Universal Intelligent Controller (UIC) Lift Control System

Installation and User Manual

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Cautions:

1) Read this manual carefully ***before*** UIC Motherboard and UIC control panel installation. If you don't follow the rules of installation, PALCO is not responsible for any fault happens and could not guarantee the safety of the product.

2) Products can be installed ***only*** by the authorized person.

3) All connections should be done when ***power is*** **off**.

4) Shielded cables are recommended to be used.

Limitations:

a) Operating temperature: 0 °C to 40 °C
b) Relative humidity: <90%, non-condensing
c) Mains (supply) voltage fluctuation: +10%, -20%
d) The UIC mother board shall be mounted on most upper-left corner of the UIC Control Panel (protection regarding the EMC disturbances of contactors, relays, etc. in the UIC Control Panel)
e) Before any connections the installer shall read the Installation Manual.
f) Any service (repair) work shall be done by authorised and trained persons under the supervision of PALCO company.
g) The enclosure where the UIC Mother Board is installed shall satisfy the requirements of IP55 protection at least.

If any one of those limitations is not taken into consideration the PALCO company does not take any obligations regarding the guarantee or safety of product.

Warranty:

The warranty is valid for one year after shipment. It is valid for controller faults done by our side i.e. PALCO company or the legal representative or the authorized person.

The warranty is not valid for improper installation and/or improper use of the controller.

1 Introduction

The **UIC®** Lift controller is fully developed and designed by our Research and Development Engineers based on the cutting edge microcontroller technology. Its ease of commissioning and maintenance makes it suitable for new installation; its versatility is further extended by offering the means to customize the lift according to site requirement. Additionally, its ease of wiring makes it perfect for modernization of existing installation. This product is aimed at obtaining the best performance without compromising the most demanding safety requirements under the most stringent circumstances. This System proved to sustain its functionality in the most hostile site environment. The UIC Lift controller is designed to fulfill the CE Mark requirements.

1.1 UIC® Functions and Features

- Based on Microcontroller Technology.
- Built in 8 stops Full Collective Selective or 12 Stops Down Collective expandable to 16 stops Full Collective Selective, 24 Stops Down Collective.
- On Site Customization and programming.
- Drive time supervision.
- Door Close and Door Open Control.
- Priority Key (Attendant).
- Door reopening in case of failure.
- Response to photocells and safety edge signal.
- Automatic car parking (Carriage) at any selected floor after preprogrammed time.
- Car parking with door normally opened or normally closed according to preprogrammed parameter.
- Overload control.
- Full load control.
- Fireman drive control.
- Additional car light and fan drive.
- Hardware and software motor protection.
- Motor overheat detection (Thermistor).
- Real time fault detection.
- Intelligent fault recovery.
- On board inspection.
- On board buttons for testing the shaft limit switches and the flight time.
- Self-correction in case of abnormal conditions.
- Coded fault priorities.
- Superior noise immunity.
- On board fault diagnostics.
- Four 7-segment displays to monitor car position, faults and system status display.
- Slow / Fast speed protection timer.
- Door motor protection timer.
- Position and direction indicator.
- On board LED status indication for the important input and output.
- Door open and door close buttons.

- Slow leveling when the car stops between floors or out of level.
- Short circuit detection
- Over current protection for Output Signals
- Two car door support
- Opto-isolated inputs

1.2 Description of the UIC® Functions and Features:

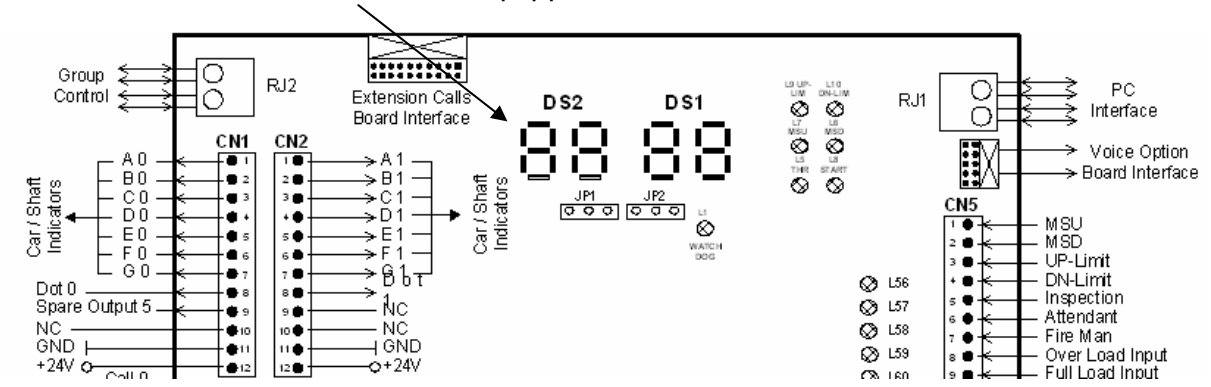
UIC® is a lift control system based on the latest Microcontroller technology, and it supervises and responds to the following events:

1.2.1 Short Circuit Protection of +24Vdc Power Supply:

A special hardware is deployed to detect any short-circuit in +24Vdc power supply circuitry. The circuit automatically and electronically disconnects the load from the power source when the DC load current reaches a threshold. The motherboard provides an on board push button to reconnect the load to +24Vdc after the short-circuit is removed. Please refer to ***section 3.5 Push Buttons Settings:***

1.2.2 Control Interactive error messages

The Controller features a sophisticated interactive error messages system. When the controller detects faults that hinder the normal operation of the lift, the **UIC®** provides the appropriate information to diagnose the fault by displaying codes on 7–Segment Indicators. The motherboard is equipped with 2 such indicators labeled DS1 & DS2.



1.2.3 Permission to start control

Before the controller sends motion order to the lift, it checks that all main contactors (**Up**, **Down**, **Fast** and **Slow**) are de-energized by reading a series of normally closed contacts. If this condition is valid, the **UIC®** motherboard turns ON an onboard LED labeled LED9. For more information about the onboard LEDs, please refer to ***section 3.6 LEDs Indication:*** This supervisory control is known as **START PERMIT**. If the **START PERMIT** is not granted, the lift controller cancels calls and the appropriate error message is displayed. The **START PERMIT** is checked before any motion (in normal travel, inspection and calibration). *For more details, refer to* **sheet (3 of 16)** *in the wiring diagram.*

1.2.4 Contactor feedback control

When the controller sends a command to energize a contactor, it checks if the

contactor is physically energized. In case a contactor does not respond to such energization, the controller stops the energization process, cancels the call and displays the appropriate error message. *For more details refer to* **sheet (3 of 16)** *in the wiring diagram.*

1.2.5 Start of Motion Failure

If all conditions for start of motion are met, but the car fails to move within a 3 second time interval, the car failed to move (stuck mechanically) for any whatever reason, then the **UIC®** de-energizes the appropriate contactors, the calls are cancelled and the appropriate error message is displayed. This is an intended behavior to provide more protection for the motor.

1.2.6 Motor Temperature control

Lift electric motors are normally equipped with over heating Thermistor. The **UIC®** Microcontroller tests this Thermistor continuously and if its contact gets opened (i.e. the temperature has exceeded the nominal value), the lift continues its current travel. However, when the car reaches its target floor, the door is opened, the calls are cancelled, the door will remain opened, and the appropriate fault message is displayed until the Thermistor contact is closed again. This supervisory signal is always tested before motion (in Calibration, Inspection and Normal motion). Motion will never start if the Thermistor contact is open.

1.2.7 Responding to Proximity magnetic switches

During travel, the **UIC®** controller needs to know the current car position with respect to floors. This is where the up direction magnetic switch and the down direction magnetic switch (known as MSU and MSD respectively) are required. These magnetic switches are normally mounted on the cabin steel structure facing magnetic rods that are mounted through out the shaft on the guide rails. While the car is in motion, the car passes over the magnetic rods and the magnetic switches turn on and off accordingly. If the controller does not sense the required magnet sign (**MSU** and/or **MSD**) and the travel time elapsed; then it stops the lift motion, displays an error message, and re-calibrates itself at the travel direction. Re-calibrating means that the lift will adjust its understanding of floor position by either moving to the upper most floor, or the lower most floor. Once the lift is at either of these terminal floors, it will detect either the **UP-Limit** switch or the **DOWN-Limit** switch according to direction; then it will stop and reset its position correctly as explained in the next paragraph. For more details about magnetic switches please refer to ***section 4.2.8 Magnetic Switches (MSU and MSD)***

1.2.8 Terminal Floor Correction Switches (Up Limit /Down Limit)

The **UIC®** detects Terminal floor limit switches (**Up-limit** and **Down-limit**)**.** The purpose of these switches is to *signal* end of travel in both direction and to indicate terminal floors in case of calibration.

1.2.9 Responding to Safety chain

The **UIC®** checks the safety chain; if the safety chain is broken while in motion, the

lift stops immediately. When the safety chain is closed again, the lift will respond to any call (order) to continue its travel. If the call is at the same floor and the lift is not leveled, the lift will move slowly until it reaches the level. The car will not commence motion so long as the safety chain in broken. *For details about safety chain please refer to* ***(sheet 6 of 16)*** *in the wiring diagram section.* Also please refer to ***section 4.2.6 Safety Circuit Connection***

1.2.10 Phase Failure and Reversal Control

For the protection of the motor drive and the safety of the passengers, the UIC® controller responds to phase failure and phase reversal signals. Whenever, such signal is received, the lift stops and the appropriate error message is displayed. A closed circuit indicates that the phases are OK. An open circuit indicates that the phases are not OK Also please refer to ***section 9 Phase Failure & Reversal Device:***

1.2.11 Full Load Control

The **UIC®** reacts to Full load conditions as follows: The full load contact (normally mounted underneath the car) is tested, if it is closed (i.e. the Maximum load reached), the lift will answer car calls only. The landing calls will be registered but never served until the full load condition no longer exists (contact is opened again). This supervisory signal is monitored all the time of operation. Its function is mainly intended while passengers are occupying the car. However, it keeps monitoring the switch during the travel to detect switch failure or signal interruption. When a full load situation is detected, an appropriate message is displayed.

1.2.12 Overload Control

The UIC® is programmed to respond to the overload signal. The Overload contact is tested, if it is closed (i.e. the rated load is exceeded by 10% with a minimum of 75 kg.), The UIC® will perform the following actions:

- The automatic power operated door is brought into fully open position.
- Manually operated door remains unlocked.
- All calls are cancelled,
- The passengers are informed by an audible and/or visible signal in the car.
- The appropriate error message is displayed until Normal lift operation resumes when the Overload contact is opened again.

This supervisory signal is always tested before motion (in Calibration, Inspection and motion). In case the overload signal is lost (due to failure of overload switch or cut in the wire), the lift will continue motion till it reaches the target floor.

1.2.13 Attendant Control

The lift can be set to operate in Attendant mode. When this switch is activated the lift will cancel all the calls and will respond only to car calls.

1.2.14 Fireman Control

The fireman control can be enabled or disabled (Enabled by default). Please refer to ***section 4.3 Setup Mode programming*** for instructions on how to enable or disable fireman.
If fireman control is enabled and fireman signal is received (ON state) the **UIC®** reacts as follows

a. If the lift is in still mode (waiting for calls) it cancels all calls and moves to the floor that is assigned as a fire floor. It will open the door and will not accept any call. If the lift is equipped with fire drive switch, the fireman can switch on this drive and the lift will accept car calls only.
b. If the lift is in motion, it stops at nearest floor without opening car door, it will move immediately (may change direction) to the fire floor and the behavior will then be similar to point (a) above.

1.3 UIC Motherboard Control system

The `**UIC®** motherboard does not work as a standalone unit. It requires other supporting devices such as:

- Transformers
- Contactors
- Circuit Breakers
- Charger
- Phase Failure
- Relays
- Etc.

We can deliver a complete fully tested **UIC®** control system housed in the appropriate enclosure with all supporting devices included. **Diagram 1** & **Diagram 2** represent the **UIC®** control panel of our lift control system. The first is for **2 Speed** Control System and the second for **V3F Inverter** Control System. Note that some of panel's components and devices could be exchanged according to your lift's requirements. ***Section 8 (Complete Lift Control System Panel Components)*** in this manual describes the components needed to build a control panel compatible with **UIC®** motherboard for 2 Speed and V3F control systems. If you choose to build your own control panel, it is very important to read and understand section 8.
UIC® motherboard could be easily adapted to control **Hydraulic Pumps** for hydraulic lifts. Because hydraulic pumps vary in their method of control; for example direct starting or star – delta starting, number of control valves…etc. Hydraulic Pump control panel would be customized according to the pump in use. In all types of pumps the **UIC®** motherboard is equipped with a special program for re-leveling; due to the nature of the hydraulic oil, hydraulic lifts creep downward when left standstill for some period of time, hence the re-leveling feature brings the lift back to floor level even when the lift door is open.

