USER'S MANUAL

LULA ELEVATOR
CONTROL PANEL
SIMPLEX

CP1H/CP1L PROCESSOR

JLL-1000 SERIES
B44-07

VERSION
JLL-1000_AN-07-1.3

TABLE OF CONTENTS

NOTES AND PRECAUTIONS

- The controller must be installed by competent people who possess the suitable training and cards for the installation of elevator controllers;
- The controller's power supply must come from a fuse switch supplied by others. The fuses value must respect the electrical code;
- It is necessary to install a separate conductive element to ground the controller in the mechanical room. To know the size of the conductive element, check the electrical code. An indirect grounding (e.g. water pipes) may cause intermittent troubles and electrical noises may occur;

- The controller contains electrostatic sensitive devices. Before handling a component, it's necessary to touch a grounded metal object (GND) to avoid an electrostatic discharge on it;
- To avoid problems caused by transportation and handling, check and tighten all the points of connections on the side "power"; from main power supply of the controller to the motor;
- Please note the controller comes with a one (1) year guarantee, effective on the day of billing. An improper usage of the controller, an incorrect connection or the disregard of the owner's manual may void the guarantee. Also note only the components are guaranteed;
- In case of an incorrect connection, the controller is protected by TVS which can short-circuit. Verify the functioning and replace them if needed.

Conditions of Operation:

- The entry voltage may vary of more or less 10 %;
- 60HZ, 50HZ standard frequency available on special order;
- 0 to 45°C (32 F to 113 F) operation temperature;
- 95 % relative humidity;
- NEMA 1 standard enclosure. Do not install the controller in a dusty environment or where there is risk of water infiltration. Other types of enclosures are available upon request (NEMA 4, 12 etc.);
- Please communicate with Automatisation JRT Inc. if the motor is installed 50 ft. or more from the controller;
- CSA approval.

General information:

JLL-1000 series controllers were developed for a quick and easy installation and operation. The controllers hold functions of internal self-diagnosis which allow an easy maintenance. Moreover, several functions are programmable by the user. ***Thus, it is very important to read thoroughly the manual, for a quick and secure installation.***

Each controller comes with an LCD screen. It allows configuring the elevator but not to modify the PLC internal program. If a sequence modification is required, Automatisation JRT must supply a compact flash with the transfer procedure.

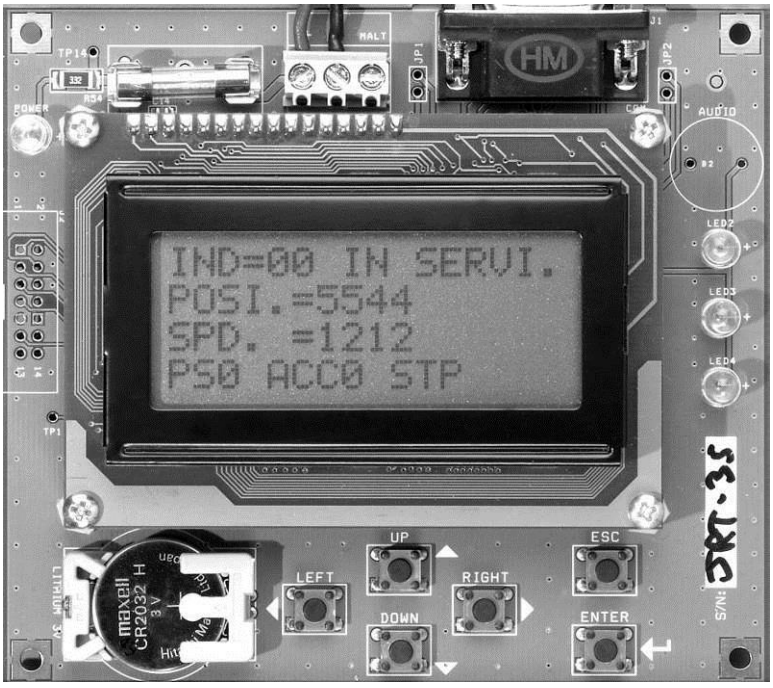
1. LCD USE (JRT-LCD):

This section is a summary of the supervision utility. Refer to appendix C for a complete description.

The LCD lets you visualize the state of the elevator controller (floor, speed in FPM, perforated tape position, alarms, etc.), modify the plc's configuration registers and also to record car calls and hall calls from a distance. The utility offers the possibility to have the information displayed in French or English.

The utility is provided with different light-emitting diodes "LED". The "POWER" LED indicates that the utility is power supplied. The "LED2" blinks to indicate that the program is functioning normally. Though, if the "LED2" stays on or off at all times, the program is not operational, you must reset the power.

When the elevator is in trouble, "LCD" screen will blink to warn the user.



1.1. KEYBOARD:

The "UP/DOWN" keys allow access to the main menus or sub-menus. They also allow changing the value of a parameter.

The "LEFT/RIGHT" keys allow placing the cursor on the parameter to modify.

The "ENTER" key allows access to a sub-menu. It also allows saving the new value.

The "ESC" key allows to return to the main menus or to cancel a parameter modification.

1.2. MENUS:

The "LCD" utility contains 19 menus available to the users.

1. Monitoring;
2. Registers access;
3. Alarms history;
4. Alarms buffer;
5. Erase alarms;
6. Construction mode;
7. Recording floor position;
8. Encoder calibration;
9. Upload DM PLC → LCD;
10. Download DM LCD → PLC;
11. Diagnosis I/O PLC;
12. Enter call;
13. Date-time;
14. Statistics;
15. Language;
16. Contrast;
17. Create PLC I/O table;
18. Password;
19. About.

To access a menu:

- Press "ESC" to access to the menus list;
- Press the "UP/DOWN" keys to select the desired menu;
- Press "ENTER" to access the menu.

The "LCD" utility has a protection that locks the menus where it is possible to modify a value or a parameter. In order to access to these menus, the user must enter the password. See section "1.2.99 Password Menu" (The LCD is locked automatically after three hours of inactivity).

1.2.1. Monitoring Menu:

The "Monitoring" menu shows, in actual time, the elevator's status data. This information may be used during the temporary and final start-up. At a start-up or after 3 hours of keyboard inactivity, the following screen will appear:

Displayed Information:

- PI. = Floor where the elevator is located;
- AUTOMATIC = Actual status of the elevator;
- POSI. = Actual position of the perforated tape(only if the elevator has a perforated tape);

- SPD. = Actual elevator speed(only if the elevator has a perforated tape);
- If traction, the last line indicates the state of the signals that were sent to the drive.
  - PSX = Preset speed X. PS0 = Preset speed 0 (For more information see the drive page)
  - ACCX = Acceleration or deceleration X. ACC1 = Acceleration 1 (For more information see the drive page)
  - FOW = Forward, REV = Reverse, STP = Stop
- If "Soft-Start", the last line indicates the "Soft-Start" state.
  - STOP = The elevator is not working.
  - RUN = The elevator is running
  - Up to speed = Reached speed.

1.2.2. Register Access Menu (to configure the elevator):

This menu allows reading and writing in one of the PLC's register. The "DM" registers are used to configure the elevator.

Register type selection:

- Press "UP/DOWN" keys to select the wanted register;
- Press "ENTER" to save;

  or

- Press "ESC" to go back to the previous menu.

Register selection:

- DM, CH, HR and AR

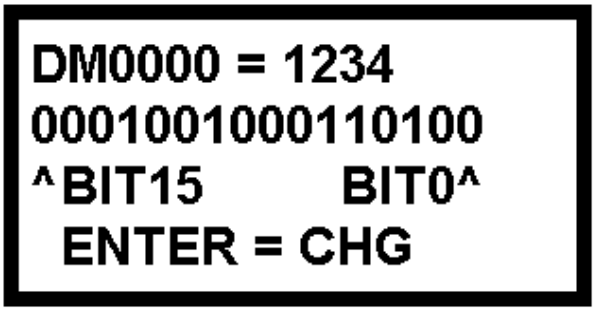
Register number selection:

- Press on the "LEFT/RIGHT" keys to place the cursor on the number to modify;
- Press on the "UP/DOWN" keys to modify the number;
- Press "ENTER" to save and to go to the next menu;
- Press "ESC" to go back to the previous menu.

