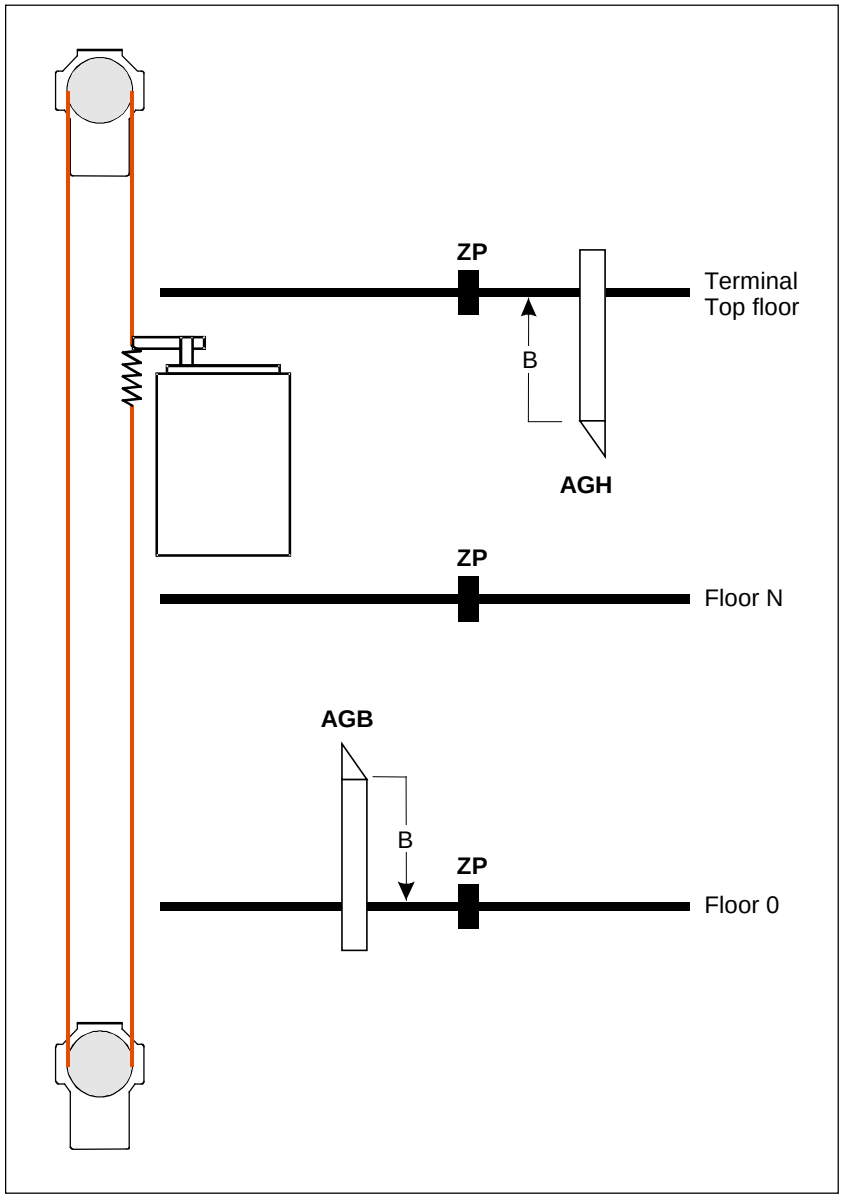


Short Floor (Terminal Bottom Floor)

5.3 DMG Encoder positioning system

DMG's rope and pulley Encoder provides the Playboard controller with a reliable, accurate and easy to install car position detection system. The encoder calculates car position by detecting the movement of the rope fixed to the cabin and checks this information with reference positions detected during initial self learning procedure (see §2.8). If present, discrepancies in the reading are detected and compensated at every passage on AGB/AGH limit switches and door zone (ZP) positions. Actual deceleration distance is set by the position of AGB/AGH limit switches. System accuracy is 1,2mm.

The activation of ZP door zone sensors also enables the door open command.

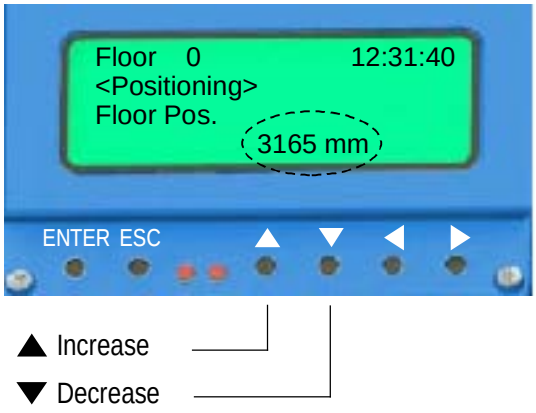


5.3.1 Fine tuning of floor stopping accuracy:

Once the self learning procedure (§2.8) is completed, it is possible to manually fine tune the stopping accuracy at each floor by using the PLAYPAD programming module, without having to access to the shaft.

Regulation of stopping accuracy:

1. Make sure the installation is in the “NORMAL SERVICE” mode
2. Use the *PLAYPAD* module directly from the controller or remove it and connect it to the TOC board on the top of the cabin by using the 9 poles flat cable (optional).
3. Enter the <*Positioning*> menu, select “*Floor Position”* parameter for the floor to be adjusted (use Left / Right keys to select the desired floor). The value displayed in the bottom of the Playpad screen indicates the current floor position (in mm) for the selected floor; press [ENTER] to modify it.
4. Increase or decrease the indicated position by using UP/DOWN keys on the PLAYPAD module.
5. Press [ENTER] to save the updated value.

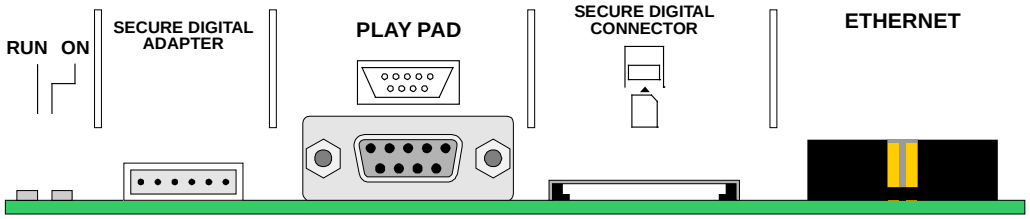


6. Check actual stopping accuracy by calling the lift to the selected floor. If needed, repeat steps 3, 4 and 5.
7. When stopping accuracy is correct, save all parameters in the “Registration” Menu.