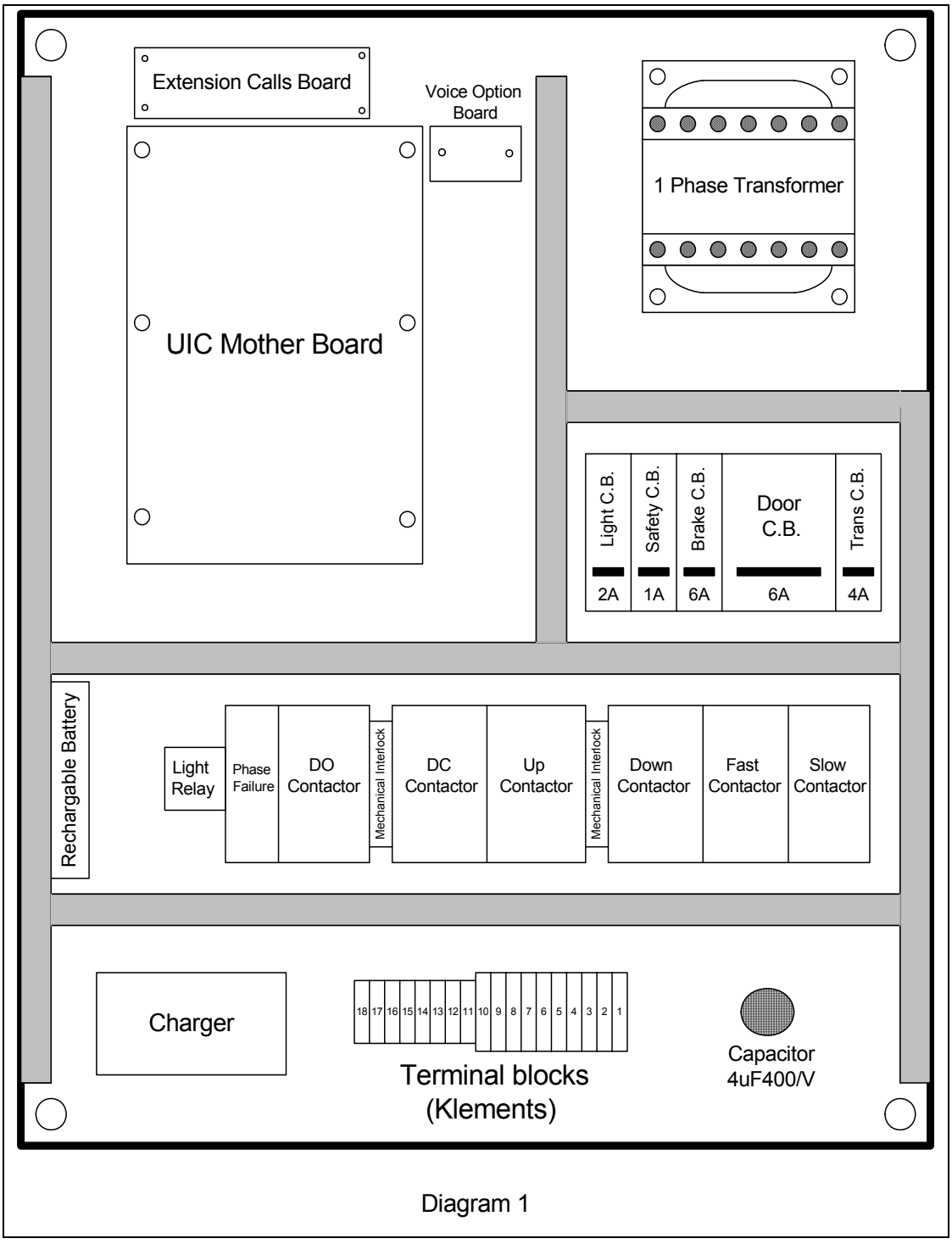


Diagram 1

UIC Control Panel

Universal Intelligent Controller (UIC)®Mother Board

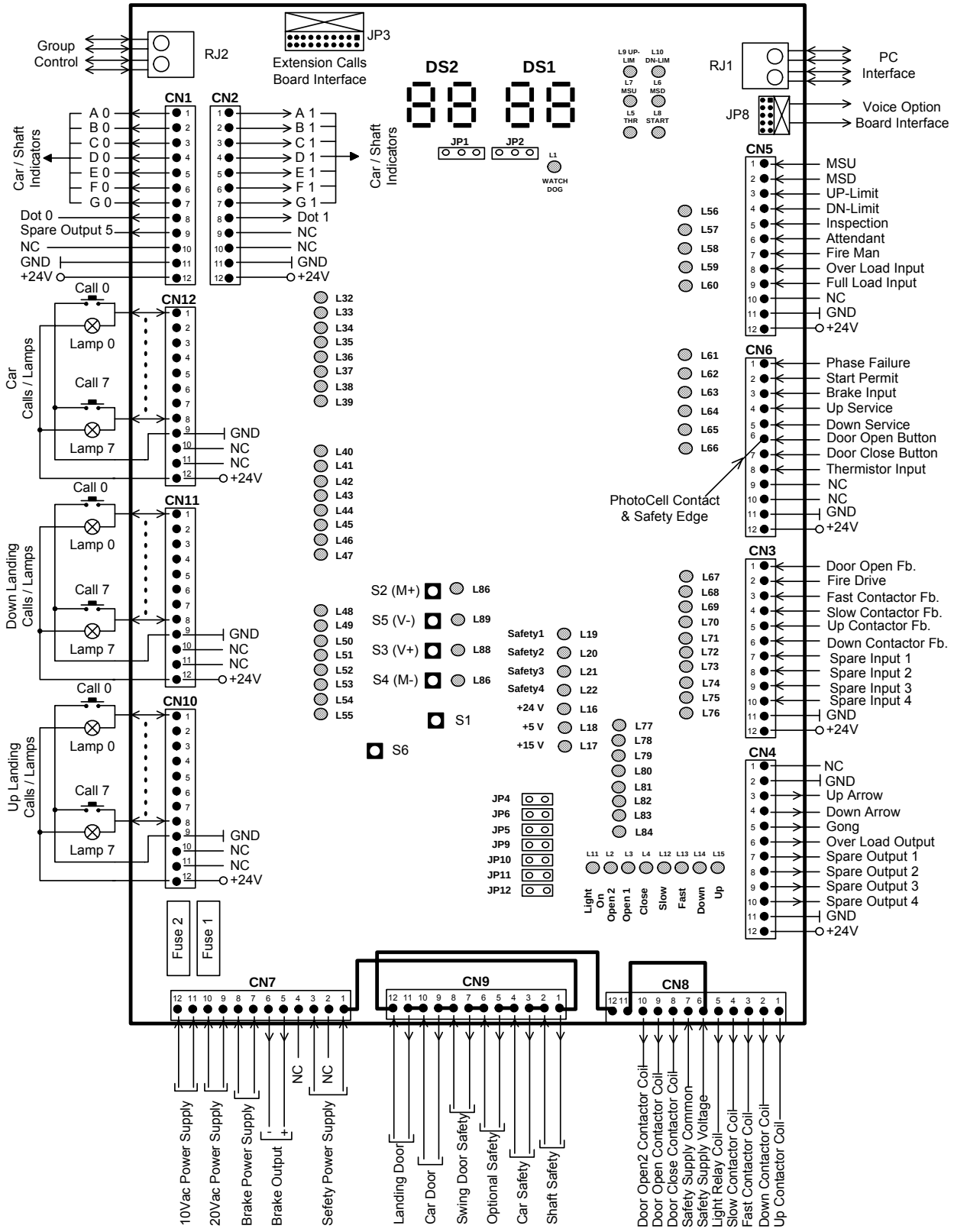


Diagram 2

Diagram 3 represents the layout of the **UIC®** Motherboard including all the devices or components that must be connected in the system.

1.4 Guidelines for the UIC® connectors' designation

- The **UIC®** motherboard is surrounded by a set of green Connectors. Every connector is designated as CN followed by a number i.e. CN6. You can identify each connector by carefully looking at labels printed on the Motherboard. Each of such connectors contains 12 pins.
- To locate a specific pin. CN(x/y) notation is used where x is the connector number and y is pin number. For example, pin number 5 in connector 6 the notation CN6/5 is used, and this notation will be used through out this manual. As seen from Diagram 3, the connectors are labeled CNx, where x is a number from 1 to 12 to designate all the 12 connectors that are soldered on the **UIC®** motherboard. Each one of these connectors has 12 pins, also labeled 1 to 12.
- Diagram 3 also shows how the connectors are labeled. It is important to note that the connectors are not labeled sequentially, for example CN1 and CN2 appear at the upper left corner of **UIC®** Motherboard. Please do not assume that the CN3 should appear directly beneath them. Before dealing with connecting Connectors, please make sure to read the connector number as labeled on the Diagram 3 or as labeled on the silk screen of the Motherboard.
- As discussed previously, each connector contains 12 pins. Pin number 1 is on the top, if the connector is placed vertically, pin number 1 is on the right, if the connector is placed horizontally. The **UIC®** clearly marks Pin number 1 on the Motherboard. Please look carefully, and make sure that you located the correct pins before you attempt to connect or disconnect

Cautation

Despite the fact that UIC® I/O is short-circuit protected, serious damage can occur by improper placement of pins and/or connectors on the UIC® Motherboard.

2 Hardware Specification

2.1 Microcontroller

The platform of UIC is 80C51 Single-Chip 8-Bit Microcontroller manufactured by ***Philips***

The Features of the Microcontroller are:

- 80C51 central processing unit
- Speed up to 33 MHZ (in **UIC®** 4MHZ)
- Full static operation
- Operating voltage range: 2.7 V to 5.5 V @ 16 MHZ
- 8k x 8 EPROM
- 256x8 RAM
- Three 16-bit timer/counter
- Programmable counter Array (PCA).
- Four 8-bit I/O ports

- Full duplex enhanced UART.
- Operating Temperature 0-70° C

2.2 Protection

A special hardware is deployed to detect any short-circuit in +24Vdc power supply circuitry. The circuit automatically and electronically disconnects the **UIC®** load from the power source when the DC load current reaches a threshold (5.1A). It features a manual re-triggering circuit to reconnect the load to +24Vdc after the short-circuit is removed. Furthermore, the **UIC®** is equipped with two Fuses to protect the 10 Vac and 20 Vac. Supply. Refer to ***Section 3.2 Fuses***.

2.3 I/O PORTS

Careful design considerations assures the efficient, reliable and safe Input/Output system as described below.

2.3.1 Input Ports:

All input signals are optically isolated (phototransistor output type) with the following specifications

Absolute maximum Ratings:

- The absolute forward current I_F (mA)= 50
- Isolation Voltage (AC) Viso (V) =5000
- Collector Emitter Voltage V_{CEO} (V)=35

Electrical characteristics:

- Current Transfer Ratio (CTR) MIN. =%50
- I_F (mA) =5
- Response time T_r (μ s) TYP.=4
- R_L (Ω)=100

2.3.2 Output Ports:

CN1, CN2 and CN4 connectors constitute outputs that are driven by Protected Quad Power Driver that has the following specs:

- 700 mA Output Current per Channel.
- Independent Over-Current Protection for Each driver.
- Thermal Protection for Device and Each Driver
- Low Output-Saturation Voltage
- Integral Output Fly back Diodes.

CN10, CN11 and CN12 are driven by BiMos II 8-bit serial input, latched drivers with current-sinking Darlington output with the following specs:

- Internal pull-up / Pull-Down Resistors.
- High voltage current sink Outputs.
- Output Transient-Protection Diodes.

- Operating temperature range -20°C to +85°C.

Additionally, a current limiting resistor of 68Ω /1W is connected in series with each output.

2.4 Dimension

The dimension of the **UIC®** Motherboard is (22.36 x 35.48) Cm^2.
A recommended enclosure case for the **UIC®** control system is 80x60x20 Cm^3.

2.5 Environment

- Index of mechanical protection for the Industrial wall mounting enclosure is IP55
- Operating temperature from +0 to 40ºC.
- Humidity <95% (non condensing)
- Permitted voltage fluctuations +10% & -20% on both board and control panel.

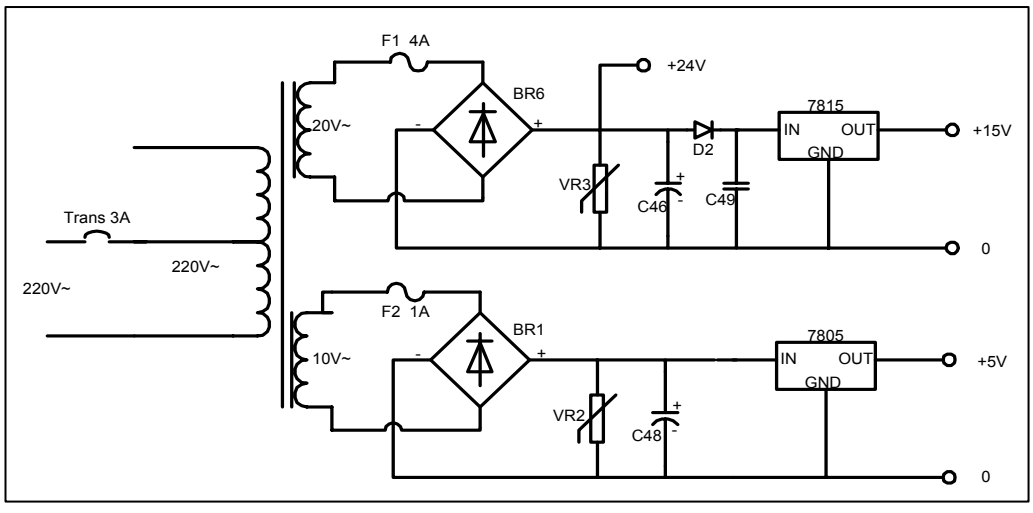
3 Key UIC Motherboard Components

3.1 Power Supply.

An external transformer (located in the control panel) is expected to deliver two voltages 10 and 20 Vac.
These two voltage lines are fed through onboard fuses to protect against over current and short circuits. Each of the two lines is then fed into full wave rectifiers to deliver unregulated DC equivalent.

The 10V line is then fed into a regulator to produce a stable 5Vdc required for all digital components of the motherboard

Power Supply functional Diagram



3.2 Fuses

The **UIC®** Motherboard contains the following fuses: -

- **F1:** 24Vdc, 4A, circuit protection, (internal and external circuits).
- **F2:** 5Vdc, 1A, circuit protection, (for logic circuit).

3.3 Test points indication:

The UIC Motherboard provides the following test points. Such points enable you to verify proper voltages:

- TP2: +24Vdc.
- TP3: +15Vdc.
- TP4: +5Vdc.
- TP5: +14Vdc.

The common (GND) for the above test points is CN4 / 11.

3.4 Jumpers Settings:

Several jumpers are located on the Motherboard. Such jumpers enable you to customize setting so that the controller meets individual needs.

For the location of jumpers refer to Diagram 3.

Jumper	State	Description
JP1	X	(Factory setting): Please do not change this jumper
JP2	X	(Factory setting): Please do not change this jumper
JP3	X	Used to connect the Extension Calls Board
JP4	ON	Door Open2 is energized with 24Vdc
	OFF	Door Open2 is energized according to customer requirement (see wiring diagram)
JP5	ON	Door Close energized with 24Vdc
	OFF	Door Close is energized according to customer requirement (see wiring diagram)
JP6	ON	Door Open is energized with 24Vdc
	OFF	Door Open is energized according to customer requirement (see wiring diagram)
JP7	X	(Factory setting): Please do not change this jumper
JP8	X	Used to connect the Voice Option Board
JP9	ON	Up Contactor is energized with 24Vdc
	OFF	Up Contactor is energized according to customer requirement
JP10	ON	Down Contactor is energized with 24Vdc
	OFF	Down Contactor is energized according to customer requirement
JP11	ON	Fast Contactor is energized with 24Vdc
	OFF	Fast Contactor is energized according to customer requirement
JP12	ON	Slow Contactor is energized with 24Vdc
	OFF	Slow Contactor is energized according to customer requirement

Notes:

- ON means that the jumper exists (The connection is jumpered).
- Open2 is activated only on request.

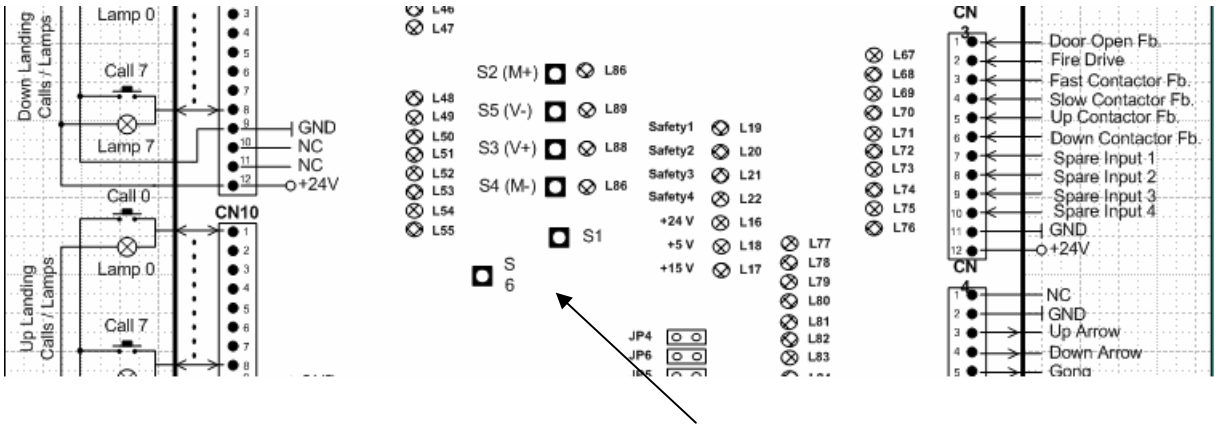
3.5 Push Buttons Settings:

The **UIC** Motherboard is equipped with several push buttons. Please see Diagram 3.

