Pitagora 4.0

(v 1.4)

Contents

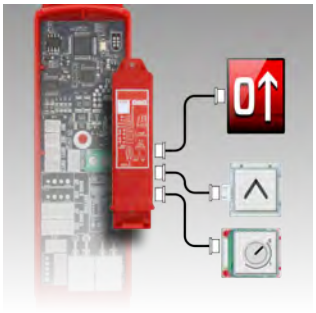
Complete System for lifts

Controller

- Motherboard: main functions, programming module, diagnostic Leds, connectors description.
- Programming menu and Changing system parameters
- VVVF Frenic Lift Setting
- Instructions for Software update

Car / Top of car

- Door command
- Weight load control
- Elevator car position / speed control with motor encoder
- Rollback control and ride comfort
- UCM Circuit



Floors

- Learning Procedure of floors

Shaft

- EN81-20 configuration
- EN81-21 installation with door's…
- Installation with door's monostable contacts
- Elevator car positioning system and stopping accuracy
- Shaft Protection

Insights

Quick installation guide

Here you can download the quick start guide in PDF format.

Troubleshooting

Here you will find the list of fault with their description, cause and remedy.

Fire service operation

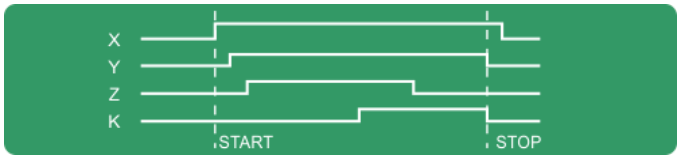
Here you can set the parameters for firefighting operations according to 5 different cases.

Test and measurements

Procedures for system safety testings and for space-time measuring elevator car movement are described here.

Multiplex solutions

The Pitagora 4.0 control panel can manage multiplex systems up to 6 lifts.



Timing diagrams

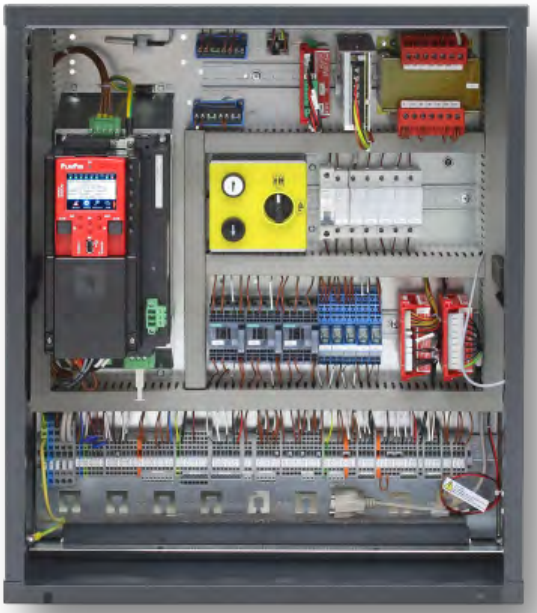
Timing diagrams of the running commands according to the type of system.

Fusion App (work in progress)

Fusion is the new app developed by DMG to enable local and remote monitoring of the Pitagora 4.0 from smartphones or PC.

Pitagora 4.0 – Controller

Contents



Motherboard

The control board of the Pitagora 4.0 system is based on 32-bit electronic technology and operates all types of electric and hydraulic lifts. Serial and/or parallel connections to pushbutton panels (cabin and floor) may be added. It is particularly suitable for VVVF electrical installations, also those equipped with the elevator car uncontrolled movement system (Amendment A3 or EN81-20 / 50).

Main functions

– Control of any kind of electrical and hydraulic system
– Up to 28 floors with serial control and up to 12 floors with parallel control
– CAN Bus serial line to connect display and serial Landing Operating Panels
– CAN Bus serial line for the serial elevator car communication
– APB; Down Collective, Full Collective
– Multiplex (max 6) systems control
– Alternative or selective door control on through or adjacent access systems
– Lift position control by magnetic contacts, incremental DMG shaft encoder, motor – encoder or ELGO LIMAX 33 CP Absolute Positioning System
– Programming/diagnostic Interface, on board and/or remote.
– Status diagnostic, errors, failures and I/O status
– VVVF parameters and diagnostics handling (only FUJI FRENIC LIFT LM2)
– Advanced control of VVVF with speed, comfort and precision stop control
– Software upgrading via USB Device
– RS232 serial line for PC and GPRS modem connection
– Compatibility with all DMG products
– Compatibility with all the +A3 solutions for electrical and hydraulic systems
– Protection of shaft access (Unauthorized Shaft Access)

The 4.0 motherboard contains hardware and software that allows control of the elevator and all its peripherals. Through the integrated and/or remote programming modules it allows access to all available features. Inputs and outputs are connected to all electronic and electromechanical devices in the controller and in the lift.

Programming module

Integrated Programming Module

The Mother Board has a removable programming module that allows viewing and editing of all the basic parameters for the control panel management and configuration. In VVVF's version, also FUJI's parameters of the basic (menu VVVF BASE) and advanced (VVVF ADVANCED menu) configuration may be viewed and edited.
For details of the programming module operation and an extensive management system menu, see paragraph changing system parameters.

Remote programming module

An alternative way to access the configuration menu of the controller, in the view/modification mode, is by connecting the removable keypad of the DMG V3 Playboard (PlayPad), to the connector PLP V3, mounted on the Lift Control Board.
This module can be connected in various ways:
– Connected directly
– Connected by a dedicated extension cable directly on the board (in the engine room)
– Connected to the board on the elevator car roof (TOC) in the case of lifts with DMG pre-wired serial devices.

An alternative way to access the controller is based on Fusion App.

Diagnostic LEDs description

On mother board are present 6 leds for a easy diagnostic:

LED1 (Green led)
CAN Multiplex termination active: led switch off when MULX board is connected (termination automatically moves on MULX board of first and last multiplex controller).

LED2 (Green led)
CAN Cabine termination active: led switch off when an optional board (PIT8 / 16IO / 16RL) is connected inside controller (termination automatically moves on last optional board).

LED3 (RGB led)
Color of this led gives info on the internal status of lift according following table:

Color	Status
Led off	The system is performing the reset procedure
Green	The system is in normal operation mode
Yellow	The system is in inspection mode
Pink	The system is in temporary operations mode
Purple	The system is out of service (parking of cabin)
Cyan	The system is running in priority mode (LOP / CAR)
Red	The system is operating in Fire-fighters mode
White	The system is performing the emergency procedure
Blue	The system is performing the elevator car drift control procedure

LED4 (Yellow led)
Led blinks when board is running.

LED5 (Green led)
Led on gives the status of SE5 safety chain

LED6 (Red led)

Led Off	No fault active
Led Flashing	One (or more) fault active
Led On	Locking fault active

Connectors description

Name		Description
FJ1	FUJI Interface	Connection to the FUJI interface inside the inverter.
J4	FUJI Analog / Serial	Connection to the FUJI used in case of remote Inverter.
J6	Parallel Signals	Connection to the APPO Board. It includes all parallel signals available on the terminal block inside the control panel.
J8	UCM Circuit	Connection to the circuit for UCM solution. For further information on connections and parameters see ANNEX VIII.

Name		Description
J9	Relevelling Circuit	Circuit to make Door Safety Contact Bypass for: - Pre opening and/or - Re-levelling In case of Absolute Encoder Positioning system this connector is not used. The circuit management of the re-leveling operation consists of a Safety Module and a Safety Relay. This circuit allows by-pass of the safety contacts of doors, thereby permitting movement of the cab with doors open at reduced speed in the permitted area (unlocking doors area) in the case of lowering the level of the elevator car, not precise elevator car stopping, or doors pre-opening. The ISO output closes to GND. - ISO output (safety relay contact by-pass doors) open collector Max 24V 100mA - Input CCISO (Monitor ISO safety relay) closure to GND (NC) I = 5mA - Input TISO (Monitor Safty module) closure to GND (NC) I = 5mA - S11-S12 (free contact) close when ISO1 is closed The Second enable signal for the Safety module comes directly from a second sensor (ISO2) and it must close to GND.
J10	Light Curtain / >|<	Use only in completely parallel Configuration. Connection to the screw terminal of cabinet.
J11	Safety Chain	Connection to the SECU Board. It includes the 7 points reading from the safety chain. The system is based on an opto insulated circuit connected to earth (Inside SEC Board): - Input SE0 <-> SE6 opto-insulated 48 Vdc Above the safety circuit, a suitably sized magnetic circuit breaker (Imax = 0,5 A) must be provided. - SE0 is the start point of Safety chain (after DIS Protection inside the controller) - SE1 controls SHAFT STOP zone and PIT Inspection Box - SE2 controls Top of elevator car STOP and TOC Inspection Box - SE3 controls Limit Switches, Safety Gear, Overspeed Governor - SE4 controls FLOOR PRELIMINARY LOCKS - SE5 controls FLOOR LOCKS - SE6 controls CAR DOORS and Pre-triggered’s contact systems If the limit switch, or Overspeed governor or Safety Gear is activated (safety chain point SE3 opens), the system is set out of service. To set it back in service you must reset the SE3 error via the programming module. Obviously the safety contact of the over run final limit switch must first be reset.

Name		Description
J12	Multiplex CAN	Connection to the MULX Board. It includes the CAN line for Multiplex installations. For further information on connections and parameters see ANNEX I.
J13	Car at Floor	Signal output from Door zone sensor for luminous signal on cabinet.
J14	Hydro Command	Connection to the COIL Board. It includes the moving commands for hydro installations. It can be used also in case of Remote Inverter installations.
J15	EN81-21 Circuit	Connection to the Circuit to manage the Protection in case of Installation with Reduced Space in the PIT. It includes management of Bistable circuit on doors and Protection devices (pre-triggered system or Manual Protection in the Pit). For further information on connections and parameters see ANNEX IX.
J16	Encoder Position	Positioning system based on an incremental encoder: - DMG Shaft Encoder or - Motor Encoder (only for VVVF Gearless Motor Lift) In case of Absolute Encoder Positioning system this connector is not used.
J18	Environment Temperature	Connection to the Environmental Temperature Sensor. To use the Environment Temperature Control function the DMG temperature sensor module (Cod. Q40.SND). This function stops the system when the temperature of the engine room drops below the minimum or increases above the maximum set threshold.
J19	PME Panel	Connection to the Control Panel inside the cabinet.
J20	Output Spare	Generic Output used for special functions.
J21	Emergency Circuit	Circuit for complete Emergency or Evacuation with Brake opening.
J22	Motor Relay	Connection to the relay for Motor Contactors (or enable signals in case of Contactorless installation). It includes also the Main Contactors' monitor input.
J23	Brake Relay	Connection to the relay for Brake Contactors (or valves in case of Hydro installation). It includes also the Brake Contactors' monitor input.
J25	Batteries Test	Connection to the CHAR Board. It includes the signals for: - Low Batteries - Phase sequence (only Hydro) - Backup mode
J26	Optional Boards	DMG Optional board for: - Parallel Prewired Pushbuttons (PIT8) - 16 relays output Board (16RL): The expansion card is necessary in particular to drive parallel displays (1 Wire / Floor, 1 Wire / Segment, Gray Code, binary) as the direct outputs available - 16 Input/Output Board (16IO)
M1	Power Supply	Power supply from a commercial stabilized power supplier. The negative terminal of the power circuits and the battery charger must be connected to the ground. Internal Clock power supply: Super Capacitor (autonomy of 5 days without power supply).

Programming menu and Changing system parameters

V3 Screen Menu map

V3 Screen Menu map

LIFT CONTROL BOARD DMG S.p.A.		Language? French, English, Portuguese, Italian, Russian, German, Dutch ENTER: confirm / ESC: exit
▲ ▼		▲
Code? ** Password **	----- ENTER ---->	System Status
		▲ ▼
		Faults
		▲ ▼
		I/O Status
		▲ ▼
		Configuration
		▲ ▼
		Doors
		▲ ▼
		Signals
		▲ ▼
		Special functions
		▲ ▼
		Positioning
		▲ ▼
		VVVF
		▲ ▼
		Rec.Parameters
		▲ ▼
		Clock

After selecting the desired language Is necessary to perform the software Upgrade

“System Status” Menu

It is easily accessed from the main window of the PlayPad, by pressing once the ENTER key.

Reference table

System Status	Description	Visualization on Serial display
Resetting	The system is performing the reset procedure	O -
In service	The system is in normal operation 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 elevator 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 elevator car drift control procedure	
Upward operation	The system is running upwards	
Downward operation	The system is running downwards	
Re-levelling	The elevator car is at floor level and is re-levelling	
Still at floor	The elevator 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 elevator 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 B 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	

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

Reference table

Floor 0 12:30:56 < Faults >	----- ENTER ---->	Floor 0 < Faults > No faults		

	----- ENTER ---->	Floor 0 < Faults > Faults: 4 Display ?	----- ENTER ---->	< Faults > 3/4 43 = Inspection Pos.: 0 # 1 Cod. 0 17/03/09 10:10 * (see below for details)
		▲ ▼		
Reset all recorded faults (press ENTER to confirm) NOTE: faults are deleted when lift cabin stops		Floor 0 < Faults > Faults: 4 Reset ?		
		▲ ▼		
Clear the detected error on the limit switch (press ENTER to confirm) NOTE: the actual cancellation occurs only in memory system is stopped		Floor 0 < Faults > Faults: 4 Reset XXX? (see table below)		

Fault	Description
Reset SE3	Limit switch fault; you can clear it only after closing Safety chain.
Reset 82212	Drift control
Reset RSP	RSP fault; for reduced pit and headroom.
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.
Reset SCS	SCS Fault; installation 81-20.
Reset UAS	UAS Fault; Special function.

“I/O Status” Menu

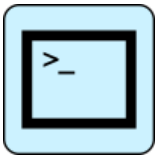
	----->>>>>			
OR				
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < I/O Status >

Table of Parameters

Table of Parameters:

Field	Description	Navigation	Values (group of 12)				
Car call	Simulation of a elevator 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				
			1/9	REM VHS SUR	RED TH1 COM	REV TH2 LE	REV1 REV2 LTMP
			2/9	RMO BRK RDE	RGV RMV RPV	MTR YBRK CCF	CCO CCO B
			3/9	BRA FOA ROA	CEA FFA RFA	BRB FOB ROB	CEB FFB RFB
			4/9	HS BFR OTM	PCA	POM RPH J20	CPO M IEME OEM E
			5/9	FLM FLD	BIP GNG M GNG D	511B 511L	DSA 212B E511
			6/9	PWR ENA B	IN_A IN_D	BR1 BYPL	BR2 BYPC
			7/9	FAI ZP	FAS TISO	CAM ISO	AGH AGB CISO
			8/9	REM REM 1 REM 2	RED RED1 RED2	PME OVS	REV REV1 REV2
			9/9	L-RED L-GREEN BUZZER		GPIO1 GPIO2 GPIO3	
 VVVF IN-OUT	VVVF Inputs/Output □ = Open Contact ■ = Closed Contact	▲▼ (Change group) ENTER (Exit) ESC (Exit)	GROUPS				
			1/8	EN FWD REV	X1 X2 X3	X4 X5 X6	X7 X8 0,0 V
			2/8	Y1 Y5A/ C	Y2 RST	Y3 30 A/B/C	Y4

Field	Description	Navigation	Values (group of 12)				
			3/8	BUS Y ACC DEC	ALM INT BRK	EXT NUV RL	TL VL IL
			4/8	Fout = 0,00 Hz Uout = 0,00 A Vout = 0,00 V			
			5/8	Fref = 0,00 Hz EDC ---V NST ---		Fref = 0,00 Hz TRQ --% NST ---h	
			6/8	Imax = 0,00 A Encoder 0 P/s --- kW MAIN =			
			7/8	Fault VVVF 0 = --- 2 = ---		Fault VVVF 1 = --- 3 = ---	
			8/8	I-bal = 0,00 A I-com = 0,00 A I-sur = 0,00 A			
 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
			Push button down side A	7 3	6 2	5 1	4 0
			Push button 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	▲▼ (Change group) ENTER (Exit) ESC (Exit)					
 Call registration list	Call registration list □ = Call not registered ■ = Call registered	▲▼ (Change group) ◄► (Cab/down/up) ENTER (Exit) ESC (Exit)	Same Groups as PUSHBUTTONS				

Field	Description	Navigation	Values (group of 12)
[0] Start = … [1] Start = … [2] Start = …	Run Counters [0] partial (resettable) [1] Total [2] Future use	◄► (Change) ENTER (Reset and Exit) ESC (Exit)	Date showed is referred to the last reset of partial counter [0]
Analogic	Analogic measures	▲▼ (Change page) ESC (Exit)	24 V = Power Supply VCAB = Cabinet and Cabine absorptions VMR = BDU absorptions 24VB = Batteries Voltage +5.0 V = Board Internal power supply TAMB = Ambient temperature sensor PWM = Analogic speed output
TOC Measures	Analogic measures	▲▼ (Change page) ESC (Exit)	T_SHA = Shaft temperature MAIN = TOC Power Supply COP_A = COP side A absorptions COP_B = COP side B absorptions
COP Measures	Analogic measures	▲▼ (Change page) ESC (Exit)	MAIN_A = COP A power supply MAIN_B = COP B power supply T_CAR = Cabine temperature
FLOORS Line	BDU Communication Line	ENTER (Reset) ESC (Exit)	Error: Communications error number FER: Frame Error Rate Date and hour of last reset
CAR Line	TOC / COP Communication Line	ENTER (Reset) ESC (Exit)	Error: Communications error number FER: Frame Error Rate Date and hour of last reset
MTPX Line	MULTIPLEX Communication Line	▲▼ (Change page) ENTER (Reset) ESC (Exit)	Error: Communications error number FER: Frame Error Rate Date and hour of last reset
ELGO model:	ELGO’s Diagnostic		

PLAYBOARD IN-OUT table description parameters

Input	Description
SE0	Safety chain Start
SE1	Safety chain pit safety contacts
SE2	Safety chain top of elevator car inspection Box/Stop
SE3	Safety chain final limit switch, safety gear, speed governor
SE4	Safety chain hall doors preliminary contacts
SE5	Safety chain hall doors inerlocks
SE6	Safety chain elevator car doors contacts and pre trigger device (81-21)
CCO CCOB	power contactors control
CISO	Monitor ISO relay
TISO	Safety Module SM1 control

Input	Description
LE	Emergency Light (elevator car light power supply)
BFR	door close button
PCA	Elevator car priority function
POM	Fire-fighters operations (Hall key switch)
CPOM	Fire-fighters operations (Car key switch)
SUR	Overload control
COM	Full load control
HS	out of service function
ZP	door zone signal
RPH	Phase sequence control
REV REV1 REV2	Inspection function (machine room) Inspection function (Top of Car) Inspection function (PIT)
REM REM1 REM2	Inspection up (machine room) Inspection up (Top of Car) Inspection up (PIT)
RED RED1 RED2	Inspection down (machine room) Inspection down (Top of Car) Inspection down (PIT)
TH1 TH2	Motor (Oil) temperature sensor control
IEME	Emergency (power supply failure)
PME	PME selector (emergency evacuation)
AGH AGB	Top deceleration switch Bottom deceleration switch
FAS FAI	Position Sensors (no encoder positioning system)
E511	Optional input for Shaft Access
BYPL BYPC	Door’s safety Bypass selector
BRA	Door open button (entrance A)
CEA	Photocell entrance A
FOA	Door open limit switch entrance A
FFA	Door close limit switch entrance A
BRB	Door open button (entrance B)
CEB	Photocell entrance B
FOB	Door open limit switch entrance B
FFB	Fine corsa chiusura (Porta B)
BR1	Brake 1 monitor switch
BR2	Brake 2 monitor switch

Input	Description
IN_A IN_D	Monitor UCM circuit

Output	Description
VHS	Output - out of order illumination
RMV	Output – intermediate speed command
BRK	Output - Brake command
MTR	Output - Motor command
YBRK	Output - Brake command (VVVF)
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 elevator car light command
CAM	Output - retiring ramp command
OEM	Output - emergency command
CCF	Output - Motor phase short Circuit
J20	Output - programmable (connector J20)
DSA	Output - alarms de-activation
511B	Output - Norm 511 Buzzer
511L	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
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)
L-RED	Traffic Light signal 81-20/21
L-GREEN	Traffic Light signal 81-20/21
BUZZER	Buzzer signal for bypass 81-20

VVVF IN-OUT table description parameters

Signal	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	Ingresso digitale (morsetto X4)
X5	digital input (screw terminal X4)
X6	Ingresso digitale (morsetto X6)
X7	Ingresso digitale (morsetto X7)
X8	Emergency digital input (screw terminal X8)
0,0 V	VVVF analog input (terminals 11-12)
Encoder	Encoder VVVF input (closed loop)
MAIN	VVVF firmware version
Y1	Digital output (terminal Y1)
Y2	Digital output (terminal Y2)
Y3	Digital output (terminal Y3)
Y4	Digital output (terminal Y4)
Y5A/C	Brake command relays (terminal Y5)
30 A/B/C	Relè (terminal 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

“Configuration” Menu

	----->>>>>		----->>>>>	
OR				

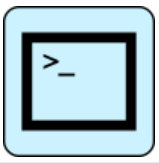
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < Configuration >

Table of Parameters

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 Annex II.			
Code ?	Password protection to access programming	◄► (Change characters) ▲▼ (Select characters)	8 characters (0 - 9; A - Z; a - z)	no password
Configuration	Type of wiring configuration: -) Standard wire terminals (Car and floors); -) Serial comm. in the elevator car, 1 line/floor connectors at floors; -) Wire terminals in the elevator car, Serial communication at floors (BDU modules); -) Serial communication for elevator 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 VVVF -) Hydraulic – Motor Direct (Dir): -) Hydraulic – Motor Soft Starter (S-S): -) Hydraulic – Motor Star Delta (Y-D): -) Hydraulic – Motor with Inverter (VVF):	◄► (Choice)	Traction Hydraulic Dir Hydraulic S-S Hydraulic Y-D Hydraulic VVF	Traction
No. of floors	Number of floors of the installation	▲▼ (Increase/Decrease)	2 <-> 16 (std.) 2 <-> 32 (BDU only)	2

Parameter	Description	Navigation	Values	Default Value
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 when the elevator car leaves its position "perfectally at floor" that's to say when one of the two beams interrupted. Re-levelling ends when both beams are free. WARNING: this setting is not suitable for hydraulic installations due to the risk of "pumping" effect (elevator 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 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 2 beams closed door. This setting allows the levelling 1 beam, floor door open (elevator car light on) and levelling 2 beams, floor door closed (elevator 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

Parameter	Description	Navigation	Values	Default Value
Low Speed fault time	Time before activation of the Low Speed fault (low speed too long)	▲▼ (Increase/Decrease)	7 s <-> 40 s	7 s
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 Multiplex solutions.	◄► (Select parameter) ▲▼ (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 a big cabin for disabled passengers and a smaller one, the greater must be set as "1" and the other as "2"; b) In an “asymmetric floor distribution” system, the installation that can reach the lowest/highest level.	◄► (Choice)	No; Yes	No

“Doors” Menu

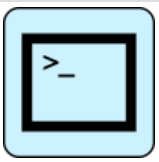
	----->>>>>		----->>>>>	
OR				
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < Doors >

Table of Parameters

Table of Parameters:

Parameter	Description	Navigation	Values	Default Value

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 elevator 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, elevator car doors manual or not present; 2) Car independent: manual doors at floors, elevator car doors independent; 3) Car automatic: manual doors at floors, elevator car doors automatic; 4) Combined auto: automatic doors in the elevator 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; 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

Parameter	Description	Navigation	Values	Default Value
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	Combined Auto
Door B with limit switch	Presence of a limit switch for door A (not present for manual and independent doors)	◄► (Selection)	No; Yes	No
Select door B 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; 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 elevator car stop).	◄► (Selection)	No; Yes	No

Parameter	Description	Navigation	Values	Default Value
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
Door contact time	Waiting Time before start a trip (for old door's safety contact)	▲▼ (Increase/Decrease)	0,0 s <-> 3,0 s	0,1 s

"Signalisation" Menu

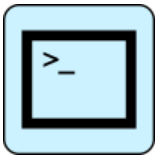
	----->>>>>		----->>>>>	
OR				
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < Signals >

Table of Parameters

Table of Parameters:

Parameter	Description	Navigation	Values	Default Value
Car priority	Time of elevator 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

Parameter	Description	Navigation	Values	Default Value
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 boards and for dynamic outputs on LOP: Type 0 = Car at floor and Out of Service Type 1 = Arrows Type 2 = Car at floor and Car is coming Type 3 = 3 Wire Display	◄► (Selection)	1 wire per floor; Car at floor; Floor light; Gray indicator; 9 segm. indicator; Lift is coming; 1 wire per floor HYD	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	◄► (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, arrow outputs are activated only when lift stops at floor (or on slowing down if trigger parameter on PV is active).	◄► (Choice)	No yes	No
LTMP Delay	This function handle the delay between a floor/elevator car call and the light turning on. The output is deactivated XX seconds after the call has been served. 0 sec means no timer active (light ON)	▲▼ (Increase/Decrease)	0 s <-> 240 s	1 sec.
EME Delay	This function handles the delay between the black out signal (IEME) and output command (OEME) before system switch in automatic emergency procedure.	▲▼ (Increase/Decrease)	0 s <-> 30 s	0 sec.

Parameter	Description	Navigation	Values	Default Value
Buzzer 81-21	For 81-21 installation: use the 81-20's acoustic buzzer (bypass door) on the top of elevator car as acoustic alarm when protections are not in active position.	◄► (Choice)	No yes	No

"Special Features" Menu

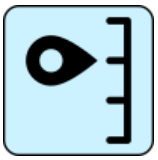
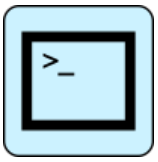
	----->>>>>		----->>>>>	
OR				
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < Special Features >

Table of Parameters

Table of Parameters:

Parameter	Description	Navigation	Values	Default Value
Reset in	Direction of travel during reset procedure	◄► (Selection)	2 s <-> 30 s	10 s
Travelling limits in inspection	Valid only for FAI/FAS positioning system. 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)	Permanent; Blinking at floors	Permanent

Parameter	Description	Navigation	Values	Default Value
Fire-fighters	(Refer to 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 elevator car FF key switch; -) EN 81-72 (b): with elevator car FF key switch;	◄► (Select field) ▲▼ (Change value)	Not present; NF P82-207; EN 81-72 (a); EN 81-72 (b)	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 elevator car to a safe floor	◄► (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
Temperature sensor during operation	Indicates whether the elevator car can be blocked by the motor temperature sensor also during travel	◄► (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 elevator 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

Parameter	Description	Navigation	Values	Default Value
Automatic return	Parameters for elevator elevator 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) ▲▼ (Change value)	No; Yes 1 s <-> 120 s	No 60 s
Call erasing at floor	Erasing all calls at floor where the elevator 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 elevator car calls. A 4-digit code may be assigned to each BCx elevator car button input, corresponding to the elevator car pushbutton inputs. Example: if the BC0 pushbutton is associated with the 0123 code, to reserv floor 0 from Cabin you can: a) keep pressed the floor 0 pushbutton for 3 seconds. b) All COP pushbutton will blink c) Press in sequence the pushbuttons corresponding to the BC0, BC1, BC2, BC3; Note: Enter a code between 0 and 9 corresponding to the inputs BC0 ÷ BC9 Programming Code “0 “ will enable the special function Pent House	◄► (Select field) ▲▼ (Change value)		

Parameter	Description	Navigation	Values	Default 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) in steps of one minute. 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 ∞ Yes - No	0 Yes
Monitor UCM	A3 amendment. Configure type of monitor. For description, refer to UCM circuit.	▲▼ (Increase/Decrease ◄► (Choice)		
UCM	Installation type 81-1 / 81-20 / 81-21 Shaft access procedure and Protections. For description, refer to UCM circuit.	▲▼ (Increase/Decrease ◄► (Choice)		

Parameter	Description	Navigation	Values	Default Value
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 elevator 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 floor priority call function. pairing with 16 IN card (or key inputs from BDU)	▲▼ (Increase/Decrease ◄► (Choice)		
Floor habilitation	Enabling the call enabling function (e.g. CARD Reader). In combination with 16 IN card. Type 1: LOP enable: to enable calls, the corresponding input of the 16 IN card must be closed. Type 2: COP enabling To enable calls, the corresponding input of the 16 IN card must be closed Type 3: Enable COP + LOP: to enable calls, the corresponding input of the 16 IN card must be closed (disabling the floor)	▲▼ (Increase/Decrease ◄► (Choice)		
Shaft Protection	Protection of compartment and doors. For description, refer to Shaft protection.	▲▼ (Increase/Decrease		
Integrated Load Weighing	Enable function for Integrated load Weighing. It is mandatory a calibration procedure (Test 22)	◄► (Select field)	No; Yes	No

“System Positioning” Menu

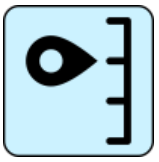
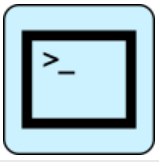
	----->>>>>		----->>>>>	
OR				
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < Positioning >

Table of Parameters

Table of Parameters: (FAI/FAS positioning system):

Parameter	Description	Navigation	Values	Default Value
Positioning system	Type of positioning system: with Encoder or traditional. Can only be modified in Temporary Oper. Mode Note: in case of absolute Encoder and shaft lengths longer than 65 meters change the resolution of Encoder = 2 in autosetting menu before starts the Manual teach procedure.	◄► (Selection)	FAI/FAS; Encoder Clockwise; Encoder Counter clockwise Absolute encoder	FAI/FAS
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	0,00s
Delay Dir.-BRK	VVVF: Delay between activation of travel direction and run command (BRK)	▲▼ (Increase/Decrease)	0,0 s <-> 3,0 s	0,5 s - VVVF 0,0 s - Others
	OLEO: Star / Delta delay	▲▼ (Increase/Decrease)	0,0 s <-> 3,0 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 <-> 3,0 s	0,00 s

Parameter	Description	Navigation	Values	Default Value
Delay BRK-Dir.	Delay between deactivation of run command and deactivation of travel direction (arrive al piano)	▲▼ (Increase/Decrease)	0,0 s <-> 3,0 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):

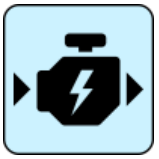
Parameter	Description	Navigation	Values	Default Value
Positioning system	Type of positioning system: with Encoder or traditional. Note: Can only be modified in Temporary Oper. mode	◄► (Selection)	Encoder Clockwise; Encoder Counter clockwise	Encoder Clockwise
Autosetting	Start of floor position self-learning procedure. Can only be modified in Temporary Operation mode.	◄► (Selection)	No; Yes	No
Floor Position	Position value for each floor	▲▼ (Increase/Decrease) ◄► (Selection)		
Accel. Time	Acceleration time. Time required to switch from start speed to travelling speed.	▲▼ (Increase/Decrease)	1,0 s <-> 5,0 s	3,0 s
Starting Boost	Starting speed	▲▼ (Increase/Decrease)	0 s <-> 10 s	3 %
Stopping Boost	Final (stopping) speed	▲▼ (Increase/Decrease)	0 s <-> 10 s	4 %
Max speed	Maximum speed during the travel	▲▼ (Increase/Decrease)	5 s <-> 100 s	100 %
Inspection speed	Travelling speed in inspection mode	▲▼ (Increase/Decrease)	5 s <-> 100 s	50 %
AGB/AGH speed	Travelling speed on AGB/AGH limit points. Same speed adopted during emergency operations	▲▼ (Increase/Decrease)	1 s <-> 15 s	10 %
Delay Dir.-BRK	VVVF: Delay between activation of travel direction and BRK command (start)	▲▼ (Increase/Decrease)	0,0 s <-> 3,0 s	0,5 s - VVVF 0,0 s - Others

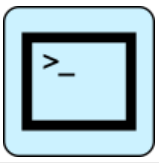
Parameter	Description	Navigation	Values	Default Value
	OLEO: Star / Delta delay	▲▼ (Increase/Decrease)	0,0 s <-> 3,0 s	0,5 s – VVVF 0,5 s – Star/Delta 0,0 s - Others
Delay BRK-S	Delay between activation of BRK command and beginning of the analogic speed ramp	▲▼ (Increase/Decrease)	0,0 s <-> 3,0 s	0,3 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 <-> 3,0 s	1,5 s - VVVF 0,0 s - Others
Emergency BRK On	Emergency break modulation parameter	▲▼ (Increase/Decrease)	0,0 s <-> 5,0 s	0,0s
Emergency BRK Off	Emergency break modulation parameter	▲▼ (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).			
Door Zone	Lenght of door zone ZP in mm			

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

"VVVF" Menu

This menu is available only when a FUJI FRENIC LIFT VVVF is connected to a Control Lift Board.