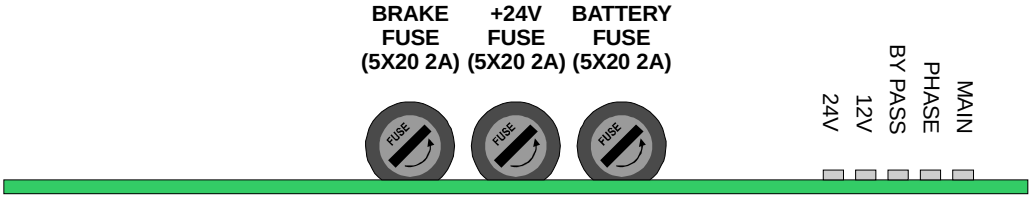
6. Electronic board list

6.1 Prewired controller (Pitagora system)

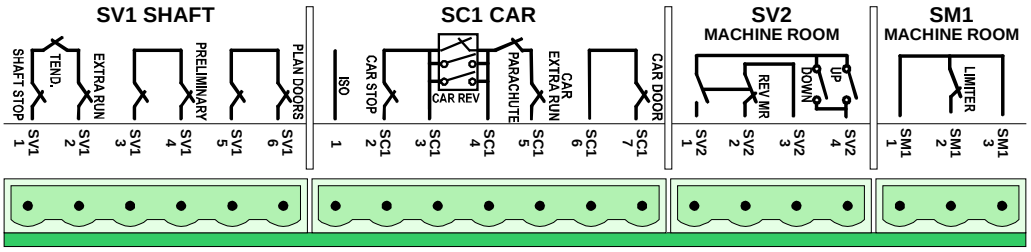
PB3 – Motherboard



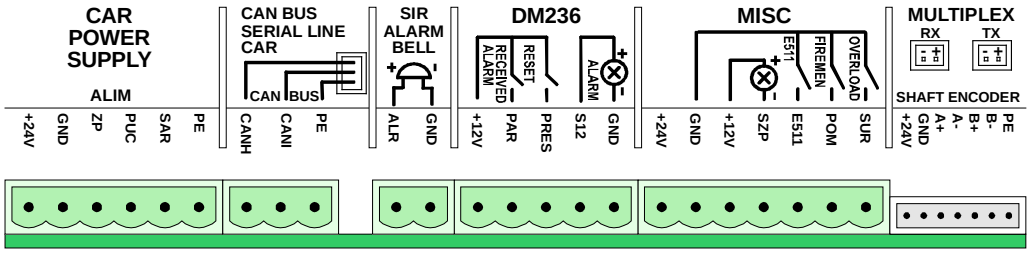
ALI – Power supply board



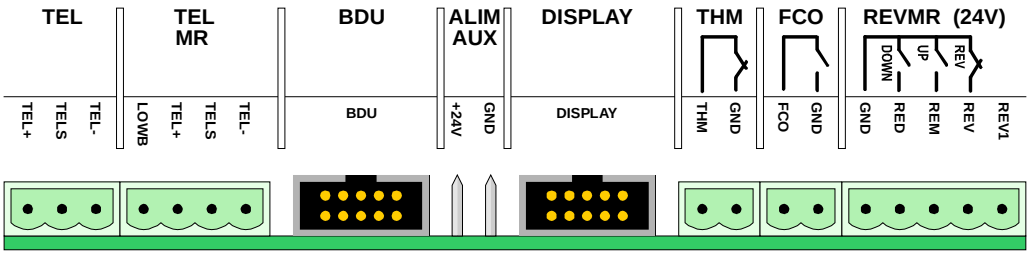
SEC – Safety board



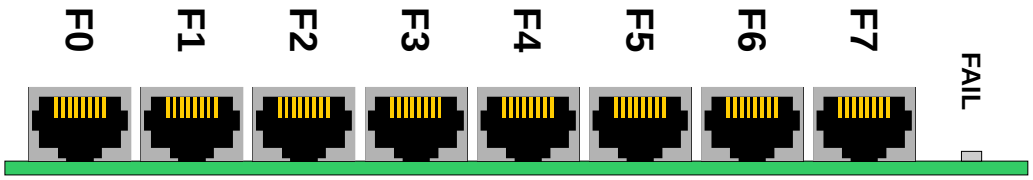
INT PIT A – Interface board A to cabin



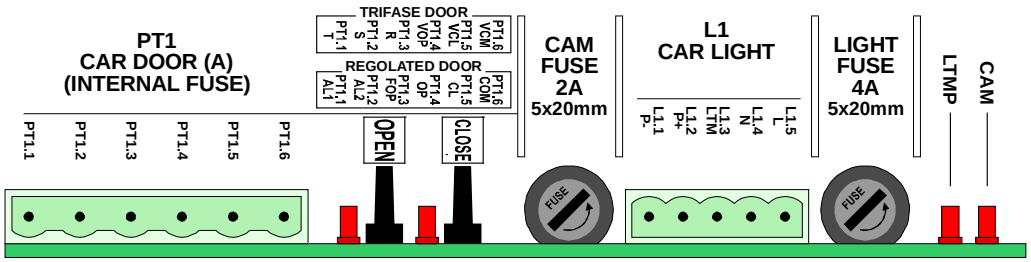
INT PIT B – Interface board B to cabin



CALL PIT – Floors interface board

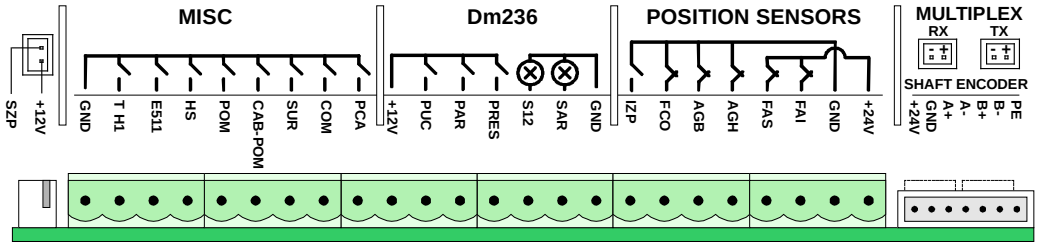


PTR TRI / PRE REG + LUX CAM – Door board + light

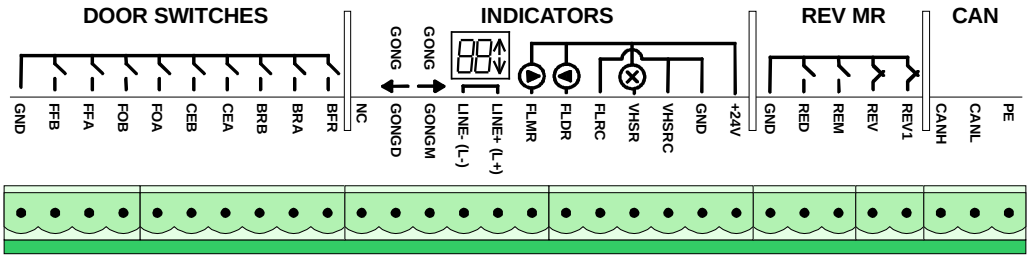


6.2 Screw terminals controller

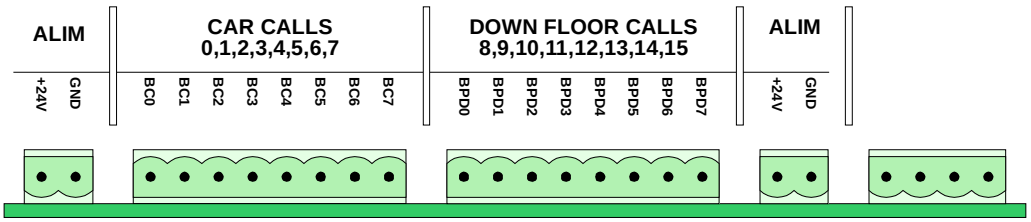
INT STD A – Interface board A to cabin



INT STD B – Interface board B to cabin



CALL STD – Floors interface board

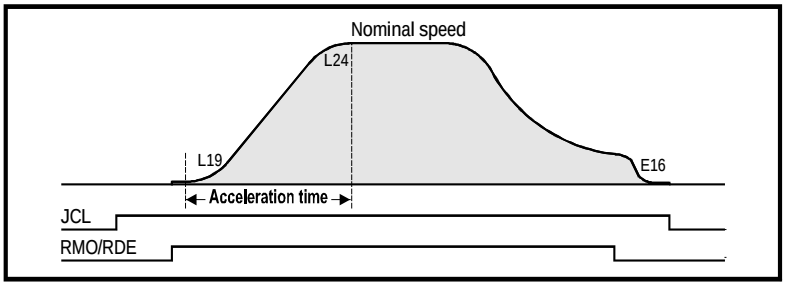


Appendix A – Time diagrams

ANALOG VVVF

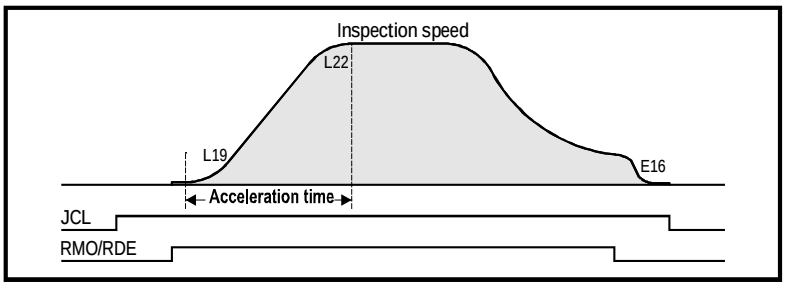
High speed starting