Register Value:

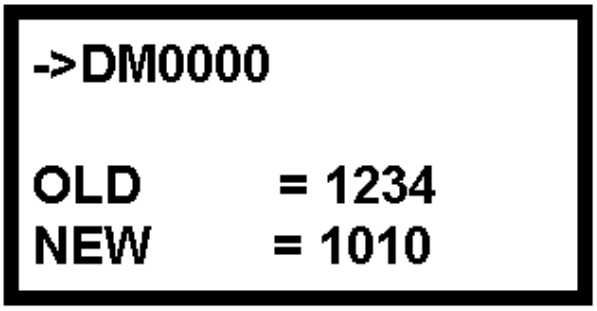
The register value is shown in hexadecimal and binary formats.

- Press "ENTER" to modify the selected register value.
- Press "ESC" to go back to the previous menu.



Modifying the register value:

- Press on the "LEFT/RIGHT" keys to place the cursor on the number to modify;
- Press on the "UP/DOWN" keys to modify the number;
- Press "ENTER" to save and to go back to the previous menu and visualize de new value;
- Press "ESC" to return to the previous menu.



1.2.3. Alarms buffer Menu:

This menu allows visualising the different alarms in the elevator controller. The utility "LCD" displays "NO ALARM" when the elevator controller has no more alarms. Press on the "UP/DOWN" keys to scroll the alarms.

1.2.4. Erase Alarms Menu:

This menu allows erasing the alarms saved in the PLC and in the alarms historical of the "LCD" utility.

To erase alarms:

- Press "ENTER" to erase alarms;

  or

- Press "ESC" to return to the previous menu.

If the alarm is still present, it will automatically show up again in the alarms buffer menu. Erasing an alarm through the "LCD" utility does not reset the alarm in the elevator controller.

1.2.5. Construction mode Menu:

The Construction mode disables temporarily certain detections to facilitate the elevator car construction in Inspection mode. As soon as the elevator controller is placed in Automatic mode and that a call has been placed, the Construction mode will be deactivated automatically and all signals will be in function.

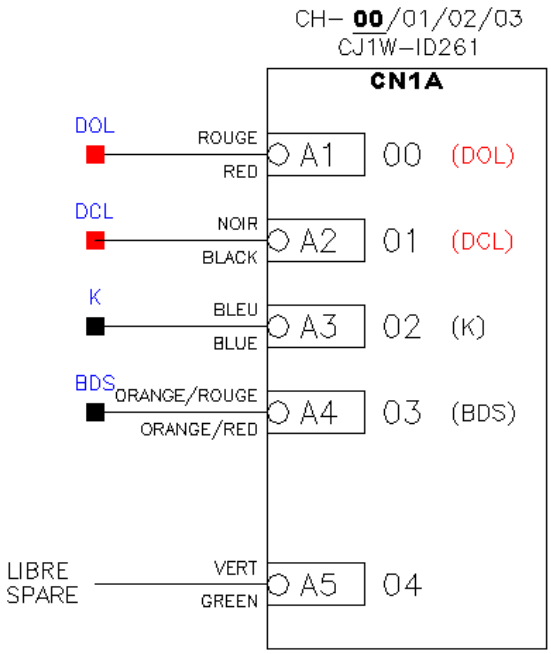
The elevator controller must be in Inspection mode.

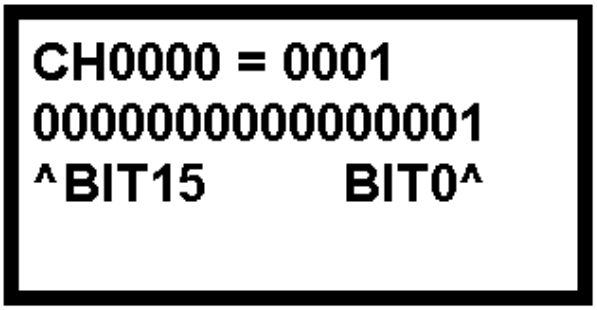
- Press "ESC";
- Press the "UP/DOWN" keys up to "CONSTRUCTION";
- Press "UP" to activate the Construction mode;
- Press "ENTER" to confirm.

1.2.6. Diagnostic I/O PLC Menu:

It is possible to visualize the controller's inputs/outputs with the electrical drawings supplied with the controller. In the inputs/outputs pages, the "Channel CH" number is written above the module. If the module has more than one channel, the underlined one is the right one.

Example:





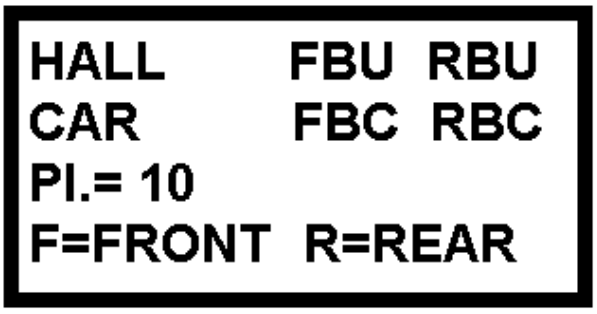
This example indicates that the "BIT 0" is activated. So the input "DOL" is activated.

Selecting the register number:

- Press "LEFT/RIGHT" to place the cursor on the number to modify;
- Press "UP/DOWN" to modify the number;
- Press "ENTER" to save and visualize the content;
- Press "ESC" to go back to the previous menu.
- Press "UP / DOWN" to see the content of the following or previous "CH".

1.2.7. Enter Call Menu:

This menu allows placing hall calls or car calls. It is also possible to see at which floor the elevator is. Use the arrow keys to select the call to place and press "ENTER" to place the call.



If the selection is not available, a "NOT AVAILABLE" will be displayed. If the controller does not have the rear call option, Rxxx will be shown instead of rear calls.

1.2.8. Language Menu:

This menu allows choosing the operation language.

For French:

- Press "UP".

For English:

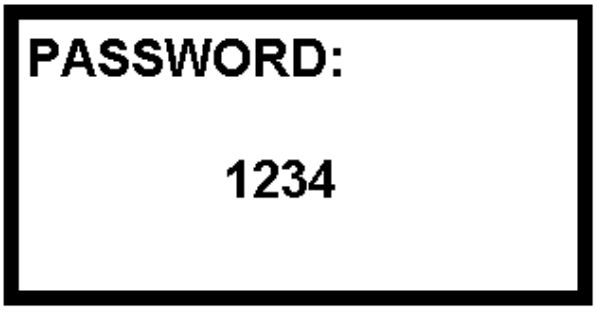
- Press "DOWN";

  or

- Press "ESC" to return to the previous menu.

1.2.9. Password Menu:

This menu allows entering a password to unlock the parameters modification menus. The password is "1234". After 3 hours of keyboard inactivity, the "LCD" utility will be locked again.



Entering the password:

- Press on the "LEFT/RIGHT" keys to place the cursor on the number to modify;
- Press on the "UP/DOWN" keys to modify the number;
- Press "ENTER" to save;

  or

- Press "ESC" to return to the previous menu.

1.2.10. Communication:

When the "LCD" utility writes successfully in the PLC, the following screen is displayed:

However, if the cable linking the screen to the PLC is defective, not well connected or that the communication parameters are incorrect, the following screen is displayed.

Verify that the cable between the "LCD" utility and the PLC is well connected. Once this is corrected, turn the power off to reset. If the problem persists, please contact Automatisation JRT.

2. TEMPORARY START-UP:

A. Put jumpers between the following terminals:

NOTE: Do not forget to remove the jumpers once the switch is installed.

- "J" and "J6" (bypass security line);
- "J6" and "J8" if you do not have the car top inspection box;
- "J9" and "J10" (car stop);
- "J10" and "LNH" (up normal limit);
- "J10" and "LNB" (down normal limit);
- "J9" and "PP" (hall doors closed);
- "J9" and "PC" (car door closed);
- "J9" and "HDL" (hall doors locked if manual doors motorised cam);

If the elevator is equipped with a UPS emergency power supply, refer to the drawing for the appropriate connections.

B. Set the pump motor overload relay:

- Across the line starter: Set the overload relay according to motor FLA, as specified on the motor nameplate.
- Star-delta starter: Set the overload relay according to the motor FLA x 0.572.

  Example: FLA = 22AMP 22 x 0.572 = 12.5AMP

  Set the overload relay to 12.5AMP

- Solid state starter: Set the parameter P1 and P2 according to motor FLA, for motor 3 wires (direct) or according to motor 6 wires FLA X 0.572 (star-delta).