	----->>>>>		----->>>>>	
OR				
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < VVVF >



VVVF Basic menu list Parameters

VVVF Basic menu list Parameters

Cod.	Parameter	Description	Navigation	Values	Default Value
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 FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)	0,00-99,9 sec	1,8 sec (FAI/FAS) 0,01 sec (Encoder)
F08	Dec T2	Acceleration ramp (Only with FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)	0,00-99,9 sec	1,8 sec (FAI/FAS) 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 FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)		4,0 Hz

Cod.	Parameter	Description	Navigation	Values	Default Value
C10	Middle Speed	System speed under inspection mode (Only with FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)		20 Hz
C11	High Speed	High speed for multistep speed change (Only with FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)		50 Hz
P01	Motor Poles	Number of poles of the motor	◄► (Selection) ▲▼ (Change value)		4 (see motor data)
P02	Motor Rated Cap	Rated power of the motor	◄► (Selection) ▲▼ (Change value)		Function of Inverter size (see motor data)
P03	Motor Rated Cur	Rated current intensity of the motor	◄► (Selection) ▲▼ (Change value)		Function of Inverter size (see motor data)
P04	Motor 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
P12	M-Rated Slip	Rated slip frequency of the motor	◄► (Selection) ▲▼ (Change value)	0-15Hz	Automatically set
L01	PG select	See VVVF Frenic lift setting	◄► (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	S-Curve – 1	◄► (Selection) ▲▼ (Change value)		30 % (FAI/FAS) 20 % (Encoder)
L24	S-Curve 6	S-Curve – 6	◄► (Selection) ▲▼ (Change value)		25 % (FAI/FAS) 20 % (Encoder)
L25	S-Curve 7	S-Curve – 7	◄► (Selection) ▲▼ (Change value)		30 % (FAI/FAS) 20 % (Encoder)

Cod.	Parameter	Description	Navigation	Values	Default Value
L26	S-Curve 8	S-Curve – 8	◄► (Selection) ▲▼ (Change value)		25 % (FAI/FAS) 20 % (Encoder)
L27	S-Curve 9	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)	0,00-10,00 Sec	0,4 (FAI/FAS) 0,1 (Encoder)

VVVF Advanced menu list Parameters (first part)

VVVF Advanced menu list Parameters (first part)

Cod.	Parameter	Description	Navigation	Values	Default Value
F01	Speed command	Command selection for speed variation	◄► (Selection) ▲▼ (Change value)	0=MULTISPEED 1=NR Analogic (no polarized) no available	0 (with FAI/FAS 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 FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)	0,00-99,9 sec	1,8 sec (FAI/FAS) 0,01 sec (Encoder)
F08	Dec T2	Deceleration ramp (only with FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)	0,00-99,9 sec	1,8 sec (FAI/FAS) 0,01 sec (Encoder)

Cod.	Parameter	Description	Navigation	Values	Default Value
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 inverter size)	◄► (Selection) ▲▼ (Change value)	1 to 200% of the rated current	100 % of the rated current
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	DC Brake 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 Hz (FAI/FAS) 0,1 Hz (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)

Cod.	Parameter	Description	Navigation	Values	Default Value
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				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

Cod.	Parameter	Description	Navigation	Values	Default Value
E22	Signal Y3	Output Y3 (transistor) not used	◄► (Selection) ▲▼ (Change value)		2
E23	Signal Y4	Output Y4 (transistor) not used	◄► (Selection) ▲▼ (Change value)		57
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

VVVF Advanced menu list Parameters (second part)

VVVF Advanced menu list Parameters (second part)

Cod.	Parameter	Description	Navigation	Values	Default Value
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)		

Cod.	Parameter	Description	Navigation	Values	Default Value
C07	Creep Speed	Creeping speed (only with FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)		
C10	Middle Speed	System speed under inspection mode (only with FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)		
C11	High Speed	High speed for multistep speed change (FAI/FAS positioning system)	◄► (Selection) ▲▼ (Change value)		
P01	Motor Poles	Number of poles of the motor	◄► (Selection) ▲▼ (Change value)		
P02	Motor Rated Cap	Rated power of the motor	◄► (Selection) ▲▼ (Change value)		
P03	Motor Rated Cur	Rated current intensity of the motor	◄► (Selection) ▲▼ (Change value)		
P04	Motor Autotuning	Auto tuning of motor parameters (geared drives only)	◄► (Selection) ▲▼ (Change value)		
P06	M-No-Load Curr.	Motor no-load current	◄► (Selection) ▲▼ (Change value)		
P07	M-%R1	Motor (%R1)	◄► (Selection) ▲▼ (Change value)		
P08	M-%X	Motor (%X)	◄► (Selection) ▲▼ (Change value)		
P09	M-Slip driving	Slip compensation gain in percentage to the rated slip (P12) at the driving sides			

Cod.	Parameter	Description	Navigation	Values	Default Value
P10	M-Slip braking	Slip compensation gain in percentage to the rated slip (P12) at the braking sides	◄► (Selection) ▲▼ (Change value)		
P11	M-Slip T	Slip compensation time value (fixed)	◄► (Selection) ▲▼ (Change value)		
P12	M-Rated Slip	Rated slip frequency of the motor	◄► (Selection) ▲▼ (Change value)		
H04	Auto reset Times	Auto-resetting (Number of times)	◄► (Selection) ▲▼ (Change value)		
H05	Auto reset int	Auto-resetting (Reset interval)	◄► (Selection) ▲▼ (Change value)		
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)		
H57	S-Curve 11	Curve to S-11	◄► (Selection) ▲▼ (Change value)		
H58	S-Curve 12	Curve to S-12	◄► (Selection) ▲▼ (Change value)		
H64	Zero Hold Time		◄► (Selection) ▲▼ (Change value)		
H65	Soft Start Time		◄► (Selection) ▲▼ (Change value)		
H67	Stop Hold Time		◄► (Selection) ▲▼ (Change value)		
H96	Brake Monitor	Enable Brake monitor	◄► (Selection) ▲▼ (Change value)		

Cod.	Parameter	Description	Navigation	Values	Default Value
H190	Motor UVW order	Sequenza fasi uscita motore	◄► (Selection) ▲▼ (Change value)		

VVVF Advanced menu list Parameters (third part)

VVVF Advanced menu list Parameters (third part)

Cod.	Parameter	Description	Navigation	Values	Default Value
L01	PG select	See VVVF Frenic lift setting	◄► (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	See VVVF Frenic lift setting	◄► (Selection) ▲▼ (Change value)		
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-Curve2				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)

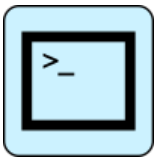
Cod.	Parameter	Description	Navigation	Values	Default Value
L28	S-Curve 10				30 % (FAI/FAS) 20 % (Encoder)
L29	SFO Hold T	Short Floor Operation (Holding time) – NOT USED	◄► (Selection) ▲▼ (Change value)		0,00 sec
L30	SFO Speed	Short Floor Operation (Allowable speed) – NOT USED	◄► (Selection) ▲▼ (Change value)		0,00 sec
L36	ASR P Gain High	See Rollback control and ride comfort	◄► (Selection) ▲▼ (Change value)		30 (FAI/FAS) 10 (Encoder)
L37	ASR I Gain High	See Rollback control and ride comfort	◄► (Selection) ▲▼ (Change value)		0,1 (FAI/FAS) 0,1 (Encoder)
L38	ASR P Gain Low	See Rollback control and ride comfort	◄► (Selection) ▲▼ (Change value)		40 (FAI/FAS) 30 (Encoder)
L39	ASR I Gain Low	See Rollback control and ride comfort	◄► (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)

Cod.	Parameter	Description	Navigation	Values	Default Value
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	See Rollback control and ride comfort	◄► (Selection) ▲▼ (Change value)		10 (FAI/FAS) 10 (Encoder)
L69	ULC ASR I gain	See Rollback control and ride comfort	◄► (Selection) ▲▼ (Change value)		0,01 (FAI/FAS) 0,01 (Encoder)
L73	APR P gain zero	See Rollback control and ride comfort	◄► (Selection) ▲▼ (Change value)		0 (FAI/FAS) 0 (Encoder)
L74	APR D Gain		◄► (Selection) ▲▼ (Change value)		0.0
L75	Filter Time		◄► (Selection) ▲▼ (Change value)		0.000 sec
L76	ACR P constant		◄► (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
L134	Backlash time	Backlash time (When L65 = 2)	◄► (Selection) ▲▼ (Change value)	0,00-10 sec	

Cod.	Parameter	Description	Navigation	Values	Default Value
L198	Op. set switch 1	BIT0 = It is possible to fix the carrier frequency to 16 kHz for the whole speed range in order to reduce driving noise.	◄► (Selection) ▲▼ (Change value)		0
L199	Op. set switch 2	Reserved.	◄► (Selection) ▲▼ (Change value)		0

“Rec Parameters” Menu

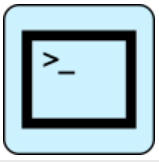
Note: data saving is not required only for emulation of PBV3 controllers.

	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < Rec Parameters >

Reference table

Floor 0 12:30:56 < Rec Parameters >	----- ENTER ----->	Floor 0 12:30:56 < Rec Parameters > Save Parameters	----- ENTER -----> <----- ESC ------	Floor 0 12:30:56 < Rec Parameters > Save Parameters Are you sure ?
		▲ ▼		ENTER ↓
				Floor 0 12:30:56 < Rec Parameters > Save Parameters End reg.
		Floor 0Floor 0 12:30:56 < Rec Parameters > Reset Parameters	----- ENTER -----> <----- ESC ------	Floor 0Floor 0 12:30:56 < Rec Parameters > Reset Parameters Are you sure ?
				ENTER ↓
				Floor 0Floor 0 12:30:56 < Rec Parameters > Reset Parameters End reg.

“Clock” Menu

	----->>>>>		----->>>>>	
OR				
	----->>>>>		----->>>>>	Floor 0 - 12:30:56 < Clock >

- Da = Day
- Mo = Month
- Yr = Year
- D = Weekday (1=Mon)
- Hr = Hours
- Mn = Minutes

WARNING: In case of system shutdown, the time is saved by means of a Super Capacitor (for up to 5 days without power supply).

VVVF Frenic Lift Setting

Motor Tuning (VVVF Controller)

In the case of a Controller equipped with electric inverter Fuji FRENIC Lift, the self-learning procedure of motor data (“Tuning”) must be performed. This must be carried out 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. The procedure is different according to the type of Motor.

– Tuning procedure –

Select “Installation menu”

In the screen will appear:

Confirm by pressing OK and select “Machine / VVVF Autotuning:

Insert the requested parameter and move on to the next one by pressing the Right Arrow.

The list of VVVF Parameter is:

Parameter	Description	Gearless Motor	Geared Motor
P01 - Motor Poles	Insert Motor Pole's number	X	X
F03 – Maximum Speed	Insert max motor Speed [RPM] (Motor Plate)	X	X
F04 – Rated Current	Insert Rated motor speed [Hz] (Motor Plate)	X	X
F05 – Rated Voltage	Insert Rated motor voltage [V] (Motor Plate)	X	X
P08 – M-%X	Insert value 10 %	X	
P07 – M-%R1	Insert value 5 %	X	
P06 – M-No Load Curr.	Insert value 0 [A]	X	
P03 – Motor Rated Current	Insert rated current [A] (Motor Plate)	X	

Parameter	Description	Gearless Motor	Geared Motor
P02 – Motor Rated Cap	Insert rated power [kW] (Motor Plate)	X	
C11 – High Speed	Insert high speed [Hz] (Motor Plate)	X	
C10 – Middle Speed	Insert middle speed [Hz] (Inspection speed)	X	
C07 – Creep Speed	Insert low speed [Hz] (10% of C11)	X	
L01 – PG select	Set motor Encoder type: (VVVF Optional Boards)	X	X (*)
L02 – PG resolution	Insert Motor Encoder Resolution	X	X (*)

(*) Closed loop only

Last parameter is different according Motor Type:

GEARLESS motor:

Select 4 : Static Tuning
Select 5 : Dynamic tuning (only if free from ropes)

GEARED motor:

Select 3

In case of any problem go to the Fault menu to identify the Problem (§ Motor Tuning Errors)

At the end of the procedure, press the up/down button and check the correct elevator 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 (4/7) is positive (+) during upward movement and negative (-) during downward movement when the FWD (1/7) command is activated. If not, invert a channel in the motor encoder of the VVVF.

VVVF Optional Boards

L01	Encoder specifications		Encoder board	Motor
	A/B Output channel	Absolute Signal		
0	Open collector / Push-Pull	=	OPC-PG3	IM
	Line Driver	=	OPC-PMPG	
1	Open collector / Push-Pull	Z	OPC-PG3	IM & PMSM
4	Sine differential (1Vpp)	EnDat2.1 (ECN1313)	OPC-PS or OPC-PSH	PMSM
5	Sine differential (1Vpp)	ERN1387	OPC-LM1-PR	PMSM
6	Sine differential (1Vpp)	BISS-C (Sendix 5873)	OPC-PS or OPC-PSH	PMSM
7	Sine differential (1Vpp)	SSI (ECN1313)	OPC-PS or OPC-PSH	PMSM
8	Sine differential (1Vpp)	Hiperface (SRS50)	OPC-PSH	PMSM

VVVF Fault table

Code	Description	
OC1	Overcurrent during acceleration	The inverter momentary output current exceeded the overcurrent level.
OC2	Overcurrent during deceleration	
OC3	Overcurrent during running at a constant speed	
EF	Ground fault	Zero-phase current caused by ground fault in the output circuit has exceeded the allowable limit. (30kW or above)
OV1	Overvoltage during acceleration	The DC link bus voltage exceeded the overvoltage detection level.
OV2	Overvoltage during deceleration	
OV3	Overvoltage during running at a constant speed	
LV	Undervoltage	The DC link bus voltage dropped below the undervolt detection level. age
Lin *	Input phase loss	An input phase loss occurred or the Interphase voltage unbalance rate was large.
OH1	Heat sink overheat	The temperature around the heat sink has risen abnormally.

Code	Description	
OH2	External alarm	The external alarm THR was entered. (when the THR "Enable external alarm trip" has been assigned to any digital input terminal)
OH3	Inverter internal overheat	The temperature inside the inverter has exceeded the allowable limit.
OH4	Motor protection (PTC/NTC thermistor)	The temperature of the motor has risen abnormally.
DBH	Braking register overheat	The temperature of the Braking resistor has exceede allowable limit.
OL1	Overload of motor 1	The electronic thermal protection for motor overload detection was activated.
OLU	Inverter overload	The temperature inside the IGBT has risen abnormally.
OS	Over speed prevention	The motor speed is higher than maximum speed * L32.
PG	Broken wiring in the PG	The motor speed is higher than maximum speed * L32.
nrb	NTC wire break error	Detected a wire break in the NTC thermistor detection circuit.
Er1	Memory error	An error has occurred when writing data to the inverter memory.
Er2	Keypad communications error	A communications error has occurred between the key and the inverter. pad
Er3	CPU error	A CPU error or LSI error has occurred.
Er4	Option communications error	A communications error has occurred between the connected option card and the inverter.
Er5	Option error	An error was detected by the connected option card (not by the inverter).
Er6	Operation protection	An incorrect operation was attempted.
Er7	Tuning error	Auto-tuning or Magnetic Pole Position Offset tuning has failed, resulting in abnormal tuning results.
Er8	RS-485 communications error (port 1)	A communications error has occurred during RS-485 communication.
ErP	RS-485 communications error (port 2)	
OPL	Output phase loss	An output phase loss occurred.
ErE	Speed mismatching	The reference speed and the detection speed are different.
ErF	Data saving error during undervoltage	When the undervoltage protection was activated, the inverter failed to save data, showing this error.
ErH	Hardware error	The LSI on the power printed circuit board has malfunctioned due to noise, etc.
Ert	CAN open communication error	A communications error has occurred during CANopen communication.
ECF	EN1, EN2 terminals circuit error	An abnormality was diagnosed in EN1, EN2 terminals circuit.
Ot	Over torque current	Reference torque current became excessive.
DBA	Braking transistor broken	Detection of an abnormality in the brake transistor

Code	Description	
bbE	Brake confirmation	The inverter detects mismatch between the brake control signal and brake detection (feedback) signal.
Eo	EN1, EN2 terminals chattering	Detected collision between ENOFF output and EN1/EN2 terminals. input
ECL	Customizable logic error	A customizable logic configuration error has caused an alarm.
OH6	Charging resistor overheat	The temperature of the charging resistor inside the has exceeded the allowable limit. inverter
rbA	Rescue by brake alarm	No movement detected during rescue operation by bra control.
tCA	Reaching maximum numbers of trip counter	The number of trip direction changes has reached the preset level.
SCA	Short-circuit control error	The inverter detects mismatch between the short-circuit control signal and short-circuit detection (feedback) signal.
LCO	Load-cell overload	Load-cell function has detected overload situation by means of preset level.

VVVF alarm subcode table

Code	Alarm name	Subcode	Description
OC1	Overcurrent during acceleration	1	Overcurrent protection (OCT interruption) - Normal overcurrent
		2	Overcurrent protection (OCL interruption) - Normal overcurrent
OC2	Overcurrent during deceleration	3	Short circuit protection - Overcurrent at start
		4	Ground fault protection - Overcurrent at start
OC3	Overcurrent during constant speed	5	Detection signal failure (FAULT signal) - Gate circuit
		11	Detection signal failure (OCT signal) - Detection circuit (PPCB)
		12	Detection signal failure (OCL signal) - Detection circuit (PPCB)
OV1	Overvoltage during acceleration	1 11	Overvoltage Protection (OVT signal) Detection signal failure (OVT signal)
OV2	Overvoltage during deceleration		
OV3	Overvoltage during constant speed		
Lin	Input phase loss	1	Rectifier diode protection level detection
		2	Continuous operation tolerance level detection
OPL	Output phase loss	1	
OH1	Cooling fin overheat	1	Cooling fin overheat (NTC2)
		3	Converter overheat (NTC4)

Code	Alarm name	Subcode	Description
		11	Thermistor disconnection (NTC2)
OH2	External fault	0	Protection through THR
OH3	Overheat inside inverter	0	Internal air overheat (NTC1)
OH4	Motor Protection (PTC thermistor)	1	PTC thermistor
		2	NTS thermistor
OH6	Charging resistor overheat	1	Charging resistor overheat Except for FRN0039LM2A-4 / FRN0045LM2A-4
		11	Thermistor disconnection (NTC3)
OL1	Motor overload	0	Current detection electronic thermal
LV	Undervoltage	1	Undervoltage is occurred during gate ON
		11	Minimum level of battery operation
dbH	DB resistor overheat	0	DB resistor overheat (F50 <-> F52)
		1	DB transistor 2sec_ON continuously (Wrong R too high)
dbA	DB transistor failure detection	0	DB transistor failure detection
Er1	Memory Error	0x0001	Alarm history destruction
		0x0002	Standard function code
		0x0004	User function code
		0x0008	Hidden function code
		0x0010	Program area error
		0x0040	Reading mismatch (retry over)
		0x0080	Writing mismatch (retry over)
		0x0100	Extended area
		0x1000	Adjustment value area
Er2	Keypad panel communication error	1	Disconnection detection
Er3	CPU error	1	CPU re-start processing
		1000	Function code checksum error (RAM error)
		0x0001	Standard function code error
		0x0002	Hidden function code (u code) error
		0x0004	Hidden function code (n code) error
		0x0008	Adjustment valve function code error
		0x0010	Extended area
		2000	Fixed-cycle error
		0x0001	L1 cycle error
		0x0004	L3 cycle error
		0x0008	L4 cycle error
		0x0020	L6 cycle error
		0x0080	LP cycle error

Code	Alarm name	Subcode	Description
		3000	Unjust cut in
		5001	Outside RST input
		7001	Stack area destruction
		9000	Software failure detection
		0x0200	Alarm QUE over
Er4	Option communication error	1	Port A communication error There is no option
		3	Port C communication error
		10	An excess of installed option There is no option
Er5	Option error	0	Option in-match
		1	Completion signal ON (There is no option)
		10	AIO PT EEPROM error (There is no option)
		26	PR-PP position information error (only OPC-PMPG+L01=2)
		27	PP position information starting error
		50	No save area
		51	Communication command error
		52	Distinction code error
		53	Check-sum error
		54	Writing error
Er6	Operation procedure error	2	Start check
		7	Multi speed assigned error
		8	Brake check (waiting time timeout)
		9	
		10	No try magnetic pole position tuning
		11	Output side contactor confirmation error
		12	Lack of rating speed
		14	Brake chack (assigned error)
		15	Short circuit (SCC assigned error)
		16	Rescue error

Code	Alarm name	Subcode	Description
Er7	At induction motor tuning	1	Multi speed assigned error
		2	R1 phase error
		3	%X error
		6	Output current error
		7	Drive command OFF
		9	BX terminal ON

Code	Alarm name	Subcode	Description
		11	Undervoltage (LV) detection
		15	Alarm occur
		16	Change of drive command
		19	Others
		21	I0 error
		24	EN terminal
		25	DRS terminal
Er7	At current detection gain tuning	32	EEPROM writing error
		37	STOP key_ON
Er7	At magnetic pole position offset tuning	51	Tuning without motor
		52	Magnetic pole position tuning result error
		53	F42 setting miss
		54	L04 mismatch
Er7	At current detection offset tuning	61	EEPROM writing error
		62	STOP key_ON
Er7	Synchronous motor tuning error	5058	Amature resistance error (lower limit)
		5059	Amature resistance error (upper limit)
		5060	Ld error (lower limit)
		5061	Ld error (upper limit)
		5062	Lq error (lower limit)
		5063	Lq error (upper limit)
		5080	ACR gain error (upper limit)
		5081	ACR gain error (lower limit)
Er8	RS485 communication error	0	CH1 RS485 communication error
nrb	NTC thermistor disconnection detection	0	NTC thermistor disconnection detection
OS	Overspeed	0	Overspeed protection
pg	PG error	1	
		2	
		50	Option – A/B phase (Sin) disconnection detection
		51	Option – C/D phase (Sin) disconnection detection
		52	Option – R phase (Sin) disconnection detection
		53	Option – A/B phase (pulse) disconnection detection
		54	Option – Z phase (pulse) disconnection detection
		55	Option – U/V/W phase (pulse) disconnection detection
		60	Option – watchdog time out
		61	Option – serial encoder response time out
		62	Option – CPU communiction CRC error

Code	Alarm name	Subcode	Description
		63	Option – CPU out of communciation error
		70	Option – ABZ output error
		71	Option – serial encoder each alarm
		72	Option - memory access error
		73	Option – culcuration error
		80	Option – PG card setting error
ErE	Speed mismatch (speed deviation excess)	1	The marks of speed command and speed detection differ
		3	Speed deviation exces (speed detection > speed command)
		5	Speed detection continues being 0
		7	Speed deviation exces (speed detection < speed command)
ErF	Undervoltage data save error	0	Undervoltage data save error
ErP	RS485 2ch communication error	0	CH2 RS485 communication error
Ert	CAN communication error	1	Bus-off
		2	Guarding timeout detection
OLU	Inverter overload	1	IGBT protection
		2	Inverter thermal Only FRN0060LM2A-4 <-> FRN0091LM2A-4
		10	ΔTj-c ≥ 60 °C
ECF	EN circuit error	10	EN input error (_EN1A=L, EN2A=L)
		11	EN input error (_EN1A=H, EN2A=H)
		5000	Diagnosis circuit error
		5010	P5S power supply failure
		5020	CPU diagnosis: Port setting diagnosis
		5030	CPU diagnosis: ROM diagnosis
		5040	CPU diagnosis: RAM diagnosis
		5050	CPU diagnosis: sequence monitor
ECL	Customization logic malfunction	0	Customization logic error
Err	Simulated failure	9998	Simulated failure
Ot	Torque excessive error	0	Torque excessive error
bbE	Mechanical brake error	11	BRAKE 1 error
		12	BRAKE 2 error
Eo	EN terminal error	0	EN terminal error
rbA	Rescue speed detection error	0	Rescue speed detection error
tCA	Direction switch limit arrival	0	Direction switch limit arrival
SCA	Short circuit error	0	Short circuit error

Code	Alarm name	Subcode	Description
Lco	Load cell error	0	Load cell error
EF	Ground protection	0	Three phase current Only FRN0060LM2A-4 <-> FRN0091LM2A-4

Motor Tuning Errors

GEARED motor

In old motors the auto-tuning 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.

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

Typical values of P06 are between 30% and 70% of P03.

$$P12 = F.r. * \left(\frac{S.s. - S.r.}{S.s.}\right) * 0,7$$

F.r. = Frequency rated
S.s. = Speed synchronous
S.r. = Speed rated

Acceptable values of P12 are between 0.5 and 5 Hz.
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).

GEARLESS motor

In case of a problem “Error 52 = er7 Error VVVF” will show 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 point 14.
After the poletuning procedure try to move the elevator in maintenance in up and down for some motor revolutions. 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 changing the VVVF’s H190 parameter, clear the errors in the “Fault” menu and repeat the poletuning procedure.

Instructions for Software update

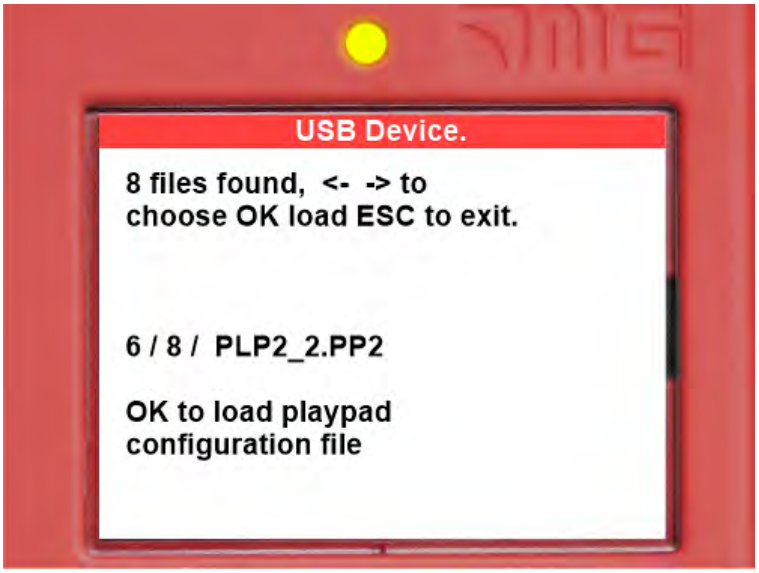
PlayPad (PLP) SW update procedure

SW update file for PLP is:
FileName.PP2

Insert the USB device into the slot, waiting for the message as in the Figure 1.

(Figure 1)

Select “Put a file into PlayPad” (default), press OK button. Window changes into Figure 2.

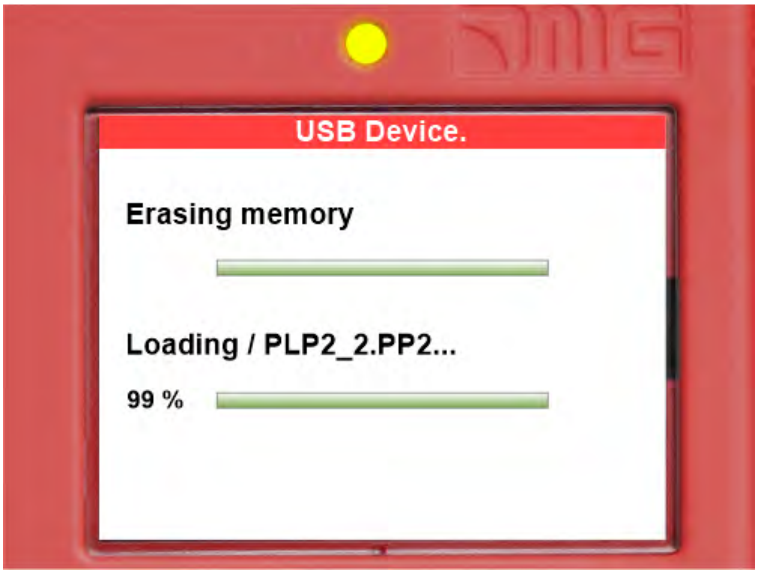


(Figure 2)

Follow the instruction on screen and select the .PP2 file (in the example PLP2_2.PP2) and press OK. Window changes into Figure 3

(Figure 3)

Press OK to confirm the update process. Window changes into Figure 4



(Figure 4)

At the end of Procedure you have to remove the USB (Figure 5 or Figure 6 will be appear).