NOTE: "Acceleration time" is reduced according to the ratio (nominal speed / max speed)



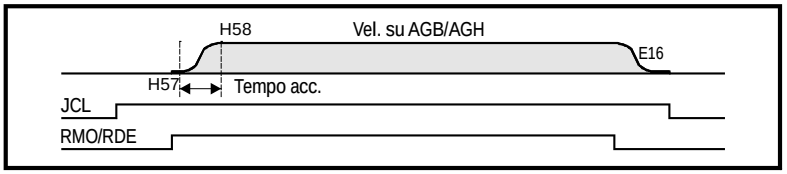
Intermediate speed starting

NOTE: "Acceleration time" is reduced according to the ratio (inspection speed / max speed)

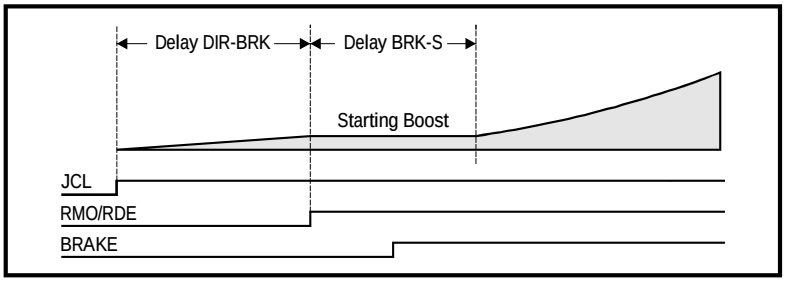


Low speed starting (ISO)

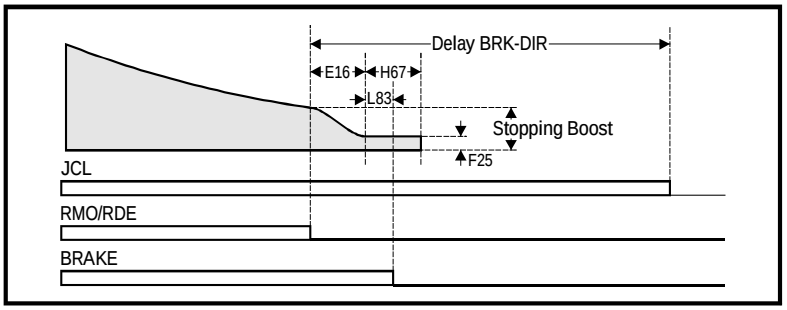
NOTE: "Acceleration time" is reduced according to the ratio (Speed at AGB AGH points / max speed)



Starting adjustment



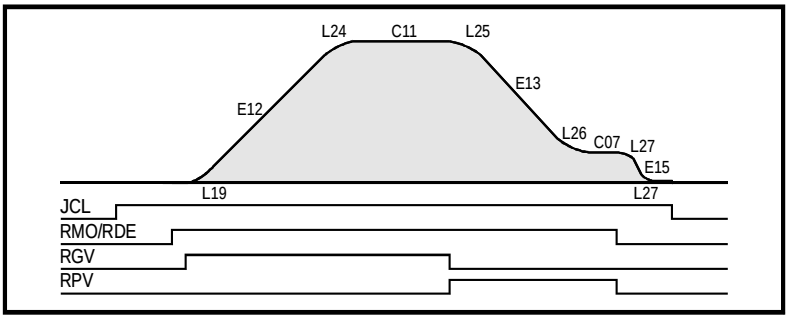
Arriving adjustment



DIGITAL VVVF

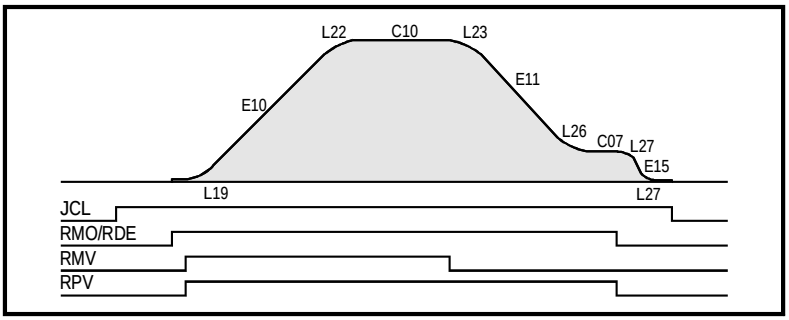
High speed starting

NOTE: E12, E13 and E15 times are reduced according to the ratio between speed difference and nominal speed



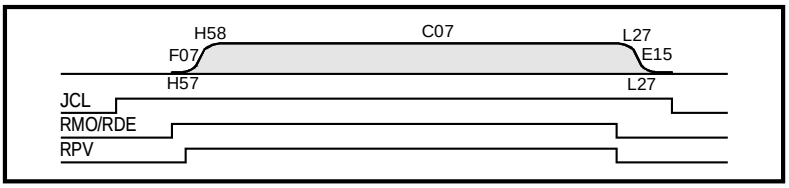
Intermediate speed starting

NOTE: E10, E11 and E15 times are reduced according to the ratio between speed difference and nominal speed

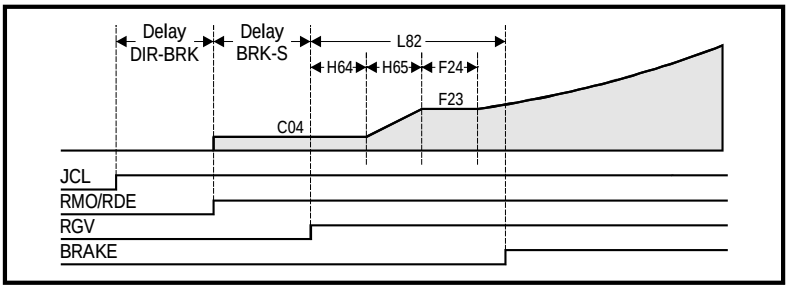


Low speed starting (ISO)