- **S1:** The reset button; When pressed, the system will be restarted.
- **S2 (M+)**
- **S3 (V+),**
- **S4 (M-),**
- **S5 (V-)**.

S2, S3, S4 and S5 are used to setup lift properties as explained in Setup Mode section 4.3

- **S6:** Short Circuit reset button. Should a short circuit exists on the +24V dc power supply, LED L16 will be OFF. In this case check if there is a short circuit between +24V dc & GND. The following diagram shows these switches



3.6 LEDs Indication:

The **UIC®** Motherboard contains a large number of LEDs designed to indicate the state of several critical operations that the lift is processing. The following table explains in details the meaning of each LED. It is strongly recommended that you read and understand the function of each LED. It will greatly simplify debugging and troubleshooting problems that you may be experiencing. The symbol **L** is used to designate an LED; For example, **L3** is a LED numbered 3 and it indicates Door Open operation. Each of these LEDs is clearly marked on the Motherboard for you to identify and can also be found on the Diagram 3.

LED	Designator	LED Status & Meaning
L1	**Watch Dog**	**Flickering**: The System is OK. **Off** or **On**: Major and serious problem in the system.
L2	**OPEN2**	**On**: Door Open 2 is energized. **Off**: Door Open2 is de-energized
L3	**OPEN1**	**On**: Door Open1 is energized. **Off**: Door Open1 is de-energized.
L4	**CLOSE**	**On**: Door Close is energized. **Off**: Door Close1 is de-energized.
L5	**THR**	**On**: Motor Thermistor is closed. **Off**: Motor Thermistor is open (Motor Overheated).
L6	**MSD**	**On**: Proximity DOWN magnetic switch is closed. **Off**: Proximity DOWN magnetic switch is open.
L7	**MSU**	**On**: Proximity UP magnetic switch is closed. **Off**: Proximity UP magnetic switch is open

L8	**Start Permit**	**On**: The series of normally close contacts of the main contactors is closed (All the main contactors are de-energized). **Off**: The series of normally close contacts of the main connectors is opened (At least one of the main contactors is energized.
L9	**UP-Limit**	**On**: Up-limit switch is opened (on extreme floor.). **Off**: Up-limit switch is closed (not on extreme floor.).
L10	**Down-Limit**	**On**: Down-limit switch is opened (on extreme floor.). **Off**: Down-limit switch is closed (not on extreme floor.).
L11	**Light-on**	**On**: Car in use. **Off**: Car not in use.
L12	**SLOW**	**On**: Slow contactor is energized **Off**: Slow contactor is de-energized
L13	**FAST**	**On**: Fast contactor is energized **Off**: Fast contactor is de-energized
L14	**DOWN**	**On**: Down contactor is energized **Off**: Down contactor is de-energized
L15	**UP**	**On**: Up contactor is energized **Off**: Up contactor is de-energized
L16	***+24V supply***	**On**: +24 V supply is OK. **Off**: +24 V supply is faulty.
L17	***+15V supply***	**On**: +15 V supply is OK. **Off**: +15 V supply is faulty.
L18	***+5V supply***	**On**: +5 V supply is OK. **Off**: +5 V supply is faulty.
L19	***SAFETY 1***	**On**: Safety 1 chain is closed (OK). **Off**: Safety 1 chain is opened (faulty).
L20	***SAFETY 2***	**On**: Safety 2 chain is closed (OK). **Off**: Safety 2 chain is opened (faulty).
L21	***SAFETY 3***	**On**: Safety 3 chain is closed (OK). **Off**: Safety 3 chain is opened (faulty).
L22	***SAFETY 4***	**On**: Safety 4 chain is closed (OK). **Off**: Safety 4 chain is opened (faulty).
L32-L39	**Floors LED**	**ON:** Indicates that a car call to the respective floor is registered L32 being floor 1 and L39 being floor 8
L40-L47	**Floors LED**	**ON:** Indicates that a down call to the respective floor is registered L40 being floor 1 and L47 being floor 8
L48-L55	**Floors LED**	**ON:** Indicates that an up call to the respective floor is registered L48 being floor 1 and L55 being floor 8
L56	**INSP.**	**ON:** Motherboard is in the inspection mode
L57	**ATTN.**	**ON:** Motherboard is in the attendant mode
L58	**FIRE-MAN**	**ON:** Fire Man signal is ON
L59	**OVL-I**	**ON:** Over load input signal to the Motherboard is ON
L60	**FUL-I**	**ON:** Full load input signal to the Motherboard is ON
L61	**PH-F-INV**	**ON:** Input signal to indicate Lack of phases or the sequence of phases are reversed
L62	**BRAKE-I**	**ON:** Input signal to indicate that brakes are not released, or car ropes are not in place or motor failed to start.
L63	**UP-SVC**	**ON:** Input signal to indicate that Motherboard in the up service mode.

L64	**DN-SVC**	**ON:** Input signal to indicate that Motherboard in the down service mode.
L65	**D-OPEN-B**	**On**: Feedback signal from door open contactor to indicate that it is energized (contactor is mechanically stucked) **Off**: No feedback signal from door open contactor i.e contactor is de-energized.
L66	**DCLOSE-B**	**On**: Feedback signal from door close contactor to indicate that it is energized (contactor is mechanically stucked) **Off**: No feedback signal from door close contactor i.e contactor is de-energized.
L67	**DOOR-STATUS**	**On**: Feedback signal from door to indicate that it is widely opened **Off**: Indicate that door still not widely opened
L68	**FIRE-DRV**	**On**: Fire drive signal is ON. **Off**: Fire drive signal is OFF.
L69	**F.C.EXT**	**On**: Feedback signal from Fast contactor to indicate that it is energized (contactor is mechanically stucked) **Off**: No feedback signal from Fast contactor i.e contactor is de-energized.
L70	**S.C.EXT**	**On**: Feedback signal from Slow contactor to indicate that it is energized (contactor is mechanically stucked) **Off**: No feedback signal from Slow contactor i.e contactor is de-energized.
L71	**U.C.EXT**	**On**: Feedback signal from Up contactor to indicate that it is energized (contactor is mechanically stucked) **Off**: No feedback signal from Up contactor i.e contactor is de-energized.
L72	**D.C.EXT**	**On**: Feedback signal from Down contactor to indicate that it is energized (contactor is mechanically stucked) **Off**: No feedback signal from Down contactor i.e contactor is de-energized.
L73-L76	**Spare I/P LEDs**	**ON:** Indicates that the corresponding spare input is used L73 being Spare I/P 1 and L76 being Spare I/P 4.
L77	**UP-ARROW**	**On**: Lift is moving in the up direction.
L78	**DN-ARROW**	**On**: Lift is moving in the down direction.
L79	**GONG**	**On**: Gong signal is ON (gong should be heard).
L80	**OVL-O**	**On**: Over load output signal from the Motherboard to indicate that lift is overloaded.
L81-L85	**Spare O/P LEDs**	**ON:** Indicates that the corresponding spare output is used L81 being Spare O/P 1 and L85 being Spare O/P 5.
L86	**MODE-INC**	**On**: Mode increase push button is pushed (programming mode).
L87	**MODE-DEC**	**On**: Mode decrease push button is pushed (programming mode).
L88	**VALUE-INC**	**On**: Value increase push button is pushed (programming mode).
L89	**VALUE-DEC**	**On**: Value decrease push button is pushed (programming mode).

3.6.1 Examples of LEDs Indication:

- L1 must always be flickering (Flashing on and off). Any other state of the LED indicates that the program controlling the lift motion is not working.
- L3 should be ON while the car door is undergoing an opening operation.
- L14 should be ON when the lift is going down.
- L35 ON means that the controller has sensed and registered a car call at the 4th floor.
- L16, L17, and L18 should always be ON, as they indicate that the Power requirements (5V, 24V, 15V) are met. If any of these LED is OFF, the lift will not work, & the reason for power interruption should be investigated.

4 Installation and Programming:

For the proper, efficient, and reliable operation of the **UIC®** control system, you must first follow instructions given below including the wiring and setup (setting) instructions. The following steps guide you through the wiring and commissioning procedures:

4.1 Wiring

The wiring of **UIC®** can be performed according to the Wiring Diagram. The wiring diagram is supplied as a separate document and contains about 16 pages. Most of the sheets are common for most installations. However, some of the sheets may be changed according to the installation specification. For example, the wiring diagram of three-phase door motor is different than that of the swing door without car door. Before connecting the wires to the motherboard, it is very important that you read and understand ***section 1.4 Guidelines for the UIC® connectors' designation***

Caution

- Despite the fact that **UIC® Motherboard** I/O is short-circuit protected, serious damage can occur by improper placement of pins and/or connectors on the **UIC®** Motherboard.

4.2 Commissioning:

The proper compliance of the following steps is important for the correct and safe commissioning of the lift

- Assembly of the Control panel
- Jumper setting
- General essential points
- Connection of phase failure.
- Connection of motor's thermostat.
- Connection of safety chain.
- Connection of Up Limit and Down Limit switches.
- Magnetic Switches

Before switching the power on, the following steps must be carried out:

4.2.1 Assembly of the control panel

If you have only obtained a **UIC®** motherboard, make sure that you assemble a complete control panel as per recommendation given in ***section 8 (Complete Lift Control System Panel Components)*** .

4.2.2 Jumper setting

Check the jumper settings according to the ***Jumpers Settings section. 3.4***

4.2.3 General essential points

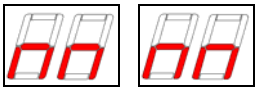
For the proper commission of the lift control system, please do the following steps

1. Make sure that all Connectors are connected in a proper way and position as discussed in ***Connector description section***.
2. Make sure that the lift is operating in the inspection mode by verifying that there is an Open circuit between CN5/5 and CN5/11
3. Make sure that all Circuit Breakers are turned off. If you are using our Control panel, there are 4 Circuit Breakers: **TRANS, DOOR** (For three phase automatic Door), **SAFETY**, **LIGHT** and **BRAKE** housed in the metal enclosure.
4. With a tester (Multi-meter), check if there is a short-circuit between CN6/12 & CN6/11. These two points correspond to +24Vdc and GND on the **UIC®** Motherboard. No short circuit should exist at all times.
5. Disconnect Connector CN7 and switch on the **TRANS** Circuit Breaker in the control panel to insure that no short circuit exists between phase and neutral terminals. See diagram1 to locate **TRANS** Circuit Breaker.
6. Switch off the **TRANS** Circuit Breaker and reconnect connector CN7 while making sure that Safety Circuit Breaker is still off.
7. Switch on the **TRANS** Circuit Breaker, and Make sure that LEDs L16, L17 and L18, which are located on the **UIC®** Motherboard, are ON. If any of them is not in the ON state, it is indicative of the fact that the power levels needed for the proper operation of the **UIC®** Motherboard is not in order.
8. Make sure that the Safety chain is closed. You can check the integrity of the safety chain by verifying that LEDs L19, L20, L21 and L22 ore ON.

4.2.4 Connection of phase failure

Make sure that the three phases connected to phase failure and phase reversal device, otherwise, the following message appears

In case the above message is displayed you must adjust the three phases connected to Phase Failure & Phase Reversal Device until the previous message disappears and the following message appears:



For more details about phase reversal device refer to ***Phase Failure & Reversal Device*** .

If other messages appear, please refer to faults interactive messages, which are detailed in ***Fault interactive messages section 7***

Notes:

If you do not have a phase failure, place a jumper between CN6/1 and CN6/11. However, you are strongly advised to use a phase failure and phase reversal device to protect the system against hazards of phase faults

4.2.5 Connection of motor's thermostat.

The motor thermostat must be connected before any attempt to start the lift. The motor thermostat is connected to CN6/8 and CN6/11.

4.2.6 Safety Circuit connection

As the lift will never commence motion if the safety circuit is broken, it is important to understand the **UIC®** design of the safety circuit. The **UIC®** motherboard specifies 4 input signals to deal with safety chain components and devices. Connector CN9 is mostly dedicated to the safety chain. For more details about this connector refer to ***section11.9*** and to sheet (6 of 16) in the wiring diagram. Since the safety chain circuit provides power to the coils of the main contactors (**UP, Down, Fast and Slow**), any interruption in the chain prevents the energization of such contactors. Safety chain signals are also checked by **UIC®** software all time. During commissioning, the installation team must be able to properly connect the safety circuit and adjust the devices involved in the safety chain.
The safety chain consists of the following 4 signals

- **Safety1**: this safety consists of a series of safety contacts for the shaft and car devices. The following is a list of such common such devices

  - *Buffers*
  - *Well stop*
  - *Speed governor*
  - *Tension wheel*
  - *Safety gear*
  - *Rope slack*
  - *Terminal (Final) limits*
  - *Emergency stop*

  Also you can connect any optional safety contact to this series.
  Due to the fact that Safety 1 is the first in the safety chain, any interruption to any of its devices will cut off power from the rest of the chain.

- **Safety2**: This safety has the second priority in the chain. It corresponds to swing door contact. If the lift is equipped with automatic doors, this safety should be jumpered. For more details refer to sheet (6 of 16) in the wiring diagram.

- **Safety3**: this safety represents the car door safety contact.

- **Safety4**: represents the combination of the landing door safety contacts.

Note: Since at this stage, the mechanical installation is just finished, the technician must make sure that door contacts are firmly and securely adjusted. It is very likely that the wiring of the contacts or the placement of the contact is loose or incorrect. The contacts may seem to be mechanically closed but electrically opened

General Remarks

1. To help technicians monitor the safety circuit status, the **UIC®** Motherboard contains four onboard LEDs. The following table summarizes the LED responsible for monitoring the safety chain

LED	Designator	Description
L19	***SAFETY 1***	**On**: Safety 1 chain is closed (OK). **Off**: Safety 1 chain is opened (faulty).
L20	***SAFETY 2***	**On**: Safety 2 chain is closed (OK). **Off**: Safety 2 chain is opened (faulty).
L21	***SAFETY 3***	**On**: Safety 3 chain is closed (OK). **Off**: Safety 3 chain is opened (faulty).
L22	***SAFETY 4***	**On**: Safety 4 chain is closed (OK). **Off**: Safety 4 chain is opened (faulty).

Note: Since the safety chain is connected in series, any interruption in the safety chain will cause disconnection to the rest of the circuit. i.e. if L19 is off, All LEDs that follow L19 are expected to be off.

2. If any device or components of the safety chain is broken in motion mode, the **UIC®** will stop the lift immediately and a proper fault indication message will be displayed on the 7-segments indicator. For more details refer to ***section 7.1***. When the safety chain is returned to the normal case (Close) the lift will continue its motion without restart or calibration. **UIC®** will memorize the position of the car.
3. When the **UIC®** fails to close the door because safety 3 (Car Door) or Safety 4 (Landing doors Safety) is broken. **UIC®** will attempt three trials to close the door, i.e. in case of failure to close the door; the **UIC®** will reopen the door and try again. After three failures, the proper error message will be indicated.