(Figure 5)

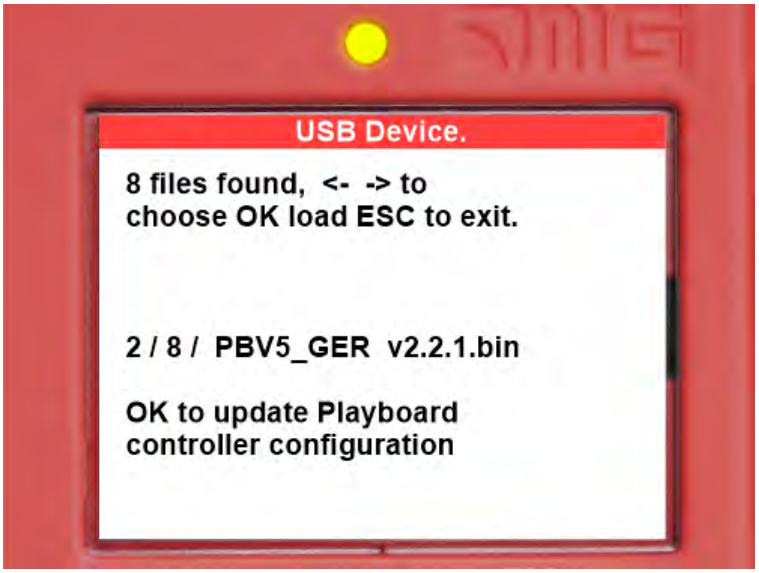
(Figure 6)

Devices SW update procedure

Insert the USB device into the slot, waiting for the message as in the Figure 7 and Select “Put a file into PlayPad” (default) and press OK button.

(Figure 7)

Window changes into Figure 8.



(Figure 8)

Follow the instruction on screen and select the *.bin file and press OK. Window changes into Figure 9.

(Figure 9)

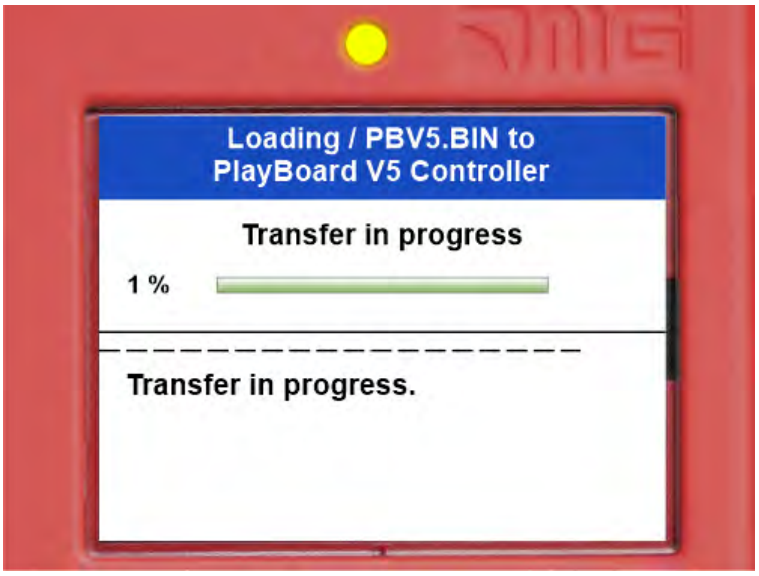
Press OK to confirm the update process. Window changes into Figure 10, wait for a while.

(Figure 10)

Select the Device (or device group) to update and press OK (Figure 11)

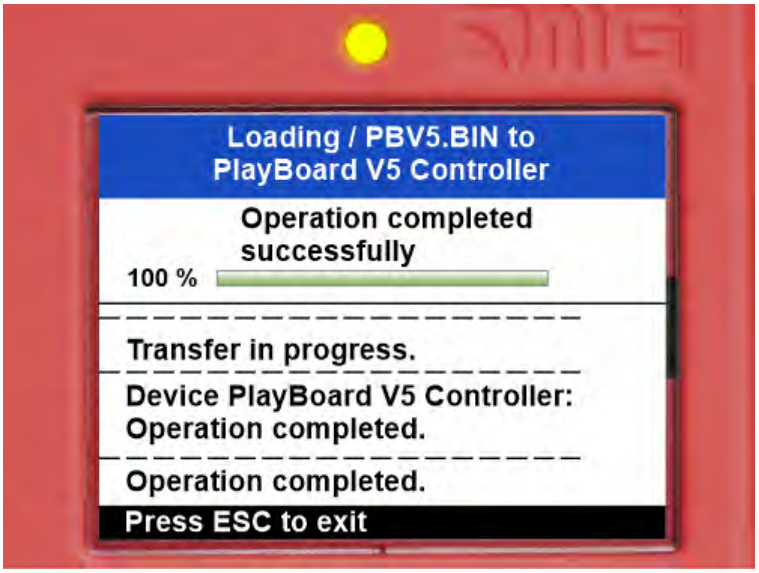
(Figure 11)

Window changes into Figure 12: wait until the process is completed. If you need to press any arrow button to switch on the backlight.



(Figure 12)

When the process ends (Figure 13) press Esc button until the windowshows “Please remove USB Device” (Figure 14).



(Figure 13)

(Figure 14)

Device	Time needed for updating SW
Mother board (Playboard Controller)	3 minutes
PlayPad 4.0	1 minute
TOC Board (Car TOP Interface)	1 minute
DMCPIT Board (Car COP Interface)	1 minute
Serial Pushbittons Intarfaces (BDU Devices)	30 seconds
Expansion boards (PIT8 / 16RL / 16IO)	30 seconds

(Table III.1 – Timing for SW update)

Insights

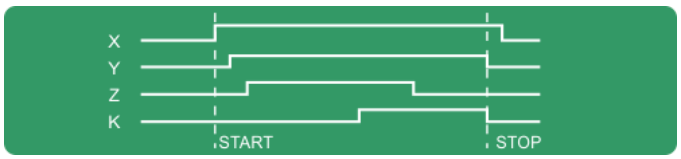
Quick installation guide

Troubleshooting

Fire operation programming procedure

Test and measurements

Multiplex parameters setting



Timing diagrams

Pitagora 4.0 – Car / Top of car

Contents

Door command

The door command board can command either one or two doors with alternative, selective or passage through opening. Output and inputs are available on the jst connectors on the TOC board and on APPO board (in the controller).

The doors can be automatic, semi-automatic or manual:

DOOR A

- *ROA output (relay open door A) open collector max 24V 100mA*
- *RFA output (relay closing door A) open collector max 24V 100mA*
- *Input BRA (A oor opening button relay) closed to GND (NA) I = 5mA*
- *Input CEA (A door photocell) closed to GND (NA) I = 5mA*
- *Input FOA (A door opening limit) closed to GND (NA) I = 5mA*
- *Input FFA (A door closing limit) closed to GND (NA) I = 5mA*

DOOR B

- *ROB output (relay opening door B) open collector max 24V 100mA*
- *RFB output (relay closure door B) open collector max 24V 100mA*
- *Input BRB (B door opening button relay) closing to GND (NA) I = 5mA*
- *Input CEB (B door photocell) closing to GND (NA) I = 5mA*
- *Input FOB (B door opening limit) closing to GND (NA) I = 5mA*
- *Input FFB (B door closing limit) closing to GND (NA) I = 5mA*

Weight load control

When COM input is active, floor reservation calls are neither recorded nor managed.

When SUR input is active the elevator car does not start and the acoustic signal in the elevator car is activated. The SUR signal is ignored while driving.

Elevator car Position / Speed Control with Motor Encoder

This control system can only be used on systems with inverter VVVF with a Gearless Motor.

Location, stop and deceleration are controlled by counting the pulses coming from the encoder of the motor. The counting of the pulses is suitably corrected (reset) by the reset signals at the top and bottom (AGB / AGH) and from the signal of door zone (ISO1).

The same J16 input connector is used to connect, with the appropriate cable, the encoder interface card, which is inside the FUJI inverter.

Parameter ”Count System” should be set as “engine encoder”. In menu choose 2048 number of pulses. Subsequently the dimensional parameters of the motor pulley and the type of pulling system should be inserted. Next the system asks to set the shaft length in order to set the correct sensitivity. Only after these steps are completed, Will it be possible to run the automatic floor levelling procedure.

Rollback control and ride comfort

When the Playboard controller is applied to installations equipped with closed loop gearless machines, comfort and precision can be optimized thus avoiding 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.

Starting phase adjustments

Adjust the following Parameters to compensate for other undesired effects.

Parameter	Description	Default		Suggested Adjustments
		Gearless	Geared	
H64	Zero speed control time	0,8	0,8	Set value between 0,7 and 0,8 then increase to soften start phase ramp Important: In “Positioning” Menu : Delay DIR-BRK <= 0,2 s Delay BRK-S > H64
L68	RBC Proportional Gain (P constant) (specifies the P constant of the Automatic Speed Regulator to be used during RBC calculation time)	1,8	10	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	0,010 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)	0,5	0	Motor overshoots: increase value by 0,50 Vibrations: decrease value by 0,50
L82	ON delay time (specifies the delay time during which the inverter main circuit is kept activated)	0,2 s	0,2 s	Larger Brakes: decrease value by 0,1 Smaller brakes: increase value by 0,1

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.

High speed phase adjustments

High speed “P” gains and “I” time 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
		Gearless	Geared	
L24	“S” Curve setting 6	25$	25%	Speed fluctuations: increase value by 5
L36	“P” Gain constant at high speed	2	10	Speed fluctuations increase value by 0,25 Vibrations: decrease value by 0,25
L37	“I” Time I constant at high speed	0,100 s	0,100 s	Speed fluctuations decrease 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. Furthermore, 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, providing a faster response. On the contrary, setting a large “I” Time constant lengthens it, having less effect on the ASR. This may help in case of resonance of machinery generating abnormal mechanical noise from the motor or gears.

Stopping phase adjustments

Use the constants of the gains “P” and the times “I”, at low speed, to make the final adjustment for the stop phase:

Parameter	Description	Default		Suggested Adjustments
		Gearless	Geared	
E16	Deceleration time # 9 (Last deceleration ramp)	1,80 s	1,80 s	Increase value by 0,5 to soften last ramp (max suggested value: 3 sec)
H67	Stop Hold Time	1,5 s	1,5 s	Car unable to stay at floor: increase 0,25 Important: In “Positioning” Menu : Delay BRK-DIR <= 2,0 s Stopping Boost = 1% or 2%
L38	“P” Gain constant at low speed	2	10	Car unable to stay at floor: increase 0,25 Vibrations: decrease value by 0,25
L39	I” Time I constant at low speed	0,100 s	0,100 s	Car unable to stay at floor: decrease value by 0,01 Vibrations: increase value by 0,01

Parameter	Description	Default		Suggested Adjustments
L83	Brake Control (OFF delay time) (specifies the delay time between stop speed and deactivation of the brake signal)	0,3 s	0,1 s	Larger Brakes: decrease value by 0,1 Smaller brakes: increase value by 0,1

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.

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 elevator 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

UCM circuit

Connection to the circuit for UCM solution.

The following table shows how to set the UCM Monitor parameter according to the device or circuit for detecting uncontrolled movements.

For Hydraulic installations the parameter is used for:
-) Central unit / valves configuration (see table 2)

-) UCM solution managed by controller

Table 1 – Monitor UCM

Monitor UCM		Device / Hydraulic Control Unit	UCM Solution	Actuator
Type	Time			
No		Not present	No	-
1	1,5 s	Overspeed Governor OSG A3 Montanari RQ-AXXX	Yes	Safety Gear
2	1,5 s	Controller = Brake monitor Movement with door open available only with Encoder ELGO LIMAX 33CP	Yes	A3 Certified Brakes
3...17		Do not use		
18	1,5 s	Brake monitor for Door opening enable (door opens only if brake is fall)	No	
19	1,5 s	DMG UCM Circuit 4.0 (no brake monitor) Only for temporarly disabling of Brake switches monitor	No	
20	1,5 s	DMG UCM Circuit 4.0 and Brake monitor	Yes	A3 Certified Brakes
21	1,5 s	Overspeed Governor OSG A3 Montanari RQ-AXXX Controller = Brake monitor	Yes	Safety Gear
22...29		Do not use		
30	1,5 s	Hydro Central Unit with Electromechanical valves (A3 second down valve is optional, no test performed)	Without UCM	
31	1,5 s	Hydro Central Unit with Electromechanical valves (A3 second down valve is optional, no test performed)	Yes = OSG A3	Safety Gear
32	1,5 s	Hydro Central Unit with Electromechanical valves (A3 second down valve is optional, no test performed)	Yes = UCM 4.0	Two valves
33	1,5 s	Hydro Central Unit with Electromechanical valves (A3 second down valve is optional, no test performed)		
34	1,5 s	Hydro Central Unit with Electromechanical valves (A3 second down valve is optional, no test performed)		
35	1,5 s	Hydro Central Unit with Electromechanical valves + A3 valve (test)	Without UCM	
36	1,5 s	Hydro Central Unit with Electromechanical valves + A3 valve (test)	Yes = OSG A3	Safety Gear
37	1,5 s	Hydro Central Unit with Electromechanical valves + A3 valve (test)	Yes = UCM 4.0	Two valves
38	1,5 s	Hydro Central Unit with Electromechanical valves + A3 valve (test)		
39	1,5 s	Hydro Central Unit with Electromechanical valves + A3 valve (test)		
40	1,5 s	GMV model NGV Central Unit	Without UCM	

Monitor UCM		Device / Hydraulic Control Unit	UCM Solution	Actuator
41	1,5 s	GMV model NGV Central Unit	Yes = OSG A3	Safety Gear
42	1,5 s	GMV model NGV Central Unit	Yes = UCM 4.0	Two valves
43	1,5 s	GMV model NGV Central Unit		
44	1,5 s	GMV model NGV Central Unit		
45	1,5 s	GMV model NGV A3 Central Unit (RDY – RUN signals monitor)	Without UCM	
46	1,5 s	GMV model NGV A3 Central Unit (RDY – RUN signals monitor)	Yes = OSG A3	Safety Gear
47	1,5 s	GMV model NGV A3 Central Unit (RDY – RUN signals monitor)	Yes = UCM 4.0	Two valves
48	1,5 s	GMV model NGV A3 Central Unit (RDY – RUN signals monitor)		
49	1,5 s	GMV model NGV A3 Central Unit (RDY – RUN signals monitor)		
50	1,5 s	Bucher Electronic unit LRV + NTA-2 (A3 second down valve is optional, no test performed)	Without UCM	
51	1,5 s	Bucher Electronic unit LRV + NTA-2 (A3 second down valve is optional, no test performed)	Yes = OSG A3	Safety Gear
52	1,5 s	Bucher Electronic unit LRV + NTA-2 (A3 second down valve is optional, no test performed)	Yes = UCM 4.0	Two valves
53	1,5 s	Bucher Electronic unit LRV + NTA-2 (A3 second down valve is optional, no test performed)		
54	1,5 s	Bucher Electronic unit LRV + NTA-2 (A3 second down valve is optional, no test performed)		
55	1,5 s	Bucher Electronic unit LRV + NTA-2 + DSV A3 (test)	Without UCM	
56	1,5 s	Bucher Electronic unit LRV + NTA-2 + DSV A3 (test)	Yes = OSG A3	Safety Gear
57	1,5 s	Bucher Electronic unit LRV + NTA-2 + DSV A3 (test)	Yes = UCM 4.0	Two valves
58	1,5 s	Bucher Electronic unit LRV + NTA-2 + DSV A3 (test)		
59	1,5 s	Bucher Electronic unit LRV + NTA-2 + DSV A3 (test)		
60	1,5 s	Bucher Electronic unit i-Valve / iCON-2 (SMA monitor signal)	Without UCM	
61	1,5 s	Bucher Electronic unit i-Valve / iCON-2 (SMA monitor signal)	Yes = OSG A3	Safety Gear
62	1,5 s	Bucher Electronic unit i-Valve / iCON-2 (SMA monitor signal)	Yes = UCM 4.0	Two valves
63	1,5 s	Bucher Electronic unit i-Valve / iCON-2 (SMA monitor signal)		
64	1,5 s	Bucher Electronic unit i-Valve / iCON-2 (SMA monitor signal)		

Monitor UCM		Device / Hydraulic Control Unit	UCM Solution	Actuator
65	1,5 s	Start Elevator unit 93/E-2DS (no test performed)	Without UCM	
66	1,5 s	Start Elevator unit 93/E-2DS (no test performed)	Yes = OSG A3	Safety Gear
67	1,5 s	Start Elevator unit 93/E-2DS (no test performed)	Yes = UCM 4.0	Two valves
68	1,5 s	Start Elevator unit 93/E-2DS (no test performed)		
69	1,5 s	Start Elevator unit 93/E-2DS (no test performed)		
70	1,5 s	Start Elevator unit 93/E-2DS (test)	Without UCM	
71	1,5 s	Start Elevator unit 93/E-2DS (test)	Yes = OSG A3	Safety Gear
72	1,5 s	Start Elevator unit 93/E-2DS (test)	Yes = UCM 4.0	Two valves
73	1,5 s	Start Elevator unit 93/E-2DS (test)		
74	1,5 s	Start Elevator unit 93/E-2DS (test)		

Table 2 – Hydraulic Central unit managed

Control Unit	A3 valve	Valves command	Monitor UCM	Note
Generic 2 or 3 valves BLAIN EV100 GMV T3010 MORIS CM 320	No	CV1 = UP CV2 = DOWN CV3 = HIGH SPEED	30 ... 34	CV4 can be used instead of CV1 as UP valve in order to exclude Soft Stop (valve energized also after motor stops)
Generic 2 or 3 valves BLAIN EV100 GMV T3010 MORIS CM 320	Yes	CV1 = UP CV2 = DOWN CV3 = HIGH SPEED CV5 = A3 VALVE	30 ... 34 (*) 35 ... 39 (**)	CV4 can be used instead of CV1 as UP valve in order to exclude Soft Stop (valve energized also after motor stops)
GMV NGV	No	CV1 = UP CV2 = DOWN CV3 = HIGH SPEED CV4 = MIDDLE SPEED CV5 = INSPECTION	40 ... 44	

Control Unit	A3 valve	Valves command	Monitor UCM	Note
GMV NGV A3	No	CV1 = UP CV2 = DOWN CV3 = HIGH SPEED CV4 = MIDDLE SPEED CV5 = INSPECTION	45 ... 49	Monitor signals RDY / RUN
Bucher LRV Bucher NTA-2	No	CV1 = UP CV2 = DOWN	50 ... 54	Need one 16RL board configured as 1 wire per floor HYD
Bucher LRV Bucher NTA-2 Bucher NTA-2 + DSV A3	Yes	CV1 = UP CV2 = DOWN CV5 = A3 VALVE	50 ... 54 (*) 55 ... 59 (**)	Need one 16RL board configured as 1 wire per floor HYD
Bucher iCON-2 Bucher i-Valve		CV1 = UP CV2 = DOWN	60 ... 64	Need one 16RL board configured as 1 wire per floor HYD
Start Elevator 93/E-2DS		CV1 = UP (not used) CV2 = DOWN CV3 = HIGH SPEED CV4 = SOFT STOP CV5 = A3 VALVE + UP START	60 ... 69 (*)	SOFT STOP Option
Start Elevator 93/E-2DS	Yes	CV1 = UP (not used) CV2 = DOWN CV3 = HIGH SPEED CV4 = SOFT STOP CV5 = A3 VALVE + UP START	70 ... 74 (**)	SOFT STOP Option

(*) = No test 2 valves
(**) = With 2 valves test

The following table indicates how to set the UCM parameter according to the type of system, including the solutions adopted for protection in systems with reduced headroom and / or pit spaces.

The use of monostable contacts involves the presence of a bistable circuit in the switchboard.

UCM		Installation Type	Reduced		Door Contacts	
Type	Time		PIT	HEAD	Monostable	Bistable
No		EN 81.1 / EN 81.2				
1	1,5 s	EN 81.1 / EN 81.2 with Bypass door circuit				
2 ... 13		Not use				
14	1,5 s	EN 81.20 with monostable contacts No protection in head. Custom solution with risk analisys		X	X(*)	
15	1,5 s	EN 81.20 with monostable contacts Manual Protection Device in PIT	X		X(*)	
16	1,5 s	EN 81.20 with monostable contacts Manual Protection Device in PIT (under the cabine) and No protection in head. Custom solution with risk analisys	X	X		
17	1,5 s	EN 81.20 / 21 with bistable contacts No protection in head. Custom solution with risk analisys		X	X(*)	X
18	1,5 s	EN 81.20 / 21 with bistable contacts Manual Protection Device in PIT	X			X(*)
19	1,5 s	EN 81.20 / 21 with bistable contacts Manual Protection Device in PIT (under the cabine) and No protection in head. Custom solution with risk analisys	X	X		X
20	1,5 s	EN 81.20 with monostable contacts Pit Access control			X(*)	
21	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device ELGO + OSG A3 (type 1)		X	X(*)	X
22	1,5 s	EN 81.20 / 21 with bistable contacts Manual Protection Device in PIT		X	X(*)	X
23	1,5 s	EN 81.20 / 21 with bistable contacts Manual Protection Device in PIT	X			X(*)
24	1,5 s	EN 81.20 / 21 with bistable contacts Manual Protection Device in PIT	X	X		X
25	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device SHI Technolift		X	X(*)	X
26	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device SHI Technolift	X			X(*)
27	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device SHI Technolift	X	X		X
28	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device OSG A3 Montanari		X	X(*)	X
29	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device OSG A3 Montanari	X			X(*)
30	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device OSG A3 Montanari	X	X		X

UCM		Installation Type	Reduced		Door Contacts	
31	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device ELGO + OSG A3 (type 2)	X	X		X
32	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device AMI 100 CMF		X	X(*)	X
33	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device AMI 100 CMF	X			X(*)
34	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device AMI 100 CMF	X	X		X
35	1,5 s	EN 81.20 / 21 with monostable contacts Manual Protection Device in PIT		X	X	
36	1,5 s	EN 81.20 / 21 with monostable contacts Manual Protection Device in PIT	X		X(*)	
37	1,5 s	EN 81.20 / 21 with monostable contacts Manual Protection Device in PIT	X	X	X	
38	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device SHI Technolift		X	X	
39	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device SHI Technolift	X		X(*)	
40	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device SHI Technolift	X	X	X	
41	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device OSG A3 Montanari		X	X	
42	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device OSG A3 Montanari	X		X(*)	
43	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device OSG A3 Montanari	X	X	X	
44	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device AMI 100 CMF		X	X	
45	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device AMI 100 CMF	X		X(*)	
46	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device AMI 100 CMF	X	X	X	
47	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device SDH Technolift		X	X(*)	X
48	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device SDP Technolift	X			X(*)
49	1,5 s	EN 81.20 / 21 with bistable contacts Protection Device SDH + SDP Technolift	X	X		X
50	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device SDH Technolift		X	X	
51	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device SDP Technolift	X		X(*)	

UCM		Installation Type	Reduced		Door Contacts	
52	1,5 s	EN 81.20 / 21 with monostable contacts Protection Device SDH + SDP Technolift	X	X	X	

X(*) = Means that contact is needed only at the lowest floor door.

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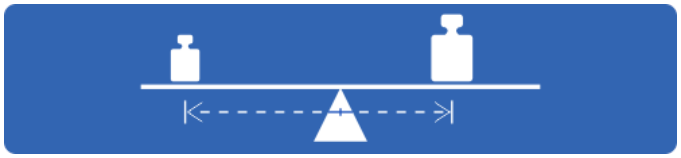

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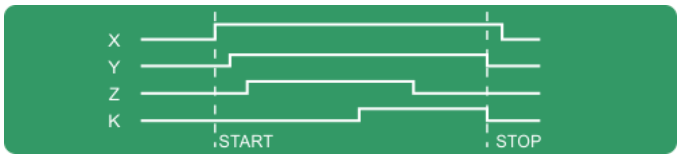
Multiplex parameters setting



Timing diagrams

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Updated on 17 Febbraio 2022

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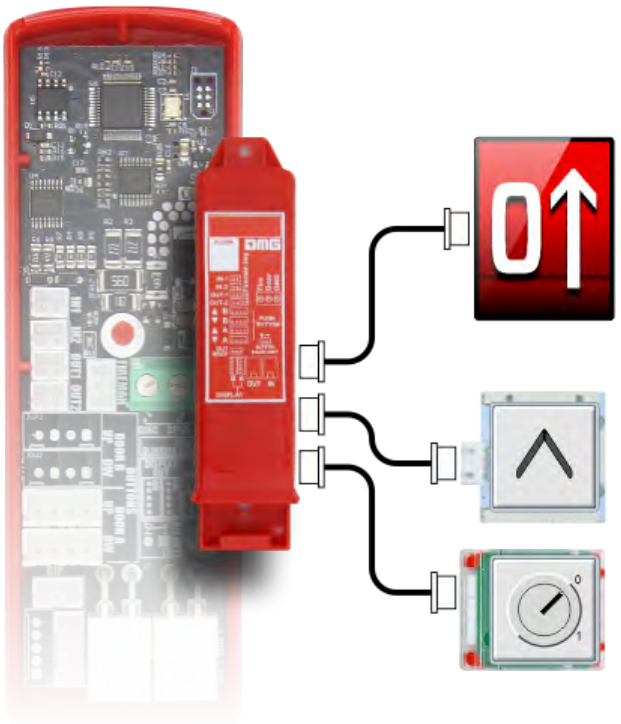


Learning procedure of floors

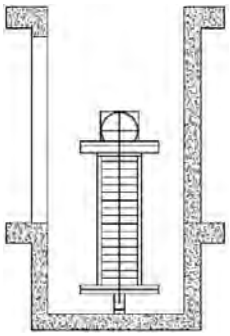
If the Controller is equipped with Absolute Encoder or DMG Encoder or Motor Encoder it is possible to take advantage of the floor position learning feature, which allows for a faster system configuration and fine tuning. The procedure is different according to the type of encoder, as described in following sections:

ELGO LIMAX 33CP: Manual Teach Procedure

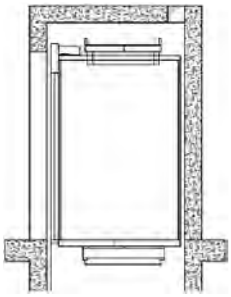
If in the installation there are not enough clearance (Reduced Head) it is recommended to make the Manual Teach from outside the lift shaft (at least the first 3 steps): In this case you can use the Inspection BOX inside controller and after the Top of ar Inspection BOX.

The procedure must be done before putting the system in Normal mode.

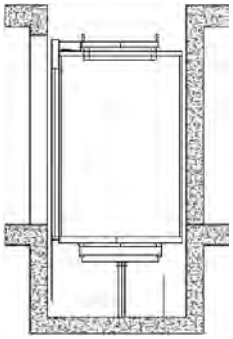
To start the procedure the Lift must be in Temporary operation. Until the end of the Manual Teach Procedure the Safety contacts are connected on the safety chain but are not yet operative (Final limit switch, Inspection limit switch, OSG, eSGC) because the ELGO doesn't know the real position of the limit points of the shaft. The only control based on ELGO Device is Teach over speed (0,4 m/s), so if cabinspeed is higher than 0.4 m/s, the ELGO opens OC contact (and closes the OC contact after the Cabin is stationary).



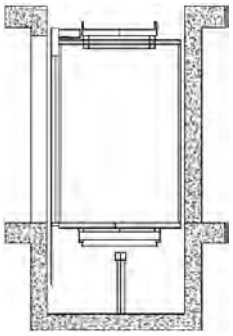
1) – Put the elevator car in the highest position (counterweight on buffers).
2) – Press simultaneously the UP and DOWN button of the Inspection BOX 3 times to put the ELGO device in Teach Mode. On the playpad is showing a WAIT blinking message (in case of problem procedure quits with a Fault ELGO, see Troubleshooting).
ELGO device switch on led MODE and starts to give acoustic feedback (one beep every 2 seconds). This acoustic signal will be present throughout the Manual Teach Procedure. On the playpad is showing a "TOP" blinking message.



3) – Press again simultaneously the UP and DOWN button of the Inspection BOX 3 times to record inside ELGO the highest point of the Shaft. This point will be the reference point for Top limits (Top limit switch, Top inspection limit, TOP ETSL control, etc.).
The ELGO device gives a long acoustic feedback to confirm the Top limit data has been recorded.
On the playpad is showing a "Floor n" blinking message (n is the floor you are going to record).
4) – Move the Cabin up to the highest floor.
Press simultaneously the UP and DOWN buttons of the Inspection BOX 3 times to record inside the ELGO the floor position.
The ELGO device gives a short acoustic feedback to confirm the floor data has been recorded.
On the playpad is showing a "Floor n-1" blinking message (n-1 is the next floor you are going to record).



5) – Move the Cabin Downward until the next floor.
Press simultaneously the UP and DOWN button of the Inspection BOX 3 times to record inside the ELGO the floor position.
The ELGO device gives a short acoustic feedback to confirm the floor data has been recorded.
6) – Repeat the previous point until the lowest floor is reached.
7) – After recording of the Bottom floor position on the playpad is showing a “BOTTOM” blinking message, move the Cabin to the lowest point of the shaft (cabin on the buffers).
Press simultaneously the UP and DOWN button of the Inspection BOX 3 times to record inside ELGO the lowest position. This point is the origin of Magnetic band (0 mm showed) and will be the reference point for Bottom limits (Bottom limit switch, Bottom inspection limit, Bottom ETSL control, etc.).
ELGO device gives a long acoustic feedback to confirm the record of data.
In this moment controller automatically records:
• *Position of acquired floors;*
• *Door zone position, used by the controller to enable door contacts bypass (pre opening / re levelling).*
• *Deceleration distance, according to the lift speed.*



On the playpad is showing a “/\” blinking message: Move the lift up to the bottom floor position. The Controller will put the ELGO in Normal Mode. (not possible before because the ELGO would be on the limits opening OC and locking the cabin).
On the playpad is showing a “WAIT” blinking message for 10 seconds, wait until will be showed Floor 0.
The ELGO device stops the acoustic beep and led MODE starts blinking (1 blink per second).
Now the ELGO Device is operative for safety contacts:
• *Electronic Safety Gear (if present)*
• *Electronic OSG.*
• *Final limit switches.*
• *Inspection limit switches are not yet managed because the lift is in Temporary mode*.