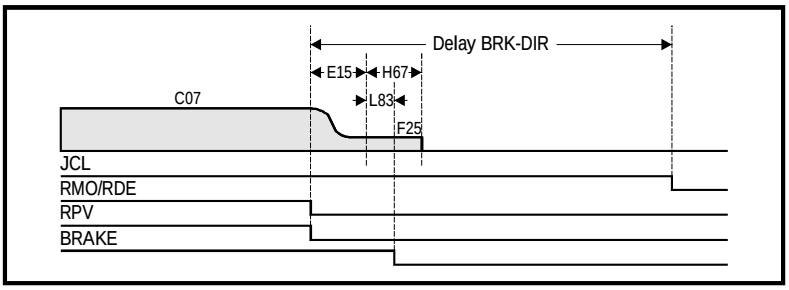
NOTE: F07 and E15 times are reduced according to the ratio between speed difference and nominal speed



Starting adjustment



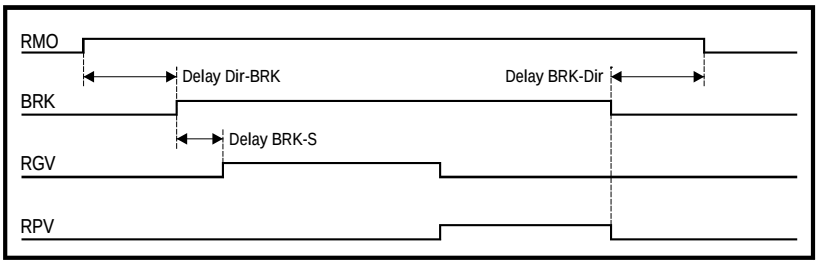
Arriving adjustment



2 SPEEDS

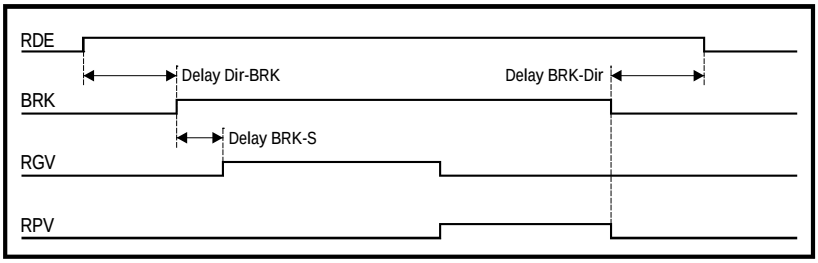
Starting time up

NOTE: Dir-BRK, BRK-S and BRK-Dir delays are set to 0 seconds by default



Starting time down

NOTE: Dir-BRK, BRK-S and BRK-Dir delays are set to 0 seconds by default

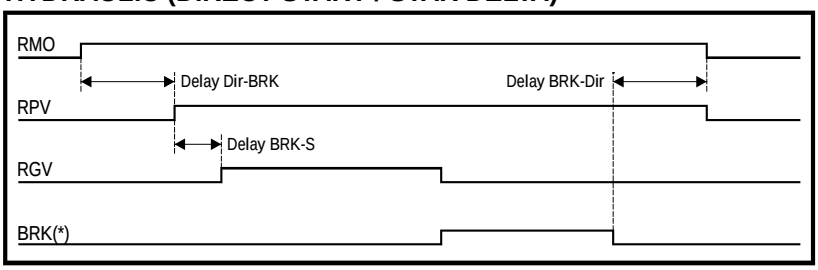


HYDRAULIC (DIRECT START / STAR DELTA)

High speed Starting time up

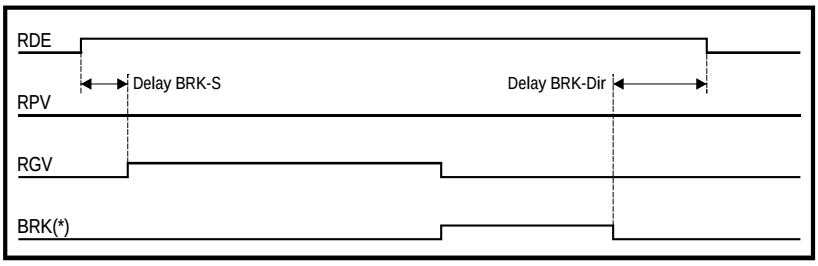
NOTE 1: Dir-BRK delay is set to 0,5 seconds in case of hydraulic star delta, for star delta switch without timer; in other cases it is set to 0 seconds.

NOTE 2: BRK-S and BRK-Dir delays are set to 0 seconds by default



High speed Starting time down

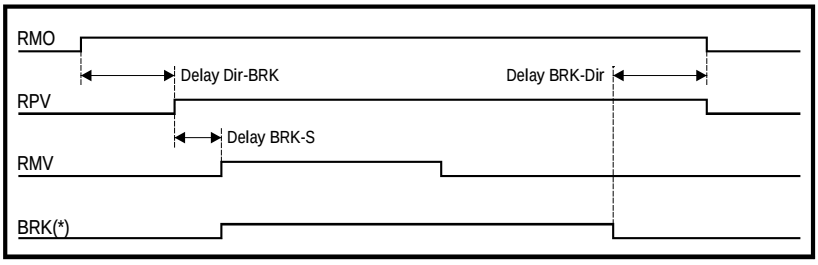
NOTE: BRK-S and BRK-Dir delays are set to 0 seconds by default



Intermediate speed Starting time up

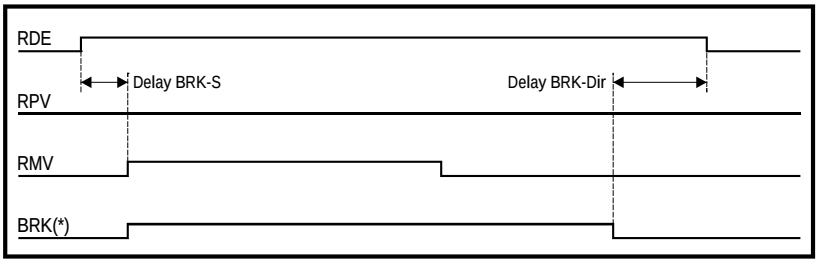
NOTE 1: Dir-BRK delay is set to 0,5 seconds in case of hydraulic star delta, for star delta switch without timer; in other cases it is set to 0 seconds.