C. Connect pumping unit to the controller (pump motor, valve, etc...)

D. Connect the controller with the main switch:

<u>240 volts controller 1 phase with neutral:</u>

Connect the main power supply to the power fuses "L1", "L2" and "N" from the main switch.

Remove the 2 fuses and measure the voltage.

Controller with 3 phases :

Connect the main power supply to L1, L2 and L3 terminals from the main switch.

Remove the 3 fuses and measure the voltage.

E. Measure:

- The controller supply voltage (see drawings)
  - ➢ 120 VAC between "J" and "N"
  - ➢ 24 VCC between "+A" and "COM"
  - ➢ 24 VCC between "+DC" and "COM", (internal voltage)

F. "POWER" and "RUN" green lights on the PLC should be on.

G. Synchronize the reverse phase relay (if applicable);

- Across the line starter or Star-delta starter: Synchronize the reverse phase relay (R.P.R.) Yellow and green lights will turn on as soon as the phases will be in the right sequence.
- Solid state starter SCR: Set parameter P15.

H. If solid state starter SCR: Read Benshaw (Solid State Motor Control) instruction manual and set parameters P1, P2, P3, P4 and P6.

I. To put the elevator in inspection:

Controller Inspection:

- Put the hoistway door and car door bypass switches at "OFF".
- Put a jumper between terminals "+A" and "ISR".
- Put the inspection switch at the position "INSPECTION".
- Press "UP" or "DOWN" on the "JRT-INT-02" card to move the elevator.

Car top inspection with a remote control:

- Do not connect "ISR". The corresponding led must be off.
- Connect the console's "UP" and "DOWN" between terminals "+A" and "PCH" and "+A" and "PCB".

J. CONSTRUCTION MODE:

The Construction mode disables temporarily certain detections to facilitate the elevator car construction in Inspection mode. As soon as the elevator controller is placed in Automatic mode

and that a call has been placed, the Construction mode will be deactivated automatically and all signals will be in function.

The elevator controller must be in "Inspection" mode.

With the controller's LCD screen:

- Press "ESC" up to the main menu;
- Press "UP/DOWN" keys up to "CONSTRUCTION" mode;
- Press "ENTER";
- Press "UP" to activate the "Construction" mode;
- Press "ENTER".

K. If the controller has the oil overheating option, see the electrical schematic to connect properly. Here are the 3 DM that let you configure the SH option.

REGISTER	DESCRIPTION	UNIT
DM 2000	Delay before detecting input SH	0.1s
DM 2100	Activate or deactivate input SH (1 = activated, 0 = deactivated)	n/a
DM 2200	Reverses the state of input SH (put 1 or 0)	n/a

L. If the controller has a thermistor relay TUS, it must be connected to the P1-P2 sensor terminals of the motor. See the electrical schematic to connect properly Reset the relay by pressing the "reset" push button on the relay. The red light should turn off. If the relay does not reset, the motor's thermistor may be in trouble. The PLC's TUS input must be off. That sensor must be thermistor type (variable resistor) and not thermal contacts.

Bypass the motor thermistor sensor, if necessary, by placing a 400 or 500 OHMS resistor, ¼ or ½ watt, across P1 and P2 terminals.

Here are the 3 DM that allow you to configure the TUS option.

REGISTER	DESCRIPTION	UNIT
DM 2001	Delay before detecting input TUS	0.1s
DM 2101	Activate or deactivate input TUS (1 = activated, 0 = deactivated)	n/a
DM 2201	Reverses the state of input TUS (put 1 or 0)	n/a

M. If the controller has a thermal contact, see the electrical schematic to connect properly. Here are the 3 DM that allow you to configure the CT option.

REGISTER	DESCRIPTION	UNIT
DM 2002	Delay before detecting input CT	0.1s
DM 2102	Activate or deactivate input CT (1 = activated, 0 = deactivated)	n/a
DM 2202	Reverses the state of input CT (put 1 or 0)	n/a

THERMAL CONTACT THERMISTOR

N. If the controller has the option Follower guide, see the electrical schematic to connect properly. Here are the 3 DM that allow you to configure the option.

REGISTER	DESCRIPTION	UNIT
DM 2003	Delay before detecting input follower guide	0.1s
DM 2103	Activate or deactivate input follower guide(1 = activated, 0 = deactivated)	n/a
DM 2203	Reverses the state of input follower guide (put 1 or 0)	n/a

O. If the controller has the option Low oil pressure detector, see the electrical schematic to connect properly. Here are the 3 DM that allow you to configure the LPS option.

REGISTER	DESCRIPTION	UNIT
DM 2004	Delay before detecting input LPS	0.1s
DM 2104	Activate or deactivate input LPS(1 = activated, 0 = deactivated)	n/a
DM 2204	Reverses the state of input LPS (put 1 or 0)	n/a

P. If the controller has the option Low oil level, see the electrical schematic to connect properly. Here are the 3 DM that allow you to configure the BNH option.

REGISTER	DESCRIPTION	UNIT
DM 2005	Delay before detecting input BNH	0.1s
DM 2105	Activate or deactivate input BNH(1 = activated, 0 = deactivated)	n/a
DM 2205	Reverses the state of input BNH (put 1 or 0)	n/a

Q. If the controller has the option Earthquake, see the electrical schematic to connect properly. Here are the 3 DM that allow you to configure the SS option.

REGISTER	DESCRIPTION	UNIT
DM 2007	Delay before detecting input SS	0.1s
DM 2107	Activate or deactivate input SS(1 = activated, 0 = deactivated)	n/a
DM 2207	Reverses the state of input SS (put 1 or 0)	n/a

R. At this point of the set-up procedure, verify:

Relays needing to be energized:

- PC, PP, SPR (if the door operator is MOD), R5, RPA,
- RPR (yellow and green lights on if supply is 3 phases),
- HD (if supply is 1 phase),
- HDL (if you have hoistway door lock contact).

Relays needing to be deactivated:

- ISR,

- X1N, X1N1 (if access key)

PLC inputs needing to be activated:

- +DC, PP, PC, J9, LNH, LNB, ISR-R
- HDL (if you have hoistway door lock contact);
- X1N-R (if access key)

PLC inputs that must be off:

- R5-R, PP-R, PC-R, RPA-R, ISR
- X1N (if access key)

Options:

- The state of the inputs for the options K à Q has to be verified according to the contact being used, "NO" or "NC". You also have the 3 DM that allow to activate or reverse the option.

Valves trials:

- By pressing the up button, the input light PCH turns ON. The UCT (with SOFT-START), UCA, SU plc outputs turn ON. The two ascent valves (U and US for Maxton, ULS and UDS for EECO) outputs and their corresponding lights turn ON and the car starts moving up after the pump is started.
- By pressing the down button, the input light PCB turns on. The SD output light, the two descent valves (DV and DR for Maxton, DMS and DLS for EECO) outputs and their corresponding lights turn ON and the car starts moving down.

Alarms:

- Erase the alarms with the LCD and then consult the alarm buffer menu in order to verify that there are none. (See appendix C for more information)
- See the section 8.4 for the alarms description.

S. During the temporary start-up, install the elevator car zoning and levelling system (see chapter 4).

IMPORTANT

PLC inputs are designed to operate at 24VDC. DANGER: Never apply 120VAC because it may cause severe damage to the PLC inputs.

When the controller is delivered, the "COM" terminal is grounded.

3. FINAL START-UP:

A. Make sure that alls sections of the temporary start-up have been done.

B. Place the elevator even to a floor that is in inspection.

C. Put the inspection switch to "NORMAL" position. Relay ISR must be energized.

D. Open the hoistway and car door bypass switches. PC, PP and HDL (if you have locked hoistway door contacts and you have an activating direction) relays must be energized if the doors are closed.

E. Relay RPA must be energized.

F. Overload relay RS1 must be reset.

- Across the line starter or Star-delta starter: Reset overload relay RS1.
- Solid state starter SCR: Reset fault relay (FLT) by pressing Parameter & Up buttons simultaneously on the circuit board.