Before the normal operation mode, it is mandatory to execute an automatic Shaft learning to set the correct Stopping distances in Upward and Downward direction for each floor.

Automatic Learning Procedure (ELGO LIMAX33-CP)

9) – The elevator must be in Temporary operation. Put the elevator on the bottom floor with half of maximum Load.

10) – Go into <Positioning> and set the Autosetting parameter to “Yes”.

EN	IT	FR	DE
Floor 0 12:30:56 <Positioning> Autosetting YES	Piano 0 12:30:56 <Conteggio> Autosetting SI	Etage 0 12:30:56 <Encodeur> Autoaprentissage gaine OUI	Etage 0 12:30:56 <Kopierung> Schachtlernfahrt JA

Turn the Inspection Selector to Normal
The lift starts to move automatically:
• Upward trips with deceleration and stop at each floor.
• Downward trips with deceleration and stops at each floor.
When the Cabin comes back to the lowest floor the system is ready to pass in to Normal service.

After automatic learning procedure in <Positioning>, *Monitor Encoder* you can to set:
• Deceleration distances in Normal service for deceleration confort
– R1S (Pag. 3) upward deceleration distance
– R1D (Pag. 2) downward deceleration distance
These values are automatically set after automatic learning according the lift’s speed (see lift speed and deceleration distance).

• Stop distances in Shaft’s Inspection
– I_LIM_S upward stop distance before top floor position
– I_LIM_D downward stop distance before bottom floor position
In Reduced Head/Pit these values must be considered according the Pre-Triggered safety system.

• Stop distances in Normal service
– N_LIM_S upward stop distance after top floor position
– N_LIM_D downward stop distance after bottom floor position
These values are automatically set after automatic learning at a distance equal to 30 mm from extreme floors (in case of less distance from reference points it is considered the middle point between extreme floor and extreme reference positions).

• ELGO+eSGC pre-Trigger position
– TRIPS distance from top Reference position where eSGC electric command force the cabin to stop (only for Reduced Head lift).
– TRIPD distance from bottom Reference position where eSGC electric command force the cabin to stop (only for Reduced Pit installation)
These values are Read Only values and are greater than 0 mm only if ELGO is part of the Safety pre.-Triggered system (togheter with electric Safety Gear / Overspeed Governor).

DMG Encoder or Motor Encoder: Automatic Learning Procedure of floors

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 the

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 distance when downward); if necessary, in the “positioning” menu set parameter Positioning system from clockwise to counterclockwise (or vice versa) and save the new setting.

EN	IT	FR	DE
Floor 0 12:30:56 <Positioning> Positioning system Encoder clockwise	Piano 0 12:30:56 <Conteggio> Sistema Conteggio Encoder orario	Etage 0 12:30:56 <Encodeur> Selection Encodeur montee rotation a droit	Etage 0 12:30:56 <Kopierung> Typ Encoder cw

3) – Check the correct reading of ZP (door zone) input (ZP 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 must be open when in deceleration limit positions)
5) – Make sure the cabin is at the bottom floor (AGB open, 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 number of floor, 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 number of floor, then press “Yes” to start the procedure.

EN	IT	FR	DE
Floor 0 12:30:56 <Positioning> Autosetting YES	Piano 0 12:30:56 <Conteggio> Autosetting SI	Etage 0 12:30:56 <Encodeur> Autoaprentissage gaine OUI	Etage 0 12:30:56 <Kopierung> Schachtlernfahrt JA

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

The system performs the following automatic procedure:
• Moving up, until the signal ZP of the bottom floor is deactivated
• Moving down, until the signal ZP of the bottom floor is activated
• Moving up at high 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 in 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.
• Moving down at high 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.
• Moving up slowing down and stoping at each floor (at ZP magnet level)
• Moving down slowing down and stoping 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.*

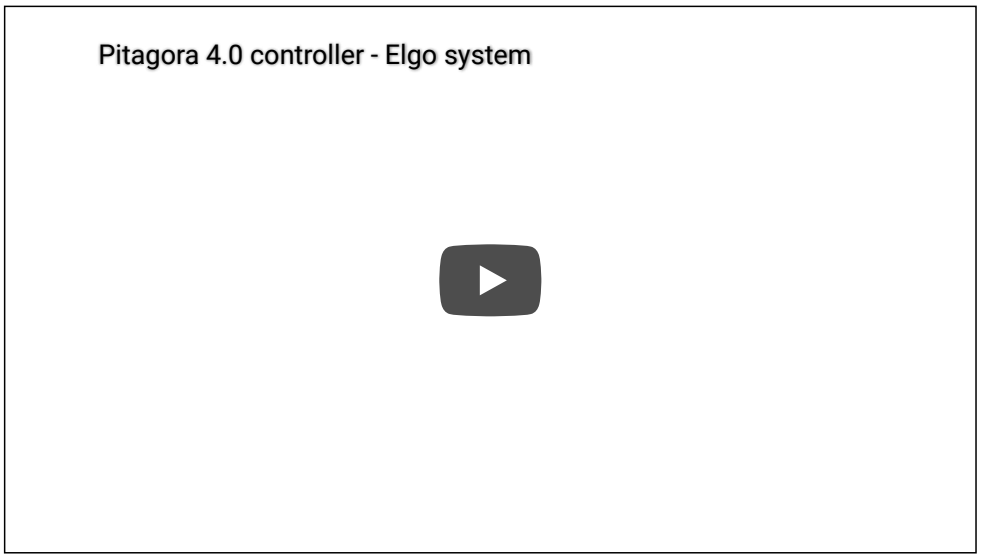
After automatic learning procedure in <Positioning>, Monitor Encoder check if AGB/AGH distances are enough for the lift speed. Is it possible to increase/decrease deceleration distances in Normal service R1S and R1D without needed to repeat Automatic learning Procedure.

For AGB/AGH positions and Deceleration distances use table according the lift's speed.

In systems where the minimum required dimensions in the top and bottom of the shaft are guaranteed according to the requirements of the regulation EN 81, it is possible use two parameters to stop the lift in Inspection.
In <Positioning>, *Monitor Encoder*
• I_LIM_S upward stop distance before top floor position
• I_LIM_D downward stop distance before bottom floor position
These stopping distances are valid for Inspection from the Shaft (are not active in case of Inspection from Machine Room) and can be used to avoid the risk of the technician being trapped inside the elevator shaft.
Mind that these stop positions are not safety contacts.

Video Tutorial

How to configure the ELGO positioning system with a controller Pitagora 4.0



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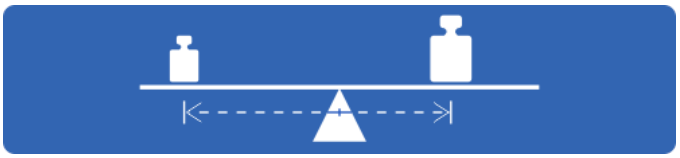

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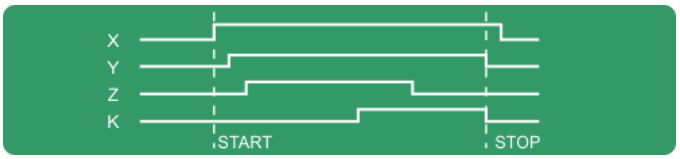
Multiplex parameters setting



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Updated on 16 Febbraio 2022

Pitagora 4.0 – Shaft

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Shaft access

For systems with encoder counting it is possible to activate the access procedure in the shaft without the system being stopped due to the interruption of the safety chain (opening of the landing doors). It is also helpful in EN81-1 installation.

With the lift in normal operation:

- Keep the doors open by keeping the door BRA or BRB button pressed
- On the elevator car control panel press the current floor button 3 times.
- The panel will emit a continuous sound to warn of the activation of the procedure which temporarily excludes all calls. (procedure can be deleted by pressing the door open button again)
- Exit from the Cabin;
- The Controller closes the doors and moves lift 2 meters down with slowdown and standard stop. The technician can open the doors and easily access the cab roof. If the cabin does not have enough space to descend, it moves upwards by 2.5 meters (pit access and / or control of the cabin bottom).
- If you do not enter the well, the Cabin remains stationary in this condition for a maximum time of 10 seconds before returning to normal service (new calls are not available in this time).

Access to the shaft for systems compliant with the EN81-20 / EN81-21 standard requires that, after an access and subsequent exit from the llift shaft by an authorized person, there is a reset procedure that excludes the return to automatic operation of the lift. Below are the instructions for entering and exiting the shaft in the case of 81-20 or 81-21 systems.

EN81-20 configuration

Parameter: See Shaft protection.

Access to the Pit

Is detected by operating the pit stop switch or by switching the pit control panel on to ‘inspection’. (both conditions open the safety chain on point SE1).

This condition activates the Fault RSP (code 20) and prevents the movement of the elevator car in normal operation (Movement is now possible only in Inspection mode).

After the end of the Inspection manoeuvre the personnel must:

- Return the selector switch and any STOP buttons to ‘Normal’ and exit the shaft of lift.
- Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
  - From lowest floor with three quick opening / closing of the release key or.
  - From the panel with three quick presses of button 
  - From the PlayPad with specific reset (RSP reset).

Characteristics of the auxiliary contact on the door (s) at the lowest floor:

- Monostable NC contact (does not open during normal door operation).

The auxiliary contact is electrically connected to the BDU's Door input or to the terminal (screw) of the controller on the E511 input (NC contacts in series when there are multiple shaft access doors eg. Pit Access Hatch).

No Access the Car roof

No control required for access to the cabin roof.

EN81-21 Installation with door's Bistable contacts

Headroom and reduced pit (Compliance with Article 2.2 of Annex 1 of Directive 95/16 / EC of the European Community)

In systems where the minimum required dimensions in the top and bottom of the shaft cannot be guaranteed, according to the requirements of the regulation EN 81, special alterations must be made to the system and the controller in order to avert the risk of injury to workers carrying out maintainance work in the shaft.

The following is a relevant section from the regulation:

"The lift must be designed and manufactured in order to prevent the risk of crushing when the elevator car is in an extreme position. In order to achieve this, a free space or refuge beyond the extreme positions must be provided. However, in exceptional cases, allowing the Member States the possibility of giving prior approval, particularly in existing buildings, the competent authorities may provide other appropriate means to avoid this risk, if the previous solution is impossible to achieve".

The controller of the lift is able to automatically manage the floor doors opening control in systems with limited space in the extreme points of the shaft. As indicated schematically in the illustration below, the controller must be equipped with a control circuit at the top/bottom of the shaft so that, when the maintenance worker opens the landing door to access the shaft, a contact connected to the dedicated input which provides monitoring of shaft access to the lift controller.

The specific procedure is according to the type of Installation as described in following sections.

The reset procedure is possible only if bistable contacts are open, otherwise the controller checks an automatic reset of bistable contacts (without any reset procedure): so the controller gives a RSP Fault (Cod 121) and it is necessary to open the Bistable circuit and after make a reset procedure.

Reduced Head Configuration

Parameter: See Shaft protection

Access to the Pit
Is detected by operating the pit stop switch or by switching the pit control panel on to 'inspection'.
(both conditions open the safety chain on point SE1).

This condition activates the Fault RSP (code 20) and prevents the movement of the elevator car in normal operation. After the end of the Inspection manoeuvre the personnel must:

• Remove the protections (in case of manual protections in the PIT), Return the selector switch and any STOP buttons to 'Normal' and exit the shaft of lift.

• Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From lowest floor with three quick opening / closing of the release key.
– From the panel with three quick presses of button.

– From the PlayPad with specific reset (RSP reset).

Characteristics of the auxiliary contact on the door (s) of the lowest floor:
• Monostable NC contact (does not open during normal door operation).

The auxiliary contact is electrically connected to the DOOR Contact input of BDU of the lowest floor.

Access on the Car roof
Access to the shaft is detected by opening a contact using the release key which activates the RSP fault (code 21), preventing the elevator car from moving in normal operation (a run is only possible in ‘Inspection’ mode). Before entering the shaft of lift, wait for the traffic light to indicate the safe condition (green light).
After the end of the Inspection manoeuvre the personnel must:
• Remove the protections (in case of manual protections), Return the selector switch and any STOP buttons to ‘Normal’ and exit from the lift well.
• Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From floor with three quick opening / closing of the reset key (optional).
– From the panel with three quick presses of button.

– From the PlayPad with specific reset (RSP reset).

Reset fault RSP on the Lift Controller and make coil’s reset on the bistable contacts on the Landings
If the controller detects an automatic contact reset (contact close before reset procedure) it gives again a Fault RSP (Cod 121) as a fault on coil’s reset circuit.

Characteristics of the auxiliary contact (BERNSTEIN type) on all doors except those on the lowest floor:
• Bistable NC contact (does not open during normal door operation) connected to a dedicated input.
• 230 Vac reset coil.

Optional reset key switches are electrically connected to the BDU’s DOOR Contact input.

Reduced Pit Configuration

Parameter: See Shaft protection

Access in the Pit
Access to the shaft is detected by opening a contact using the release key which activates the RSP fault (code 21), preventing the elevator car from moving in normal operation (a run is only possible in ‘Inspection’ mode). Before entering the shaft, wait for the traffic light to indicate the safe condition (green light).
After the end of the Inspection maneuver the personnel must:
• Remove the protections (in case of manual protections), Return the selector switch and any STOP buttons to

‘Normal’ and exit from the lift well.
• Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From the floor with three quick opening / closing of the reset key (optional).
– From the panel with three quick presses of button

– From the PlayPad with specific reset (RSP reset).

If controller detects an automatic contact reset (contact close before reset procedure) it gives again a Fault RSP (Cod 121) as a fault on coil’s reset circuit.

Characteristics of the auxiliary contact (BERNSTEIN type) only on the lowest floor:
• Bistable NC contact (does not open during normal door operation). connected to a dedicated input.
• 230 Vac reset coil

Optional reset key switches are electrically connected to BDU’s DOOR Contact input.

Access on the Car roof
No control required for access to the cabin roof.

Reduced Head and Pit Configuration

Parameter: See Shaft protection

Access in the Pit or Access on the Car roof
Access to the shaft is detected by opening a contact using the release key which activates the RSP fault (code 21), preventing the elevator car from moving in normal operation (a run is only possible in ‘Inspection’ mode). Before entering the lift shaft, wait for the traffic light to indicate the safe condition (green light).
After the end of the Inspection manoeuvre the personnel must:
· Remove the protections (in case of manual protections), Return the selector switch and any STOP buttons to ‘Normal’ and exit from the lift well.
· Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From floor with three quick opening / closing of the reset key (optional).
– From the panel with three quick presses of button.

– From the PlayPad with specific reset (RSP reset).

If controller detects an automatic contact reset (contact close before reset procedure) it gives again a Fault RSP (Cod 121) as a fault on coil’s reset circuit.

Characteristics of the auxiliary contact (BERNSTEIN type) on all doors:
· Bistable NC contact (does not open during normal door operation). connected to dedicated input.
· 230 Vac reset coil

Optional reset key switches are electrically connected to BDU’s DOOR Contact input.

Installation with door's Monostable contacts

Headroom and reduced pit (Compliance with Article 2.2 of Annex 1 of Directive 95/16 / EC of the European Community)

With the same consideration of previous chapter it is possible to manage installation with monostable contacts on the landing doors to monitor the shaft access.

In a case where monostable door contacts are used, present in the controller is a bistable circuit. The reset procedure is possible only if the bistable circuit is open, otherwise the controller gives a specific Fault RSP (§ 6): it is necessary to open the Bistable circuit and after carry out the reset procedure.

The specific procedure is according type of Installation as described in following sections.

Reduced Head Configuration

Parameter: See Shaft protection

Access in the Pit
Access to the pit is detected by operating the pit stop switch or by switching the pit control panel on to 'Inspection'. (both conditions open the safety chain on point SE1). This condition sets the Fault RSP (code 20) by preventing the movement of the elevator car in normal operation.
After the end of the Inspection manoeuvre the personnel must:
• Remove the protections (in case of manual protections in the PIT), Return the selector switch and any STOP buttons to 'Normal' and exit the lift shaft.
• Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From lowest floor with three quick opening / closing of the release key.
– From the panel with three quick presses of button.

– From the PlayPad with specific reset (RSP reset).

Characteristics of the auxiliary contact on the door (s) of the lowest floor:
• Monostable NC contact (does not open during normal door operation).

The auxiliary contact is electrically connected to the DOOR Contact input of BDU of the lowest floor.

Access on the Car roof
Access to the shaft is detected by opening a contact using the release key which activates the RSP fault (code 21), preventing the elevator car from moving in normal operation (a run is only possible in 'Inspection' mode). Before entering the lift shaft, wait for the traffic light to indicate the safe condition (green light).
After the end of the manoeuvre the personnel must:
• Remove the protections (in case of manual protections), Return the selector switch and any STOP buttons to 'Normal' and exit from the lift well.
• Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From floor with three quick opening / closing of the the release key.
– From the panel with three quick presses of button.

– From the PlayPad with specific reset (RSP reset).

Characteristics of the auxiliary contact on all doors except those on the lowest floor:
• Monostable NC contact (does not open during normal door operation).
Keys are electrically connected in series to the screw terminal of the controller.

Reduced Pit Configuration

Parameter: See Shaft protection

Access in the Pit
Access to the shaft is detected by opening a contact using the release key which activates the RSP fault (code 21), preventing the elevator car from moving in normal operation (a run is only possible in ‘Inspection’ mode) Before entering the shaft, wait for the traffic light to indicate the safe condition (green light).

After the end of the Inspection manoeuvre the personnel must:
• Remove the protections (in case of manual protections), Return the selector switch and any STOP buttons to ‘Normal’ and exit from the lift well.
• Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From floor with three quick opening / closing of the release key.
– From the panel with three quick presses of button.

– From the PlayPad with specific reset (RSP reset).

Characteristics of the auxiliary contact on all doors except those on the lowest floor:
• Monostable NC contact (does not open during normal door operation).

Key are electrically connected in series to the screw terminal of the controller.

Access on the Car roof
No control required for access to the cabin roof.

Reduced Head and Pit Configuration

Parameter: See Shaft protection

Access in the Pit or Access on the Car roof
ccess to the shaft is detected by opening a contact using the release key which activates the RSP fault (code 21), preventing the elevator car from moving in normal operation (a run is only possible in ‘Inspection’ mode). Before

entering the lift shaft, wait for the traffic light to indicate the safe condition (green light).
After the end of the Inspection manoeuvre the personnel must:
• Remove the protections (in case of manual protections), Return the selector switch and any STOP buttons to 'Normal' and exit from the lift well.
• Close the landing doors (check the safety chain) and carry out the reset using one of the following methods:
– From floor with three quick opening / closing of the release key.
– From the panel with three quick presses of button.

– From the PlayPad with specific reset (RSP reset).

Characteristics of the auxiliary contact on all doors:
• Monostable NC contact (does not open during normal door operation).
Key are electrically connected in series to the screw terminal of the controller.

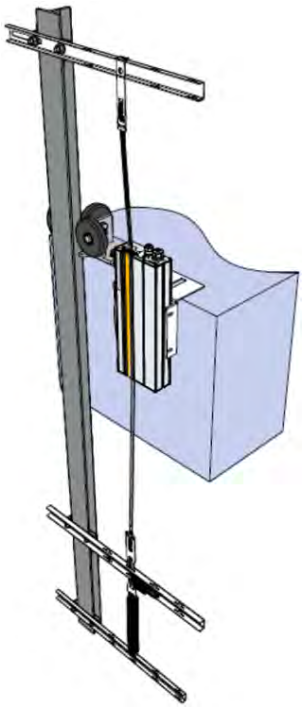
Elevator car Positioning System and Stopping Accuracy

ELGO LIMAX 33 CP Absolute Encoder Counting System

ELGO LIMAX 33 CP Absolute Encoder Counting System

The absolute encoder allows you to replace all the safety contacts inside the lift shaft. The position of the cabin is detected thanks to a magnetic strip.
Features:
• Absolute position detection and safety functions:
– Extra limit switches
– Inspection limit switches
– Overspeed Governor (combined with an electronic safety gear
– Door bypass circuit (movement with doors open)
– UCM (in case of certified double brake)

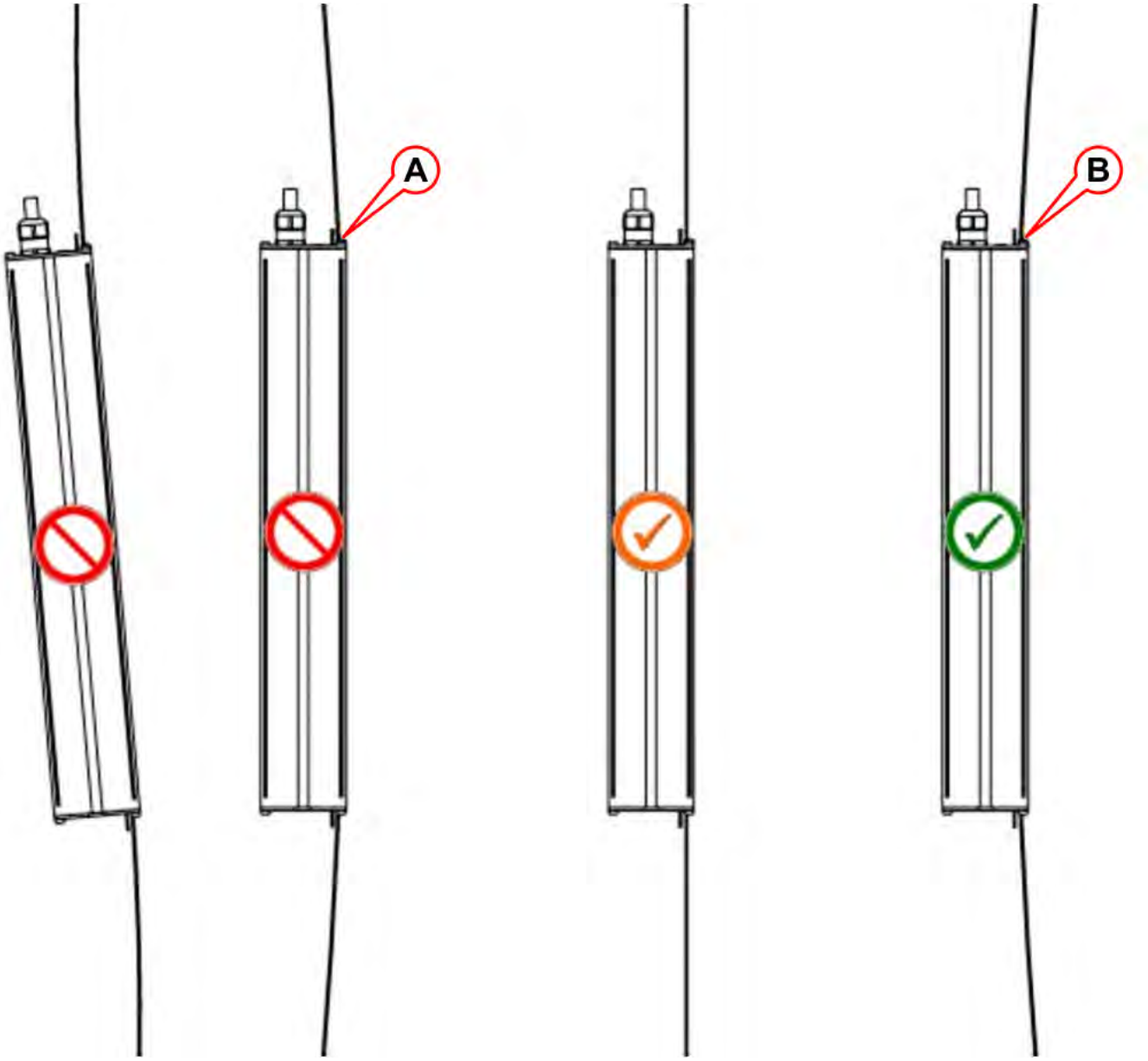
• EU approved, SIL3 (TÜV)



Magnetic Tape

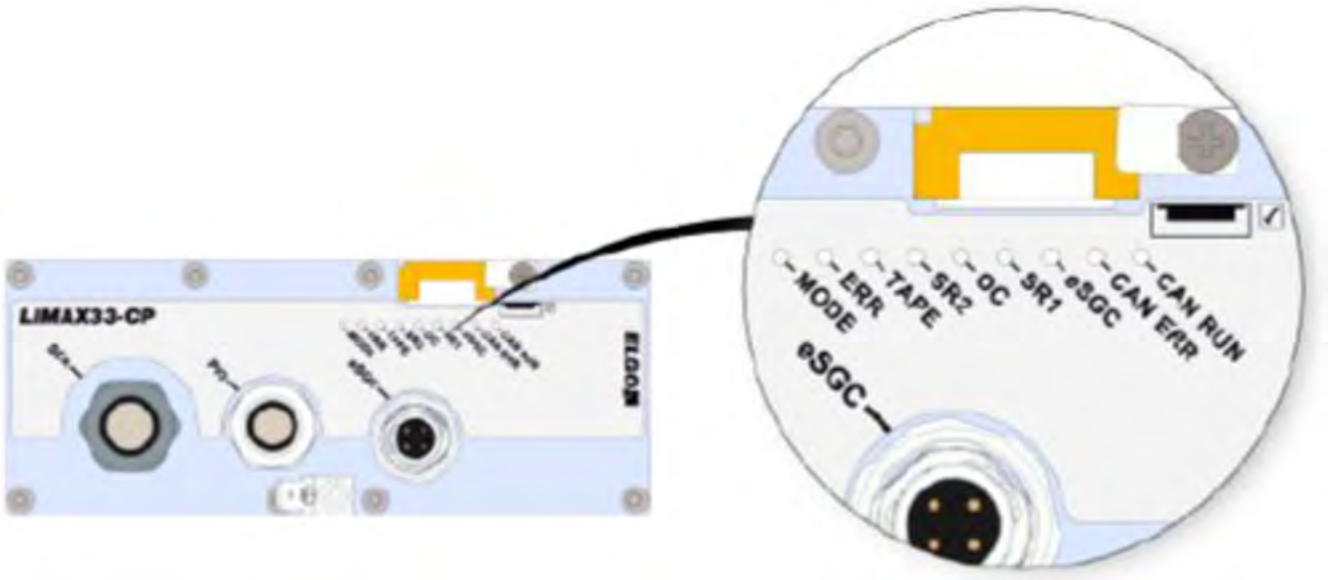
Remove all the magnets in the compartment before installing the magnetic tape.

Do not install the magnetic tape near permanent magnet motors.
Do not use magnetized tools near the Magnetic tape.
Do not use welding equipment near the magnetic tape.
Respect the fitting shown on the tape and make sure it is in the correct position shown in the following figure:



A) – Tape touches the guide with the magnetized side.
B) – Tape touches the guide with the steel side.