4.2.7 Connection of UP-Limit and Down-Limit Correction switches.

Two correction (limit) switches must be connected and adjusted

- Terminal floor correction switch at the uppermost floor (top) this switch is designated as **Up-limit.**
- Terminal floor correction switch at the lowermost floor (bottom) this switch is designated as **Down-limit**.

The terminal floor limit switches (UP-Limit and Down Limit) are bistable magnetic or mechanical switch. Firstly, let us assume that this switch is initially open or close.

When the Magnetic Switch (bistable) passes the south pole of the Magnetic Rod (MR), the switch contact closes and remains closed even after the Magnetic switch gets away from the MR. This contact does not become open again until the magnetic switch passes the North Pole of the next MR. These bistable switches are used to give signals of Down-Limit and Up-Limit to **UIC®**. If you wish to replace these magnetic switches with mechanical switches (CAM), you have to note that the contact must be close when the car is between the floors. For the connection of these magnetic switches refer to sheet (4 of 16) in the wiring diagram.

Note:
The status of the magnetic switches also depends on the direction of approach of the MR; i.e. approaching a south pole from down is exactly the same as approaching a North Pole from up & vise versa.

4.2.8 Magnetic Switches (MSU and MSD)

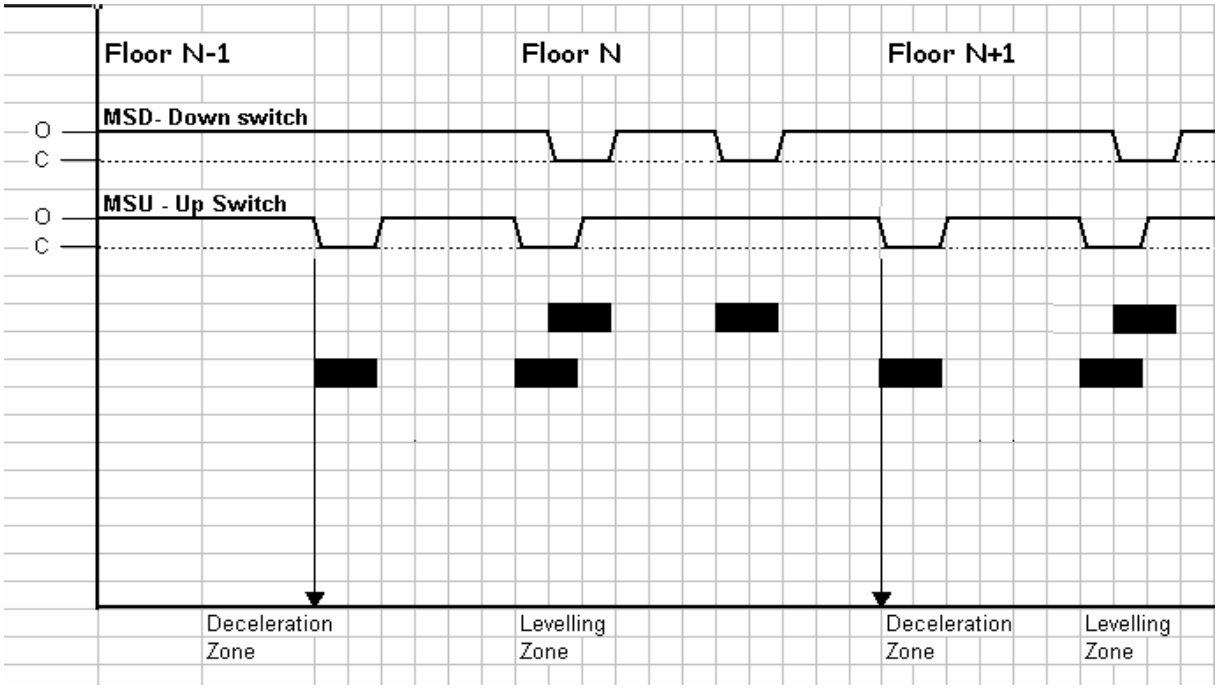
The following proximity devices (Magnetic switches) are connected to the UIC motherboard: -

- Magnetic deceleration and /or stop switch (down), this switch is designated as **(MSD).**
- Magnetic deceleration and /or stop switch (up), this switch is designated as **(MSU).**

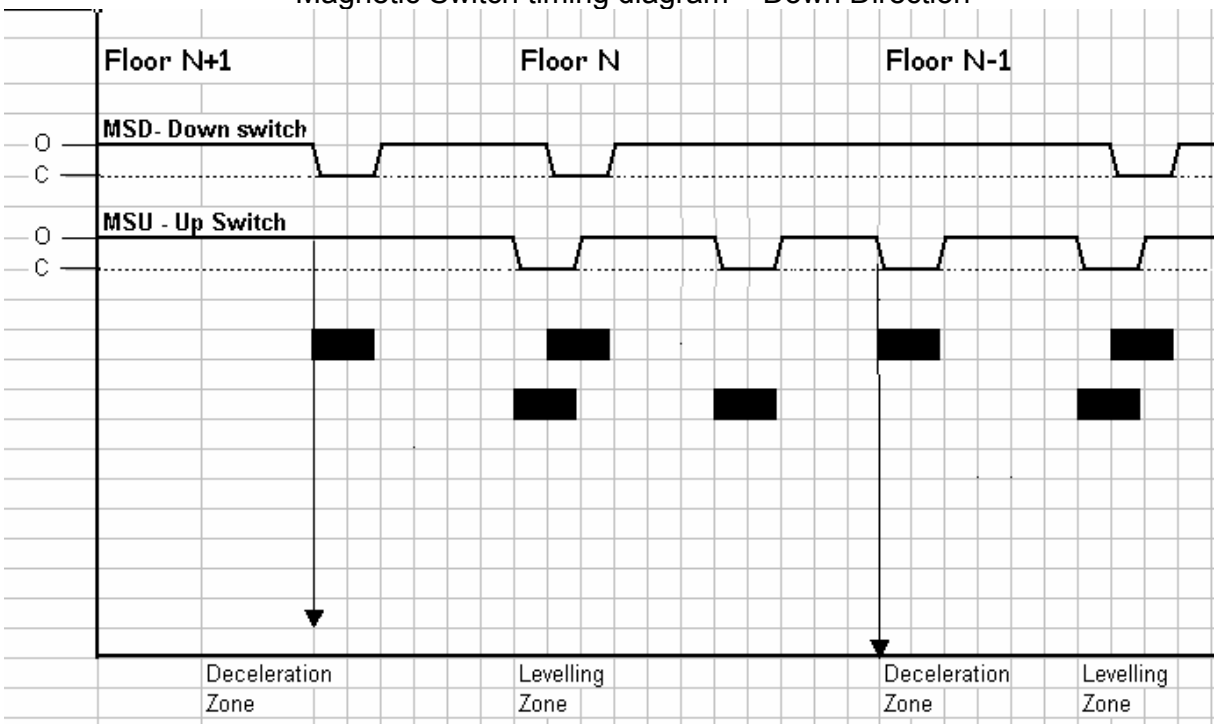
The contact of the magnetic switches used for MSU and MSD is always open in normal status (without effect of any magnetic rod (MR)). When the magnetic switch passes over the MR, the contact of this switch becomes close for the period of passing. When the Magnetic switch moves away from the MR the contact of the magnetic switch returns to its normal status (open). These two magnetic switches (MSU and MSD) are used to give the UIC the suitable signals to inform the UIC about the position of the Car and the number of floors served. This effect is achieved by installing (distributing) the magnetic rods (MRs) on the guide rails according to sheet (7 of 16) in the wiring diagram and the MSU/MSD magnetic switches are installed on the Car. Therefore, during car motion and as MSU/MSD pass over the magnetic rods, the UIC senses the periodic changes of the magnetic contacts and therefore, can maintain floor position, can reduce speed when approaching target floor, and ultimately stop the car at floor level. For the connection of these magnetic switches refer to sheet (4 of 16) in the wiring diagram.

Below, two graphical representations of the status of MSU and MSD are shown. The first diagram shows a timing diagram in Up-direction, and the other diagram shows a timing diagram in the Down – Direction

Magnetic Switch timing diagram –Up direction
T



Magnetic Switch timing diagram – Down Direction



▬: This symbol represents a magnetic rod (MR). When magnetic switches overpasses MR, the contact of the magnetic switch is closed

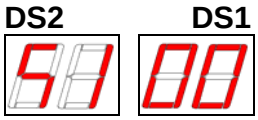
- O means the magnetic switch contact is Open
- C means the magnetic switch contact is Close

Notes:

- When the lift is at the Upper Most Floor, The UP Limit switch should be open and the Up-Limit LED (LED9) should be ON. Furthermore, the DC Voltage between CN5/3 & CN5/11 should be +24Vdc. As the car travels in the down direction, the magnetic Up-Limit magnetic switch closes, LED9 goes off and the voltage between CN5/3 & CN5/11 is 0 Vdc. For more details about the status of this signal refer to11.5 below ***section 11.5*** that describes connector CN5
- When the lift is at the Lower Most Floor, The Down Limit switch should be open and the Down-Limit LED (LED10) should be ON. The DC Voltage between CN5/4 & CN5/11 is +24Vdc for more details about the status of this signal refer to11.5 below***section 11.5*** The shaded areas in sheet (7 of 16) in the Wiring Diagram represent the MR. Under such areas, the magnetic switch contacts (MSU and MSD) should be closed. Elsewhere, the contacts are open.
- At floor level, the MSD MRs must be higher than MSU MRs. This is in accordance with the table in sheet (7 of 16) in the Wiring Diagram
- The preferable length of the MR is between 6 and 10 Cm.
- When the car is between the floors, the Up-Limit and Down Limit contacts must be close. However, when the car is in the upper most floor, the Up-Limit must be open, and when the car is at the lower most floor, the Down-Limit must be open.

4.3 Setup Mode programming

This mode is necessary to customize your controller according to your site requirements; this must be done before setting the lift to normal mode. The default values are shown in Table 1 under the factory-setting column.
To enter this mode, switch OFF the **TRANS** Circuit Breaker, and then switch it ON again while pressing on **S2 (M+)** and **S3 (V+)** push buttons simultaneously. The following messages should be displayed on the 7-segment displays:



DS2: represents the setup parameter number.
DS1: represents the value corresponding to this parameter.

In this mode the bush buttons have the following meanings:

- **S2 (M+)**: Increments the setup parameter number as listed in Table 1.
- **S3 (V+)**: Increments the value for the corresponding parameter.
- **S4 (M-)**: Decrements the setup parameter number.
- **S5 (V-)**: Decrements the value for the corresponding parameter.
- **S2+S4** (pressed together i.e. simultaneously) to Load the Factory Values.
- **S2+S5** (Enters the Faults monitoring mode or exit this mode to the normal operation)
- **S3+S5 (End of setup mode).** The system will be switched to Normal mode after saving the parameters to EEPROM.

The following table (Table 1) contains all the parameters that you can set and the Factory Setting Parameters for the Lift Control System. An example of how to program the **UIC** Motherboard will be shown after table 1.

Table 1: *Lift Parameters Setup for 2-speed*

DS2	Parameter Name	Description.	Factory setting
	Indicator Type	**0**: 7 Segment Display with common anode. **1**: Lamps with common +24V. **2**: Lamps with common GND. **3**: Binary Coded Decimal.	0
	Number of Stops	Up to 8 for Full Collective or 12 for Down Collective or Up to 16 for Full Collective or 24 for Down Collective (with extension Calls Board).	8
	Number of Basements	Up to 9 basements.	0
	Carriage Floor	If Floor ***Park Enable*** is set to be On, the lift will park at the indicted floor.	0
	Fire Floor	In case of fireman On, the lift will automatically park in the determined floor.	0
	Travel Time	Max. Allowed time in seconds to miss the required magnetic pulse in the travel direction.	8 Sec
	Carriage Time	Idle time in minutes allowed before lift travels to parking floor.	5 Min
	Drive Type	**0**: Two Speed Drive. Other drives will be added later.	0
	Fire Man Enable	**0**: Disabled, the lift will not respond to Fireman signal. **1**: Enabled, the lift will respond to Fireman signal.	1
	Synchronization Travel Direction	**0**: Calibration direction is down. **1**: Calibration direction is up.	0
	Floor Park Enable	**0**: The floor parking is disabled. **1**: The floor parking is enabled.	1
	Full Collective	**0**: Down Collective. **1**: Full Collective.	0
	Door Open Time	Mandatory door open time in seconds.	4 Sec
	Door Close Time	Door Close time in seconds will be canceled if door didn't close properly for any reason.	6 Sec
	Door Type	**0**: Manual door (swing door with or without car door) **1**: Automatic door.	1
	Door Normal Position	**0**: Landing door normally closed. **1**: Landing door normally opened.	0
	Group Control	**0**: Simplex mode.	0

Table 2-b: *Lift Parameters Setup for V3F*

DS2	Parameter Name	Description.	Factory setting
	Indicator Type	**0**: 7 Segment Display with common anode. **1**: Lamps with common +24V. **2**: Lamps with common GND. **3**: Binary Coded Decimal.	0
	Number of Stops	Up to 8 for Full Collective or 12 for Down Collective or Up to 16 for Full Collective or 24 for Down Collective (with extension Calls Board).	8
	Number of Basements	Up to 9 basements.	0
	Carriage Floor	If Floor ***Park Enable*** is set to be On, the lift will park at the indicted floor.	0
	Fire Floor	In case of fireman On, the lift will automatically park in the determined floor.	0
	Travel Time	Max. Allowed time in seconds to miss the required magnetic pulse in the travel direction.	8 Sec
	Carriage Time	Idle time in minutes allowed before lift travels to parking floor.	5 Min
	Drive Type	0: 2-speed drive 1:V3F drive	0 1
	Fire Man Enable	**0**: Disabled, the lift will not respond to Fireman signal. **1**: Enabled, the lift will respond to Fireman signal.	1
	Synchronization Travel Direction	**0**: Calibration direction is down. **1**: Calibration direction is up.	0
	Floor Park Enable	**0**: The floor parking is disabled. **1**: The floor parking is enabled.	1
	Full Collective	**0**: Down Collective. **1**: Full Collective.	0
	Brake Release Time	The delay time in tenth of seconds, to release the brake after the car reaches the level	1
	Door Open Time	Mandatory door open time in seconds.	4 Sec
	Door Close Time	Door Close time in seconds will be canceled if door didn't close properly for any reason.	6 Sec
	Door Type	**0**: Manual door (swing door with or without car door) **1**: Automatic door.	1
	Door Normal Position	**0**: Landing door normally closed. **1**: Landing door normally opened.	0
	Group Control	**0**: Simplex mode.	0

Example: It is required to configure a **UIC** lift control system for a building with the following specs:

- No. Of floors: 6.
- No. Of Basements: 2.
- Door type: automatic.
- Full collective operation: ok.

Procedure:

1. Follow the instruction mentioned in the beginning of this section to enter the setup mode.

2. Press **S2 (M+)** and verify that the following symbol appears on **DS2** (7-segment display):

3. Press **S5 (V-)** to decrement the value on **DS1** until the number 6 appears.
4. To set the number of basement floors, Press on **S2 (M+)** until the following symbol appears on **DS2**

5. Press S3 (V+) or S5 (V-) to set the value on DS1 to the number 2.

6. To set the door type to automatic door, press on **S2 (M+)** or **S4 (M-)** until the following symbol is displayed on **DS2**.