NOTE 2: BRK-S and BRK-Dir delays are set to 0 seconds by default



Intermediate speed Starting time down

NOTE: BRK-S and BRK-Dir delays are set to 0 seconds by default



(*) If second valve not present, otherwise BRK = RDE

Appendix B – Fire operation programming procedure

a. SITUATION 1: ONE FIREFIGHTERS KEY ONLY (AT FLOOR)

Please enter the menu "SPECIAL FUNCTIONS" submenu "FIREFIGHTERS" and set:

- The floor where there is the fire-fighters key
- The Access (if there are multiple doors)
- The state in stand-by of the key switch contact (NO or NC); IN CASE OF NC contact the CPOM(*) input of TOC box must be shunted.
- The operation EN 81-72 (a)

With these settings, once activated the fire-fighters key at floor (input POM), the elevator will go to the programmed floor, open the doors, turn off the Landing Operation Panels (PHASE 1); leaving in operation the Car Operating Panel. The operation will end when the elevator will arrive to the programmed floor and the fire-fighters key turned in off condition.

b. SITUATION 2: TWO FIREFIGHTERS KEYSWITCHES (AT FLOOR AND IN THE CAR)
Please enter the menu "SPECIAL FUNCTIONS" submenu "FIREFIGHTERS" and set:

- The floor where there is the fire-fighters key
- The Access (if there are multiple doors)
- The state in stand-by of the key switches (NO or NC)
- The operation EN 81-72 (b)

With these settings, once activated the fire-fighters key at the fire floor, the elevator will go to the programmed floor (PHASE 1), open the doors, turn off the Landing Operation Panels, leaving in operation the Car operating Panel but only after turning on the fire-fighter key in the CAR (input CPOM(*)). The operation will end when the elevator will arrive to the programmed floor and the fire-fighters keys turned in off condition.

c. SITUATION 3: EXTERNAL FIRE CONTACT FOR FIRE DETECTION WITH ONE CONTACT ONLY
Please enter the menu "SPECIAL FUNCTIONS" submenu "FIREFIGHTERS" and set:

- The floor where the elevator has to go in case of direct activation of the contact from the external fire contact
- The Access (if there are multiple doors)

(*)The input CPOM on the TOC is for the Prewired Controller version, in case of screw terminals version the input is the CAB-POM on the card INT A

- The stand-by state of the contact of the external fire contact (NO or NC) if there are programmed contacts of NC type the input CPOM(*) of TOC box must be shunted
- The operation EN 81-72 (b)

Connect the contact to the POM input of the controller.
With these settings, once activated the contact by the external fire contact, the elevator will go to the programmed floor, open the doors and will remain stopped (PHASE 1). The Landing Operation Panels and the Car operating Panel are disabled. The reactivation of the elevator will take place at the deactivation of the contact from the external fire contact.

d. SITUATION 4: EXTERNAL FIRE CONTACT WITH ONE CONTACT AND ONE FIREFIGHTERS KEY ONLY (AT FLOOR)

Please enter the menu "SPECIAL FUNCTIONS" submenu "FIREFIGHTERS" and set:

- The floor where there is the fire-fighters key
- The Access (if there are multiple doors)
- The state in stand-by of the key switch and of the external fire contact (NO or NC)
- The operation EN 81-72 (a)
- Carry on the wiring as indicated in the electric diagram: the contact from the external fire contact must be connected to the input CPOM(*) of the TOC box.

The activation of this input will start the PHASE 1 of the operation (also called evacuation) and will not allow car calls without the activation of the fire-fighters key-switch). With these settings, once activated the contact by the external fire contact, the elevator will go to the programmed floor, open the doors and will remain stopped (PHASE 1). The Landing Operation Panels are disabled and the Car operating Panel is in operation but only after turning on the fire-fighters key at the floor (input POM). The reactivation of the elevator will take place bringing the elevator to the programmed floor, turning off the key and deactivating the contact from the external fire contact.

e. SITUATION 5: EXTERNAL FIRE CONTACT WITH ONE CONTACT AND TWO FIREFIGHTERS KEYS (AT FLOOR AND IN THE CAR)

Please enter the menu "SPECIAL FUNCTIONS" submenu "FIREFIGHTERS" and set:

- The floor where there is the fire-fighters key
- The Access (if there are multiple doors)
- The state in stand-by of the key switches and the external fire contact (NO or NC)
- The operation EN 81-72 (b)

(*)The input CPOM on the TOC is for the Prewired Controller version, in case of screw terminals version the input is the CAB-POM on the card INT A

- Carry on the wiring as indicated in the electric diagram: the contact of the external unit must connected together with floor key switch POM (in serial for NC contacts, in parallel for NO contacts), the activation of this input will start the PHASE1 of the operation (also called evacuation) and will not allow car calls without the activation of the fire-fighters key-switch in the car.

With these settings, once activated the contact by the external fire contact OR the key at floor, the elevator will go to the programmed floor, open the doors and will remain stopped (PHASE 1). The Landing Operation Panels are disabled and the Car Operating Panel is in operation but only after turning on the fire-fighter key in the CAR (input CPOM(*)). The reactivation of the elevator will take place bringing the elevator to the programmed floor, turning off the fire-fighter keys (at the floor and in the car) and deactivating the contact from the external fire contact.

f. SITUATION 6: EXTERNAL FIRE CONTACT AND ELEVATOR WITH AN ALTERNATIVE EVACUATION FLOOR

Please enter the "SPECIAL FUNCTIONS" menu, then the "FIREFIGHTERS" submenu and set:

- The main evacuation floor
- The Access (if there are multiple doors)
- The stand-by state of the - optional - key switches (NO or NC)
- The EN 81-73 operation, that must be coupled with fire revelation among the special function
- The following evacuation floor in priority sequence
- Wire as indicated in the electric diagram: the NC contacts of the central unit must be connected to the 16 IN board or to the fire contacts of the BDU serial panels. In the case of floors not managed by the central, matching contacts must be bridged.

With these settings, once the contact is activated by the external fire central OR by the key at floor (POM input), the elevator will start PHASE 1 of the manoeuvre (also known as EVACUATION) , will head towards one the first of the 4 designated evacuation floors WITHOUT an active fire signal.
If in the meanwhile the fire signal gets active, the elevator will proceed to the next evacuation floor, unless evacuation is already in place and has not yet ended.
Once the scheduled floor has been reached, doors wll be opened and the elevator will stand still. The system reset will have to be made by deactivating all the NC contacts in the central.

g. SITUATION 7: DM 15/09/2005 RESCUE ELEVATOR: EXTERNAL FIRE REVELATION CONTROL UNIT WITH A SINGLE CONTACT, FIREFIGHETER KEYS AT EVERY FLOOR AND INSIDE THE CABIN

Please enter the "SPECIAL FUNCTIONS" menu, then the "FIREFIGHTERS" submenu and set:

- The firefighter access floor
- The access (if there are multiple doors)
- The stand-by state of the control unit and of the key switches (NO or NC)
- DM 15/09/2005 manoeuvre

With these settings, once the fire detection input (POM input), is activated, existing elevator calls will be cancelled , both floor and cabin pushbuttons will be deactivated and the elevator will head to the scheduled floor (PHASE 1).

Afterward the allowed manoeuvres are:

Using firefighter key at a floor : Unless the cabin keyswitch is already active , switch the key to position 1 and call the elevator.

Using firefighter key at a cabin : switch the key to position 1 to allow firefighter or other authorized personnel to control the elevator (CPOM* input)

Floor calls can be repeated also after cabin key usage. Once the cabin key switch is reset to “0” position.

The manoeuvre ends when the elevator is brought to the firefighters’ access floor and all the fire switches are brought back to normal position (NO or NC depending on the configuration)

PHASE 1 can also be started by switching one of the floor’s keys. Cabin behaviour will be the same as evacuation phase, but it will move to the floor where the key has been switched.