G. Stopped at a floor with doors closed, the PLC's input lights must be on;

- DZO, PC, PP, LNH, LNB, J9, +DC, ISR, DOL, C3
- HDL (if you have locked hoistway door contacts)
- X1N-R (if access key)

H. Stopped at a floor with doors closed, the PLC's output lights must be on;

- R5

I. Stopped at a floor with doors closed, the PLC's input lights must be off;

- DZO-R, LU-R, LD-R, PC-R, PP-R, R5-R, U, US, DV, DL, ISR-R, ISRC, PCHC, PCBC, USL, DSL, RS1, RPA-R, DCL, BC à 4C, BP à 4P
- HDL-R (if you have locked hoistway door contacts)
- X1N (if access key)

J. If the controller is provided with the options SH, TUS, CT, Follower guide, LPS, BNH or SS, see the 3 DM tables for each option in section K to Q of the Temporary Start-up to set the activation time delay, activate the option or to reverse the state.

K. Proceed to tape selector adjustments (standard tape selector, section 4.2).

L. Proceed to mechanical limits adjustments (see section 4.3 and 4.4).

M. Erase the alarms with the LCD.

Alarms:

- Erase the alarms with the LCD and then consult the alarms buffer menu to verify that there is no alarm. (See appendix C for all the details).

- See the section 8.4 for the alarms description.

IMPORTANT

PLC inputs are designed to operate at 24 Volts. DANGER: Never apply 120VAC, it may cause severe damage to the PLC inputs.

When the controller is delivered, the "COM" terminal is grounded.

4. OPERATION PRINCIPLE FOR CAR ZONING AND LEVELING:

4.1. USING A CAM (ZONING BY PM SWITCH):

4.1.1. Car zoning switches:

There is a PM switch located at each floor intended for car zoning. Those switches are activated by an adjustable length cam located on the car. The length of that cam is proportional to the car up and down speed and must be calculated according to the following method:

Upper length of the cam (up slowdown distance) 6" for each portion of 25 FPM of the car speed in up direction.

Lower length of the cam (down slowdown distance) 6" for each portion of 25 FPM of the car speed in down direction.

Example:

If the car up speed is 30 FPM and down speed is 40 FPM, the upper part of the cam will be 7.25" and the lower part 9.75" for a total length of 17".

(30 FPM ÷ 25 x 6") + (40 FPM ÷ 25 x 6) = 17"

4.2. USING A STANDARD SELECTOR TAPE (ZONING BY MAGNETS PULSES):

The steel tape is installed in the hoistway and is divided in three rows of magnets; is composed by three magnets rows; one for the zoning control and up slowdown, one for the zoning control and down slowdown and the last one for the car levelling and door zoning. The sensing head is located on the car and the three rows are sensible to the North or South Pole magnet. The USL can detect the up zoning control, a DSL sensor for down zoning, and 4 other sensors detect the magnet row, LU sensor for up levelling, LD for down levelling and DZO for door zoning.

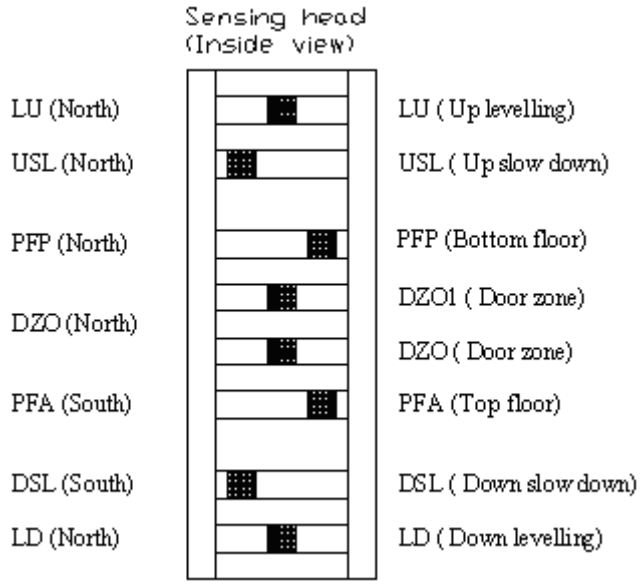
The sensors PFP and PFA are use to confirm and correct the zone of the elevator.

The sensors can be moved inside the sensing head to facilitate the adjustment of the car positioning. For example, in order to achieve the best possible levelling adjustment, it is better and easier to move the LU and LD sensors than to cut off the magnet on the steel tape.

The USL sensor (going up) and the DSL sensor (going down) engage a slowdown. The calculation method for slowdown distances is 6 inches for each 25 FPM.

Example:

$$\frac{40\ FPM}{25\ FPM} \times 6\ po = 10\ po$$



In order to place the magnets in the correct position on the steel tape, it is recommended to bring the car at the exact position where the command has to be energized when choosing an intermediate floor.

- Levelling (8" magnet): Bring the car even with the floor and place the magnet on the steel tape, in order for it to energize the DZO sensor but not LU and LD sensors (between LU and LD). Using two detectors allows obtaining the door zone redundancy.

- Up slowdown (3" USL magnet): Example for a 30 FPM speed elevator. Bring the car floor 7" lower than the floor level and place the magnet on the steel tape, in order for the bottom end to energize the USL sensor.

- Down slowdown (3" DSL magnet): Example for a 40 IPM: Place the car floor at 10" higher than the level floor and place the magnet on the steel tape so that the top of the magnet energize the DSL detector.

- Confirmation of the bottom floor door zone (PFP 8" magnets): According to the DZO magnet position from the bottom floor, place the car even with the bottom floor in order for the DZO sensors to be activated but not LU and LD. Then, place the 8” magnet on the tape in order for the center magnet to energize the PFP sensor.

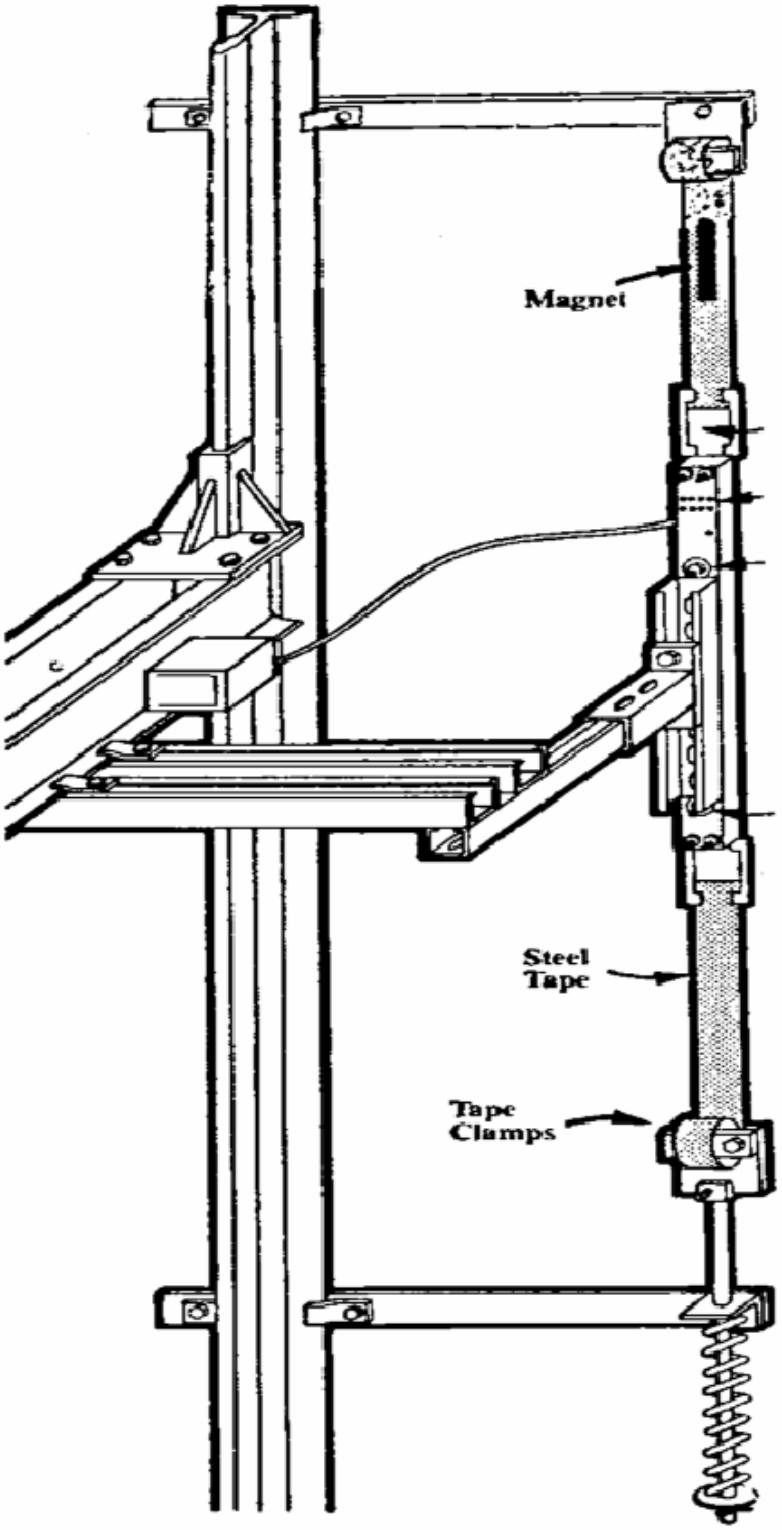
- Confirmation of the top floor door zone (PFA 8" magnets): According to the DZO magnet position from the top floor, place the car even with the top floor in order for the DZO sensors to be activated but not LU and LD. Then, place the 8" magnet on the tape in order for the center magnet to energize the PFP sensor.