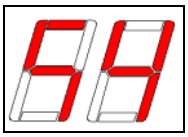
7. Press on S3 (V+) or S5 (V-) to set the value on DS1 display until the number 1 appears. The value 1 means that the controller is now set for automatic door system.

8. To set the operation mode to Full Collective, use **S2 (M+)** and **S4 (M-)** so that the following symbol is displayed on **DS2**.

9. Press on **S3 (V+)** or **S5 (V-)** to set the value on **DS1** to the value 1
10. Finally, to save and exit the setup mode, press on **S3 (V+)** and **S5 (V-)** simultaneously.

Notes:

- When you want to set the Carriage Floor and the Fire Floor, you must take into consideration that the value 0 that appears on DS1 represents the lowermost floor. Do not be misled into thinking that the correct value should be 1. Suppose we have three Basements and the Number of stops is 8 and it is required to set the carriage floor at the Ground floor, then what is the value of Parameter:



Since the lift controller is programmed with 3 basement floors then DS1=0 represents the lowermost floor (which is –3 in our case). Therefore, if you want to set the carriage floor to ground floor, then ground floor is equal to the lowermost floor + 3 floors. Hence, the Carriage floor is = 3

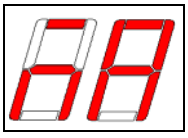
The following table illustrates

Stops (Floor Designator)	Carriage Floor
-3	0
-2	1
-1	2
GF(0)	3
1	4
2	5
3	6
4	7

The value of  is 3

4.4 Normal Mode:

When the System is in the Normal mode and waiting for calls, the following message will appear at **DS1** (This message is known to our design engineers as Main Loop):



In this mode the meaning of the buttons are as follows:

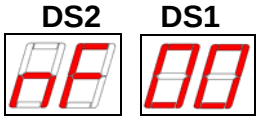
- **S3 (V+)**: When pressed, it simulates a car call to the top floor according to the following behavior: -
  The lift moves up to the top floor, and when it reaches that floor, the door will not be opened, and the car light will still be off.

- **S5 (V-)**: When pressed, it simulates a car call to the bottom floor according to the following behavior
  The lift moves down to the bottom floor, and when it reaches that floor, the door will not be opened, and the car light will still be off.

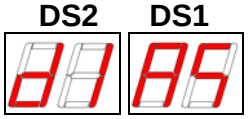
5 Error Log

In certain situations, it could be beneficial for troubleshooting technician to know the faults history of the lift. The errors log is a utility to keep the last 16 errors that occurred. Such faults are recorded in chronological order. To enter this mode, follow the following steps:

1. Enter the setup mode (refer to setup mode in the previous paragraph.)
2. Press **S2 (M+)** and **S5 (V-)** simultaneously.
3. **DS2** should display the message that appears below, while **DS1** represents the number of faults that occurred since last clear.



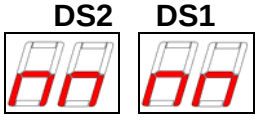
4. This number will be between 00 and 16, and in the above case no faults were detected since the last clear. If you detect a non-zero value on DS1, you can press S3 (V+) to view the error code.
5. You can then scroll to the next error or previous error by pressing S3 (V+) or S5 (V-) respectively. The number of errors displayed will depend on the actual number of faults that occurred. DS2 will represent the Address of the error stored in the EEPROM; DS1 will represent the code of fault. For example, if the safety 1 chain was opened the following message will appear:



6. ***Section 7.1 Fault Interactive Messages:*** shows all possible fault codes.

6 On Board Inspection Mode:

Inspection on board is activated when the **S2 (M+)** is pressed and will be retained as long as this switch is held pressed. The following message will appear on the 7-segment displays upon the activation of this mode.



In this mode the bush buttons have the following meaning (Remember to keep S2 pressed)

- Upward motion **S3 (V+)**: While this button is pressed, the lift will move up in

slow speed until the car reaches the Up limit. When the button is released, the car stops.

- Downward motion **S5 (V-)**: While this button is pressed, the lift will move down in slow speed until the car reaches the Down limit, when you take your hand off this button, the car stops.

- **S4 (M-)** has no effect in this mode.

To quit this mode release **S2 (M+)** and the system will resume normal operation.

7 Control Interactive messages:

An important feature of the **UIC®** controller is its capability of displaying interactive error messages. Such messages help technical personnel in their troubleshooting efforts

Messages that appear on the 7- segment display indicator of the UIC motherboard are grouped as:

- Fault Interactive Messages.
- System Status Interactive Messages.

7.1 Fault Interactive Messages:

These interactive messages are viewed on the four seven segment displays named DS1 and DS2. The following table explains the details:

Message	Generated if	Causes	Consequences
	The Up limit switch and down limit switches are both opened **or** The car is found within both limits	The magnetic Up limit switch and magnetic down switch are incorrectly adjusted or not functioning properly (one or both switches may be stuck).	The system will not respond to any call until problem is resolved and the **UIC®** restarted
	The car passes the reverse limit switch (i.e. direction is up and the car passes the down limit switch or the direction is down and the car passes the up limit switch.	There is a phase reversal situation Or the up limit and down limit switches are interchanged in installation	Check the motor connection in sheet (1 of 16) in the wiring diagram. Check that the up limit is Connected to CN5 /3 and the down limit is connected to CN5 /4
	The car reached the next floor and the previous limit switch is still on.	One of the Proximity limit switches is stuck or not functioning	The system will reach the next floor but will update the terminal floor according to the stuck limit switch
	After Travel time is elapsed the required	Magnetic rods are not set properly or one of	System will attempt re-calibration and will

	magnet sign (proximity signal) is not sensed.	the magnetic switches (MSU or MSD) is badly adjusted or defected.	proceed normally from there
	The contactors are energized properly to start the motor in the required direction in the Calibration mode (Start Up) but after the travel time has elapsed, the car is still in its current position. (Physically no motion occurred)	Brakes are not released, or car ropes are not in place or motor failed to start.	The system will be idle until cause resolved
	The contactors are energized properly to start the motor in the required direction but after 3 sec the car is still in its current position. (Physically no motion occurred)	Brakes are not released, or car ropes are not in place or motor failed to start.	The system will be idle until cause resolved
	After 18 second, the car failed to reach level while slow contactor energized.	The magnetic rods are incorrectly adjusted, or slow zone is too long	Switch the system off and check magnetic Rods while system is in inspection mode
	During Calibration the door is failed to close after three trials.	One or more safety chains are broken.	The system won't respond to any call until the door closes properly and the control is ordered by any call.
	Start Permit signal is not generated.	One contactor is stuck.	All calls will be canceled The system will not respond to calls until problem fixed.
	Up contactor is not energized mechanically.	UP contactor feedback signal not delivered to motherboard or UP contactor not functioning correctly	All calls will be canceled. Next call will trigger normal operation again if possible.
	Fast contactor is not energized mechanically.	FAST contactor feedback signal not delivered to motherboard or FAST contactor not functioning correctly	All calls will be canceled. Next call will trigger normal operation again if possible.
	Slow contactor is not energized mechanically	Slow contactor feedback signal not delivered to motherboard or FAST contactor not	All calls will be canceled. Next call will trigger normal operation again if possible.

		functioning correctly	
	Down contactor is not energized mechanically	DOWN contactor feedback signal not delivered to motherboard or DOWN contactor not functioning correctly.	All calls will be canceled. Next call will trigger normal operation again if possible.
	Safety 1 chain is open in still or in motion mode.	Safety 1 chain broken,	System will resume normal operation upon recovery.
	Safety 2 chain is open in still or in motion mode.	Safety 2 chain broken	System will resume normal operation upon recovery.
	Safety chain 3 (Car Door) is open. This signal is displayed only if Car door contact gets opened while in motion. A different code is displayed if the condition occurs while in still mode	Safety 3 chain broken.	System will resume normal operation upon recovery.
	Safety chain 4 is open	Safety 4 chain broken	System will resume normal operation upon recovery.
	Car door problem (safety 3 chain is open). Occurs if safety broken before motion. Is not displayed if safety broken while in motion	There is a problem preventing internal door from closing. Safety chain (safety3) is broken	Calls will be canceled. Normal operation is attempted upon receiving a call.
	Photocell senses an obstacle preventing door from closing or door open button is pressed or safety edge is not adjusted.	Problem in photocell (may need to be adjusted properly) or door open button correctly wired or stuck	No door close is possible until situation resolved.
	Safety 4 chain is open when the lift tries closing the door	External door is opened. Close door contact problem	Calls are canceled. No door close is possible until situation resolved.
	Lack of phases or the sequence of phases are reversed	1-Fault in phase failure circuitry 2-The three phases from the mains may be reversed or at least one phase is missing.	System stalled until power is back normal.
	The thermistor or	Motor is overheated	Door is opened. System

	thermal switch contact is opened (i.e. motor is overheated)	above allowed maximum temperature.	stalled until temperature of the motor returns back to normal.
	The system is in inspection mode	Inspection switch is on	System is in inspection mode.
	Attendant switch is on	Attendant switch turned on for attendant mode.	System is in attendant mode.
	Fireman switch is on (The system is in fire mode)	There is fire in the building.	No external calls are allowed. Lift will stop at the nearest floor without opening the door, and the return to fire floor and will respond to car call if fire drive switch is on.
	The system is in fire mode before Calibration	There is a fire in the building i.e. fire switch may be incorrectly adjusted or situated	System stalled until problem resolved.
	The car is overloaded	Too many Persons or/and goods in the car or the overload sensor is badly adjusted	No motion is possible until load is corrected. Buzzer will sound. Door will open.
	The system is fully loaded	Max. Load of the car is inside or the full load is switch or sensor is badly adjusted	External calls are denied. Car calls are processed normally and the car parked at the target floor with door open
	EEPROM is not programmed properly	EEPROM defect	Switch off the system and call technical support

7.2 System Status Interactive Messages

These interactive messages are viewed on the four seven segment displays named DS1 and DS2. The following explains the details:

Message	Generated if	Causes	Consequences
	The system is in calibration mode.	System initialization at startup or adjusting its position after returning from major fault.	Lift is not useable until it reaches the required calibration level. .
	The system is in Normal mode and waiting for any order from the user.	Normal operation	Lift is working normally and processing Main Loop

8 Complete Lift Control System Panel Components

In order to operate the **UIC®** Motherboard, other external components are needed. Such components and the motherboard need to be assembled in a metal cabinet. **UIC®** lift control system panel is shown in Diagram 1 & Diagram 2. The recommended Bill of Materials required to build the UIC® lift Control System are:

Bill of Material for UIC® 2 Speed Control System				
Item	**Description**	**Qty**	**Recommended Specifications**	**Notes**
1	**UIC®** Motherboard	1	Up to 8 stops full collective selective and 12 stops down collective.	If the number of stops exceeds 8 stops in full collective selective mode or 12 down in down collective, an extension calls board is needed.
2	Industrial wall mounting steel enclosure with mounting plate	1	IP 55 (80 X 60 X 20) cm^3	You can use any good quality enclosure. A large one for V3F or Hydraulic drives is recommended.
3	Single-phase transformer.	1	550VA, Primary 220-400V, Secondary (48-115) / 60 / 10 / (16-20) V.	Other voltages may be needed according to your site requirements. Refer to sheet 2 of 16 in the wiring diagram for more details.
4	Three phase 6A Circuit Breaker	1	6A Circuit Breaker. Breaking capacity at least 6KA.	This is for 3 phase door motors. For other types such as Single Phase or V3F Doors the recommended value for this Circuit Breaker is 4A. Designated **Door** in **UIC®** control panel..
5	Single Phase Circuit Breaker 6A	1	6A Circuit Breaker, Breaking capacity at least 6kA	The Designator of this Circuit Breaker on the **UIC®** control panel is **Brake**
6	Single Phase Circuit Breaker 2A	1	2A Circuit Breaker	The Designator of this Circuit Breaker on the UIC control panel is **Light**
7	Two Phase Circuit Breaker 4A	1	4A Circuit Breaker	The Designator of this Circuit Breaker on the UIC control panel is **Trans**
8	Single Phase Circuit Breaker 1A	1	2A Circuit Breaker, Breaking capacity at least 6kA	The Designator of this Circuit Breaker on the UIC control panel is **Safety.**
9	Contactors	3	3NO (Power Contacts)+1NC+1NO (Aux. Contact) for (**Up**,**Down**,**Fast**) contactors. Rating according to motor size. Coil Voltage according to safety supply voltage (the default value = **110 Vac**	The selection of contactors power is discussed later in the ***Selection of Contactor section***
10	Contactors	1	3NO (Power Contacts)+1NC+1NO (Aux. Contact) for (**Slow**) contactor. Rating according to motor size. Coil voltage according to safety supply voltage (the default value = **110Vac**	The selection of contactors power is discussed later in the ***Selection of Contactor section***
11	Contactors	2	Door Open Contactor (**Open)** and Door Close Contactor (**Close)** (3NO Power**)**+1NC+1NO (Aux.). Coil according to safety supply voltage (the default value **= 110 Vac**)	The selection depends upon the Door Motor power but not less than 4KW

12	Relay	1	Coil +24Vdc, two-pole changeover power relay fitted with DIN to suit 8 or 11 pin socket. The contact rating as follows • Resistive 10A 250V AC/30V DC • Inductive 3A 250V AC /5A 24V DC	This Relay is used to drive the car in-use light and Fan inside the car , in case of any fault the light becomes **ON** This relay designated (**Light**)
13	Auxiliary Contacts	2	1NO+1NC for (**Up & Down**) Contactors	1NO+1NC add-on blocks
14	Phase Failure & Reversal	1	Mounting DIN-RAIL Sensing the validation of Supply Voltages.	Please refer to ***Phase Failure & Reversal Device*** section for further specs
15	Charger Board (**Optional**)	1	▪ Battery charger for 6/12 Vdc. ▪ Alarm bell drive 6/12 Vdc. ▪ Car emergency light power supply. ▪ Built in ringer with different tones.	When **J1** on the Charger board is **mounted** the battery and the Bell must be +12Vdc. When **JI** is **dismounted** the battery and the bell must be +6Vdc.
16	Battery (**Optional**)	1	Rechargeable Sealed Lead Acid Battery 6V/12V at least 2.4 Ah	The battery should be charged before installation for sufficient time.
17	Metal Polypropylene capacitor 4uF/400V	1	Max. Continuous voltage 450V a.c. (630V d.c.). Temperature range -25°C to +85°C	This capacitor is connected to the output of the Brake DC supply. Refer to sheet (1 of 16) in the Wiring Diagram.
18	Mechanical Interlock	2	Mechanical Interlock between (**Up** & **Down)** is obligatory, the other between (**Open** & **Close**) Contactors is obligatory in case of door with 3 phase motor	The purpose of interlock is to prevent the **Up** and **Down** or door **Open** and door **Close** to be simultaneously energized

Bill of Material for UIC® V3F Control System				
Item	**Description**	**Qty**	**Recommended Specifications**	**Notes**
1	**UIC®** Motherboard	1	Up to 8 stops full collective selective and 12 stops down collective.	If the number of stops exceeds 8 stops in full collective selective mode or 12 down in down collective, an extension calls board is needed.
2	Industrial wall mounting steel enclosure with mounting plate	1	IP 55 (100 X 80 X 30) cm^3	You can use any good quality enclosure. Smaller enclosure, the same as with 2 Speed Control System, could be used if the Inverter is installed outside enclosure
3	Single-phase transformer.	1	550VA, Primary 220-400V, Secondary (48-115) / 60 / 10 / (16-20) V.	Other voltages may be needed according to your site requirements. Refer to sheet 2 of 16 in the wiring diagram for more details.
4	Three phase 6A Circuit Breaker	1	6A Circuit Breaker. Breaking capacity at least 6KA.	This is for 3 phase door motors. For other types such as Single Phase or V3F Doors the recommended value for this Circuit Breaker is 4A. Designated **Door** in **UIC®** control panel..