LED Signal

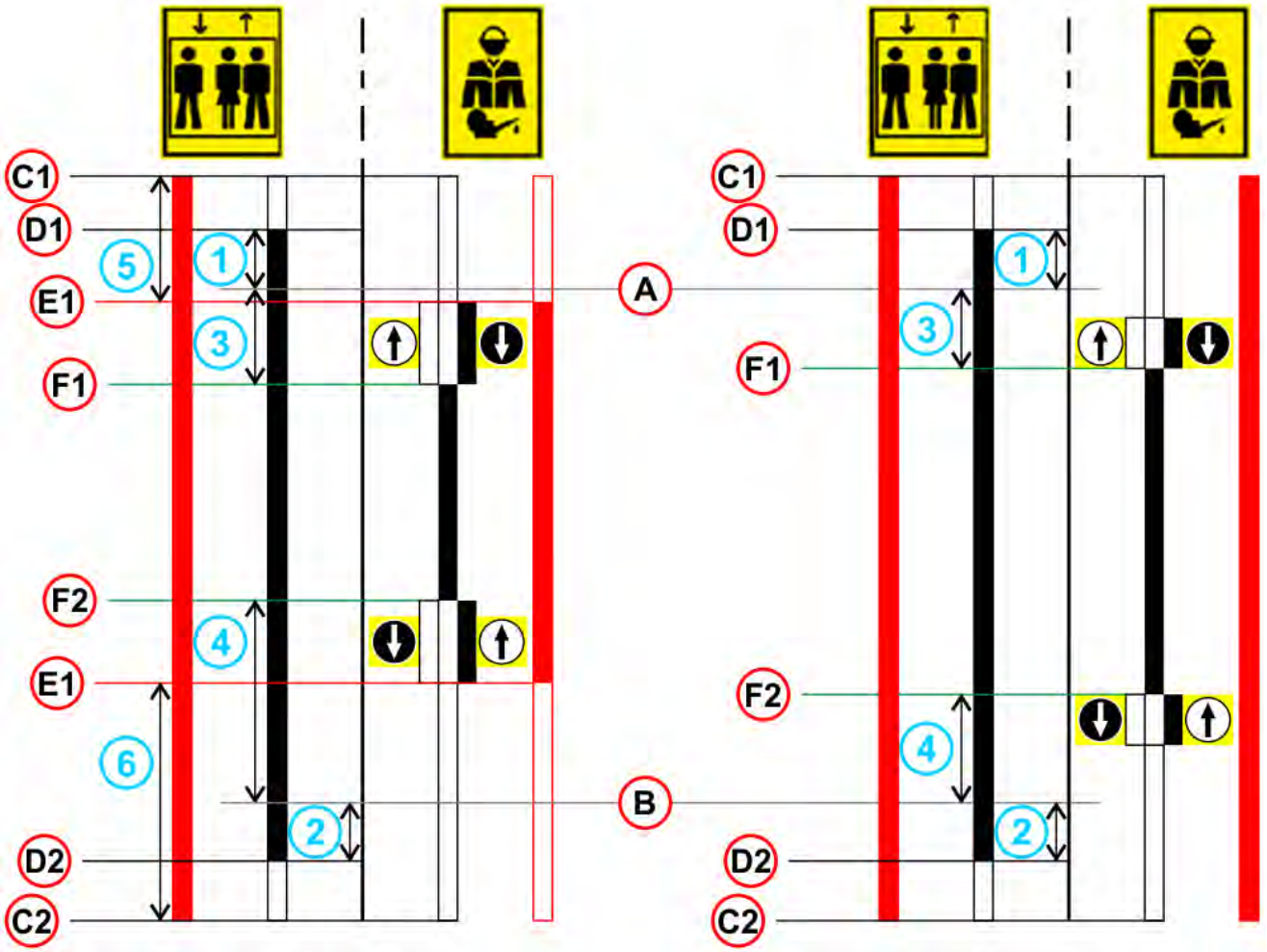


LED	DESCRIPTION	
MODE	Normal mode	Slow Flashing (1 s)
	Pre-Commissioning Mode	Fast Flashing (0,1 s)
	Teach Mode	Lights permanently
ERROR	No Error	Led OFF
	Generic Error	Led ON
	Emergency Error	Flashing
TAPE	Magnetic Tape not detected	Led ON
eSGC	eSGC Contact close	Led ON
	eSGC Contact Open	Led OFF
OC	OC Contact close	Led ON
	OC Contact Open	Led OFF
SR1	SR1 Contact close	Led ON
	SR1 Contact Open	Led OFF
SR2	SR2 Contact close	Led ON
	SR2 Contact Open	Led OFF
CAN-ERR	Status CAN Open	Led ON
CAN-RUN	Status Can Open	Led OFF

Explanation of safety contacts

Reduced Head and/or Reduced PIT Installation	Sufficient Head and Pit clearance according EN81-20 §5.2.5.7 / § 5.2.5.8

Reduced Head and/or Reduced PIT Installation	Sufficient Head and Pit clearance according EN81-20 §5.2.5.7 / § 5.2.5.8



	Normal Mode	A) -	TOP floor
	Inspection Mode	B) -	BOTTOM floor
OC open / OC closed / eSGC open / eSGC closed	Safety contacts status	C1) -	Upper reference position
	Inspection UP button	C2) -	Lower reference position
	Inspection DOWN button	D1) -	Upper final limit switch
1	Final limit switches Offset Up	D2) -	Lower final limit switch
2	Final limit switches Offset Down	E1) -	Upper pre-triggered stopping system limit
3	Inspection limit switches Offset Up	E2) -	Lower pre-triggered stopping system limit
4	Inspection limit switches Offset Down	F1) -	Upper inspection limit switch

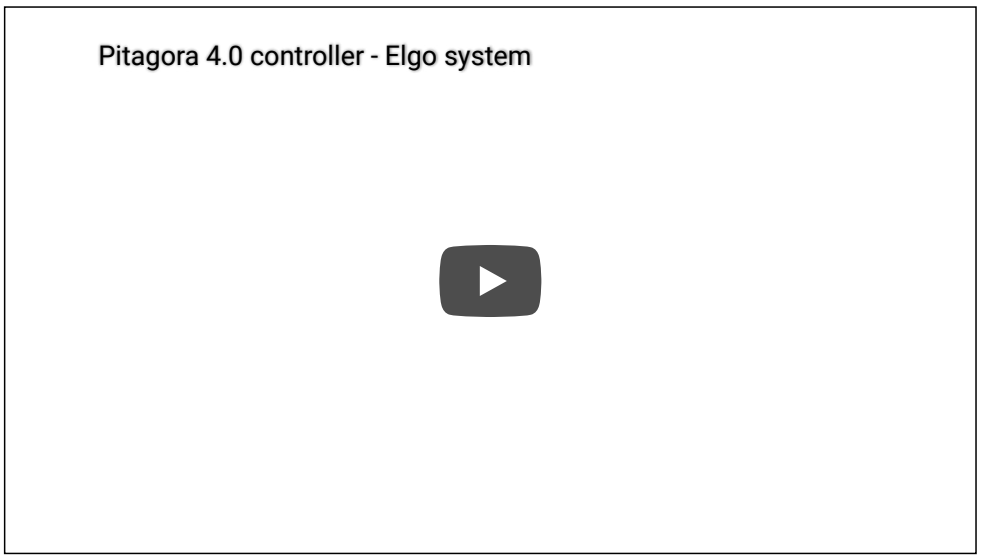
Reduced Head and/or Reduced PIT Installation		Sufficient Head and Pit clearance according EN81-20 §5.2.5.7 / § 5.2.5.8	
5	Pre-Triggered Stopping System Offset Up	F2) -	Lower inspection limit switch
6	Pre-Triggered Stopping System Offset Down		

For manual adjustment of the positions of the indicated is possible from menu *<Positioning> Monitor Encoder* (see table below).

	Label	Page	Description
1	N_LIM_S	7	Upper final limit switch offset (offset over top floor)
2	N_LIM_D	7	Lower final limit switch offset (offset under bottom floor)
3	I_LIM_S	6	Upper inspection limit switch (offset under top floor)
4	I_LIM_D	6	Lower inspection limit switch (offset over bottom floor)
5	TRIPS	8	Upper Pre-Triggered Stopping System limit (from Upper Reference Position)
6	TRIPD	8	Lower Pre-Triggered Stopping System limit (from Lower Reference Position)

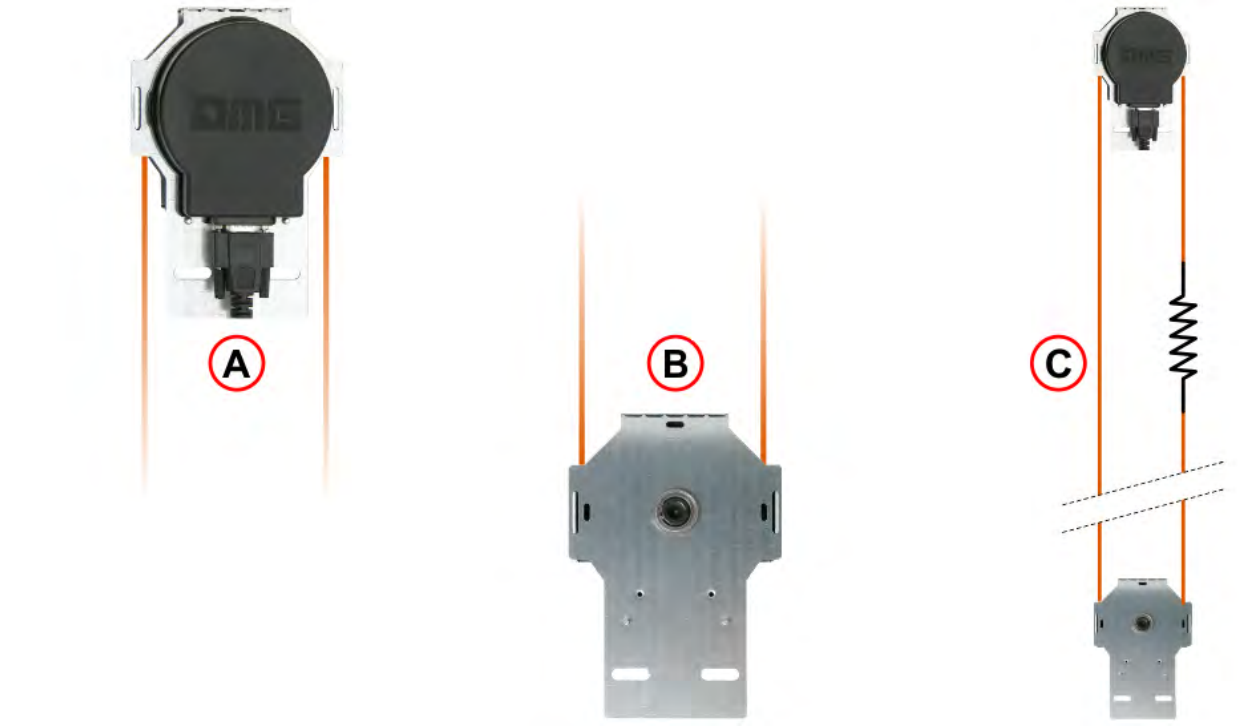
TRIPS and TRIPD values are used only if ELGO is part of Safety System for Reduced Head and/or Pit (ELGO + eSGC).

Video Tutorial – ELGO Limax 33 CP positioning system



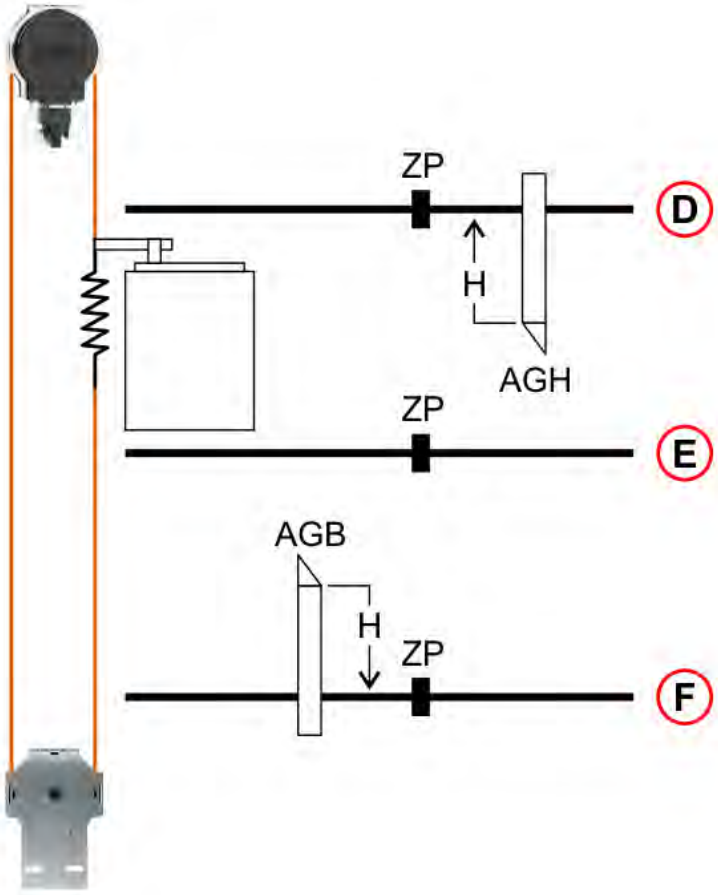
DMG Encoder based Counting System

DMG Encoder based Counting System



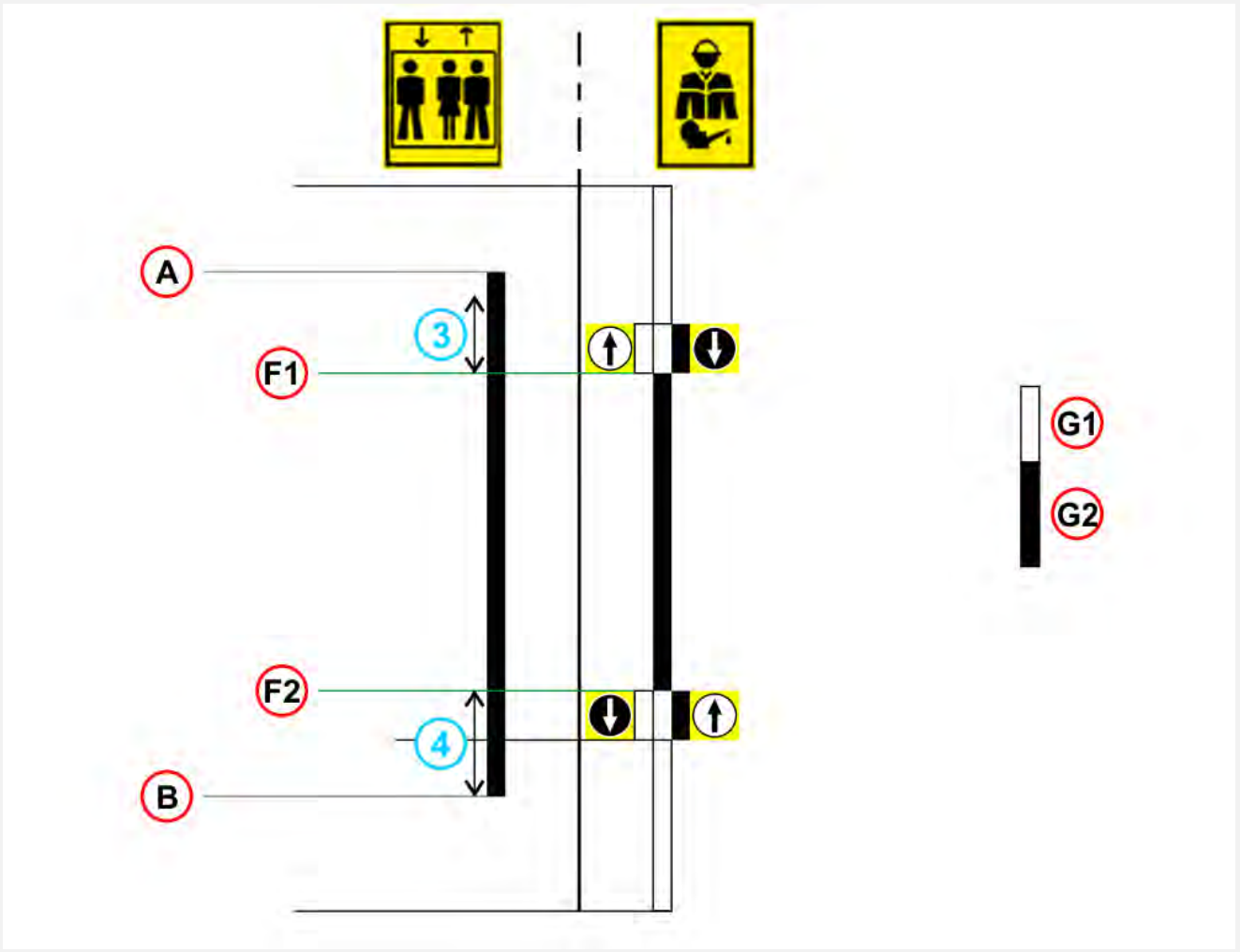
A) – Encoder
B) – Pulley
C) – Symbols

DMG's rope and pulley Encoder provides the Playboard controller with a reliable, accurate and easy to install elevator car position detection system. The encoder calculates elevator car position by detecting the movement of the rope fixed to the cabin and checks this information with reference positions (detected during the initial self learning procedure). 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.
More over it is possible to set Inpsection limit point (no safety contacts).



D) – Terminal Top Floor
E) – Floor N
F) – Floor 0
H) – Deceleration distance
ZP) – Door Zone
AGB) – Limit switch for bottom deceleration or reset
AGH) – Limit switch for top deceleration or reset

Inspection limit position



	Normal Mode	A) -	TOP floor
	Inspection Mode	B) -	BOTTOM floor
	Inspection UP button	F1) -	Upper inspection limit switch
	Inspection DOWN button	F2) -	Lower inspection limit switch
	Inspection limit position Up	G1) -	Moving enable
	Inspection limit position Down	G2) -	Moving not enabled

For manual adjustment of the positions of the indicated is possible from menu <Positioning> Monitor Encoder (see table below).

	Label	Page	Description
	I_LIM_S	6	Upper inspection limit (offset under top floor)
	I_LIM_D	6	Lower inspection limit (offset over bottom floor)

Lift speed and Deceleration distance

Lift speed and Deceleration distance

In table is showed recommended values for deceleration distance and acceleration time according the lift's speed.

Speed [m/s]	Deceleration [mm]	Acceleration time [s]
0,6	900	3,0
0,7	1050	3,0
0,8	1200	3,0
0,9	1350	3,0
1,0	1500	3,0
1,1	1750	3,2
1,2	2000	3,3
1,3	2250	3,5
1,4	2500	3,6
1,5	2750	3,7
1,6	3000	3,8
1,7	3250	3,8
1,8	3500	3,9
1,9	3800	4,0
2,0	4100	4,1
2,1	4200	4,2
2,2	4700	4,3
2,3	5000	4,3
2,4	5300	4,4
2,5	5600	4,5
2,6	5950	4,6
2,7	6300	4,7
2,8	6650	4,8
2,9	7000	4,8
3,0	7350	4,9
3,1	7700	5,0
3,2	8050	5,1
3,3	8500	5,2
3,4	9000	5,3
3,5	9500	5,4
3,6	10000	5,6
3,7	10500	5,7

Speed [m/s]	Deceleration [mm]	Acceleration time [s]
3,8	11000	5,8
3,9	11500	5,9
4,0	12000	6,0

Shaft protection

The following table indicates how to set the Shaft Protection parameter according to the system

The parameter activates two different functions:
• Checking jumpers on door contacts (SCS error)
• Unauthorized access control in the compartment (UAS error): function required on the Russian market.

Shaft Protection	SCS Fault	UAS Fault	
Type		Door contacts	Hatch contacts
No	Disabled	Disabled	
1 ... 5	Do not use		
6	Yes	Disabled	
7	Yes	Door contact N.O.	Disabled
8	Yes	Door contact N.C.	Disabled
9	Disabled	Disabled	Door contact N.O.
10	Disabled	Disabled	Door contact N.C.
11	Disabled	Door contact N.O.	Door contact N.O.
12	Disabled	Door contact N.C.	Door contact N.C.
13 ... 16	Do not use		
17	Yes	Disabled	Door contact N.O.
18	Yes	Disabled	Door contact N.C.
19	Yes	Door contact N.O.	Door contact N.O.
20	Yes	Door contact N.C.	Door contact N.C.

Insights

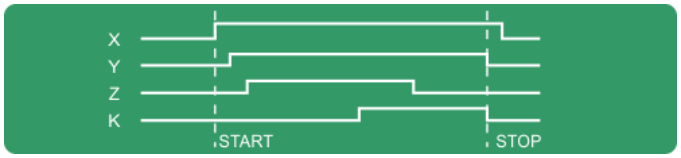
Quick installation guide

Troubleshooting

Fire operation programming procedure

Test and measurements

Multiplex parameters setting



Timing diagrams

Fusion App

Updated on 17 Febbraio 2022

Pitagora 4.0 – Troubleshooting

List of faults with their description, cause and remedy.

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

1) – Reset

Description (and cause)
Power supply: the controller was restarted. For informational purpose only.
Furthermore, if there are devices that require a restart, it can present itself with the following specific codes.
Cod 9: 9 months without power cycle reset, lift continues to operate.
Cod 12: 12 months without power cycle reset, lift is out of service. Must be executed a POWER restart

Remedy
Cod 9 / 12 are present only in case of LM2 inverter or LIMAX3CP. Power restart is requested from these devices.

2) – Contactors blocked

Description (and cause)
One or more NC contacts associated to the power contactors and connected in series on the input CCO and CCOB remain open after the car stop.
Cod 0: CCO open
Cod 1: CCOB open

Cod 2: CCO+CCOB open

Remedy
Check:
1- the series of auxiliary contacts (NC) of the power contactors and other cables in series on the circuit CCO and CCOB
2- the CCO and CCOB circuit wiring
3- the connection of the CCO and CCOB on the board

3) – Low speed too long

Description (and cause)
Car moving at low speed for too long. In case of VVVF may be too low engine torque in the approching floor phase.

Remedy
Check:
1- Check parameter “Low Speed fault time” (“Configuration” menu) and increase time if necessary
2- the elevator speed to a low speed (in the case of VVVF); increase it if necessary
3a- the decelarating distance to the plane indicated (magnets / flags FAI / FAS)
3b- value of the distance R1D / R1S if Encoder is used (“System Positioning” menu)

4) – Overload

Description (and cause)
Overload input (SUR) activated (NO contact).

Remedy
Check:
1- the SUR input (if locked) and wiring
2- the setting of the load weighing device

5) – Positioning fault

Description (and cause)
This error shows a difference between the performed theoretical counting and the real position detected:
Cod 0: at the activation of the AGB/AGH limit contacts;
Cod 100: at the activation of ZP magnet floor
Cod 200:at the activation of stop level’s ZP magnet floor

Remedy
Check:
1- the correct positioning of the magnets (or flags)
2- operation of magnetic reeds, optical detector or encoder; verify the arrival of 24V current
3- the distance between extreme contact and magnet (or flag)

6) – Direction fault

Description (and cause)
The controller detects the wrong direction of travel.

Remedy
Check:
1- the direction of travel of the engine (control UP vs. Car movement direction)
2- the installation and connection of FAI / FAS sensors
3- CW / CCW Encoder configuration (“System Positioning” menu)
4- AGH and AGB inputs

7) – Safety 3 open at stop

Description (and cause)
Safety chain interrupted with elevator not running. Calls are deleted. On the PlayPad Led SE3 is off.

Remedy
Check all contacts between the terminals SC2 and SE3 (Safety Gear, Limit switch, Overspeed Governor).

9) – Door lock fault

Description (and cause)
Safety chain open at point SE6 when a call is registered.
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.
Cod 5: floor locks
Cod 6: car doo

Remedy
Check all contacts between the terminals SD2 and SD3 (floor locks) or SC4 and SC5 (car doors) according cod info,

their connection and if an object obstructs the closing of the door to the indicated floor (POS).
In case of 81-21 devices check its contacts in Normal mode operations.

10) – Door A opening slippage

Description (and cause)
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.

Remedy
Check:
1- Door open limit switch (FOA) and its wiring;
2- door operator power supply and fuses;
3- door open contactors (ROA)

11) – Door B opening slippage

Description (and cause)
Same as door A, for second entrance.

Remedy
Same as A, but signals (FOB) and (ROB).

12) – Safety 3 open during travel

Description (and cause)
Safety chain open before Input SE3 while elevator car travelling. Car stops and elevator car calls are cancelled.
On the PlayPad Led SE3 is off.

Remedy
Check all contacts between the terminals
S35-S36 (Top of Car)
SC3-SM4 (controller)
Safety devices: Safety Gear, Limit switch, Overspeed Governor.

13) – Motor temperature sensor

Description (and cause)
Inputs TH1 or TH2 of motor temperature is activated (NC contact)
Cod 1: TH1 open
Cod 2: TH2 open
Cod 3: TH1 and TH2 open

Remedy
Check inputs (TH1, TH2), sensor connections and the state of the motor's temperature sensor.

14) – Parameters memory

Description (and cause)
Fault in the Eprom parameters memory.

Remedy
Reset, re-enter and record all parameters.

15) – Final limit switch

Description (and cause)

When it is reached the final limit switch (or Safety Gear or Overspeed Governor limiter trip), the input SE3 is active (NC contact).
After delay of 1,5 s the error remains in memory, even after deactivation of the signal, and inhibits the landing calls and the elevator car movements, until special reset Menu “Faults” is made (Reset SE3).

Remedy
1- Release the final limit switch (or Safety Gear or OSG) closing the safety chain (SE3) and cancel fault in the “Faults” Menu.
2- Check the connection of the NC contact between SC2 and SE3 terminals

16) – Fire detection

Description (and cause)
In case of fire sensors installed, this fault indicates that one or more sensors are active.

Remedy
Check fire sensor input(s).

17) – Safety 4 open during travel

Description (and cause)
Safety chain open before input SE4 while elevator car travelling.
Landing calls and the elevator car movements are cancelled
On the PlayPad Led SE4 is off.

Remedy
Check all contacts between the terminals SD1 and SD2 (Preliminaries floor doors).

18) – Safety 6 open during travel

Description (and cause)
Safety chain open before Input SE6 while elevator car travelling.
landing calls and the elevator car movements are cancelled
On the PlayPad Led SE6 is off.
Cod 5: floor locks
Cod 6: elevator car door

Remedy
Check all contacts between the terminals SD2 and SD3 (floor locks).
Check all contacts between the terminals SC4 and SC5 (elevator car door).
Check all contacts between the terminals SC5 and SE6 (Protection device 81-21).

19) – Low tension during movement

Description (and cause)
Motherboard power below 17V (this fault disappears when the 24V is restored)

Cod 0: Main power Input
Cod 1: Overcurrent on VCAB
Cod 2: Overcurrent on VMR
Cod 3: Short Circuit on VCAB
Cod 4: Short Circuit on VMR

Remedy
Check the network, the supply voltage to the transformer primary, the presence of 24V and the consumption of the circuit.

20) – Travel interrupted

Description (and cause)
During upward (or downward) movements contactors open while RMO (or RDE) commands are active. Possible short interruption of the safety circuit while moving.
Cod 100: CCO signal falling during travel
Cod 200: CCOB signal falling during tavel

Remedy
Check:
1- Preliminary contacts and door lockers at the indicated floor
2- car door contacts
3- the supply voltage of the safety circuit

21) – CCO input blocked

Description (and cause)
The contactors control circuit (Input CCO) remains closed after travel command is given
Cod 100: CCO
Cod 200: CCOB
Cod 250: CTB not activated

Remedy
Check:
1- wiring and state of the auxiliary contacts (NC) of the power contactors and other NC contacts wired in series on the CCO / CCOB circuit
2- CCO / CCOB Motherboard input

22) – Low tension at stop

Description (and cause)
Same as Fault N.19
Cod 0: Main power Input
Cod 1: Overcurrent on VCAB
Cod 2: Overcurrent on VMR
Cod 3: Short Circuit on VCAB

Cod 4: Short Circuit on VMR

Remedy
Check the network, the supply voltage to the transformer primary, the presence of 24V and the consumption of the circuit.

23) – AGB blocked

Description (and cause)
The expected operation of AGB (NC) contact is not checked.
Cod 100: contact is not closed at floor different from bottom floor (downward calls erased).
Cod 200: contact is not open at lowest floor (lift locked)

Remedy
Check the condition of the contact AGB (mechanical switch or magnetic sensor) and the AGB circuit wiring.

24) – AGH blocked

Description (and cause)
The expected operation of AGH (NC) contact is not checked.
Cod 100: contact is not closed at floor different from top floor (upward calls erased).
Cod 200: contact is not open at top floor (lift locked)

Remedy
As for the error 23, regarding the AGH input.

25) – AGH and AGB simultaneously

Description (and cause)
Inputs AGB / AGH opened simultaneously. The system shuts down.

Remedy
Check the condition of AGH and AGB contacts (mechanical or magnetic) and their wiring.
When one of the two contacts is closed, the system performs a reset manoeuvre.

26) – Running time UP

Description (and cause)
No change in the beam status for motion sensors (or floor) for more than planned during car travel. In case of encodeur the threshold is 1 sec. over AGB/AGH limit point
Cod 0: problem on FAI FAS input (no changing of inputs for time longer than “Running time” parameter
Cod 100: problem on encoder channel
Cod 200: no changing of ZP input for time longer than “Running time” parameter.

Remedy
Check contactors, brake, motor power supply, FAI/FAS sensors (or ENCODER).
Check “X1” and “12” inputs of the VVVF. Anti-slippage test (See insights “Test and measurements”).

27) – Running time DOWN

Description (and cause)
See above but in downward movement.

Remedy
See above but in downward movement.

28) – Door A closing slippage

Description (and cause)
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.

Remedy
Check:
1- door close limit switch FFA (NC contact) and wiring
2- door motor power supply and fuses
3- door close contactors (RFA)

29) – Door B closing slippage

Description (and cause)
Same as door A, for second entrance.

Remedy
Same as door A, but signals (FFB) and (RFB).

30) – Out of service switch

Description (and cause)
If the relevant parameter has been programmed, it indicates that the system has been put out of service through the activation of input HS.

Remedy
Check input HS (NO contact).

31) – FAI/FAS error

Description (and cause)
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.

Remedy
Check power supply to sensors;
Check sensors and magnets position.

32) – Temporary operation without inspection

Description (and cause)
During temporary operations the input REV or REV1 or REV2 must be active or the lift will not move.

Remedy
Check input REV, REV1 or REV2 (NC contact).

33) – Stopping accuracy

Description (and cause)
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 occurs. If the system is equipped with ENCODER the uncertainty of the stop is more than 2 cm.

Remedy
Check:
1- position of the magnets (or flags);
2- deceleration distances;
3- motor brake

34) – Anti-nuisance

Description (and cause)
It appears after a call cancellation and if the parameter “Anti-nuisance” has been programmed.
The reason is too many calls from the elevator car without the cell being cut (in case of combined doors) or without landing doors opening (other door types).

Remedy
Change number of unwanted calls in the Anti-nuisance parameter.

35) – Lift not avalaible

Description (and cause)
The lift cannot take calls and is not considered for call dispatching (in multiplex). After 3 closing door cycles, the lift is considered unavailable for 1 minute.
Cod 10: No power on Car light
Only in multiplex:
Cod 100: light curtain / door open button

Cod 200: no SE4 signal (eg manual door not closed)

Remedy
–

36) – Phase sequence

Description (and cause)
Wrong sequence in input phases. Could be detected even during system shutdown.

Remedy
Check the right sequence of phases or swap two phases on power input terminals L1-L2-L3.

37) – Low battery

Description (and cause)
Low charge on 24V battery.

Remedy
Test battery charge or change battery.

38) – SE2 open

Description (and cause)
Safety chain open. Landing calls and the car movements are cancelled. Playpad SE2 led is off.
Cod 0: DIS switch open (SE0 led off)
Cod 1: PIT safety circuit open (SE1 led off)
Cod 2: TOC safety circuit open (SE2 led off).

Remedy
Check DIS Switch

Check all contacts between the terminals SP3 and SP4 (STOP in the pit, pit ladder, Inspection box, etc.).
Check all contacts between the terminals SC1 and SC2 (STOP on the Toc, Toc protection, Inspection box, etc).

39) – Ambient temperature

Description (and cause)
This error indicates that the ambient temperature detected by the sensor is outside the set limits.
Cod 100: Temperature below the lower threshold;
Cod 200: temperatures above the higher threshold.

Remedy
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

Description (and cause)
For reduced pit and headroom.
Cod 20: pit access according EN81.20
Cod 21 shaft access according EN81.21
Cod 111: Monitor Relay RSDC fail (contact doesn't open)
Cod 121: reset circuit bi stable contact EN81.21 (automatic reset)
Cod 131: Bistabile circuit (relay RSR1)
Cod 132: Bistabile circuit (relay RSR2)

Remedy
Clear RSP parameter in the menu "Faults".
Cod 111 check right working of relay RSDC
Cod. 121: check reset circuit. It could be possible automatic reset of bi stable contacts caused by problem on reset circuit. The contact series must be open and then make a standard reset.
Cod 131 (132) check right working of relsy RSR1 (RSR2) and after make the Reset procedure.