Then proceed to the other floors using the same method as described above or using the following procedure: Place the 8” magnet (levelling magnet) proceeding as described in step 1 above. Then place the USL and DSL magnets at the same distance from the 8” magnet (levelling magnet) as measured at the previous floor.

It is strongly recommended not to stick the magnets immediately to the steel tape. If a mistake should happen in the positioning, it would still be easy to move the magnets on the tape. Wait until you have made successful tests before sticking definitely the magnets to the tape.

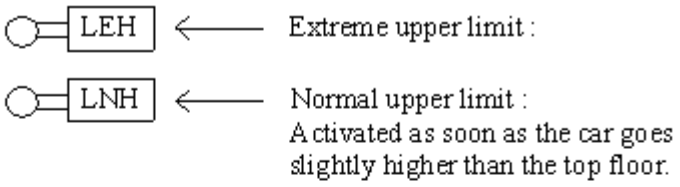
The "DZO" light must be "ON" and "LU" and "LD" lights must be "OFF" when the car is centered in the door zone.

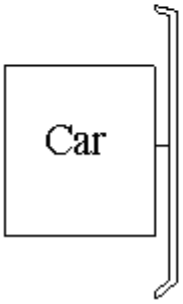
Standard tape selector installation:



4.3. END OF TRAVEL LIMIT SWITCHES INSTALLATION WITH STANDARD TAPE:

Extreme levels limit switches.





The same corresponding limit switches are found at the bottom floor: LNB, and LEB. The down normal limit switch must be activated as soon as the car goes 1-2 inches lower than the bottom floor.

Make sure that normal stops at top and bottom floors are engaged by the magnets, not by the limit switches (LNH-LNB).

4.4. HOISTWAY ACCESS AND TRAVEL ADJUSTMENT SWITCHES:

Depending on the speed of the elevator, there can be one or two hoistway access switches:

If the speed is greater than150 FPM (0.75 m/s.), hoistway access switches shall be provided at:

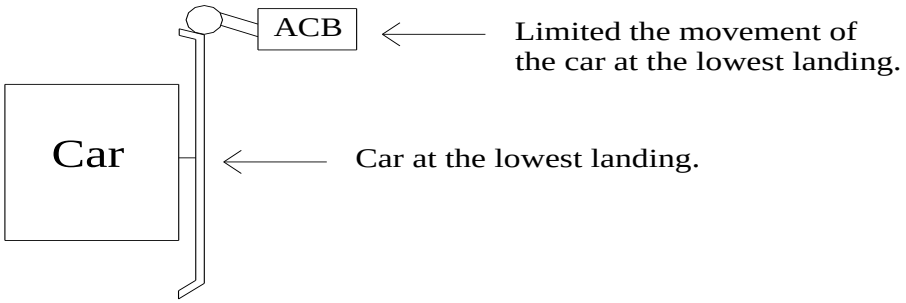
- The lowest landing for access to the pit, when a separate pit access door is not provided;
- The top landing for access to the top of the car.

If the speed is 150 FPM (0.75 m/s.) or less, hoistway access switches shall be provided at the top landing when the distance from the top of the car to the landing still exceeds 900mm (35 in.) when the car platform is levelled with the second landing from the top.

With the new B44-00 code, we shall limit the movement of the car in the up and down direction.

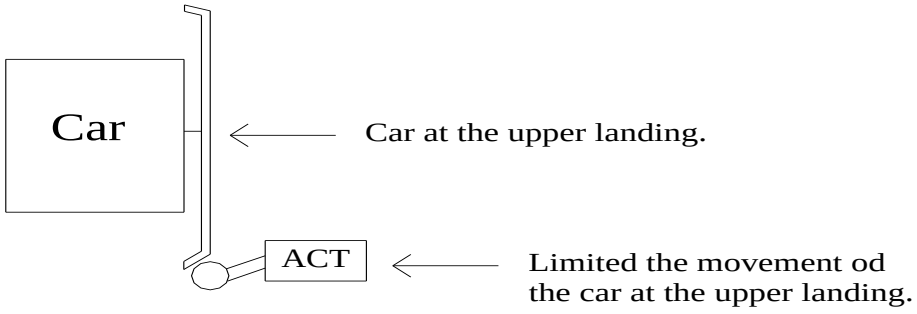
The movement of the car initiated and maintained by the access switch at the lowest landing. (ACB switch):

- The movement shall be limited in the up direction to the point where the bottom of the platform guard is even with hoistway entrance header.



The movement of the car initiated and maintained by the upper access switch. (ACT switch):

- The movement shall be limited in the down direction to a travel not greater than the height of the car crosshead above the car platform, and limited in the up direction to the distance the platform guard extends below the car platform.



5. INTERNAL FUNCTIONS AND CONTROLLER CONFIGURATION:

Many functions and timers may be configured and adjusted in each elevator controller with the LCD.

5.1. MODIFYING THE DM WITH THE LCD:

Follow these instructions:

- Press "ESC" and the "UP/DOWN" keys to select "Register access".
- Press "ENTER".
- Choose "DM" for the register type.
- Press "ENTER".
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter the DM number.
- Press "ENTER".
- Press "ENTER" to modify the value.
- Press the "LEFT/RIGHT" and "UP/DOWN" keys to enter the new value and press "ENTER" to save the modification.

5.2. MOTOR CONTROL + VALVES :

REGISTER	DESCRIPTION	UNIT
DM0047	Inactivity delay before switching to night mode.	Min.
DM0048	Night mode, minimum delay between re-levelling.	Min.
DM0161	Time delay before activating the hydraulic pump motor once the doors have started closing and that the elevator is going up.	0.1s
DM0009	Time for a soft stop.	0.1s

5.3. DOORS CONTROL :

REGISTER	DESCRIPTION	UNIT
DM0000	Door open delay on hall call. Timing begins when the door is fully opened.	0.1s
DM0001	Door open delay on car call. Timing begins when the door is fully opened.	0.1s
DM0002	Door open delay on a re-opening caused by safety edge activation or light beam interruption. Timing begins when the door is fully opened.	0.1s
DM0032	Door closure delay beyond which the door will reopen if they are not completely closed.(PC or PP activated or DCL deactivated) (Activated only if DM87=1).	0.1s
DM0173	Door open delay if follower guide activated.	0.1s
DM0033	Number of door closure trials before trouble if DM87 = 1	
DM0034	Door opening delay beyond which the door will re-close; for instance, if the door did not reach full opening or if the DOL limit has not been	0.1s

REGISTER	DESCRIPTION	UNIT
	activated. This counter doesn't need to be adjusted because it is automatically according to DM0000.	
DM0060	FDOL / RDOL signals off delay applied when the contact opens before stopping the door from opening.	0.1s
DM0061	FDCL / RDCL signals off delay applied when the contact opens before stopping the door from closing.	0.1s
DM0066	Door photocell interruption delay beyond which the door will be forced to close slowly in nudging (15s).	0.1s
DM0067	Delay before door re-opening during nudging, if the door cannot close completely (25s).	0.1s
DM0068	Delay between the first and second attempt to close the door in nudging. (5s).	0.1s
DM0077	Door close button simulation when a new car call is registered. (Yes=1, No=0)	n/a
DM0080	Door pre-opening in leveling zone. (Yes=1, No=0)	n/a
DM0084	Door nudging. (Door closing at low speed) (Yes=1, No=0)	n/a
DM0087	Door closing protection. (Yes=1, No=0)	n/a
DM0088	Delay before door opening in the door zone.	0.1s
DM0112	Delay before the car light turns off when the car is stopped with door closed. **Option TLUM**	0.1s

If there is simultaneously a stop on car call and on floor call, the floor timer will be predominant.