5	Single Phase Circuit Breaker 6A	1	6A Circuit Breaker, Breaking capacity at least 6kA	The Designator of this Circuit Breaker on the **UIC®** control panel is **Brake**
6	Single Phase Circuit Breaker 2A	1	2A Circuit Breaker	The Designator of this Circuit Breaker on the UIC control panel is **Light**
7	Two Phase Circuit Breaker 4A	1	4A Circuit Breaker	The Designator of this Circuit Breaker on the UIC control panel is **Trans**
8	Single Phase Circuit Breaker 1A	1	1A Circuit Breaker, Breaking capacity at least 6kA	The Designator of this Circuit Breaker on the UIC control panel is **Safety.**
9	Contactors	2	3NO(Power Contact)+1NC+1NO (Aux. Contact) for **TP** and **TP1** Contactors, Coil Voltage according to safety supply voltage (the default value is (**110 Vac)**	The selection of contactors power is discussed later in the ***Selection of Contactor section***
10	Contactors	1	3NO Power Contact +1NC+1NO (Aux. Contact) for **Brake** contactor. Coil voltage according to safety supply voltage (the default value is (**110 Vac)**	4 KW rating would be enough for most cases.
11	Contactors	2	Door Open Contactor (**Open)** and Door Close Contactor (**Close)** (3NO (Power**)**+1NC+1NO (Aux.). Coil according to safety supply voltage (the default value is (**110 Vac)**	The selection depends upon the Door Motor power but not less than 4KW
12	Relay	2	Coil +24Vdc, two-pole changeover power relay fitted with DIN to suit 11 or 8 pin socket. The contact rating as follows • Resistive 10A 250V AC/30V DC • Inductive 3A 250V AC /5A 24V DC, This relay designated (**Light**)	One Relay is used to drive the car in-use light and Fan inside the car , in case of any fault the light becomes **ON** This relay designated (**Light**). The other relay designated (**NOR**) is used to identify Normal or Inspection mode to the Inverter.
13	Relay	4	Coil voltage according to safety voltage, three-pole changeover relay fitted with DIN to suit 11 pin sockets. The contact rating as follows: • Resistive 10A 250V AC/30V DC • Inductive 3A 250V AC/5A 24V DC Relays are designated (**Up, Down, Fast, Slow**)	These relays are used to replace counterpart contactors with 2 Speed Control System
14	Phase Failure& Reversal	1	Mounting DIN-RAIL Sensing the variation of Supply Voltage.	Please refer to ***Phase Failure & Reversal Device*** section for further specs
15	Charger Board	1	▪ Battery charger for 6/12 Vdc. ▪ Alarm bell drive 6/12 Vdc. ▪ Car emergency light power supply. ▪ Built in ringer with different tones.	When **J1** on the Charger board is **mounted** the battery and the Bell must be +12Vdc. When **JI** is **dismounted** the battery and the bell must be +6Vdc.
16	Battery	1	Rechargeable Sealed Lead Acid Battery 6V/12V at least 2.4 Ah	The battery should be charged before installation for sufficient time.
17	Metal Polypropylene capacitor 4uF/400V	1	Max. Continuous voltage 450V a.c. (630V d.c.). Temperature range -25°C to +85°C	This capacitor is connected to the output of the Brake DC supply Refer to sheet (1 of 16) in the Wiring Diagram.

18	Mechanical Interlock	2	Mechanical Interlock between door **Open** & **Close** Contactors is obligatory in case of 3 phase door motors. It is optional for others	The purpose of interlock is to prevent the door **Open** and door **Close** to be simultaneously energized

8.1 Selection of Contactors

The contactors assembled in the UIC Control System (panel) are selected according to the smallest size that will satisfy the following equation:

(Rated Current of motor at high speed) x K ≤ Contactor size (A)

Where ***K=*** *coefficient of calculation, which assumes various values according to the drive**:***

1.25 for hydraulic installations
1.36 for rope installation (1 or 2 speed)
1 for installation with variable voltage variable frequency drives

The above equation guides you how to select the proper rating of the contactors according to the specifications of the motor and drive type.

Example: If the Rated current of a two speed traction (rope) motor at high speed (Nominal Current) is 17A, the minimum current for the contactors must be

17 * 1.36 =23.1A

.

Therefore, you can choose any standard rating contactor with current rating higher than 23.1 A, typical 25A contactors i.e. 11KW

8.2 Circuit Breakers:

UIC® Control system contains the following Circuit Breakers that are located on the control panel (see diagram 1).

- **TRANS:** Two-phase Circuit Breaker 4A for Main Supply.
- **Main:** Three-phase Circuit Breaker (Miniature Circuit Breaker), 6A or 4A for Door motor.
- **Break:** Single phase Circuit Breaker, 6A for Brake circuit protection and 60Vac power supply
- **Light:** Single-phase Circuit Breaker 2A for Car Light.
- **Safety:** Single-phase Circuit Breaker, 1A for safety chain, 115Vac (Default).

***Note*:** The UIC control System also supports the following safety voltages: 220, 110, 60, 48, 24Vac, the default Value for Safety is 110Vac; DC safety voltage is only available on request.

8.3 Fixing UIC in the Panel:

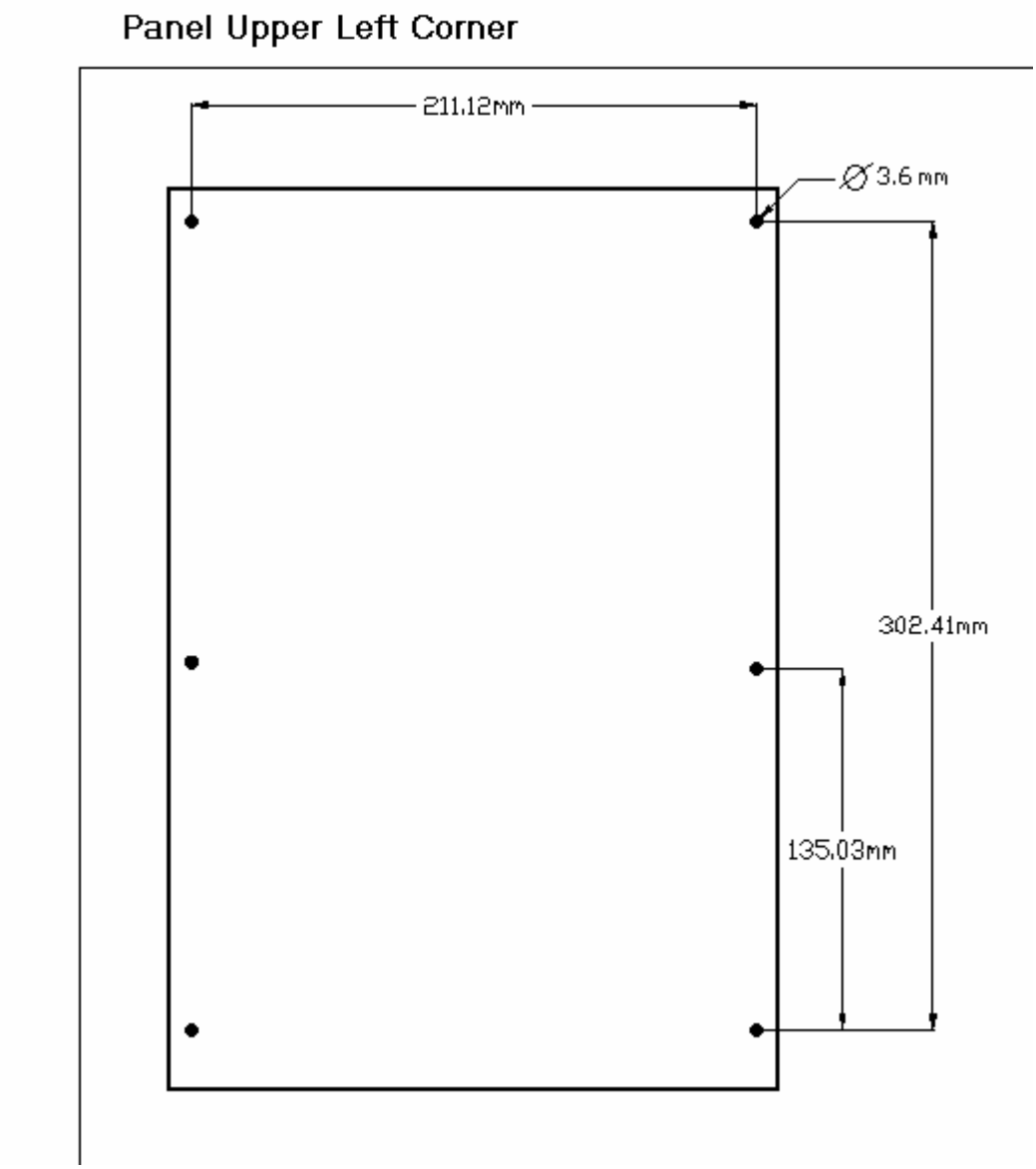
The UIC motherboard should occupy the upper left position of the panel.

8.3.1 Fixing the UIC in the panel:

Materials needed;

6X spacer (28X5 mm^2)
6X spring washer (hole diameter = 3.2 mm)
6X screw (10-13 mm length, diameter = 3mm)
6X nut (hole diameter = 2.5 mm)

Method:
1) Fix spacers on the panel as shown (all dimensions are in mm)

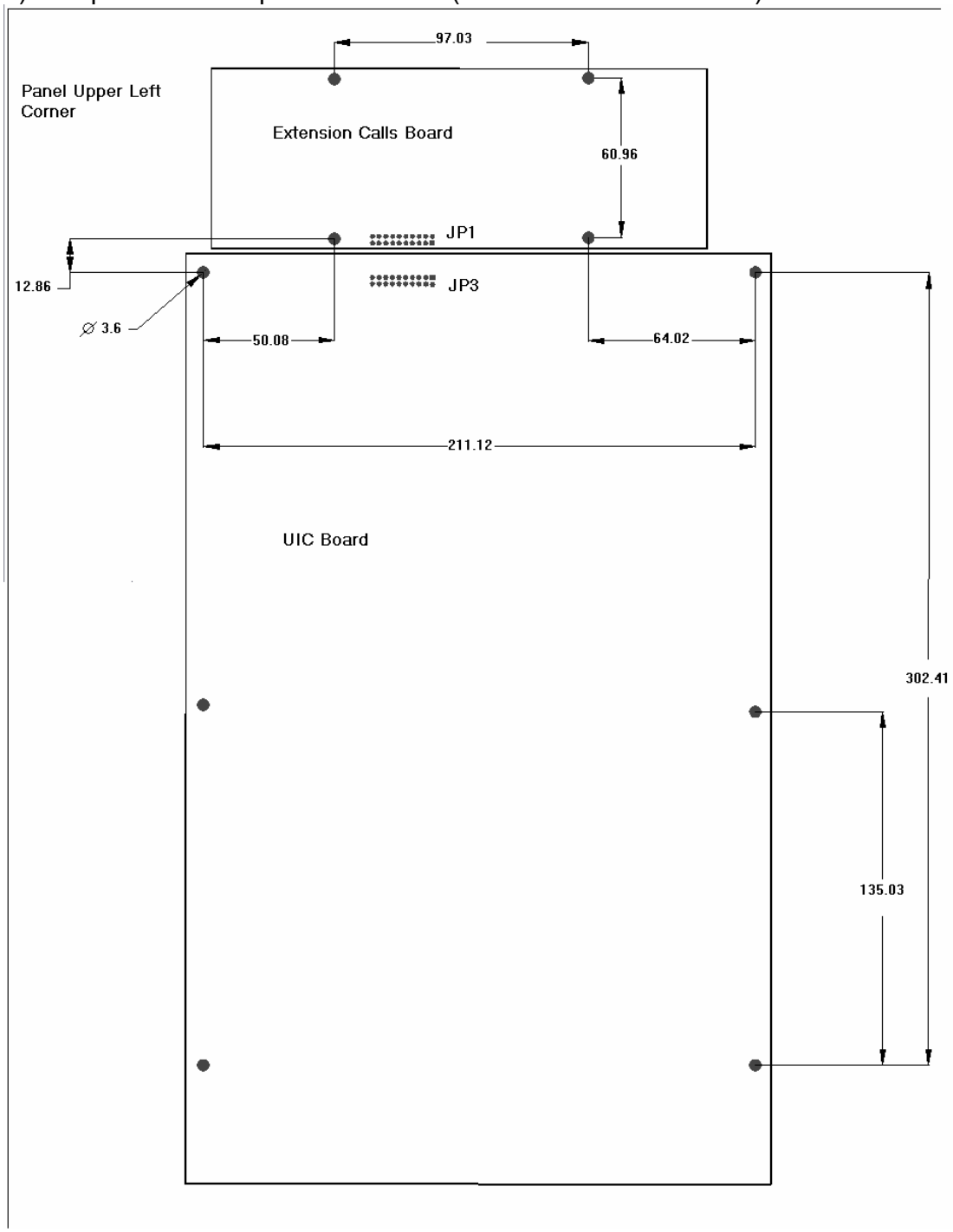


2) Fix spacers with spring washers and nuts.
3) Fix the UIC board on the spacers using screws.