If the cabin key is the one to be activated first, the evacuation phase is bypassed and the elevator enter FIREFIGHTER MODE and can be controlled directly

Appendix C – Multiplex Parameters

EXAMPLE 1

Duplex elevator

Floors in MULTIPLEX	Controller A floors	Controller B floors
7	7	7
6	6	6
5	5	5
4	4	4
3	3	3
2	2	2
1	1	1
0	0	0

<Configuration>	Controller A	Controller B
No. of floors	8	8
…		
MULTIPLEX CONFIG.		
Lift number	1.X	2.X
Floors in Multiplex	8	8
OFFSET	0	0

NOTE : please refer to examples 5 and 6 for the configuration of the button wiring indicated with X

EXAMPLE 2

Duplex lame elevator

Floors in MULTIPLEX	Controller A floors	Controller B floors
7	7	5
6	6	4
5	5	3
4	4	2
3	3	1
2	2	0
1	1	
0	0	

<Configuration>	Controller A	Controller B
No. of floors	8	6
…		
MULTIPLEX CONFIG.		
Lift number	1.X	2.X
Floors in Multiplex	8	8
OFFSET	0	2

NOTE : please refer to examples 5 and 6 for the configuration of the button wiring indicated with X

EXAMPLE 3

Duplex lame elevator

Floors in MULTIPLEX	Controller A floors	Controller B floors
7	7	
6	6	
5	5	
4	4	4
3	3	3
2	2	2
1	1	1
0	0	0

<Configuration>	Controller A	Controller B
No. of floors	8	5
…		
MULTIPLEX CONFIG.		
Lift number	1.X	2.X
Floors in Multiplex	8	8
OFFSET	0	0

NOTE : please refer to examples 5 and 6 for the configuration of the button wiring indicated with X

EXAMPLE 4

Duplex lame elevator

Floors in MULTIPLEX	Controller A floors	Controller B floors
7		5
6		4
5	5	3
4	4	2
3	3	1
2	2	0
1	1	
0	0	

< Configuration >	Controller A	Controller B
No. of floors	6	6
…		
MULTIPLEX CONFIG.		
Lift number	1.X	2.X
Floors in Multiplex	8	8
OFFSET	0	2

NOTE : please refer to examples 5 and 6 for the configuration of the button wiring indicated with X

EXAMPLE 5

Shared button wiring

Controller A floors		Controller B floors
7		7
6		6
5		5
4		4
3		3
2		2
1		1
0		0

<Configuration>	Controller A	Controller B
No. of floors	8	8
…		
MULTIPLEX CONFIG.		
Lift number	1.0	2.0
Floors in Multiplex	8	8
OFFSET	0	0

NOTE : each button must be connected to all controllers

EXAMPLE 6

Independent button wiring

Controller A floors		Controller B floors
7		7
6		6
5		5
4		4
3		3
2		2
1		1
0		0

< Configuration >	Controller A	Controller B
No. of floors	8	6
…		
MULTIPLEX CONFIG.		
Lift number	1.0	2.1
Floors in Multiplex	8	8
OFFSET	0	0

NOTE : each button is only connected to its controller and must NOT be connected in parallel

EXAMPLE 7

Multiplex Call

Controller A floors	Controller B floors
7	7
6	6
5	5
4	4
3	3
2	2
1	1
0	0

If this function is activated, two types of call are possible:

a) standard pressure call (the call is assigned to the nearest elevator);

b) long pressure call (more than 3 seconds pressure); this call is assigned to the elevator with lower "Lift Number" (MASTER); use this function if you have two elevator cars with different sizes (i.e. one for disabled and one standard) and the call must go to the bigger elevator car.

EXAMPLE 8

Multiplex Call

Controller A floors	Controller B floors
5	5
4	4
3	3
2	2
1	1
0	0

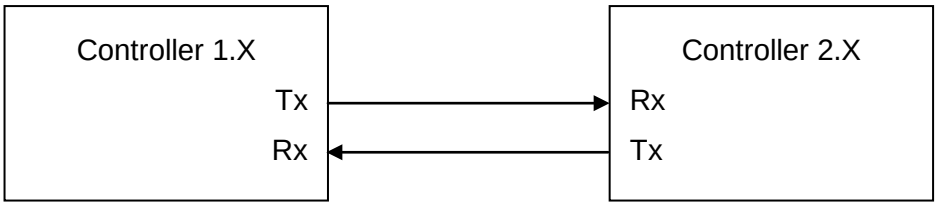
If this function is activated, two types of call are possible:

a) standard pressure call (the call is assigned to the nearest elevator);

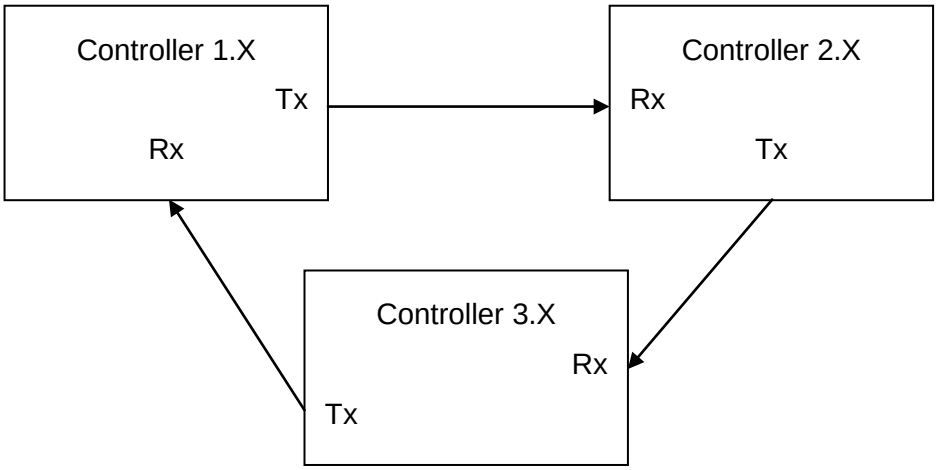
b) long pressure call (more than 3 seconds pressure); this call is assigned to the elevator which can reach the highest floor (UP call) or the lowest (DOWN call). The example shows a long pressure call always being assigned to controller A, whereas a long pressure UP call will always be assigned to controller B.