5.4. CALLS :

REGISTER	DESCRIPTION	UNIT
DM0020	Delay beyond which car calls and hall calls are cleared if the car has not moved to another floor.	0.1s
DM0089	Car call cancellation at top and bottom floors (Yes=1, No=0).	n/a
DM0090	Reverse direction car calls not allowed. Example: if the car is in up direction and parked at the 4th floor, the car calls to lower floors such as BC, 2C and 3C will not be accepted. If the car is in down direction and parked at the 4th floor, the car calls to upper floors will not be accepted. If a car arrives at a floor with no direction in memory, the car calls are allowed in all directions (Yes=1, No=0).	n/a

5.5. GONG :

REGISTER	DESCRIPTION	UNIT
DM0038	Car calls acknowledgement pulse duration. (activated by DM 0086 = 1)	0.1s
DM0040	Passing gong pulse time.	0.1s
DM0043	Delay between 2 passing gong pulses.	0.1s
DM0081	Passing gong activation. (Yes = 1 No = 0)	0.1s
DM0085	Passing gong, 2 pulses in down direction. (Yes = 1 No = 0)	n/a
DM0086	Car calls acknowledgement activation. (Yes =1 No = 0)	n/a

5.6. MAIN FLOOR:

REGISTER	DESCRIPTION	UNIT
DM0098	Main floor level.	Floor

5.7. POSITION INDICATOR + SU/SD DIRECTION:

REGISTER	DESCRIPTION	UNIT
DM2308	0000, standard indicator (floor light) 0001, binary indicator (A,B,C,D)	n/a
DM2309	DA220 type indicator activation (yes = 1, no = 0).	n/a
DM1301 et +	Corresponding floor code BZ et +	n/a

5.8. PARKING:

REGISTER	DESCRIPTION	UNIT
DM0024	Delay before the elevator returns to the parking floor.	0.1s
DM0095	Parking return activation. (Yes = 1 No = 0.)	n/a
DM0096	Parking doors opened. (Yes=1, No=0)	n/a
DM0097	Parking floor level 1,2,3,4,5,….To program the floor level, enter the wanted level in DM97. Example: for a parking at level 2, put 2 in DM97. If it's 0, the processor will automatically put 1. If it's a number higher than the total number of floors, the processor will put the top floor..	Floor

5.9. TROUBLE :

REGISTER	DESCRIPTION	UNIT
DM0008	Too long travel protection.	0.1s
DM0110	Contactor detection delay "C3" doesn't activate	0.1s
DM0249	Construction mode activation in inspection if = 0001 Automatic deactivation when returning to normal mode.	n/a
HR80 à HR88	Memorises the detected alarms, see section 8.4	n/a

5.10. OPTION :

REGISTER	DESCRIPTION	UNIT
DM 2000	Delay before detecting input SH	0.1s
DM 2100	Activate or deactivate input SH (1 = activated, 0 = deactivated)	n/a
DM 2200	State reverse of input SH (put 1 or 0)	n/a
DM 2001	Delay before detecting input TUS	0.1s
DM 2101	Activate or deactivate input TUS (1 = activated, 0 = deactivated)	n/a
DM 2201	State reverse of input TUS (put 1 or 0)	n/a
DM 2002	Delay before detecting input CT	0.1s
DM 2102	Activate or deactivate input CT (1 = activated, 0 = deactivated)	n/a
DM 2202	State reverse of input CT (put 1 or 0)	n/a
DM 2003	Delay before detecting input Following guide	0.1s
DM 2103	Activate or deactivate input Following guide (1 = activated, 0 = deactivated)	n/a
DM 2203	State reverse of input Following guide (put 1 or 0)	n/a
DM 2004	Delay before detecting input LPS	0.1s
DM 2104	Activate or deactivate input LPS (1 = activated, 0 = deactivated)	n/a

REGISTER	DESCRIPTION	UNIT
DM 2204	State reverse of input LPS (put 1 or 0)	n/a
DM 2005	Delay before detecting input BNH	0.1s
DM 2105	Activate or deactivate input BNH (1 = activated, 0 = deactivated)	n/a
DM 2205	State reverse of input BNH (put 1 or 0)	n/a
DM 2007	Delay before detecting input SS	0.1s
DM 2107	Activate or deactivate input SS (1 = activated, 0 = deactivated)	n/a
DM 2207	State reverse of input SS (put 1 or 0)	n/a

6. STANDARDISED OPERATION PARTICULARITIES:

A. You may connect a low oil level sensor to the controller. The sensor contact can be configured (see section 5.10). As soon as the signal comes in, it is latched into the PLC, the elevator is switched “out of order” and the car returns to the bottom floor or the ground floor. The HR8000 alarm is turned ON as described in chapter 8. To reset the alarm, open the switch terminal block labelled “PLC”.

B. There is a too long travel timer on the car displacement.

C. The elevator will go back to the bottom floor if one of the following troubles occurs:

- Too long travel
- Low oil level
- Motor overload trip (RS1)
- Motor overheat trip (if thermistor relay TUS is provided)
- PLC battery low voltage or trouble
- Thermal contact CT (if included in the controller)
- Oil overheat SH (if included in the controller)

The car is switched “out of order” and returns to the bottom or ground floor. Once there, the door opens and closes and then all the push buttons inside the car are disabled except the “door open” push button. To reset the alarm, open the switch terminal block labelled “PLC”.

When a battery trouble occurs, the “ALARM” light on the CPU is flashing continuously. To replace the battery, refer to chapter 8 “MAINTENANCE”.

D. If the car is being held at one floor, without being in trouble, car calls and hall calls will be erased after two minutes.

E. The PLC monitors continuously the critical relays operations.

F. When the switch is set to "inspection", the car is placed in inspection mode and it is controlled from the control panel. This one is effective only if the "car top inspection box" is set to "normal" position. Set to "inspection" position, the car can move in up or down position with the 2 push buttons labelled "up" and "down".

G. This controller has a hoistway door bypass switch. When this switch is set to "bypass", the car is automatically placed in "inspection" mode and it can travel with the hoistway door opened but not the car door opened; you don’t have to place any jumper at all to "bypass" the hoistway door contacts.

The car can only move with the car top inspection box.

H. This controller has a car door bypass switch. When this switch is set to "bypass", the car is automatically placed in "inspection" mode and it can travel with the car door opened but not the car door opened; you don’t have to place any jumper at all to "bypass" the car door contacts.

The car can only move with the car top inspection box.

I. The controller will detect any jumper that might be placed to bypass hoistway door or car door contacts.

Jumper on car doors: As soon as the car reaches a landing and opens its doors, it detects the jumper, automatically switches to "out of order" and remains at that landing with its doors open.

Jumper on hoistway doors: works just like the jumper on car doors.

J. There are many redundancy circuits in the controller. The CPU monitors those circuits continuously and as soon as a trouble is detected, the relays R5 will drop and the car is placed "out of order".

K. The door zone switch (DZO) is monitored continuously. If it remains activated between two floors, the car is placed "out of order" as soon as it reaches a floor.

L. Levelling switches are also monitored continuously.

M. If a fault condition occurs in the solid state starter SCR (Soft-start), the PLC will attempt to rearm it three times if necessary. If the fault persists, the rearming attempts will stop and the car will be put out of service.