8.3.2 Fixing the UIC and the Extension Calls Board in the panel:

Material needed;
10X spacer (28X5 mm^2)
10X spring washer (hole diameter = 3.2 mm)
10X screw (10-13 mm length, diameter = 3mm)
10X nut (hole diameter = 2.5 mm)

Method:
1) Fix spacers on the panel as shown (all dimensions are in mm)



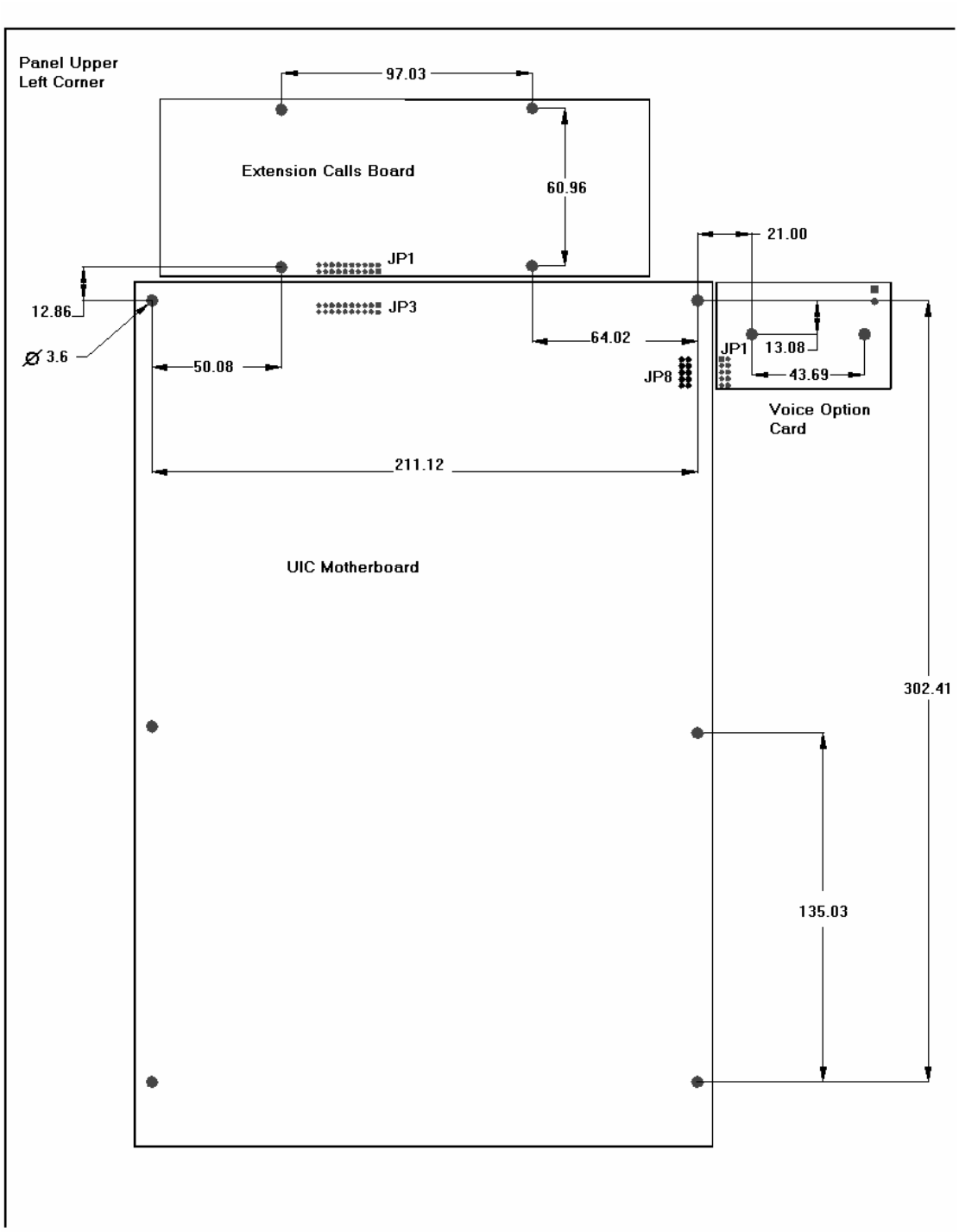
2) Fix spacers with spring washers and nuts.

3) Fix the UIC board and extension calls board on the spacers using screws.

8.3.3 Fixing the UIC and the Extension Calls Board and Voice Option Card in the panel:

Material needed;
12X spacer (28X5 mm^2)
12X spring washer (hole diameter = 3.2 mm)
12X screw (10-13 mm length, diameter = 3mm)
12X nut (hole diameter = 2.5 mm)

Method:
1) Fix spacers on the panel as shown (all dimensions are in mm)



2) Fix spacers with spring washers and nuts.
3) Fix the UIC board, extension calls board and voice option board on the spacers using screws.

9 Phase Failure & Reversal Device

This is a special device available in the market. The function of this device is to monitor the correct sequence and the lack of phase in a three phase mains.
This device must have the following Technical Specification: -

- Mounting DIN-RAIL.

- Sensing the variation of Supply Voltage. It must detect conditions when where voltage surges to greater than 10% of the nominal voltage or drops to more than %25 of the nominal voltage.
- Detecting of any lack of the three phases.
- Detecting of incorrect phase-sequence.
- Output:(Relay 1 NO Contact).

The status of the output relay is :

State	Description
ON (NC)	All the three phases are present and the sequence of the phases R-S-T is correct.
OFF (NO)	The phases sequence is wrong or one or more of the phases are missing.

The Contact of the relay is connected to (CN6/1 and CN6/11) of the UIC Motherboard. Refer to Sheet (8 of 16) in the Wiring Diagram.

10 Charger Board

The Charger Board is a separate board and is not a part of the UIC Motherboard. The main functions of this board are:

1. Charging Battery of 6V or 12V according to the board setting
2. Providing power Supply to the external ringer and Emergency lamp.
3. Generating different tones for a standard 8 Ω speaker as indicated in sheet (8 of 16) in the wiring diagram.

Note: You cannot install External ringer and 8Ω speaker simultaneously.

10.1 Fuses

The charger board is fitted with the following fuse:

- **F1: 4**A and 20Vac.

10.2 Test Points Indication

The Charger board provides the following tests points:

- **TP1:** logic ground.
- **TP2:** +24 Vdc.

10.3 Jumpers Setting:

- **J1**

State	Description
ON	The External Ringer and the Re-chargeable Battery supply must be +12 Vdc
OFF	The External Ringer and the Re-chargeable Battery supply

	must be +6 Vdc.

10.4 Potentiometers

- **P1:** used to change the tone frequency for the built in ringer.

11 Connector description

This section gives detailed description about each connector attached to the **UIC®** motherboard

11.1 CN1 Car /Shaft Indicators

All the signals of this Connector are Output Signals and are intended to drive a common anode 7 segments indicator or +24VDc indicator Lamps or Binary Coded Decimal Indicator. Please Refer to ***section 4.3 Setup Mode programming*** for more details about the setting of Indicator Type .For the wiring of this connector, please refer to sheet (5a&5b of 16) in the wiring diagram.

No	Signal	Label	Status	Description
1	A0	CN1/1	**ON**: the voltage between CN1/1 &CN1/12 is +24Vdc **OFF:** the voltage between CN1/1 &CN1/12 is 0Vdc	Segment A in Common Anode (CA) 7 Segment Display, Floor 1 in CA (Common Anode) Lamps indicator. A signal in the Binary Coded Decimal (BCD)
2	B0	CN1/2	**ON:** the voltage between CN1/2 &CN1/12 is +24Vdc **OFF:** the voltage between CN1/2 &CN1/12 is 0Vdc	Segment B in CA 7 Segment Display, Floor 2 in CA (Common Anode) Lamps indicator. B signal in the Binary Coded Decimal (BCD)
3	C0	CN1/3	**ON:** the voltage between CN1/3 &CN1/12 is +24Vdc **OFF:** the voltage between CN1/3 &CN1/12 is 0Vdc	Segment C in CA 7 Segment Display, Floor 3 in CA (Common Anode) Lamps indicator. C signal in the Binary Coded Decimal (BCD)
4	D0	CN1/4	**ON**: the voltage between CN1/4 &CN1/12 is +24Vdc **OFF:** the voltage between CN1/4 &CN1/12 is 0Vdc	Segment D in CA 7 Segment Display Floor 4 in CA (Common Anode) Lamps indicator D signal in the Binary Coded Decimal (BCD)
5	E0	CN1/5	**ON:** the voltage between CN1/5 &CN1/12 is +24Vdc **OFF**: the voltage between CN1/5 &CN1/12 is 0Vdc	Segment E in CA 7 Segment Display Floor 5 in CA (Common Anode) Lamps indicator
6	F0	CN1/6	**ON:** the voltage between CN1/6 &CN1/12 is +24Vdc **OFF**: the voltage between CN1/6 &CN1/12 is 0Vdc	Segment F in CA 7 Segment Display Floor 6 in CA (Common Anode) Lamps indicator
7	G0	CN 1/7	**ON:** the voltage between CN1/7 &CN1/12 is +24Vdc **OFF**: the voltage between CN1/6 &CN1/12 is 0Vdc	Segment G in CA 7 Segment Display Floor 7 in CA (Common Anode) Lamps indicator
8	Dot0	CN1/8	Reserved for future	Reserved for future
9	NC	CN1/9	Not Connected	Unused

10	NC	CN1/10	Not connected	Unused
11	GND	CN1/11	Ground (GND)	GND
12	+24Vdc	CN1/12	+24Vdc(The voltage between CN1/12&CN1/11)	+24Vdc

11.2 CN2 Car /Shaft Indicators

All the signals of this Connector are Output Signals and are intended to drive a common anode 7 segments indicator or +24VDc Lamps or Binary Coded Decimal Indicator Common Anode Refer to ***section 4.3 Setup Mode programming*** for more details about the setting of Indicator Type. for more details about the setting of Indicator Type .for wiring of this connector refer to sheet (5a&5b of 16) in the wiring diagram.

No	Signal	Designator	Status	Description
1	A1	CN2/1	**ON**: the voltage between CN2/1 &CN2/12 is +24Vdc **OFF:** the voltage between CN2/1 &CN2/12 is 0Vdc	Segment A1 7 Segment Display Floor 8 in CA (Common Anode) Lamps indicator
2	B1	CN2/2	**ON:** the voltage between CN2/2 &CN2/12 is +24Vdc **OFF:** the voltage between CN2/2 &CN2/12 is 0Vdc	Segment B1 in CA 7 Segment Display Floor 9 in CA (Common Anode) Lamps indicator
3	C1	CN2/3	**ON:** the voltage between CN2/3 &CN2/12 is +24Vdc **OFF:** the voltage between CN2/3 &CN2/12 is 0Vdc	Segment C1 in CA 7 Segment Display Floor 10 in CA (Common Anode) Lamps indicator
4	D1	CN2/4	**ON**: the voltage between CN2/4 &CN2/12 is +24Vdc **OFF:** the voltage between CN2/4 &CN2/12 is 0Vdc	Segment D1 in CA 7 Segment Display Floor 11 in CA (Common Anode) Lamps indicator
5	E1	CN2/5	**ON:** the voltage between CN2/5 &CN2/12 is +24Vdc **OFF**: the voltage between CN2/5 &CN2/12 is 0Vdc	Segment E1 in CA 7 Segment Display Floor 12 in CA (Common Anode) Lamps indicator
6	F1	CN2/6	**ON:** the voltage between CN2/6 &CN2/12 is +24Vdc **OFF**: the voltage between CN2/6 &CN2/12 is 0Vdc	Segment F1 in CA 7 Segment Display Floor 13 in CA (Common Anode) Lamps indicator
7	G1	CN2/7	**ON:** the voltage between CN2/7 &CN2/12 is +24Vdc **OFF**: the voltage between CN2/7 &CN2/12 is 0Vdc	Segment F1 in CA 7 Segment Display Floor 14 in CA (Common Anode) Lamps indicator
8	Dot1	CN2/8	Reserved for future	Reserved for future
9	NC	CN2/9	Ground (GND)	GND
10	NC	CN2/10	Ground (GND)	GND
11	GND	CN2/11	Ground (GND)	GND
12	+24Vdc	CN2/12	+24Vdc(The voltage between CN2/12&CN2/11)	+24Vdc

11.3 CN3

All the signals of this Connector are input signals. The meanings of the 12 pins of this

connector are as follows:

No	Signal	Designator	Status	Description
1	Door Open Fb (Feedback)	CN3/1	**ON**: the voltage between CN3/1 &CN3/11 is +0Vdc **OFF:** the voltage between CN3/1 &CN3/11 is +24Vdc	This signal sends feedback about the status of door Open contactor (energized, or de-energized). This information prevents the µC (Microcontroller) from responding to door close command unless the door is completely opened. Refer to Sheet (9 of 16) in the Wiring Diagram.
2	Fire Drive	CN3/2	**ON:** the voltage between CN3/2 &CN3/11 is +0Vdc **OFF:** the voltage between CN3/2 &CN3/11 is +24Vdc	The fire drive is an input signal used to enable or disable the car calls when Fireman switch is ON. Refer to sheet (4 of 16) in the Wiring Diagram.
3	Fast Contactor Fb (Feedback).	CN3/3	**ON:** the voltage between CN3/3 &CN3/11 is 0Vdc **OFF:** the voltage between CN3/3 &CN3/11 is +24Vdc	Feedback signal to indicate that the **Fast** contactor is mechanically energized or de-energized. Refer to sheet(3 of 16) in the wiring Diagram.
4	Slow Contactor Fb Feedback.	CN3/4	**ON:** the voltage between CN3/4 &CN3/11 is 0Vdc **OFF:** the voltage between CN3/4 &CN3/11 is +24Vdc	Feedback signal to indicate that the **Slow** contactor is mechanically energized or de-energized. Refer to sheet (3 of 16) in the wiring Diagram.
5	Up Contactor Fb.	CN3/5	**ON:** the voltage between CN3/5 &CN3/11 is 0Vdc **OFF:** the voltage between CN3/5 & CN3/11 is +24Vdc	Feedback signal to indicate that the **UP** contactor is mechanically energized or de-energized. Refer to sheet (3 of 16) in the wiring Diagram.
6	Down Contactor Fb.	CN3/6	**ON:** the voltage between CN3/6 &CN3/11 is 0Vdc **OFF:** the voltage between CN3/6 &CN3/11 is +24Vdc	Feedback signal to indicate that the Down contactor is mechanically energized or de-energized. Refer to sheet (3 of 16) in the wiring Diagram.
7	Spare Input1	CN3/7	**ON:** the voltage between CN3/7 &CN3/11 is 0Vdc **OFF:** the voltage between CN3/7 &CN3/11 is +24Vdc	Reserved for Future
8	Spare Input 2	CN3/8	**ON:** the voltage between CN3/8 &CN3/11 is 0Vdc **OFF:** the voltage between CN3/8 &CN3/11 is +24VVdc	Reserved for Future
9	Spare Input 3	CN3/9	**ON:** the voltage between CN3/9 &CN3/11 is 0Vdc **OFF:** the voltage	Reserved for Future

			between CN3/9 &CN3/11 is +24Vdc	
10	Spare Input 4	CN3/10	ON: the voltage between CN3/10 &CN3/11 is 0Vdc OFF: the voltage between CN3/10 & CN3/11 is +24Vdc	Reserved for Future
11	GND	CN3/11	Ground (GND)	GND
12	+24Vdc	CN3/12	+24Vdc(The voltage between CN3/12&CN3/11)	+24Vdc

11.4 CN4

The signals of this Connector are output signals, the meanings of the 12 pins of this connector are:

No	Signal	Designator	Status	Description
1	NC	CN4/1	Not Connected	Unused
2	GND	CN4/2	Ground (GND)	GND
3	Up arrow	CN4/3	**ON**: the voltage between CN4/3 &CN4/12 is +24Vdc **OFF:** the voltage between CN4/3 & CN4/12 is 0Vdc	This signal drives the Up arrow light. With complete output protection will sink 700 mA in the ON state. Over-current protection activated at approximately 1A. Refer to sheet (5a&5b of 16) in the Wiring Diagram
4	Down arrow	CN4/4	**ON**: the voltage between CN4/4 &CN4/12 is +24Vdc **OFF:** the voltage between CN4/4 & CN4/12 is 0Vdc	This signal drives the Up arrow with complete output protection will sink 700 mA in the ON state. Over-current protection activated at approximately 1A. Refer to sheet(5a&5b of 16) in the Wiring Diagram.
5	Gong	CN/4/5	**ON**: the voltage between CN4/5 &CN4/12 is +24Vdc **OFF:** the voltage between CN4/5 & CN4/12 is 0Vdc	This signal drives the Gong in order to announce the arrival to the target floor, with complete output protection will sink 700 mA in the ON state. Over-current protection activated at approximately 1A. Refer to sheet (5a&5b of 16) in the Wiring Diagram
6	Over Load Output	CN4/6	**ON**: the voltage between CN4/6 &CN4/12 is +24Vdc **OFF:** the voltage between CN4/6 & CN4/12 is 0Vdc	This signal drive the Over Load (Buzzer and Lamp) in order to indicate that the lift is overloaded, with complete output protection will sink 700 mA in the ON state. Over-current protection activated at approximately 1A. Refer to sheet (5a&5b of 16) in the Wiring Diagram
7	Spare Output 1	CN 4/7	Reserved for future	Unused.
8	Spare Output 2	CN 4/8	Reserved for future	Unused.
9	Spare Output 3	CN 4/9	Reserved for future	Unused.
10	Spare Output 4	CN 4/10	Reserved for future	Unused.
11	GND	CN 4/11	Ground (GND)	GND
12	+24Vdc	CN 4/12	+24Vdc(The voltage between CN4/12&CN4/11)	+24Vdc