WIRING DIAGRAM SERIAL COMMUNICATION Tx-Rx

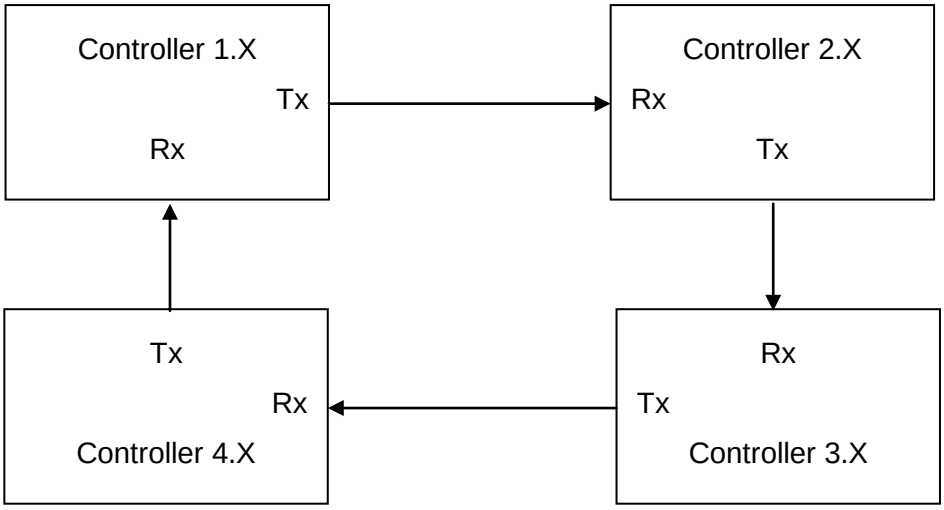
Duplex:



Triplex:



Quadruplex:



Appendix D – Test and measures

The following tests and measures may facilitate controls and tests to be performed before putting the installation in service (EN81-X D) and during the periodic maintenance interventions (EN81-X E). Some measures can be performed only through the encoder counting system.
Test can be performed only if the installation is in normal operation mode; select parameter “test” to perform the test and press ENTER to start it. The test procedure can be stopped by switching the installation to inspection mode.

Test 1: Measure of the stopping space and time in UP direction, DMG UCM module in acceleration out of the door zone

Before starting the test, move the empty car to the floor where you want to take the measure.
During the test, the car will move upwards until the end of that floor door zone; now the forced intervention of the UCM module is activated and the car will thus stop. After the car has stopped, the distance covered from the floor level is shown (to be compared to point 9.11.5 of EN81) and the stopping time since the UCM activation. Important: the stopping distance must be calculated before, considering the sum of intervention times (controller + stopping unit). After the test, the UCM module must be reset (menu <Faults> reset UCM).

Test 2: Measure of the stopping space and time in DOWN direction, DMG UCM module

Before starting the test, move the empty car to the floor where you want to take the measure.
During the test, the car will move downwards until the end of that floor door zone; now the forced intervention of the UCM module is activated and the car will thus stop. After the car has stopped, the distance covered from the floor level is shown (to be compared to point 9.11.5 of EN81) and the stopping time since the UCM activation. Important: the stopping distance must be calculated before, considering the sum of intervention times (controller + stopping unit). After the test, the UCM module must be reset (menu <Faults> reset UCM).

Test 3: Measure of the stopping space and time in UP direction at rated speed

Before starting the test, move the empty car to the ground floor.
During the test, the car will move upwards up to the second last floor (AGH for two stops installations); now the car stops. After the car has been stopped, the distance covered from the second last floor and the stopping level and the stopping time are shown.

Test 4: Measure of the stopping space and time in DOWN direction at rated speed

Before starting the test, move the full loaded car to the top floor.
During the test, the car will move downwards up to the first floor (AGB for two stops installations); now the car stops. After the car has been stopped, the distance covered from the first floor and the stopping level and the stopping time are shown.

Test 5: Re-leveling test with too high car (EN 81 point 14.2.1.2)

Before starting the test, move the car to the floor where you want to take the measure.
During the test, the car will move upwards until the re-leveling function is activated; now the car is re-leveled. After the car has stopped, the distance at which the re-leveling starts and the intervention time are shown. We recommend to perform the test at each floor to check the correct installation of the re-leveling sensors.

Test 6: Re-leveling test with too low car (EN 81 point 14.2.1.2)

Before starting the test, move the car to the floor where you want to take the measure.
During the test the car will move downwards until the re-leveling function is activated; now the car is re-leveled. After the car has stopped, the distance at which the re-leveling starts and the intervention time are shown. We recommend to perform the test at each floor to check the correct installation of the re-leveling sensors.

Test 7: Final limit switch test (EN 81 point 10.5)

Before starting the test, move the car to the ground or top floor.
During the test the car will move towards the shaft end until the safety chain opens (or until the FCO input is detected). After the car has stopped, the distance between the intervention floor and the limit switch intervention and the status of FCO input (NO contact for registering the limit switch intervention) are shown. The car can be moved beyond the limit switch through the inspection control panel in the machine room (in inspection mode the movement beyond the top and bottom floor is disabled) to put the car or the counterweight on the shock absorbers and perform the rope slipping test. Move the car out of the limit switch area and put the installation in normal operation mode (if the second NO contact of the FCO input is connected, you must reset FCO in the menu <Faults>).

Test 8: Motor run time test (EN 81 point 12.10)

Before starting the test, move the car to the ground or top floor.
During the test the car will move towards the opposite extreme floor at null speed. After 5 seconds, the up/down run time error will be detected (check in the menu <Faults>). Clear all errors to put the installation in normal operation mode again.

Test 9: System balancing test

Before starting the test, place the cab on the ground floor with the weight suited to balance the system itself (typically 50% of the maximum load). During the test the cabin will start in the direction of the opposite farthest floor and the absorbed current at the middle of the shaft will be displayed. The cabin will then move to the lowest floor, once again displaying the absorbed current at the middle of the shaft. The values will also be preserved after the end of the test for evaluation purposes.

Appendix E – UCM

Valve brake monitoring

Menu <Special funtions> UCM Monitor

The following table lists the possible configurations of the Brake/Valves groups monitoring.

UCM Monitor	*Timer*	*BDA*	*Description*
No	-	No	No monitoring. This is the programmed value for existing controllers. Useful for units, which do not need monitoring (i.e. MORIS)
1	0,0 s	No	Brake monitoring with Fuji Frenic Lift. Monitoring is possible if NC contacts of the brakes are connected to one of the Xn inputs of the FUJI Frenic Lift programmed with code 1065. In case of problems, the Sicur.2 error sequence will be stopped, er6 VVVF fault, UCM Code 1 fault (delayed of the timer value).
2	2,5 s	Yes	Brake monitoring from the controller (generic inverter). Monitoring is possible if NC contacts of the brakes are connected to the IN_B and IN_C inputs of the BDA. Inputs will have to be closed when the car has no direction and open when it has a direction (up/down) except for a starting time defined by the Timer value. In case of problems the following errors will be displayed: -) Error UCM Cod. 2 (car with no direction) -) Error UCM Cod. 3 (car with direction).
3	2,0 s	Yes	Monitoring of GMV NGV A3 valves Monitoring is possible if RDY and RUN signals of the GMV unit are connected to IN_B and IN_C inputs of the BDA. Inputs will have to respect the sequence shown in the GMV user manual (be always different, except for a starting time defined by the Timer value). In case of problems the following errors will be displayed: -) Error UCM Cod. 4 if outputs RDY = OFF and RUN = OFF are detected; -) Error UCM Cod. 5 if outputs RDY = ON and RUN = ON are detected;