7. SYMBOLS LISTING:

PP:	Landing door relay
HDL:	Landing door locked
PC:	Car door relay
LNB:	Down normal limit switch
LNH:	Up normal limit switch
SR:	Safety relay
SPR:	Safety relay
HD:	Safety relay
DZO:	Door zone
LU:	Up levelling
LD:	Down levelling
DOL:	Opened door limit switch
DCL:	Closed door limit switch
RDOL:	Rear opened door limit switch
RDCL:	Rear closed door limit switch
BDS:	Safety edge
RBDS:	Rear safety edge
PH:	Door photocell
RPH:	Rear door photocell
ISR:	Inspection relay
BC-2C.3C…:	Car calls
BP-2P, 3P…:	hall calls
BZ-2Z, 3Z…:	Car zone
USL:	Zone count + up slowdown signal
DSL:	Zone count + Down slowdown signal
PFP:	Bottom floor (tape selector)
PFA:	Top floor (tape selector)
SU:	Car going up
SD:	Car going down
OP:	Door opening contactor
ROP:	Rear door opening contactor
CL:	Door closing contactor
RCL:	Rear door closing contactor
R5:	Trouble redundancy relay
XIN, XIN1:	Hoistway access relay
GEN1:	Generator signal
GEN2:	Pre-transfer generator signal
FS (output):	Low speed nudging relay

BUZ:	Nudging, car call acceptance buzzer
GP:	Passing gong
GU:	Car gong with up arrow light
GD:	Car gong with down arrow light
UCA:	Motor relay
U:	Up fast speed valve relay
US:	Up slow speed valve relay
DV:	Down fast speed valve relay
DL:	Down slow speed valve relay
UC:	Main motor contactor for motor
C1, C2, C3:	Auxiliary main contactor for motor
TUC:	Wye-delta timer
UCT:	Off delay relay (If solid state starter)
DRY:	Fault solid state starter relay
RSD:	Reset solid state starter relay
SPE:	Vocal indicator activation
RPR:	Reverse phase relay
RPA:	120vac supply relay. (If RescuPower or UPS)
RS1:	Overload relay
TUS:	Thermistor protection relay
CT:	Thermal contact
BNH:	Low oil level
CC:	Car call key
CP:	Hall call key
USE:	Elevator is use
UPS:	Emergency unit
G2:	Door open buzzer
SH:	Oil overheat
SS:	Earthquake
GS:	Follower guide
LPS:	Low oil pressure
OPF1, OPF2:	Dry contact to indicate front door open
ROPF1, ROPF2:	Dry contact to indicate rear door open

8. MAINTENANCE:

8.1. ALARMS:

All the alarms are memorised in the "HR" registers and are saved even during a power failure. It is possible to erase the faults list completely by going in the LCD's menu "Erase alarms". (For more details, see appendix C)

For the alarms description, refer to section 8.4.

8.2. PLC BATTERY REPLACEMENT :

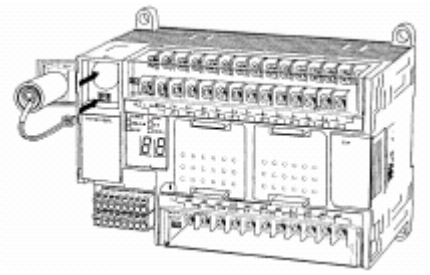
The battery lifetime is approximately five years. If the voltage level becomes too low, the ALARM indicator on the PLC will flash and the car will be turned "out of order". Then, you must replace the battery within one week. Replacement dates of the battery are indicated on the CPU front cover. The catalogue number for the battery is CJ1W-BAT01.

IMPORTANT

When replacing the battery, you must proceed quickly (within 5 minutes), or else, you will lose the PLC program.

Follow these steps to replace the battery:

- Turn off the main power.
- Open the cover above the peripheral port on the CPU. You should now see the battery.



- Pull out the battery and unplug its connector.
- Quickly put the new battery in place and plug the connector.
- Turn on the main power.
- Make sure that POWER and RUN indicators on the CPU are on. Then you may turn the elevator back in service.

8.3. PEAK VOLTAGE PROTECTION:

Please note a wrong connection could short-circuit the "TVS" (transient voltage suppressor) that protects the elevator. If it occurs, they must be verified and replaced if needed.

To verify them, use an ohmmeter and place the sensors on the "TVS" terminals. If the value shown is 0, the "TVS" is short-circuited.

8.4. ALARMS DESCRIPTION:

Alarms #:	Description:	Causes and verifications
HR8000	Low oil level detected.	Check the oil level in the tank.
HR8001	The PLC's battery must be replaced	See section 8.2 of user's manual for the PLC battery replacement.
HR8002	Excessive travel time.	The elevator has exceeded the DM0008 delay during the travel. Verify: the elevator commute, the LRH/LRB slowdown limits and the drive speed control circuit board. Verify the functioning of the valves.
HR8003	Phase lost/inverse detection.	Verify the controller's input voltage, the power supply and the phase detection relay "RPR".
HR8004	Spare	
HR8005	Overheating motor thermal contact "CT"	Verify the motor's condition and the state of the thermal contact (input "CT").
HR8006	Overheating oil sensor detection "SH".	Verify the state of the thermal sensor that activated the input SH.
HR8007	The door zone sensor "DZO" remained activated out of the levelling zone.	Verify the tape head. The sensor remains activated.
HR8008	"DZO" door zone sensor did not operate properly in levelling zone.	Verify the tape head. The sensor did not activate.
HR8009	Overload motor relay detection "RS1".	Verify the state and/or the adjustment of the relay "RS1".
HR8010	"LU" Levelling Up sensor did not operate properly in levelling zone.	Verify the relay and sensor operation in the top of car reader connecting box.
HR8011	"LD" Levelling Down sensor did not operate properly in levelling zone.	Verify the relay and sensor operation in the top of car reader connecting box.
HR8012	DCL switch did not open when front door closed.	Verify DCL switch operation. The switch did not open before the DM0032 delay, when front door closed, with

Alarms #:	Description:	Causes and verifications
		PP and PC switches closed.
HR8013	DCL switch did not close when front door opened.	Verify DCL switch operation. The switch did not close when the front door opened, with DOL switch opened, PC and PP switches closed. The DCL switch opened more than a half second while the front door was completely opened.
HR8014	DOL switch did not open when front door opened.	Verify DOL switch operation. The switch did not open when the front door is completely opened, or the door did not completely open after 12 seconds on door opening instruction when DCL switch and OP relay are closed.
HR8015	DOL switch did not close when front door closed.	Verify DOL switch operation. The switch did not close when the front door closed, with DCL switch opened and PP closed.
HR8100	RDCL switch did not open when rear door closed.	Verify RDCL switch operation. The switch did not open before DM0032 delay when rear door is closing, with PC and PP switches closed.
HR8101	RDCL switch did not close when rear door opened.	Verify RDCL switch operation. The switch did not close when rear door opened, RDOL switches opened, PC and PP switches closed. The RDCL switch opened more than a half second while the rear door was completely opened.
HR8102	RDOL switch did not open when rear door opened.	Verify RDOL switch operation. The switch did not open when rear door opened or the door did not fully open after 12 seconds on door opening instruction when RDCL switch and ROP relay are closed.
HR8103	RDOL switch did not close when rear door closed	Verify RDOL switch operation. The switch did not close when rear door closed, with RDCL switches opened and PP closed.

Alarms #:	Description:	Causes and verifications
HR8104	PP landing doors contact did not close when doors closed.	Verify PP landing doors contact. The contact did not close when door was fully closed, after 20 seconds, DCL and RDCL opened CL and RCL relays activated. Verify DCL and RDCL switches operations.
HR8105	PC car doors contact did not close when doors closed	Verify PC car doors contact. The contact did not close when door was fully closed, after 20 seconds, DCL and RDCL opened CL and RCL relays activated. Verify DCL and RDCL switches operations.
HR8106	PC or PP contacts did not open when doors opened.	Verify PC and PP operation. PC and PP contacts did not open when doors opened, DCL and RDCL switches opened. Verify if either contact is short-circuited or DCL and RDCL switches operation. This fault can occur if those switches are not opened when PP and PC are fully closed.
HR8107	Front door did not close completely after 5 attempts.	Verify doorway. Something might be blocking. Check PP and PC contacts operation. Also check DCL switch operation.
HR8108	Rear door did not close completely after 5 attempts.	Verify doorway. Something might be blocking. Check PP and PC contacts operation. Also check RDCL switch operation.
HR8109	Spare	
HR8110	Down valve failure.	The elevator exceeded the travelling delay while starting in down direction. Check the valves' circuits. Ensure the valves proper functioning.
HR8111	J9 security line was opened.	J9 security line opened while the elevator was moving or 4 seconds after it had stopped. Verify security line switches (see drawings for more details).
HR8112	Solid state starter SCR (soft-start) fault.	Refer to solid state starter user’s manual to access the error list.