41) – Fault ISO

Description (and cause)
Problem detected in the operation monitoring of safety module for advanced door opening / re-leveling. If activated, the installation goes into "out of service" mode at the top floor (electric) or bottom floor (hydro).
Cod. 10: Monitor Relay RISO fail
Cod 100: fail on Safety module monitor during travel
Cod 200: fail on Safety module monitor at level

Remedy
Check the alignment of ISO1 and ISO2.
Reset ISO in the menu "Faults".

42) – TOC Communication

Description (and cause)
No serial link between controller and elevator car (in case of elevator car serial link system configuration).

Remedy
Check CAN link between controller and top of elevator car board.

43) – Inspection

Description (and cause)
The system is in Inspection mode (NORM/ISP switch set to Inspection)

EN 81.1/2
Cod 1: REV input open (STD Version)
Cod 2: TOC's REV1 input open
Cod 3: REV + TOC's REV1 input open
Cod 5: REV input open (Pitagora version)
Cod 6: REV1 input open
Cod 7: REV + TOC's REV1 input open

EN 81.20
Cod 11: PME inspection (REV)
Cod 12: TOC inspection (REV1)
Cod 13: PME + TOC inspection (REV + REV1)
Cod 14: PIT Inspection (REV2)
Cod 15: PME + PIT Inspection (REV + REV2)
Cod 16: TOC + PIT Inspection (REV1 + REV2)
Cod 17: PME + TOC + PIT Inspection (REV + REV1 + REV2)

Remedy
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

Description (and cause)
Hydraulic lifts: the re-levelling procedure was not completed within 10 seconds. All subsequent re-levelling requests at the same floor are inhibited.

Remedy
Check:
1- the correct operation of the Safety module and of its sensors ZP1 and ZP2;
2- Check the FAI/FAS or ENCODER sensors and the ZP sensor;

3- position of the magnets in the re-levelling zone;
4- RISO relay.

45) – Fault ZP

Description (and cause)
Door zone contact stays open when the sensor is in door zone position.

Remedy
Check the correct operation of the door zone sensor (if present);
See Fault # 33.

46) – Multiplex link interrupted

Description (and cause)
In multiplex systems this fault indicates that the link between two or more controllers in the multiplex loop is missing

Every controller switch to SIMPLEX-like functioning.
Cod 0: cable wiring between controller
Cod 255: firmware problem

Remedy
Check the connection between the controllers (MULX board);
Check all multiplex settings.

47) – Faults memory

Description (and cause)
Errors in the faults memory.

Remedy
Erase all faults

48) – BDU link unavailable

Description (and cause)
In case of serial communication with floors, indicates the loss of link between the controller and all BDU modules at floors.
On BDUs
Green LED fast blinking (0,5 sec): OK
Green LED slow blinking (1 sec): OK BDU is not addressed
Red LED ON: BDU defective
Red LED slow blinking (1 sec): communication not established.
Red + Green LED slow blinking (1 sec): sync.

Remedy
Check:
1- BDU connector on screw terminals;

2- connection between the controller and the closest BDU;
3- the system configuration ("Configuration" menu)

49) – BDU fault

Description (and cause)
In case of serial communication with floors, indicates the loss of link between the controller and one or more BDU at floors.
On the BDU GREEN LED fast blinking (0,5 sec): OK
GREEN LED slow blinking (1 sec): OK BDU not addressed
RED LED ON: Faulty BDU
RED LED slow blinking (1 sec): no communication.
GREEN and RED LEDs slow blinking (1 sec): communication sync in progress.

Remedy
Check BDU functions and its connections;
Change defective BDUs:

Repeat addressing procedure.

50) – Drift control

Description (and cause)
Drift control (if provided) activation: the system is put out of service at an extreme floor.

Remedy
Reset 82212 in the menu “Faults”.

51) – Wrong Password

Description (and cause)
If the system has a password, this fault appears after entering the wrong password for three times.

Remedy
–

52) – Fault VVVF

Description (and cause)
A fault occurred in the inverter
Cod value is the subcode info of VVVF’s fault.

Remedy
Only in case of VVVF FUJI FRENIC LIFT.

53) – Fault UCM

Description (and cause)
UCM Circuit Fault:
Cod 2: Brakes open
Cod 3: Brakes closed in travel
Cod 4: Monitor error GMV NGV A3
RDY = RUN = OFF
Cod 5: Monitor error GMV NGV A3
RDY = RUN = ON
Cod 6: error Test two valves
Cod 8: error Test two valves (START ELEVATOR)
Cod. 10: Monitor SMA i-Valve fail (SMA not at 0V)
Cod. 11: Monitor SMA i-Valve fail (SMA not at 24V)
Cod 100: UCM Detection
Cod 200: Monitor error on RUCM1/RUCM2

Cod 201: RUCM1 Stucked Open
Cod 202: RUCM2 Stucked Open
Cod 203: RUCM3 Stucked Open
Cod 204: Monitor OSG A3 (stud stucked in extended position)
Cod 210: RUCM1 Stucked Close
Cod 220: RUCM2 Stucked Close
Cod 230: RUCM3 Stucked Close
Cod 240: Monitor OSG A3 (stud stucked in retracted position)

Remedy
Reset UCM in the menu "Faults".
Cod 100: means Unintended Cabine Movement (UCM) detection. If it happens togheter with Fault 41 (Fault ISO) check the sensors ZP1 and ZP2.

54) – Safety zone

Description (and cause)
Only for lift with no elevator car door and safety light curtains.
Cod 0: Light curtain active during travel (lift wait for a new Car call to restart)
Cod 1: Fail test CEDES door side A
Cod 2: Fail test CEDES door side B
Cod 10: Fail test on safety relay KSA
Cod 20: Fail test on safety relay KSB

Remedy
Check circuit according cod's info..

55) – Fault SCS

Description (and cause)
Safety Circuit Shunt.
Function enabled by "Shaft Monitor" parameter. See Shaft protection.
Cod 2: Second contact door A shunted (FFA Signal).
Cod 4: Floor door contacts door A Shunted (SE4 input)
Cod 6: Car door contacts door A Shunted (SE6 input)
Cod 12: Second contact door B shunted (FFA Signal).
Cod 14: Floor door contacts door B Shunted (SE4 input)
Cod 16: Car door contacts door B Shunted (SE6 input)
Cod 100: No SE6 input during bypass (ISO Circuit)

Remedy
Check circuit according cod's info.
Reset SCS parameter in the menu "Faults".

56) – Fault UAS

Description (and cause)
Unintended Shaft Access
Function enabled by “Shaft Monitor” parameter.
Must be used BDU with additional door input (could be NO or NC).
System detect a manually floor door opening monitoring the auxiliary door input.
Cod 1: One Floor door manually open (with no open door command).
Cod 2: More than one Floor door manually open (at different floors)

Remedy
Reset UAS in the menu “Faults”.

57) – Bypass door

Description (and cause)
Only for EN 81-20.
Bypass active on door safety contacts.
(Moving enabled only in inspection)
Check also SM1 module monitor
Cod 1: Bypass Car active
Cod 2: Bypass Pre-Locks active
Cod 3: Bypass Locks active
Cod 100: Module SM1 locked

Remedy
Cod 100: Module SM1 is checked if only PME selector is active and no STOPS nor direction button pressed: in that condition module SM1 must be not enabled and SE3 input should be open.

58) – Overspeed

Description (and cause)
Only for Encoder positioning system.
In inspection or Temporary mode Lift’s speed is more than 0,63 m/s

Remedy
Check encoder parameters or inspection speed in “System Positioning” menu.

59) – Fault SHI

Description (and cause)
Only for 81-21 Pre-triggered device.
Cod 0: Wrong feedback when pre-triggered device is not energized
Cod 255: Wrong feedback when pre-triggered device is energized
Manual protection:
Cod 101: Monitor Relay RMPP (contact doesn’t open)
Cod 102: Monitor Relay RMPP (contact doesn’t close)

Remedy
Check Pre-Triggered Device (or relay RMPP)

60) – Fault ELGO

Description (and cause)
ELGO Fault.
Cod 4: Pre-triggered Stopping system Top
Cod 5: Pre-triggered Stopping system Bottom
Cod 8: Normal mode overspeed (pre tripping)
Cod 9: Normal mode overspeed (final tripping)
Cod 11: Inspection mode overspeed (final tripping)
Cod 13: Teach mode overspeed (final tripping)
Cod 14: Normal mode overspeed (leveling)
Cod 15: Normal mode overspeed (re-leveling)
Cod 24: Unintended elevator car movement
Cod 100: ELGO not in operative mode
Cod 102: ELGO's Input EN81-21 in Manual Teach mode
Cod 103: ELGO's eSGC_POW missing in Manual Teach mode
Cod 104: Restarting error in Manual Teach mode
Cod 121: Input ELGO 81.21 not matching (all time OFF)
Cod 122: Inputs ELGO UP/DOWN (not active)
Cod 123: Input ELGO UP not matching
Cod 124: Input ELGO DOWN not matching
Cod 125: Inputs ELGO UP/DOWN not matching (all time ON)
Cod 200: Communication time out
Cod 255: Magnetic Band missing

Remedy
Check ELGO configuration data.
Check ELGO wiring.
Make a Fault reset to remove the fault.

Cod 100: Need a Manual Teach procedure
Cod 102: Check wiring of ZP2 signal in the controller
Cod 103: Check wiring of cable eSGC (power missing)
Cod 104: Need Chenge device
Cod 121: Check wiring of ELGO and TOC's signal output. Error means a mismatch between command from controller and ELGO's diagnostic.
Cod 121<->125: Check wiring of ELGO and TOC's signals output. Errors means a mismatch between commands from controller and ELGO's diagnostic.
Cod 200: Check wiring TOC- ELGO (Can signals)
Cod 255: Check mounting of the magnetic band and mountingdirection as well.

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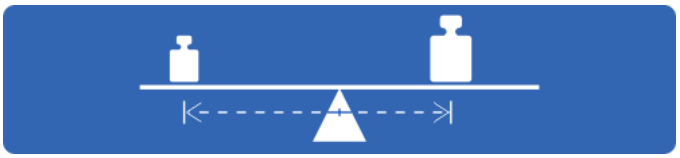
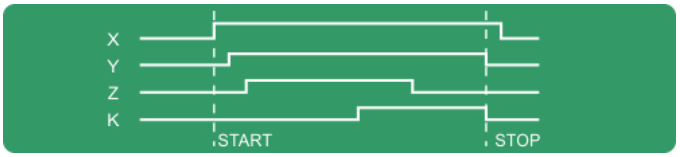
Fire service operation



Test and measurements

Multiplex solutions



Timing diagrams

Fusion App *(work in progress)*

Updated on 17 Febbraio 2022

Pitagora 4.0 – Fire service operation

Contents

The system has the following inputs for firefighters' operations:

- POM input (key of floor): closing towards GND (NC / NO) I = 5mA
- CPOM input (elevator key): closing towards GND (NC / NO) I = 5mA

Reference standards

EN81-72:2015 – Firefighters lift (Europe)

The EN 81-72 standard establishes the safety rules for the construction and installation of lifts with particular reference to fire-fighting lifts.

• The standard applies to all new installations inside new buildings.
• The "Firefighter" Lift is a lift for normal use, with some special requirements for use by firefighters in the event of a fire.

D.M. 15/09/05 – Rescue lift (only for Italy)

The rescue lift can only be used for the transport of equipment and for the evacuation of people, it is therefore not a lift in

normal service.
It only provides manual doors in the elevator car and at floors.
The elevator car door must have one or more sliding leaves.
Hydraulic operation is not allowed.

EN81-73

Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lifts
Behaviour of lifts in the event of fire

Firefighters operation

Phase 1

Firefighters key switch to “1”

- *All car/floor existing calls cancelled.*
- *Call buttons and light barriers disabled (except Alarm & Door Open).*
- *Car priority recall to fire service access level and parking with door open.*
- *Interphone communication system activated.*
- *Shaft and machine room lighting activated.*

Phase 2

Firefighters in the car

- *Priority mode: only one call at a time, any new call cancels the previous one.*
- *When car is stationary at landing, doors can be opened by applying constant pressure to Door Open button. If pressure is released before doors are fully open, doors re-close automatically.*
- *Car shall be returned to the fire service level by switching the firefighters switch to “0” and (within 5 sec.) back to “1”.*

Elevator car

Elevator car firefighter key switch (if present), switched to “1” allows to initiate elevator car movement in Phase 2, switched to “0” keeps the elevator car parked with doors open.

To revert the lift to normal service, all firefighters key switches must be returned to “0” and car must be returned to fire service access level

Fire operation programming procedure

Here you can set the parameters for firefighting operations according to 5 different cases.

Case 1 – One Firefighters key only (at floor)

Using these settings and once the fire-fighters key at fire-fighters floor has been activated (input POM), the elevator will go to the programmed floor, open the doors and turn off the Landing Operation Panels (PHASE 1); The Car Operating Panel remains in operation. The operation ends when the elevator arrives at the programmed floor and the fire-fighters key is turned to ‘off’ condition.

Enter the menu “SPECIAL FUNCTIONS” submenu “FIREFIGHTERS” and set:
• The floor where the fire-fighters key is located
• The Access (if there are multiple doors)
•The stand-by state 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)

Case 2 – Two firefighters key switches (at floor and in the elevator car)

Using these settings and once the fire-fighters key at the fire-fighter floor has been activated, the elevator will go to the programmed floor (PHASE 1), open the doors and turn off the Landing Operation Panels. The Car Operating Panel remains in operation but only after the fire-fighter key in the CAR (input CPOM) has been turned on. The operation ends when the elevator arrives at the programmed floor and the fire-fighters keys are turned to ‘off’ condition.

Enter the menu “SPECIAL FUNCTIONS” submenu “FIREFIGHTERS” and set:
• The floor where the fire-fighters key is located
• The Access (if there are multiple doors)
• The stand-by state of the key switches (NO or NC)
• The operation EN 81-72 (b)

Case 3 – External fire contact for fire detection with one contact only

Using these settings and once the contact is activated by the external fire contact, the elevator will go to the programmed floor, open the doors and 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.

Enter the menu “SPECIAL FUNCTIONS” submenu “FIREFIGHTERS” and set:
• The floor where the elevator must go in case of direct activation of the contact from the external fire contact
• The Access (if there are multiple doors)
• 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

Case 4 – External fire contact with one contact and one firefighters key only (at floor)

The activation of this input will start PHASE 1 of the operation (also called evacuation) and will not allow elevator car calls without the activation of the fire-fighters key-switch. Using these settings and once the contact has been activated by the external fire contact, the elevator will go to the programmed floor, open the doors and remain stopped (PHASE 1). The Landing Operation Panels are disabled and the Car operating Panel remains 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), by turning off the key and deactivating the contact from the external fire contact.

Enter the menu “SPECIAL FUNCTIONS” submenu “FIREFIGHTERS” and set:
• The floor where the fire-fighters key is located
• The Access (if there are multiple doors)
• The stand-by state of the key switch and of the external fire contact (NO or NC)
• The operation EN 81-72 (b)
• Connect 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.

Case 5 – External fire contact with one contact and two firefighters keys (at floor and in the elevator car)

The activation of this input will start PHASE1 of the operation (also called evacuation) and will not allow elevator car calls without the activation of the fire-fighters key-switch in the elevator car.
Using these settings and once the contact by the external fire contact OR the key at floor has been activated, the elevator will go to the programmed floor, open the doors and remain stopped (PHASE 1). The Landing Operation Panels are disabled and the Car Operating Panel remains in operation but only after the fire-fighter key in the CAR (input CPOM) has been turned on. The reactivation of the elevator will take place, (bringing the elevator to the programmed floor), by turning off the fire-fighter keys (at the floor and in the elevator car) and deactivating the contact from the external fire contact.

Enter the menu “SPECIAL FUNCTIONS” submenu “FIREFIGHTERS” and set::
• The floor where the fire-fighters key is located
• The Access (if there are multiple doors)
• The stand-by state of the key switches and the external fire contact (NO or NC)
• The operation EN 81-72 (b)
• Connect the wiring as indicated in the electric diagram: the contact of the external unit must be connected together with floor key switch POM (in serial for NC contacts, in parallel for NO contacts).

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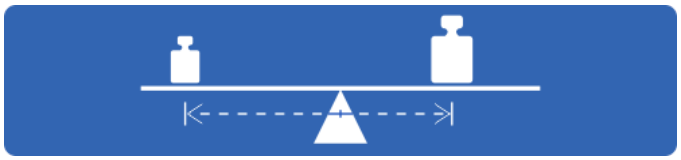
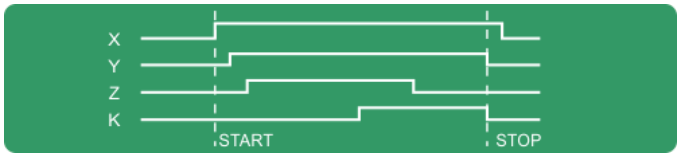
Fire operation programming procedure



Test and measurements

Multiplex parameters setting



Timing diagrams

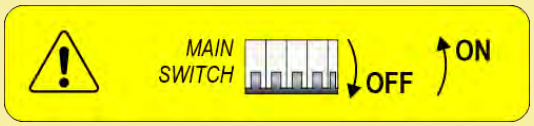
Fusion App *(work in progress)*

Updated on 16 Febbraio 2022

Pitagora 4.0 – Test and measurements

Contents

Procedures for system safety testings and for space-time measuring elevator car movement are described here.



The main switch of the controller must be switched off by every maintenance and at least 365 days after the last switch off and on.
This procedure is mandatory and must be followed in order to start the Autotest of the ELGO LIMAX CP33 and FUJI LM2 components.

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.
Tests 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 5.6.7.5 of EN81-20) 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 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 5.6.7.5 of EN81-20) 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 reset UCM).

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

Before starting the test, move the empty elevator car to the ground floor.
During the test, the elevator car will move upwards up to the second last floor (AGH for two stops installations); now the elevator car stops. After the elevator 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 elevator car to the top floor.
During the test, the elevator car will move downwards up to the first floor (AGB for two stops installations); now the elevator car stops. After the elevator 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 elevator car (EN 81 point 14.2.1.2)

Before starting the test, move the elevator car to the floor where you want to take the measure.
During the test, the elevator car will move upwards until the re-leveling function is activated; now the elevator car is re-leveled. After the elevator 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 elevator car (EN 81 point 14.2.1.2)

Before starting the test, move the elevator car to the floor where you want to take the measure.
During the test the elevator car will move downwards until the re-leveling function is activated; now the elevator car is re-leveled. After the elevator 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 elevator car to the ground or top floor.
During the test the elevator car will move towards the shaft end until the safety chain opens (or until the FCO input is detected). After the elevator 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 elevator 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 elevator car or the counterweight on the shock absorbers and perform the rope slipping test. Move the elevator 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 elevator car to the ground or top floor.

During the test the elevator 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 highest 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 valueswill also be preserved after the end of the test for evaluation purposes.

Test 10: ELGO UCM in UP direction (ELGO-CP)

Before starting put the empty elevator car to the floor where you want to make the test (excluded top floor).
During the test the lift starts in UP direction up to the end of door zone; at this point ELGO will give a fault (Fault ELGO Cod. 24) and stop the elevator car (OC contact open) and on the display is showed space and time of system intervention (to be compared with Eelevator N81 point 9.11.5).
IMPORTANT: spaces must pbe calculated before as a sum of intervention times (controller, Stopping device)
After test it is necessary a fault reset (Menu Fault, Reset) to put the ELGO LIMAX33-CP in normal operating mode.

Test 11: ELGO UCM in DOWN direction (ELGO-CP)

Before starting put the empty elevator car to the floor where you want to make the test (excluded bottom floor).
During the test the lift starts in DOWN direction up to the end of door zone; at this point ELGO will give a fault (Fault ELGO Cod. 24) and stop the elevator car (OC contact open) and on the display is showed space and time of system intervention (to be compared with EN81 point 9.11.5).
IMPORTANT: spaces must pbe calculated before as a sum of intervention times (controller, Stopping device)
After test it is necessary a fault reset (Menu Fault, Reset) to put the ELGO LIMAX33-CP in normal operating mode.

Test 12: OSG and Safety Gear test (ELGO-CP + eSGC)

Before starting put the elevator car to the top or bottom floor.
During the test the lift starts in high speed and the OSG+eSGC will open at nominal speed (Fault ELGO Cod. 9) stopping the elevator car.
After test it is necessary a fault reset (Menu Fault, Reset) to put the ELGO LIMAX33-CP in normal operating mode.

Test 13: ETSL system intervention in UP direction (ELGO-CP)

Optional function. In normal condition protection open OC contact if the cabine's speed is too high during the UP direction trip (risk for counterweight on the buffers).
During the test ELGO consider the middle of the Shaft as if it were the Upper Reference point.

Before starting the test, place the empty cabin on the ground floor (lowest floor) without load to simulate the worst conditions. During the test the cabin will start towards the highest floor. Before the mid-point of the lift shaft the ELGO will open the OC safety contact (Fault ELGO Cod. 16) and the elevator car will stop for brake intervention before reaching the half compartment position (assumed as the simulated buffer position).
The intervention time (from the opening of the OC contact) and distance from the mid-point of the lift shaft (safety margin with the buffers) are displayed.

Test 14: ETSL system intervention in DOWN direction (ELGO-CP)

Optional function. In normal condition protection open OC contact if the cabine's speed is too high during the UP direction trip (risk for cabine on the buffers).
During the test ELGO consider the middle of the Shaft as if it were the Lower Reference point.
Before starting the test, place the cabin on the top floor with a fully loaded lift cabin to simulate the worst conditions. During the test the cabin will start towards the bottom floor. Before the mid-point of the lift shaft the ELGO will open the OC safety contact (Fault ELGO Cod. 16) and the elevator car will stop for brake intervention before reaching the half compartment position (assumed as the simulated buffer position).
The intervention time (from the opening of the OC contact) and distance from the mid-point of the lift shaft (safety margin with the buffers) are displayed.

Test 15: Reduced Head Safety test (EN 81-21 – ELGO-CP+eSGC)

Test for Reduced Head and Protection system based on ELGO+eSGC.
Protection intervention is after a shaft access, in the point given by distance TRIPS (Monitor Encoder, pag 8) from the Upper Reference position (counterweight on the buffer).
During the test ELGO intervention is given also with lift in normal mode, without any shaft access simulation. Before starts the test put the lift under the intervention point.
During the test elevator car will start in UP direction (to the top floor). When elevator car reaches the intervention point, ELGO will open OC contact and switch off the eSGC output stopping the elevator car (Fault ELGO Cod. 4).
After test it is necessary a fault reset (Menu Fault, Reset) to put the ELGO LIMAX33-CP in normal operating mode.

Test 16: Reduced Pit Safety test (EN 81-21 – ELGO-CP+eSGC)

Test for Reduced Pit and Protection system based on ELGO+eSGC.
Protection intervention is after a shaft access, in the point given by distance TRIPD (Monitor Encoder, pag 8) from the Lower Reference position (Cabine on the buffer).
During the test ELGO intervention is given also with lift in normal mode, without any shaft access simulation.
Before starts the test put the lift over the intervention point.
During the test elevator car will start in DOWN direction (to the bottom floor). When elevator car reaches the intervention point, ELGO will open OC contact and switch off the eSGC output stopping the elevator car (Fault ELGO Cod. 5).
After test it is necessary a fault reset (Menu Fault, Reset) to put the ELGO LIMAX33-CP in normal operating mode.

Test 17: OC Safety contact test (ELGO-CP)

Only for installation with ELGO-CP.
Test checks if the safety contact OC inside the ELGO works porperly: contact opens for 0,5 sec. (you can check the safety chain open from SE3 point).
Test is automatically executed one time a day.
It is no further operation needed after the test (lift is in normal Service).

Test 18: Door Disable

Test for temporarly disabling door operators.
Test is useful if technician needs to make some test with lift in normal mode but without the risk some user can enter in the elevator car.
It is possible to program a time of 1/5/10/30/60 minutes.
Time is valid also if Lift will be put in inspection / Normal again.
At the end of timer, lift comes back in normal mode.

Test 19: Black out Simulation

Only for installation with full emergency option. Lift behaviour is the same you have when power supply goes off, so it make an automatic emergency moving the car to the floor and opens the door.

Test 20: Telephon call for low batteries level simulation

Controller send command to DMCPIT (output ALARM Enable) as if the battery level was wrong for an emergency call. This signal has to be connected to the telephone's input for emergency call.

Test 21: Simulation of system shutdown need (ELGO or VVVF system only)

Controller send command to DMCPIT (output ALARM Enable) as if the battery level was wrong for an emeThe system simulate a long time without any shutdown.
– At first executiion, system simulate a switch-on beyond 9 months (270 days), as an effect only the information defect "1 = Reset Cod 9". In the Errors menu DAY COUNTER = 270 is displayed. Lift continues to operate regularly.
– At second executiion, system simulate a switch-on over 12 months (365 days), as an effect the blocking fault "1 = Reset Cod 12". The lift stops at the floor without being able to take further calls. In the Errors menu DAY COUNTER = 365 is displayed. To return in normal operation, the main power switch must be turned off and then on again.

Test 22: Integrated Weighing Calibration Procedure (VVVF system only)

Controller send command to DMCPIT (output ALARM Enable) as if the battery level was wrong for an emeThe system

simulate a long time without any shutdown.
– At first executiion, system simulate a switch-on beyond 9 months (270 days), as an effect only the

The Test must be repeat twice, the first for the full load (100%), the second time (110%) for the overload measurement.
Before starting the test, place the cabin on the ground floor or on the top floor.
Select in order:

– Test 22 – 100%: Put into the car the FULL LOAD. When you confirm the test lift automaticaly will make a start from each floor in both direction. During the test doors will not be enabled to keep constant load into the cabin. Test finish when the cabin come back to the starting floor and door opens. On the Playpad is showed “End reg.”.
– Test 22 – 110%: Add into the car 10% of the load with a minumum of 75 Kg. When you confirm the cabin close the door (without moving from the floor) and the overload will be activated (and so the door will be open. On the Playpad is showed “End reg.”.

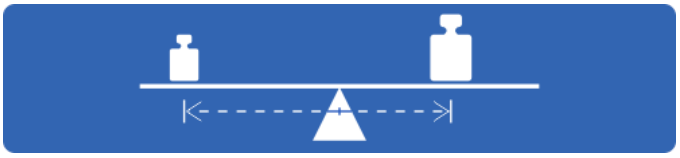
After the Calibration procedure check the status of parameter “Integrated Load Weighing” in the menu .

Attention:
Calibration Procedure Must be repeated in case of any changing into the cabin (panels, flooring, COP changing etc.) or on the counterweight (lift balancing).