4	10,0 s	No	Monitoring of HDU Wittur valves The test provides: a) activation of the EVD HDU valve for as long as the timer is configured; if the car is re-leveled during the test, the test starts again when the re-leveling is finished. If the re-leveling activates twice, UCM Error will occur; b) activation of the down-movement valve for as long as the timer is configured; if the car is re-leveled during the test, the test starts again when the re-leveling is finished. If the re-leveling activates twice on one of the two previous points, UCM Error cod.6 will occur; The test is performed after a reset and after the automatic return to the bottom floor (anyway every 24 h). It foresees Double command down (BRK = EVD HDU Valve).
5	0,3 s	No	Monitoring of Bucher unit type No test is provided. This option must be associated to a UCM unit.
6	3,0 s	No	Monitoring of START ELEVATOR DS Valve. This option must be associated to a UCM unit. The test provides: a) activation of the down valve for as long as the timer is configured; b) wait for the half of the timer with valves off; c) activation of the DS valve for as long as the timer is configured; if the car must re-level at the end of the test, then there's a problem and UCM error cod.8 will be registered; The test is performed after a reset and after the automatic return to the bottom floor (anyway every 24 h). It foresees Double command down (BRK = Valvola DS).
7	3,0 s	No	Monitoring of START ELEVATOR 11/M valves group The test provides: a) activation of the down valve for as long as the timer is configured; b) wait for the half of the timer with valves off; c) activation of the DS valve for as long as the timer is configured; if the car must re-level at the end of the test, then there's a problem and UCM error cod.8 will be registered; The test is performed after a reset and after the automatic return to the bottom floor (anyway every 24 h). It foresees Double command down (BRK = Valve <20>).
8	3,0 s	No	Monitoring of START ELEVATOR 93/E-2DS valves group The test provides: a) activation of the down valve for as long as the timer is configured; b) wait for the half of the timer with valves off; c) activation of the DS valve for as long as the timer is configured; if the car must re-level at the end of the test, then there's a problem and UCM error cod.8 will be registered; The test is performed after a reset and after the automatic return to the bottom floor (anyway every 24 h). It foresees Double command down (BRK = Valve <20>)

9	3,0 s	No	Monitoring of START ELEVATOR LX valves group The test provides: a) activation of the down valve for as long as the timer is configured; b) wait for the half of the timer with valves off; c) activation of the DS valve for as long as the timer is configured; if the car must re-level at the end of the test, then there's a problem and UCM error cod.8 will be registered; The test is performed after a reset and after the automatic return to the bottom floor (anyway every 24 h). It foresees Double command down (BRK = Valve <20>)
10	3.0 s	No	Control unit1 Valve Bucher DSV A3. No tests planned.
11	10,0 s	No	Monitoring 2 Valve Bucher DSV A3. The test involves the sequence: a) Activation of the DSV valve for the time indicated by the timer ; if during the test, the relevelling is performed then this is repeated until the end of the relevelling itself, b) b) activation of the Descent valve for the time indicated by the timer; if during the test, the relevelling is performed then this is repeated until the end of the relevelling itself. If the relevelling is performed twice during one of the two previous points then you will recieve the Error UCM Cod.6; The test is carried out at the end after reset and after an automatic return to the lowest level (anyway every 24 h) . Anticipates Dual Control downward (BRK = valve DSV) .
12	3.0 s	No	Control unit 1 Valve GMV 3010. No tests planned.
13	10,0 s	No	Monitoring Valve Wittur HDU ST. The test involves the sequence: a) Activation of the DSV valve for the time indicated by the timer ; if during the test, the relevelling is performed then this is repeated until the end of the relevelling itself, b) b) activation of the Descent valve for the time indicated by the timer; if during the test, the relevelling is performed then this is repeated until the end of the relevelling itself. If the relevelling is performed twice during one of the two previous points then you will recieve the Error UCM Cod.6; The test is carried out at the end after reset and after an automatic return to the lowest level (anyway every 24 h) . Anticipates Dual Control downward (BRK = Valve HDU).

14	4,0 s	Yes	Monitoring control unit Bucher i-VALVE Test according to specifications i-VALVE In case of errors: -) Errore UCM Cod. 10 if detected in zone A -) Errore UCM Cod. 11 if detected in zone B;
15	0,3 s	No	Monitoring control unit Bucher NTA2 No tests planned. This option must be combined with a UCM.
16	0,3 s	No	2 valves MORIS CM320 monitoring control unit No tests planned.
17	4,3 s	Yes	1 valve MORIS CM320 monitoring control unit No tests planned.

Unintented Car Movement (UCM)

Menu <Special Functions> UCM

The following table lists the possible configurations of unintended car movement detections.

Monitor UCM	*Timer*	*BDA*	*Descrizione*
No	0,0 s	No	No UCM detection. This is the programmed value for existing controllers.
1	2,5 s	Yes	DMG UCM module The module is powered with the SR3 relay managed by POWER_UCM output of the BDA. The module is enabled by the safety relay SR4 (monitor SR4+SR2 on IN_D) managed by ENABLE_UCM output of the BDA. Furthermore, with lift car at floor, enabling is given by the closed safety chain or by the door zone from the re-leveling module. IN_A input will have to be closed when the module is on, otherwise UCM cod. 100 error will occur. If a problem on the SR4 + SR2 monitor is detected, then the UCM Cod 101 error will occur. If secu3 is absent, the module is off. Output Enable is active when the installation: a) has no movement and is not a floor level (check by stopping, within the timer timing); b) has a movement (re-leveling is not considered as a movement); c) is stopping (command is maintained as long as the time of the timer); To clear UCM error you must reset the UCM. The error is not detected in inspection mode, in temporary operation mode, during self-learning.
2	2,5 s	Yes	Bypass UCM error while keeps handling the POWER UCM and ENABLE_UCM signals (we used it to enable the movement while waiting for the replacement of some components)
3	2,5 s	Yes	Bypass UCM Monitor. Disable the detection of the monitor UCM errors maintaining the handling of the control signals of the speed and direction control units (it has been used to enable the movement in case of malfunction of some signals of the brake switches)
4	2,5 s	Yes	UCM Monitor and UCM Bypass

Appendix F – Instructions for Software update from SD card

Updating from version 1.0.4 or next, follow this instruction:

1. Switch on the controller and put it in INSPECTION mode.
2. Disconnect the 12V battery.
3. Open the mother board cover (PB3).
4. Plug the SD Card in the mother board SECUR DIGITAL CONNECTOR.
5. Check that only the **ON** led of the mother board starts blinking (update in progress). the **RUN** led must be switched OFF.
6. Wait for the **ON** led to switch OFF (it will take about 15 seconds).
7. Remove the SD card and the system will run with new SW, otherwise switch the controller OFF and then ON again.
8. Connect the 12V battery again and set system date and hour.

If the system shuts down during the updating process, the software could be corrupted and the **ON** led of mother board will be blinking slowly (every 2 seconds); in this case repeat the update procedure.

Updating from version 1.0.3 or previous, follow this instruction:

1. Switch on the controller and put it in INSPECTION mode.
2. Disconnect the 12V battery.
3. Open the mother board cover (PB3).
4. Plug the SD Card in the mother board SECUR DIGITAL CONNECTOR.
5. Check that only the **ON** led of the mother board starts blinking (update in progress). the **RUN** led must be switched OFF.
6. Wait for the **ON** led to switch off (it will take about 15 seconds).
7. Switch the controller OFF and then ON again.
8. Check that only the **ON** led of the mother board starts blinking (update in progress). the **RUN** led must be switched OFF.
9. Wait for the **ON** led to switch OFF (it will take about 15 seconds).
10. Remove the SD card and the system will run with new SW.
11. Connect the 12V battery again and set system date and hour.

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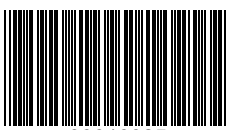

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