Alarms #:	Description:	Causes and verifications
HR8113	C3 or UC (if Soft-start) contactor failure or phase lost/inverse detection.	On up command, verify the contactor C3 or UC (if Soft-start) and the phase detection relay "RPR".
HR8114	The low pressure switch LPS was activated	Verify the low pressure switch (LPS) and the system's pressure.
HR8115	Follower guide is activated.	Verify the follower guide switch on the hydraulic cylinder.
H8200	Perforated tape reader malfunction.	The processor receives too many or not enough pulses from the perforated tape. Verify HT1 and HT2 indicators operation on the processor (they should be flashing when the elevator is moving). Clean both infrared transmitters and the hoistway mirror.
HR8201	Spare	
HR8202	Spare	
HR8203	Spare	
HR8204	Uncontrolled elevator speed.	Check functioning of valves relays U, US, DV and DL
HR8205	Spare	
HR8206	Spare	
HR8207	Spare	
HR8208	The elevator moved in the wrong direction.	Ensure the motor and valves are functioning properly according to the car's direction. Ensure the contactor's are correctly activating. Ensure the perforated tape counter is properly functioning and increment appropriately (see DM5800).
HR8209	Car door contact PC relay opened during movement out of door zone.	Verify PC contacts operation and clean them.
HR8210	Hall door contact PP relay opened during movement out of door zone.	Verify PP contacts operation and clean them. This can occur when mechanics open the hall doors with a lunar key, while the elevator is moving.

Alarms #:	Description:	Causes and verifications
HR8211	Spare	
HR8212	Spare	
HR8213	Spare	
HR8214	Spare	
HR8215	Spare	
HR8300	LRH and LRB top and bottom slow down limit switches failure.	Verify electrical wiring and physical contacts.
HR8301	Spare	
HR8302	Spare	
HR8303	Spare	
HR8304	Spare	
HR8305	Spare	
HR8306	Spare	
HR8307	Spare	
HR8308	Spare	
HR8309	Spare	
HR8310	LNB down normal limit switch failure.	Verify electrical wiring and limit switch contact.
HR8311	LNH up normal limit switch failure.	Verify electrical wiring and limit switch contact.
HR8312	Spare	
HR8313	Earthquake SS	Verify the earthquake switch SS
HR8314	Spare	
HR8315	Spare	
HR8400	Spare	
HR8401	Spare	

Alarms #:	Description:	Causes and verifications
HR8402	Auto correction by LNB	Verify the functioning of the switch LNB. The switch is too close to the bottom floor.
HR8403	Auto correction by LNH	Verify the functioning of the switch LNH. The switch is too close to the top floor.
HR8404	Spare	
HR8405	Spare	
HR8406	Spare	
HR8407	Spare	
HR8408	Spare	
HR8409	Spare	
HR8410	Spare	
HR8411	Corrupted data	PLC's data are corrupted. Defective PLC or data loss.
HR8412	Spare	
HR8413	Spare	
HR8414	Spare	
HR8415	Spare	
HR8500	**DZO** relay did not activate.	Verify DZO relay operation, because it did not activate when the PLC DZO input activated.
HR8501	**DZO** relay contacts remained closed.	Verify DZO relay operation, because it remained closed when the PLC DZO input deactivated
HR8502	Spare	
HR8503	Spare	
HR8504	Spare	
HR8505	Spare	
HR8506	**LU** and **LD** levelling sensors were activated. at the same time.	Verify LU and LD relays operation. Verify the sensor operation in the top of car reader connecting box
HR8507	**ISR** relay did not activate.	Verify ISR relay operation, because it did not activate when the PLC ISR input activated
HR8508	**ISR** relay has remained closed.	Verify ISR relay operation, because it remained closed when the PLC ISR input deactivated
HR8509	**PP** relay did not activate.	Verify PP relay operation, because it did not activate

Alarms #:	Description:	Causes and verifications
		when the PLC PP input activated
HR8510	**PP** relay has remained closed.	Verify PP relay operation, because it remained closed when the PLC PP input deactivated
HR8511	**PC** relay did not activate.	Verify PC relay operation, because it did not activate when the PLC PC input activated
HR8512	**PC** relay has remained closed.	Verify PC relay operation, because it remained closed when the PLC DZO input deactivated
HR8513	Spare	
HR8514	Spare	
HR8600	Spare	
HR8601	Spare	
HR8602	Spare	
HR8603	**XIN** relay did not activate.	Verify XIN relay operation, because it did not activate when the PLC XIN input activated
HR8604	**XIN** relay has remained closed.	Verify XIN relay operation, because it remained closed when the PLC XIN input deactivated
HR8605	**R5** relay did not activate.	Verify R5 relay operation, because it did not activate when the PLC R5 input activated
HR8606	**R5** relay has remained closed.	Verify R5 relay operation, because it remained closed when the PLC R5 input deactivated
HR8607	**LU** relay did not activate.	Verify LU relay operation, because it did not activate when the PLC LU input activated
HR8608	**LU** relay has remained closed	Verify LU relay operation, because it remained closed when the PLC LU input deactivated
HR8609	**LD** relay did not activate.	Verify LD relay operation, because it did not activate when the PLC LD input activated
HR8610	**LD** relay has remained closed.	Verify LD relay operation, because it remained closed when the PLC LD input deactivated
HR8611	**HDL** relay did not activate.	Verify HDL relay operation, because it did not activate when the PLC HDL input activated
HR8612	**HDL** relay has remained closed.	Verify HDL relay operation, because it remained closed when the PLC HDL input deactivated
HR8613	24 Volts DC +**A** power failure.	Verify protection fuse. The filament could be defective.

Alarms #:	Description:	Causes and verifications
		There may have been a short-circuit.
HR8614	Spare	
HR8615	Spare	
HR8700	**RCT** relay did not activate.	Verify RCT relay operation, because it did not activate when the PLC RCT input activated.
HR8701	RCT relay has remained closed.	Verify RCT relay operation, because it remained closed when the PLC RCT input deactivated
HR8702	Spare	
HR8703	Spare	
HR8704	Spare	
HR8705	Spare	
HR8706	Up direction fast speed valve "U or ULS" had activated while relay "U" did not activate.	Verify U relay operation.
HR8707	Up direction fast speed valve "U or ULS" did not activate when relay “U” activated.	Verify U relay operation.
HR8708	Up direction slow speed valve "US or UDS" had activated while relay "US" did not activate.	Verify US relay operation.
HR8709	Up direction slow speed valve "US or UDS" did not activate when relay “US” activated.	Verify US relay operation.
HR8710	Down direction fast speed valve "DV or DMS" had activated while relay "DV" did not activate.	Verify DV relay operation.
HR8711	Down direction fast speed valve "DV or DMS" did not activate when relay “DV” activated.	Verify DV relay operation.
HR8712	Down direction slow speed valve "DL or DLS" had activated while relay "DL" did not activate.	Verify DL relay operation.
HR8713	Down direction slow speed valve "DL or DLS" did not activate when relay “DL” activated.	Verify DL relay operation.
HR8714	**UP/DW** relay did not activate.	Verify UP/DW relay operation, because it did not activate when the PLC UP/DW input activated
HR8715	**UP/DW** relay has remained closed.	Verify UP/DW relay operation, because it remained closed when the PLC UP/DW input deactivated
HR8800	Spare	
HR8801	Spare	

Alarms #:	Description:	Causes and verifications
HR8802	Spare	
HR8803	Spare	
HR8804	Spare	
HR8805	Spare	
HR8806	Spare	
HR8807	Spare	
HR8808	Spare	
HR8809	Spare	
HR8810	Spare	
HR8811	Spare	
HR8812	Light curtain fault.	For a vertical sliding door freight elevator, the photocell proper functioning must be checked before closing the door. Check the photocell proper functioning.
HR8813	Spare	
HR8814	Spare	
HR8815	Door jammed on opening	The elevator tried to completely open the door 3 times without succeeding. The alarm activates once an opening relay (FOP, ROP) is activated lasting more than the protection delay. Ensure the door operators are supplied. Check the door opening.

Note: The HR85-86-87channels deactivate the relay R5.