Quick installation guide

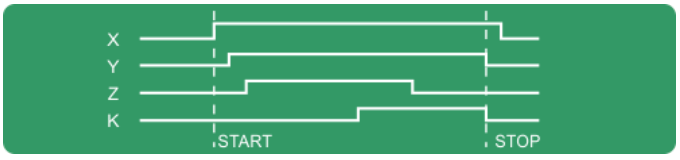
Troubleshooting

Fire operation programming procedure



Test and measurements

Multiplex parameters setting



Timing diagrams

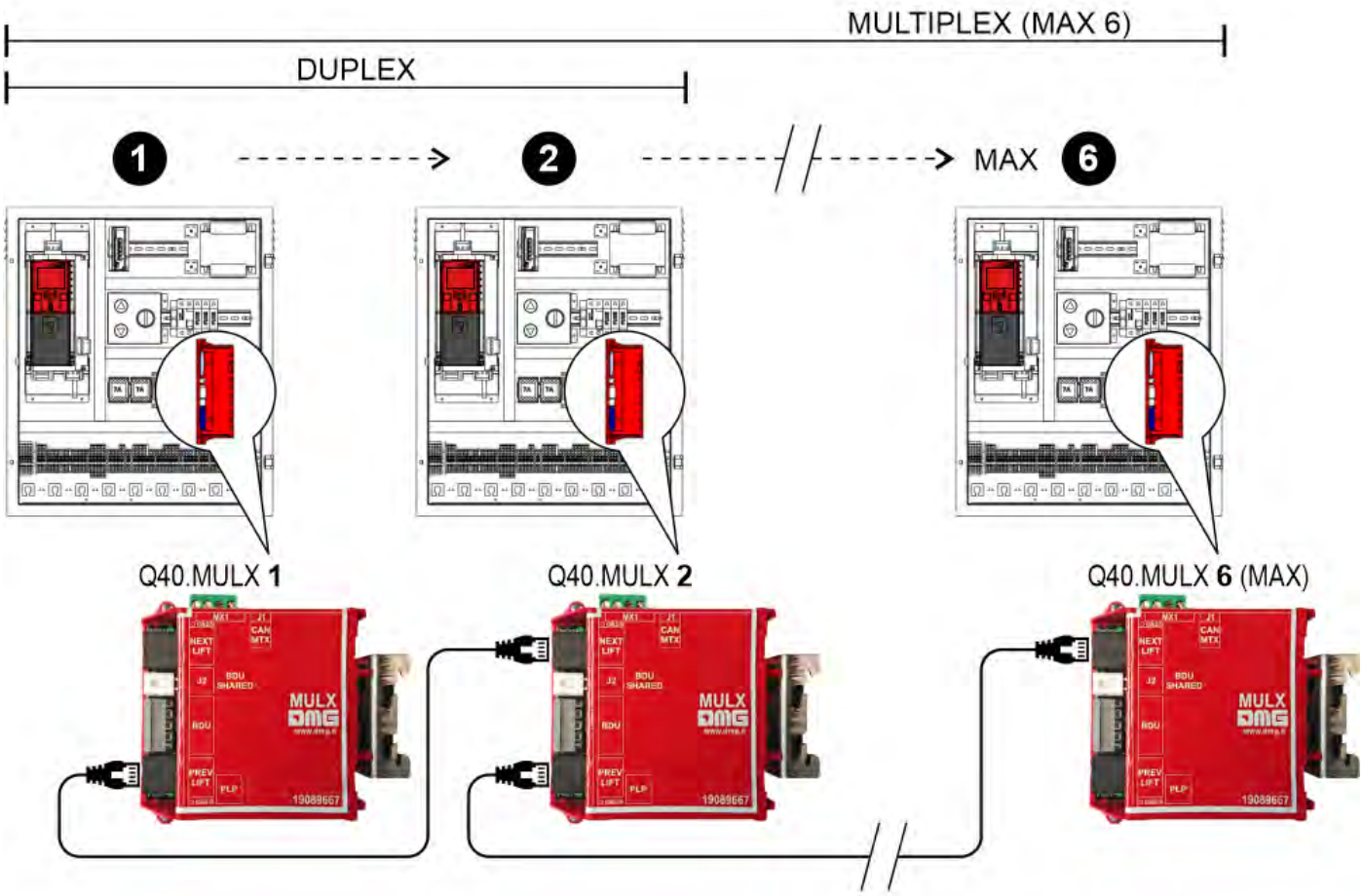
Fusion App *(work in progress)*

Updated on 17 Febbraio 2022

Pitagora 4.0 – Multiplex solutions

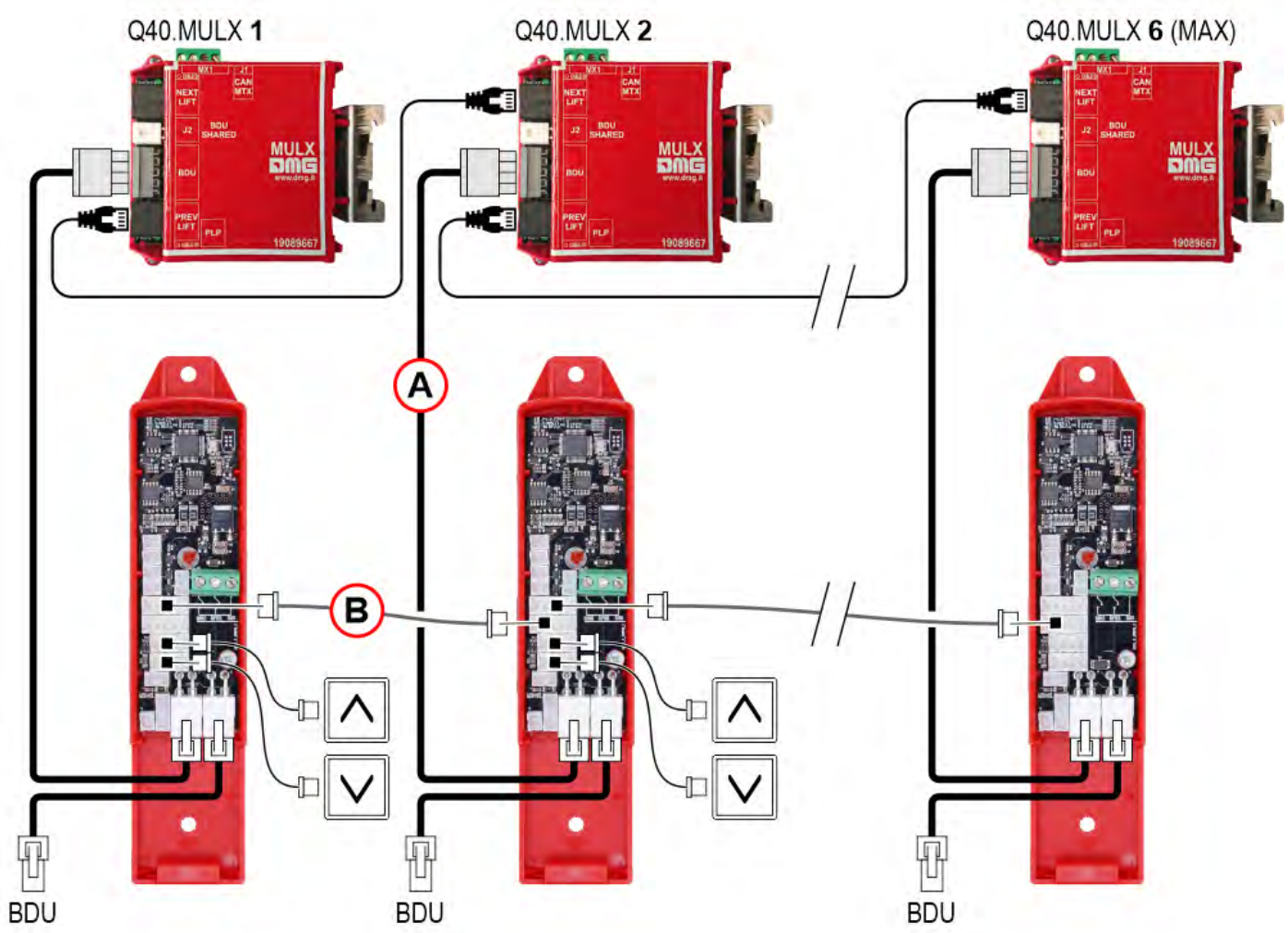
The Pitagora 4.0 control panel can manage multiplex systems up to 6 lifts.

The solution requires the use of a Q40.MULX electronic board mounted on the DIN rail of each control panel of the multiplex system. Each Q40.MULX multiplex board is equipped with two connectors (PREV / NEXT) and an ethernet cable for connection to the multiplex boards of the previous and next control panel.



Each Q40.MULX multiplex board must be connected by a specific cable (A) to the closest shaft BDU.

It is also recommended to connect the BDUs on the same floor by means of a 5-pole JST cable (B); in this way, in the event of a blackout of one of the Controllers, the button and the beep device will continue to operate calling one of the other lifts still in operation.



Below are some specific examples of duplex configurations.

Duplex elevator

– Example 1 –

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

	Controller A	Controller B
Number of floors	8	8

...		
Multiplex configuration		
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

Duplex “Dog Leg”elevator

– Example 2 –

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	

	Controller A	Controller B
Number of floors	8	6
...		
Multiplex configuration		
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 –

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

	Controller A	Controller B
Number of floors	8	5
...		
Multiplex configuration		
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 –

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	

	Controller A	Controller B
Number of floors	6	6
...		
Multiplex configuration		
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

Shared button wiring

– Example 5 –

Controller A	Push-buttons	Controller B
7		7
6		6
5		5
4		4
3		3
2		2
1		1
0		0

	Controller A	Controller B
Number of floors	8	8
...		
Multiplex configuration		
Lift number	1.0	2.0
Floors in Multiplex	8	8
OFFSET	0	0

NOTE : each button must be connected to all controllers

Independent button wiring

– Example 6 –

Controller A	Push-buttons	Push-buttons	Controller B
7			7
6			6
5			5
4			4
3			3
2			2
1			1
0			0

	Controller A	Controller B
Number of floors	8	6
...		
Multiplex configuration		
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

Multiplex call

– Example 7 –

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

– Example 8 –

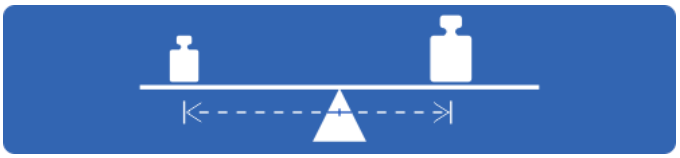
Controller A floors	Controller B floors
	5
	4
5	3
4	2
3	1
2	0
1	
0	

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 of 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.

Quick installation guide

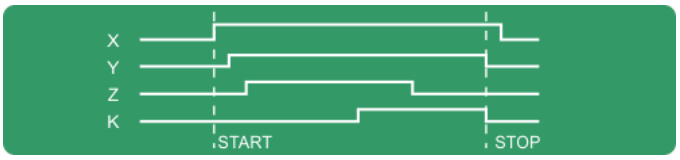
Troubleshooting

Fire operation programming procedure



Test and measurements

Multiplex parameters setting

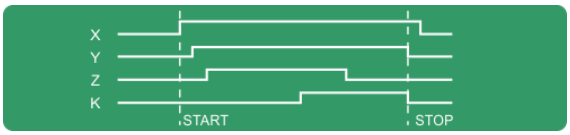


Timing diagrams

Fusion App *(work in progress)*

Updated on 16 Febbraio 2022

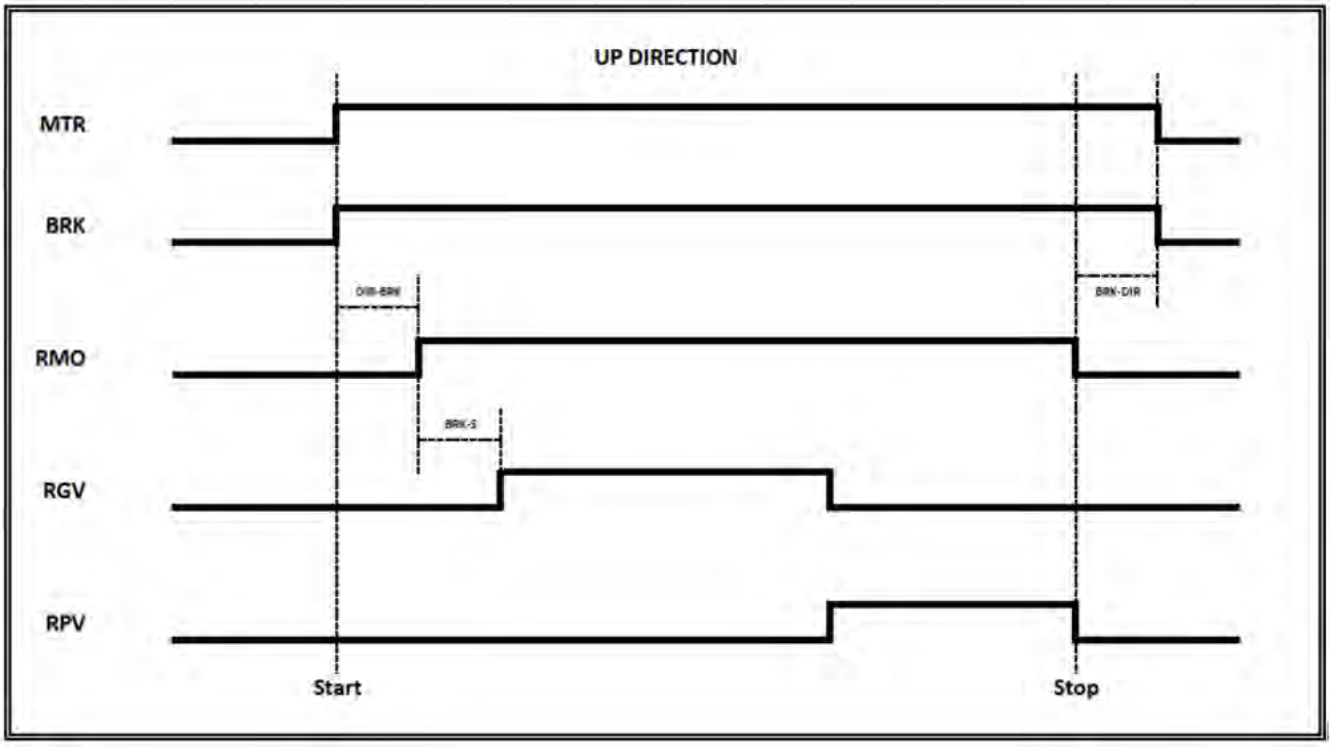
Pitagora 4.0 – Timing diagrams



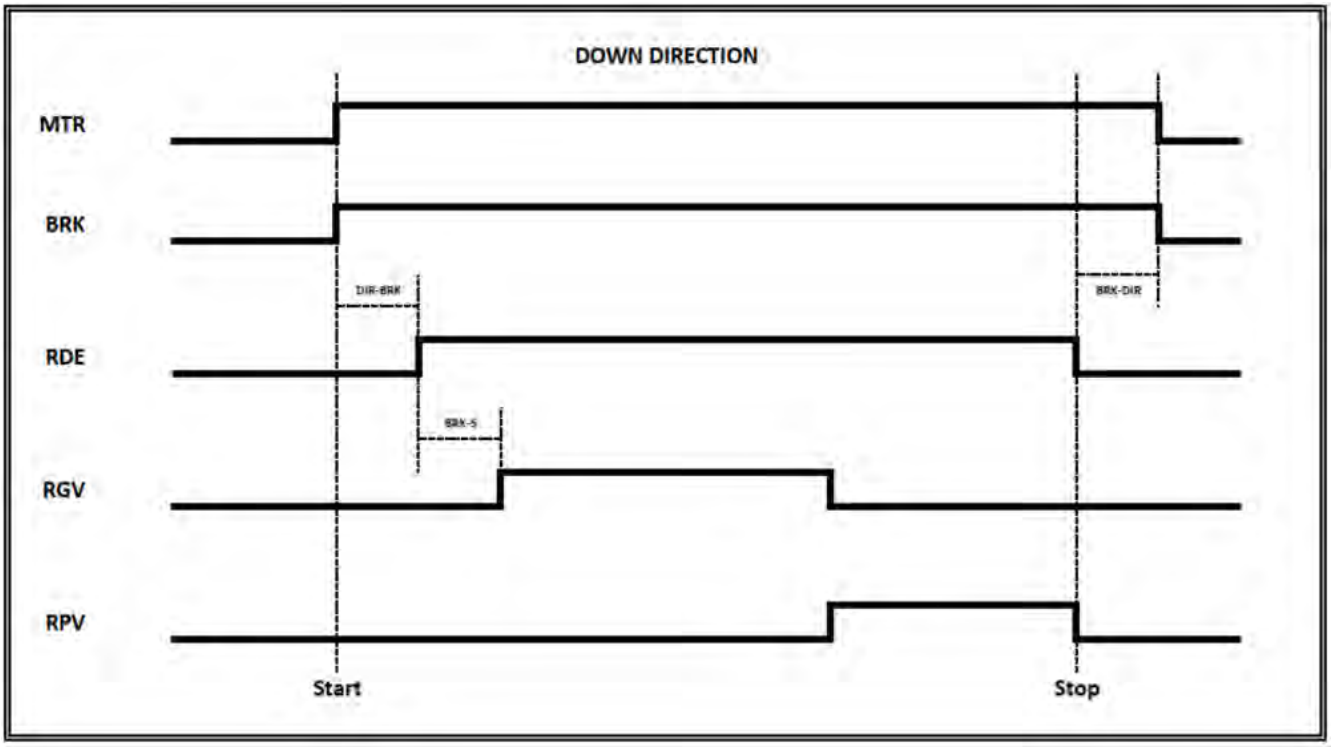
Timing diagrams of the running commands according to the type of system.

Installations with Inverter FUJI LM2

Up direction

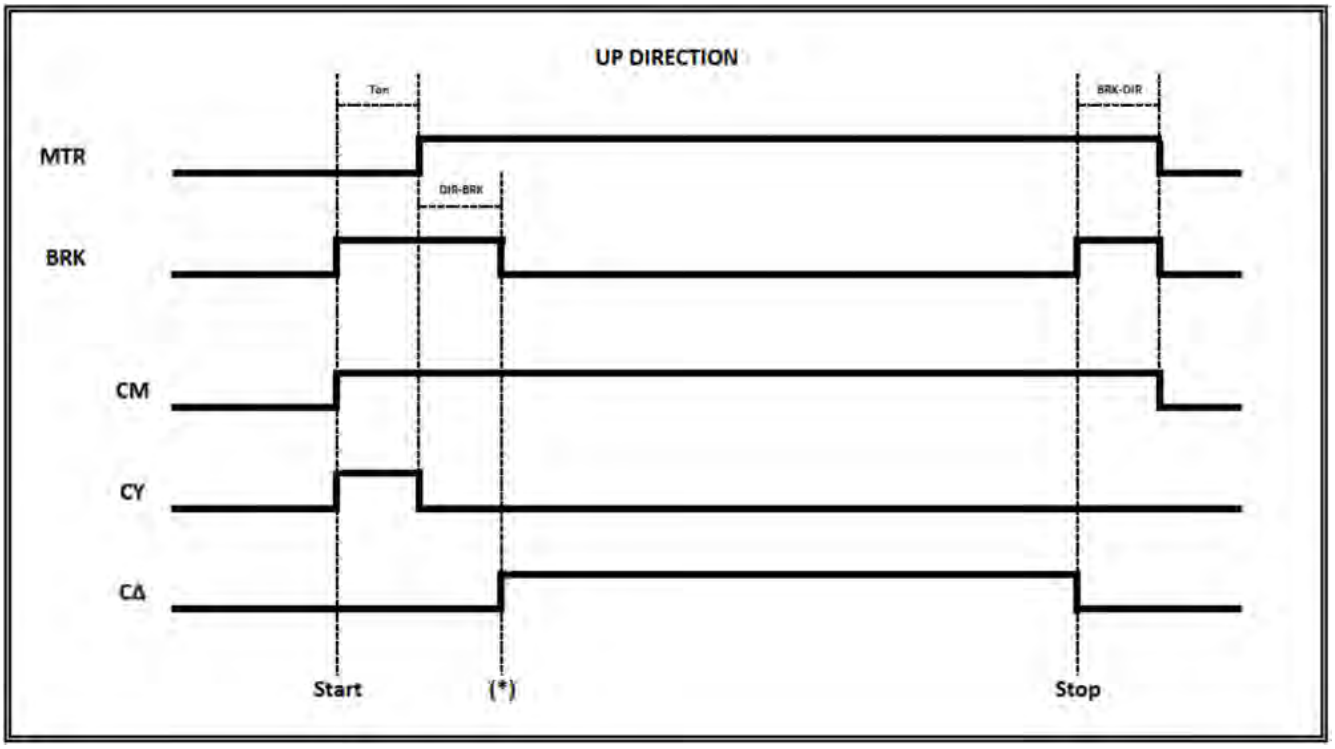


Down direction



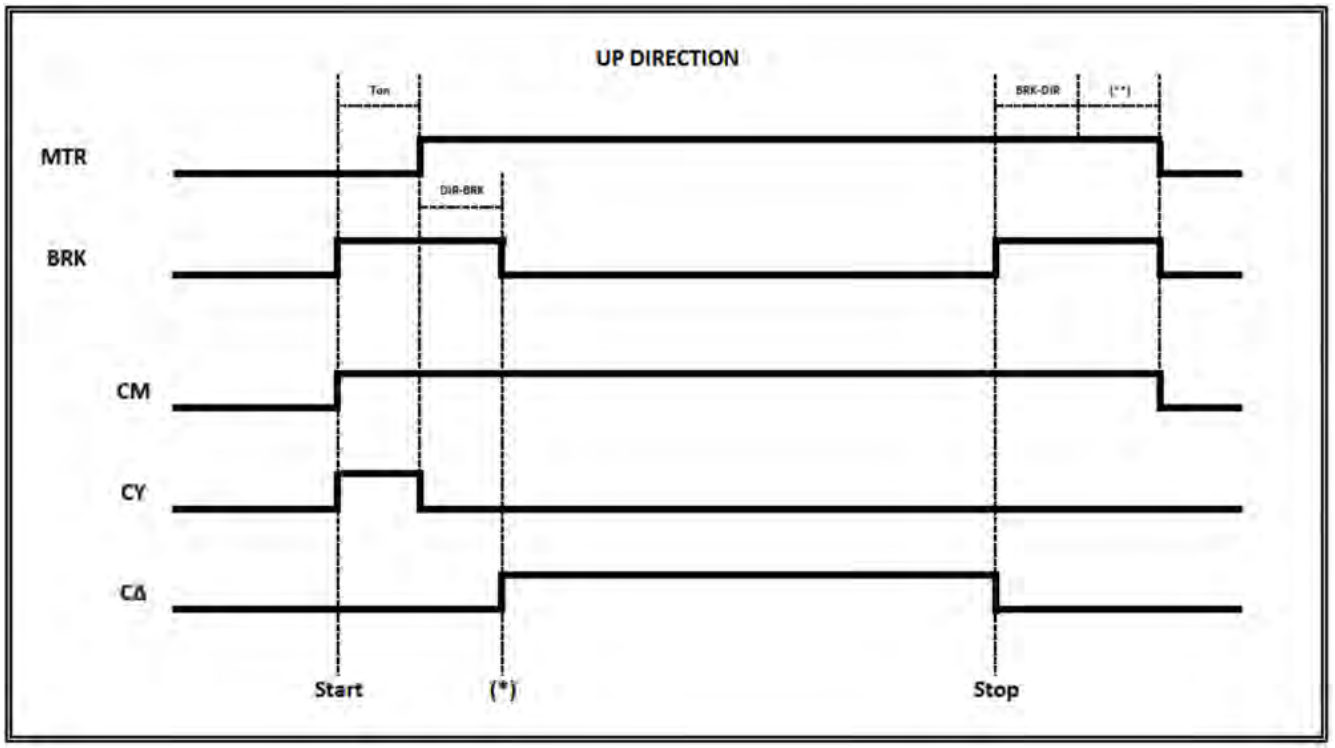
Hydraulic Lifts – Motor controls

Direct



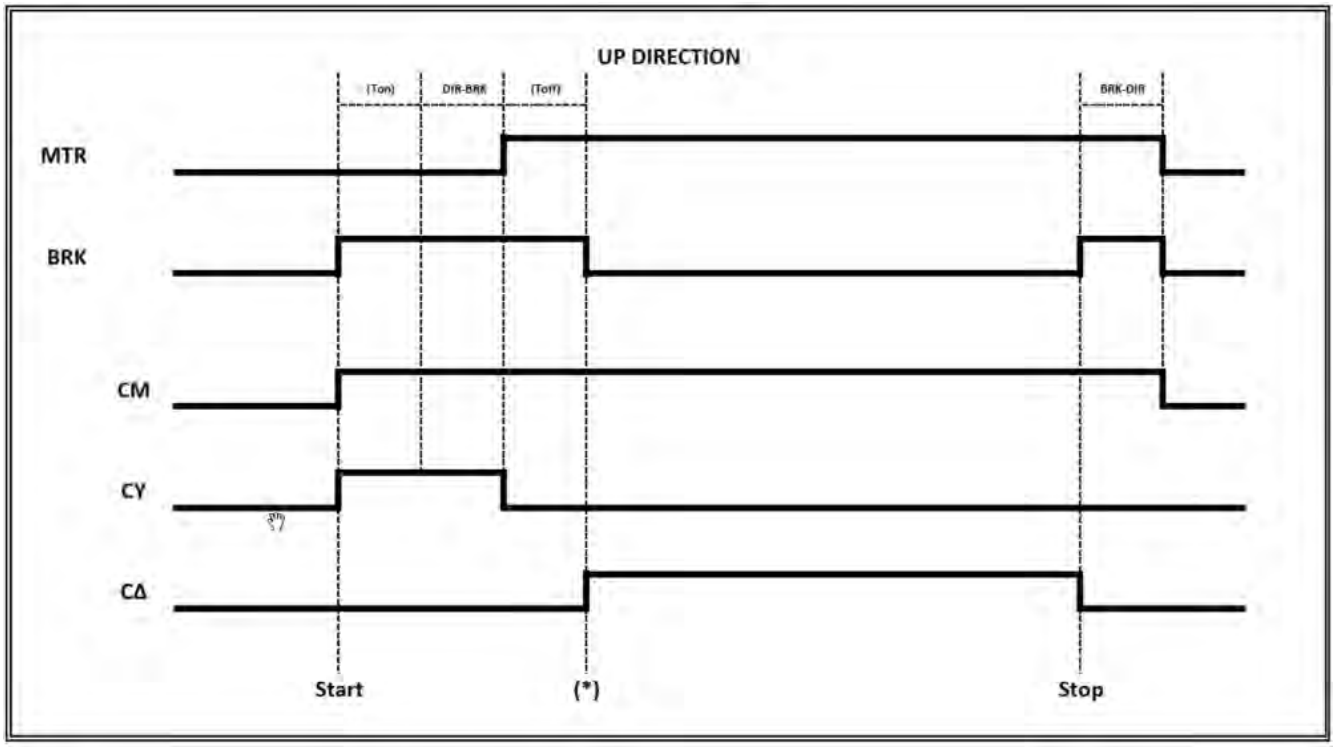
(T on) = Contactor's Time Activation, check on cco feedbacks
(*) Signal feedback for start Valve UP command

Soft Starter



(T on) = Contactor's Time Activation, check on cco feedbacks
(*) Signal feedback for start Valve UP command
(**) Signal feedback from Soft Starter Deceleration (Soft Stop)

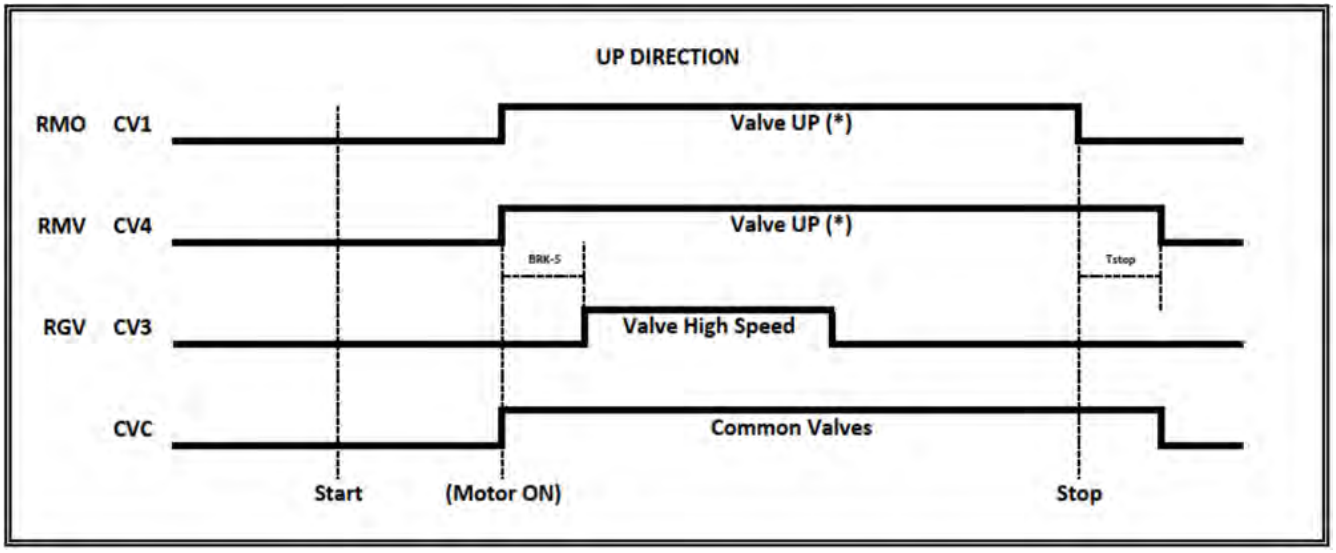
Star Delta



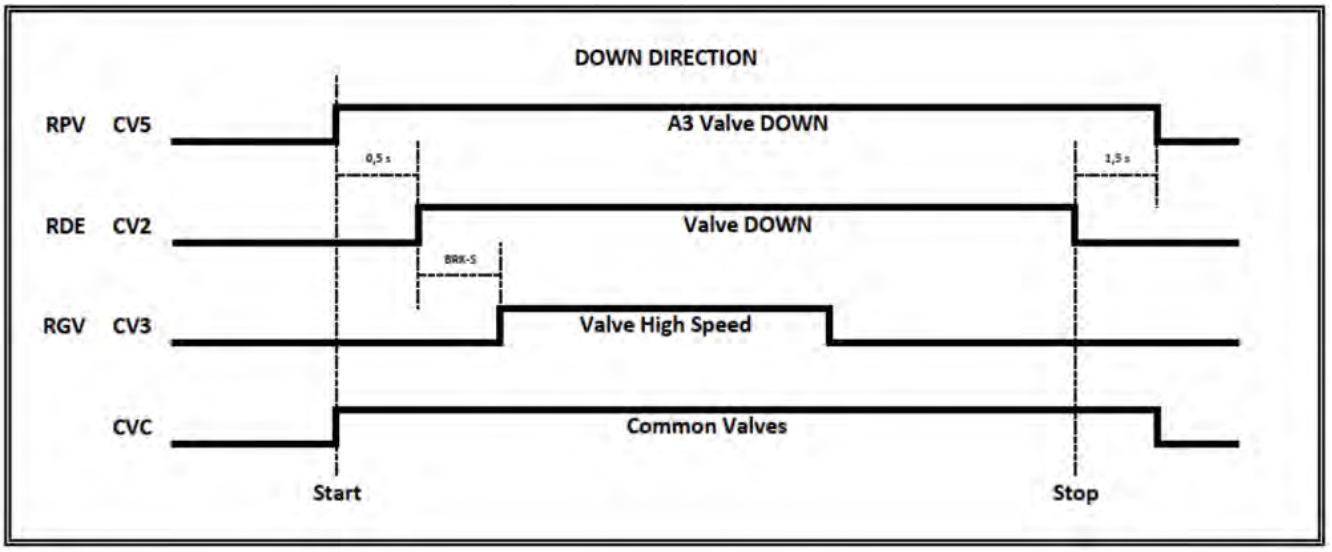
(T on) = Contactor's Time Activation, check on cco feedbacks
(T on) = Contactor's Time Disactivation, check on cco feedbacks
(*) Signal feedback for start Valve UP command

Hydraulic Lifts – Valves controls

Monitor UCM = 30…39 (2 Valves / 3 Valves / BLAIN EV100 / GMV T3010 / MORIS CM 320)

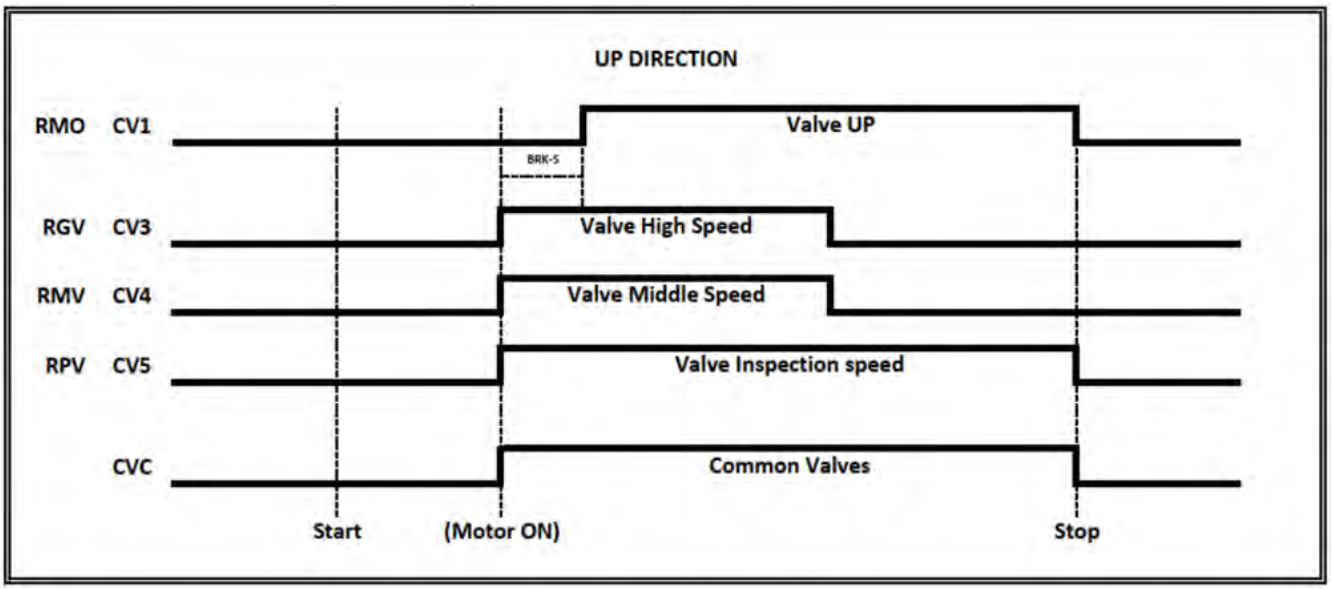


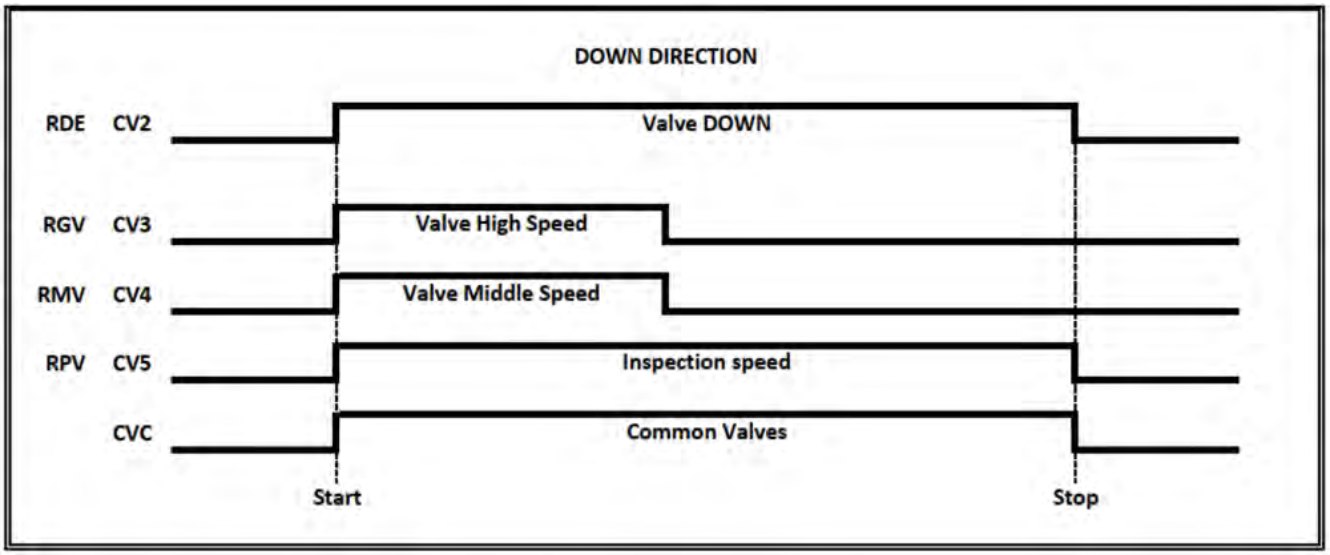
(*) In case of Soft Stop use CV1 for UP Valve's Contactor
(*) in case of no Soft Stop use CV4 for UP Valve's Contactor – Tstop = BRK-DIR + 1,5s



3 Valve => No Double Valve Down test (A3 Valve Down couldn't be present)
3 Valves + A3 => Double Valve Down test

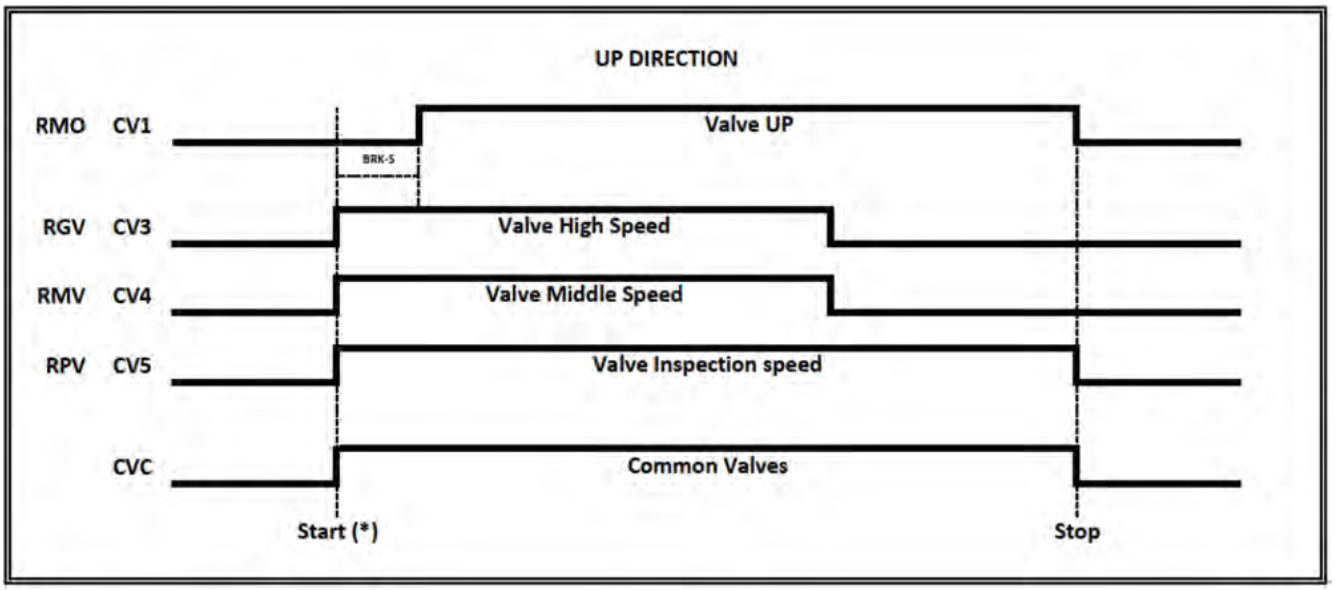
Monitor UCM = 40…44 (GMV NGV)



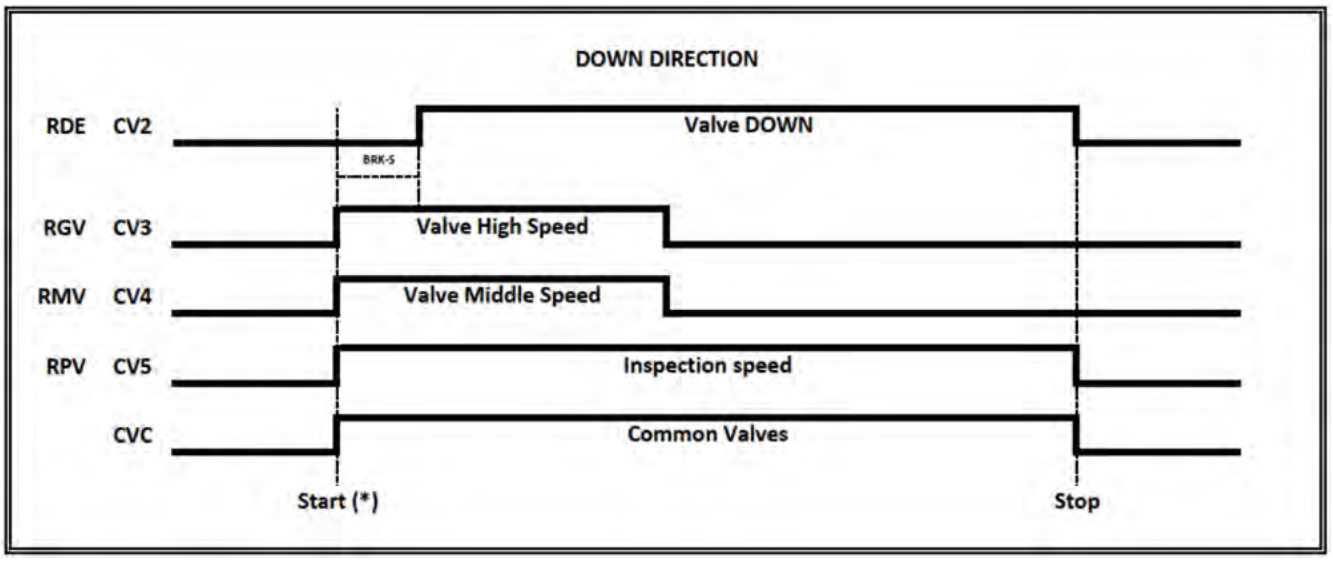


No Double Valve Down test

Monitor UCM = 45…49 (GMV NGV A3)

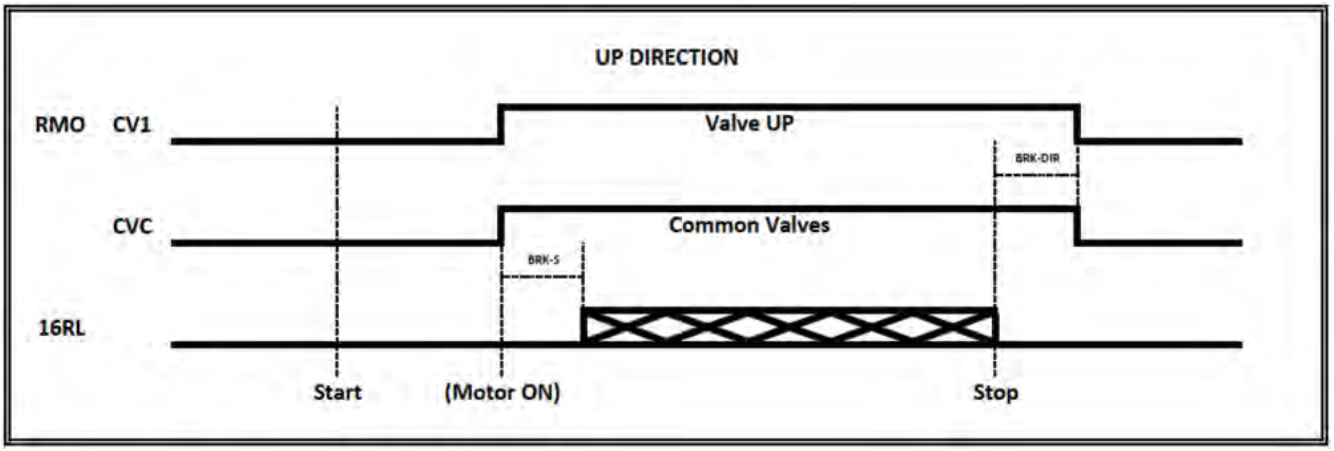


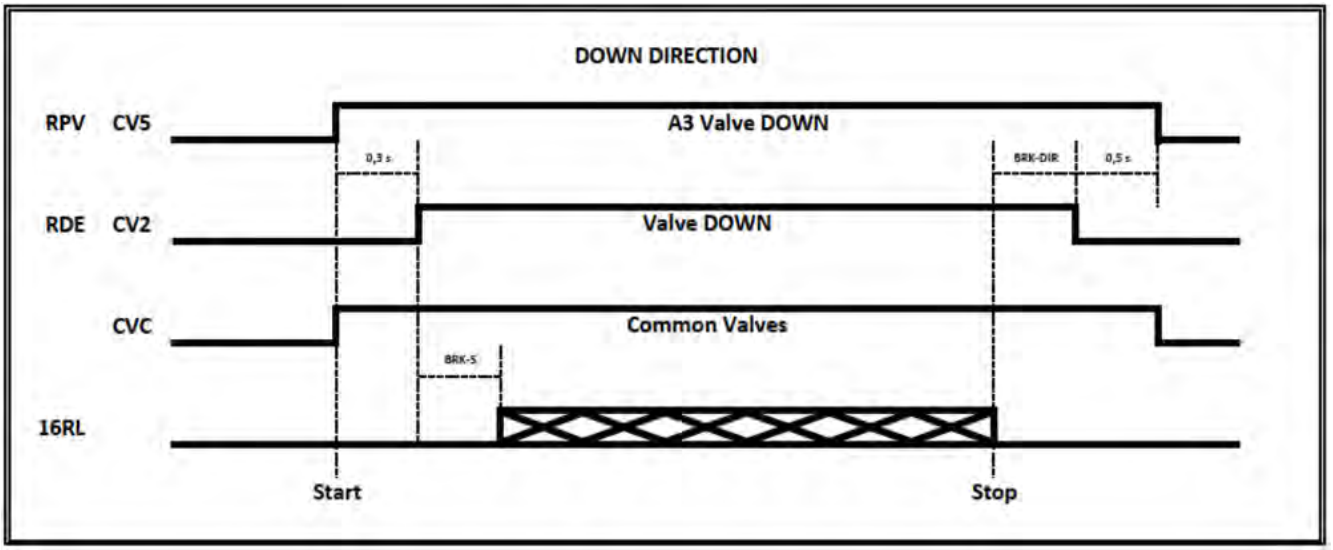
(*) Valve commands starts only if RDY signal is active
Note: Motor Contactors Starts Only With RUN Feedback Signal



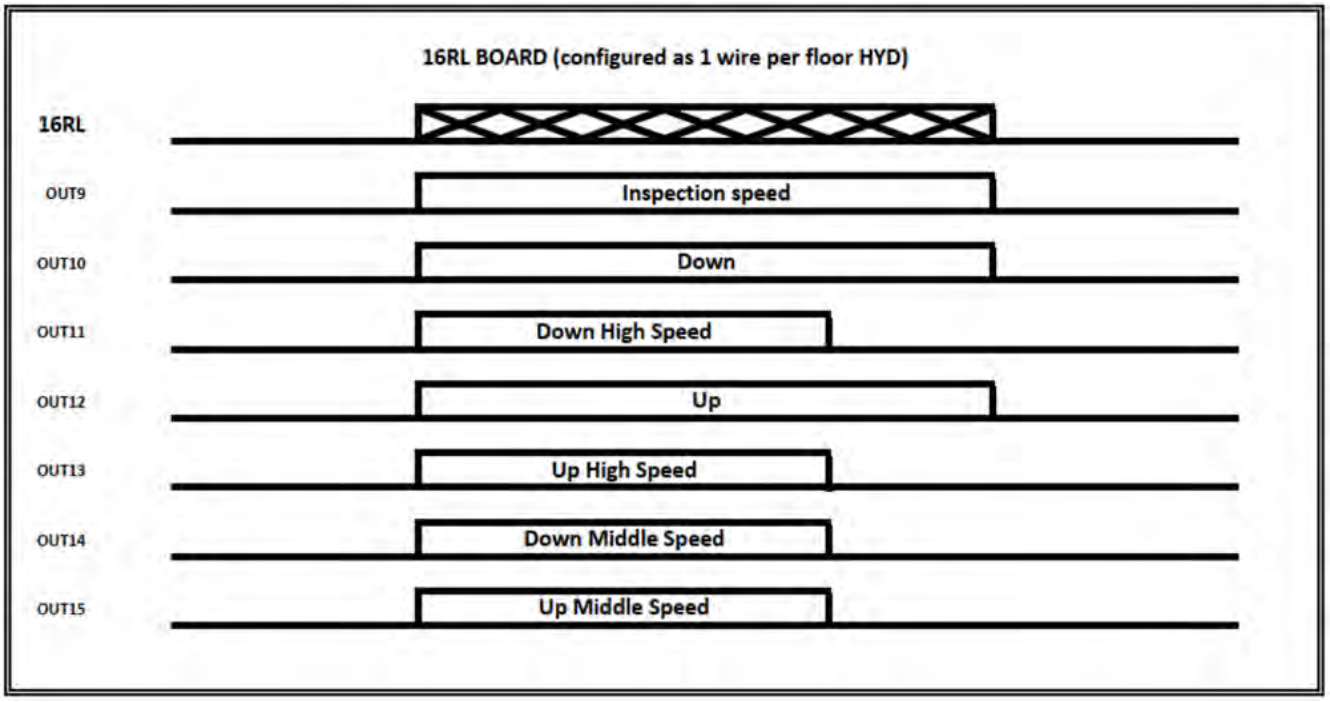
(*) Valve commands starts only if RDY signal is active

Monitor UCM = 50…59 (BUCHER LRV / BUCHER NTA-2 / BUCHER NTA-2 + DSV A3)

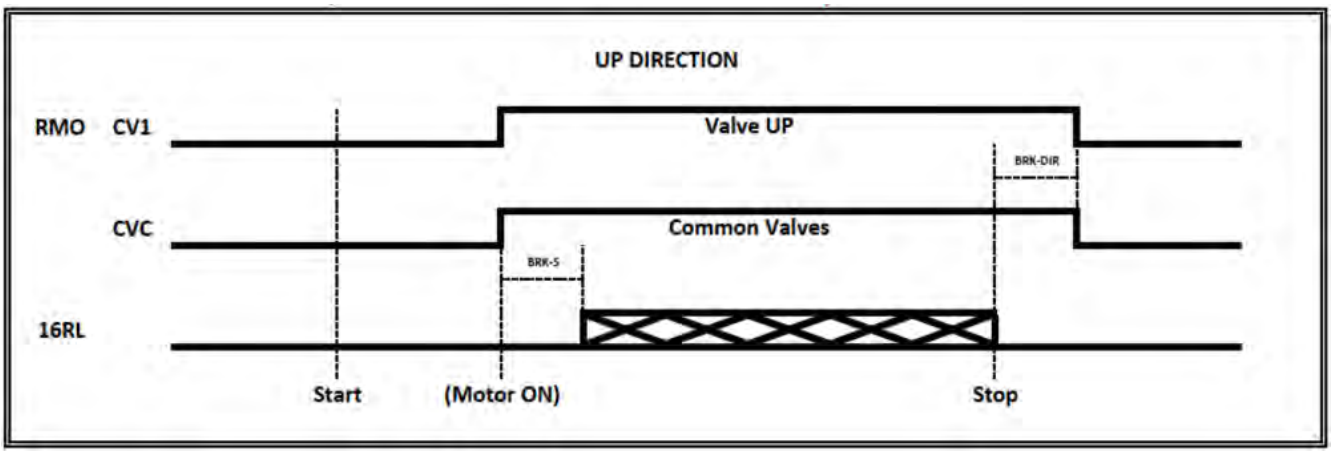




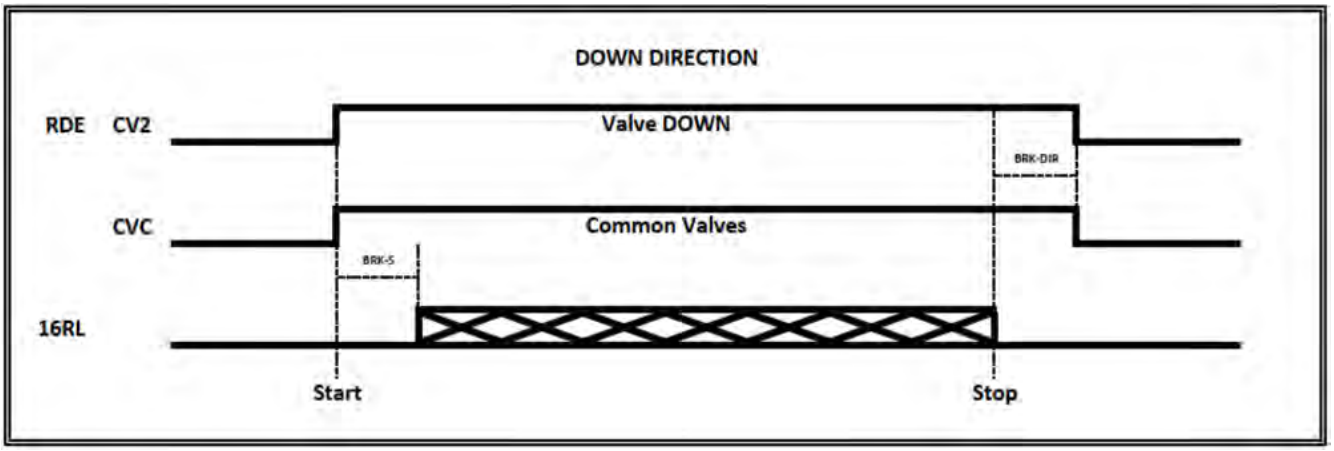
LRV1 + NTA-2 ► No Double Valve Down test (A3 Valve Down couldn't be present)
LRV1 + NTA-2 + A3 ► Double Valve Down test



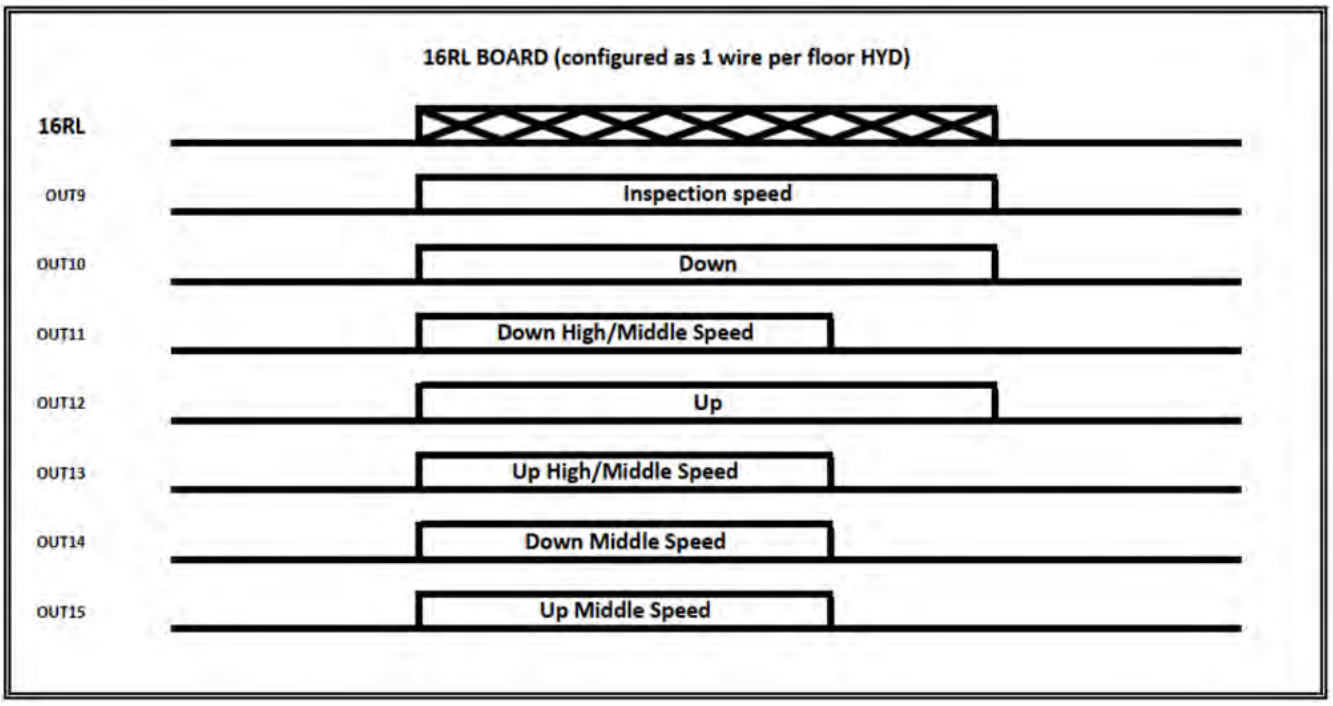
Monitor UCM = 60…64 (BUCHER i-VALVE / BUCHER iCON-2)



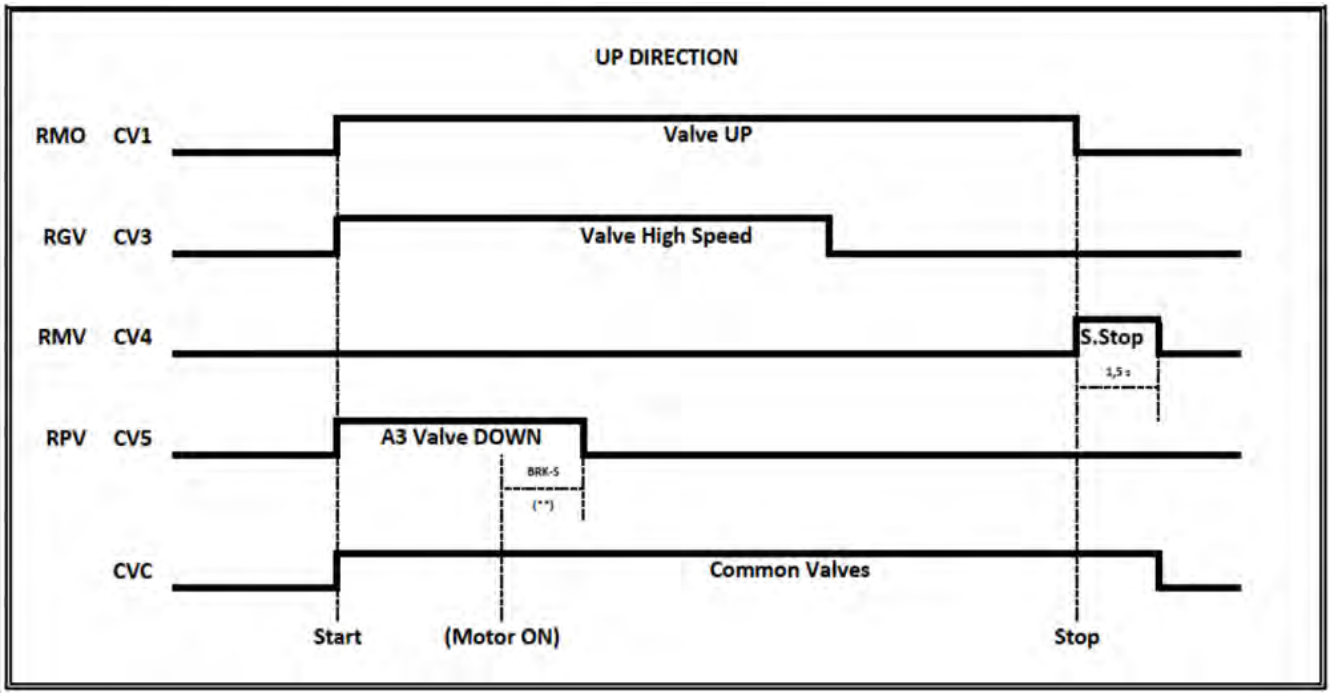
Monitor of Signal + SMA



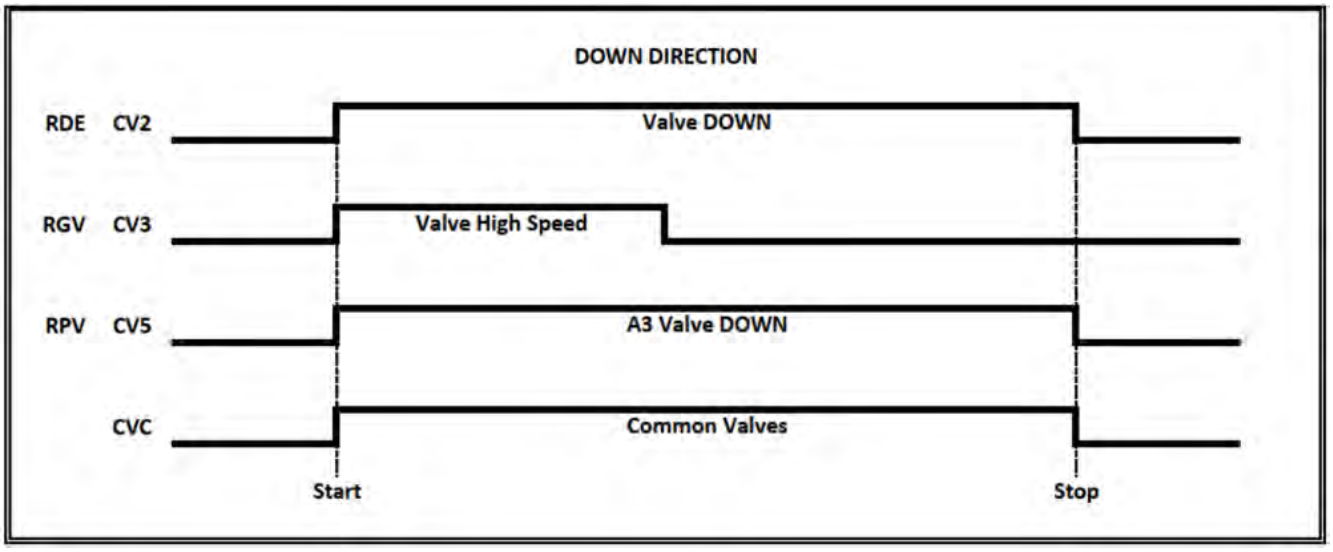
Monitor of Signal + SMA



Monitor UCM = 65…74 (START ELEVATOR 93/E-2DS)



(**) Signal feedback from Soft Starter Acceleration (Y-BRKS)
CV1 = Used only with 93/E-SL valves (Soft Stop with delay BRK-DIR)
CV4 = Used only with 93/E-2DS valves (Soft Stop)

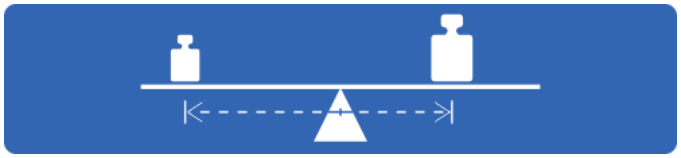


3 Valves => No double valve down test (A3 valve down couldn't be present)
3 valves + A3 => Double valve down test

Quick installation guide

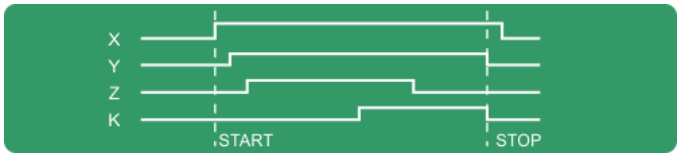
Troubleshooting

Fire operation programming procedure



Test and measurements

Multiplex parameters setting



Timing diagrams

Fusion App *(work in progress)*

Updated on 16 Febbraio 2022