11.5 CN5

The signals of this Connector are input signals, the meaning of the12 pins of this connector are:

No	Signal	Designator	Status	Description
1	MSU	CN 5/1	**ON**: the voltage between CN5/1 &CN5/11 is +0Vdc **OFF:** the voltage between CN5/1 &CN5/11 is +24Vdc	Magnetic Switch Up signal. The contact of this switch becomes close (ON) when iit passes the magnetic rod in the desired direction. For more details refer to ***Magnetic Switches section*** and sheet (7 of 16) in the Wiring Diagram.
2	MSD	CN5/2	**ON**: the voltage between CN5/2 &CN5/11 is +0Vdc **OFF:** the voltage between CN5/2 &CN5/11 is +24Vdc	Magnetic Switch Down signal. The contact of this switch becomes close (ON) when it passes the magnetic rod in the desired direction. For more details refer to ***Magnetic Switches section*** and sheet (7 of 16) in the Wiring Diagram
3	UP-Limit	CN5/3	**ON**: the voltage between CN5/3 &CN5/11 is +24Vdc **OFF:** the voltage between CN5/3 &CN5/11 is 0Vdc	Magnetic Switch UP Limit signal. The contact of this switch becomes Normally open when it passes the CAM or (magnetic rod in the Upper most floor) and returns to normally close position when it moves away from the magnetic rod or the CAM switch. For more details refer to ***Magnetic Switches section*** and sheet (7 of 16) in the Wiring Diagram
4	Down-Limit	CN5/4	**ON**: the voltage between CN5/4 &CN5/11 is +24Vdc **OFF:** the voltage between CN5/4 &CN5/11 is 0Vdc	Magnetic Switch Down Limit signal. The contact of this switch becomes Normally open when it pass the CAM or (magnetic rod in the Lower most floor) and returns to normally close position when it moves away from the magnetic rod or the CAM switch. For more details refer to ***Magnetic Switches section*** and sheet (7 of 16) in the Wiring Diagram
5	Inspection	CN/5/5	**ON**: the voltage between CN5/5 &CN5/11 is +24Vdc **OFF:** the voltage between CN5/5 &CN5/11 is 0Vdc	Inspection mode Switch. Refer to sheet (4 of 16) in the Wiring Diagram

6	Attendant	CN5/6	**ON**: the voltage between CN5/6 &CN5/11 is +0Vdc **OFF:** the voltage between CN5/6 &CN5/11 is +24Vdc	When the Attendant switches ON .The lift will be in attendant mode and when this switch returned off the lift returns to Normal operation. For more details refer to sheet (4 of 16)
7	Spare Output 1	CN 5/7	Reserved for future	Unused.
8	Spare Output 2	CN 5/8	Reserved for future	Unused.
9	Spare Output 3	CN 5/9	Reserved for future	Unused.
10	Spare Output 4	CN 5/10	Reserved for future	Unused.
11	GND	CN 5/11	Ground (GND)	GND
12	+24Vdc	CN 5/12	+24Vdc(The voltage between CN5/12&CN5/11)	+24Vdc

11.6 CN6

The signals of this Connector are input signals, the meaning of all the pins of this connector are:

No	Signal	Designator	Status	Description
1	Phase Failure	CN 6/1	**ON**: the voltage between CN6/1 &CN/11 is +0Vdc **OFF:** the voltage between CN6/1 &CN6/11 is +24Vdc	This Signal monitors the output of the phase failure and reversal device. If it is **ON** the phases sequence and existence is OK. If its **OFF** the phases are not Ok. For more details, refer to 9.
2	Start Permit	CN6/2	**ON**: the voltage between CN6/2 &CN6/11 is +0Vdc **OFF:** the voltage between CN6/2 &CN6/11 is +24Vdc	This signal detects if any of the main contactors is energized before any motion order. If it is **ON,** none of the contactors is energized, the start of motion is granted. If it is **OFF** one of the contactors is energized. Refer to Sheet (3 of 16) in the Wiring Manual.
3	Brake Input	CN6/3	**ON**: the voltage between CN6/3 &CN6/11 is 0Vdc **OFF:** the voltage between CN6/3 &CN6/11 is +24Vdc	Feedback signal from the brake contact. This signal currently not in use. (On request)
4	Up service	CN6/4	**ON**: the voltage between CN6/4 &CN6/11 is 0Vdc **OFF:** the voltage between CN6/4 &CN6/11 is +24Vdc	While this button is pressed, the lift will move up in slow speed until the car reaches the Up limit. When released, the car will stop. This button is used for upward motion in inspection mode.
5	Down Service	CN/6/5	**ON**: the voltage between CN6/5 &CN6/11 is 0Vdc **OFF:** the voltage between CN6/5 &CN6/11 is +24Vdc	While this button is pressed, the lift will move down in slow speed until the car reaches the down limit. When you released the car will stop. This button is used for Downward motion in inspection mode.

6	Door Open Button	CN6/6	**ON**: the voltage between CN6/6 &CN6/11 is +0Vdc **OFF:** the voltage between CN6/6 &CN6/11 is +24Vdc	This input is used to monitor the door open button, Photocell contact and the door safety edge. All of these devices should be closed. This input is active only when the lift is in still mode. For more details refer to sheet (9 of 16) in the Wiring Diagram.
7	Door Close Button	CN6/7	**ON**: the voltage between CN6/7 &CN6/11 is +0Vdc **OFF:** the voltage between CN6/7 &CN6/11 is +24Vdc	This input is used to respond to the door close button, so that the UIC can close the door after the mandatory door open time. This input is active only when the lift is in still mode. Refer to sheet (9 of 16) in the wiring diagram.
8	Thermistor input	CB6/8	Not Connected	This input monitor the thermistor input signal, If the status is ON the motor thermistor is Ok. If its off the motor is over heated, no motion is granted.
9	GND	CN6/9	Ground (GND)	GND
10	GND	CN6/10	Ground (GND)	GND
11	GND	Cn6/11	GND	GND
12	+24Vdc	Cn6/12	+24Vdc(The voltage between CN6/12&CN6/11)	+24 Vdc

11.7 CN7

This connector feeds the UIC with all the required supply voltages and supplies the brake of the motor with the required DC voltage. The functions of the 12 pins of this connector are described in the following table. For the wiring of this connector refer to sheet (2 of 16) in the wiring diagram:

No	Signal	Designator	Status	Description
1	Safety Circuit Supply Voltage	CN7/1	The voltage between CN7/1 and CN7/3 must be equal to the safety supply voltage (AC)	This signal represents the power supply of the safety circuit, the coils of all the main contactors (UC, DNC,FC, SC)
2	NC	CN7/2	Not Connected	Not connected.
3	Safety circuit supply voltage (Common)	CN7/3	The voltage between CN7/1 and CN7/3 must be equal to the safety supply voltage (AC)	This signal represents the common of the power supply of the safety circuit.
4	NC	CN7/4	Not Connected.	Not Connected.
5	Brake Output (+).	CN7/5	The DC Voltage between CN7/5 & CN7/6 equals Brake Supply voltage in DC.	Brake Power Supply (+ Brake Voltage DC)
6	Brake Output (-).	CN7/6		Brake Power Supply (- Brake Voltage DC).
7	Brake Supply voltage (AC)	CN7/7	The AC Voltage between CN7/5 & CN7/6 equals Brake Supply voltage in AC.	Brake Supply Voltage (AC).
8		CN7/8		Brake Supply Voltage Common.

9	20 Vac supply.	CN7/9	The AC Voltage between CN7/9 & CN7/10 equals 20 Vac.	20 Vac Supply voltage.
10		CN7/10		20 Vac supply voltage (Common)
11	10 Vac supply. 10 Vac supply (common)	CN7/11	The AC Voltage between CN7/11 & CN7/12 equals 10 Vac.	10 Vac supply voltage.
12		CN7/12		10 Vac supply voltage (Common)

11.8 CN8

This connector drives the coils of the contactors and supplies the coils voltage for Door Close Contactor **(DC)** and Door Open Contactor **(DO).** The functions of the 12 pin of this connector are:

No	Signal	Designator	Status	Description
1	Up Contactor (**UC**) driver	CN8/1	**ON:** The Voltage between CN8/1& CN8/12 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN8/1& CN8/12 equal **0** Vac.	This signal is an output signal used to drive the **UP** Contactor (**UC**) when it is **ON** the contactor is energized. When it is **OFF** the contactor is de-energized.
2	Down Contactor (**DNC**) driver	CN8/2	**ON:** The Voltage between CN8/2 & CN8/12 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN8/2 & CN8/12 is **0** (AC).	This signal is an output signal used to drive the **Down** Contactor when it is **ON** the contactor is energized. When it's **OFF** the contactor is de-energized.
3	Fast Contactor (**FC**) driver	CN8/3	**ON:** The Voltage between CN8/3 & CN8/12 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN8/3 & CN8/12 equal **0** Vac.	This signal is an output signal used to drive the Fast Contactor when it is **ON** the contactor is energized. When it's **OFF** the contactor is de-energized.
4	Slow Contactor (**SC**) driver	CN8/4	**ON:** The Voltage between CN8/4 & CN8/12 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN8/4 & CN8/12 equal **0** Vac.	This signal is an output signal used to drive the Slow Contactor when it is **ON** the contactor is energized. When it's **OFF** the contactor is de-energized.
5	Light-On Relay driver	CN8/5	**ON**: the voltage between CN8/5 &CN8/12 is +24Vdc **OFF:** the voltage between CN8/5 & CN8/12 is 0Vdc	This signal feeds the Light relay that in turn supplies the proper voltage to turn on the car light. It remains on as long as there is a registered call or when there is a fault
6	Door Open and Door Close coils supply	CN8/6	The voltage between CN8/6 and CN8/7 must	This signal represents the power supply of the coils of all the **DC, DO**.

7	Door Open and Door Close coils common	CN8/7	be equal to supply voltage (AC) of the door close (**DC**) and door open coils voltage (**DO**).	This signal represents the common of the power supply of the **DO & DC** contactors coil.
8	Door Close Contactor (DC) driver**.**	CN8/8	**ON:** The Voltage between CN8/8 & CN8/12 equal Voltage of **DC** coil (AC). **OFF:** The Voltage between CN8/8 & CN8/12 equal **0** Vac.	This signal is an output signal used to drive the Door Close (**DC**) contactor. When it is **ON** the contactor is energized. When it is **OFF** the contactor is de-energized.
9	Door Open contactor (DO) driver	CN8/9	**ON:** The Voltage between CN8/9 & CN8/12 equal Voltage of **DO** coil (AC). **OFF:** The Voltage between CN8/9 & CN8/12 equal **0** Vac.	This signal is an output signal used to drive the Door Open (**DO**) contactor. When it's **ON** the contactor is energized. When it's **OFF** the contactor is de-energized.
10	Door Open B (DOB) driver	CN8/10	**ON:** The Voltage between CN8/10 & CN8/12 equal Voltage of **DOB** coil (AC). **OFF:** The Voltage between CN8/10 & CN8/12 equal **0** Vac.	This signal is an output signal used to drive the Door Open B (**DOB**) contactor. When it's **ON** the contactor is energized. When it's **OFF** the contactor is de-energized.
11	Door Open and Door Close coils supply)	CN8/11	Same as CN8/6.	Same as CN8/6 connected together.
12	End of safety chain. (Safety End)	CN8/12	The voltage between CN7/3 and CN8/12 must be equal to the safety supply voltage when the safety chain is closed.	This signal connected by hardware to C9/12 end of safety chain. It feeds power to the coils of the main contactors in order to make sure that the activation of main contactors takes place only when the safety circuit is intact.

11.9 CN9

This connector is an important connector because it represents the safety chain input signals. For more details about this connector you can refer to sheet (6 of 16) in the wiring diagram and refer to ***section 4.2.6***. The functions of the 12 pin of this connector are:

No	Signal	Designator	Status	Description
1	Start of Safety 1 chain (**SC1**) contact	CN9/1	**ON:** The Voltage between CN9/1 or CN9/2 & CN7/3 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN9/1 or CN9/2 & CN7/3 equal **0** Vac.	This signal is an input signal representing the start of safety chain contact SC1 (Shaft safety).
2		CN9/2		

3	Safety 1 Chain contact(Car Safety)	CN9/3	**ON:** The Voltage between CN9/3 or CN9/4 & CN7/3 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN9/3 or CN9/4 & CN7/3 equal **0** Vac.	This signal is an input signal representing a part of safety chain contact SC1 (Car safety).
4		CN9/4		
5	Safety 1 chain contact (Optional Safety)	CN9/5	**ON:** The Voltage between CN9/5 or CN9/6 & CN7/3 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN9/5 or CN9/6 & CN7/3 equal **0** Vac.	This signal is an input signal representing a part of safety chain contact SC1 (Optional safety).
6		CN9/6		
7	Safety 2 chain contact	CN9/7	**ON:** The Voltage between CN9/7 or CN9/8 & CN7/3 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN9/7 or CN9/8 & CN7/3 equal **0** Vac.	This signal is an input signal that represents safety chain contact SC2 (Swing doors contacts). It is used only for Swing door and should be jumpered for automatic doors .
8		CN9/8		
9	Safety 3 chain contact (Car Door Safety).	CN9/9	**ON:** The Voltage between CN9/9 or CN9/10 & CN7/3 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN9/9 or CN9/10 & CN7/3 equal **0** Vac.	This signal is an input signal that represents safety chain contact SC3 (Car Door Safety contact).
10		CN9/10		
11	Safety 4 chain contact (Landing Doors Safety).	CN9/11	**ON:** The Voltage between CN9/11 or CN9/12 & CN7/3 equal Voltage of Safety supply (AC). **OFF:** The Voltage between CN9/11 or CN9/12 & CN7/3 equal **0** Vac.	This signal is an input signal that represents safety chain contact SC4 (Landing Doors Safety contact).
12		CN9/12		

11.10 CN10 Landing UP Calls and Lamps:

All the signals of this Connector are Input/ Output Signals, which are used to register the Landing up Calls and drive the registered call lamp. For more details about the wiring of this connector according to the type of control (Full Collective selective or Down Collective refer to sheet (10 of 16), and sheets (12 to 15 of 16) in the wiring diagram.

Note: The description of the connector pins under column 2 "**Signal**" in the following table applies only for "Full Collective Selective" mode of operation of lifts. For other modes please read the "Description" under column 5 in the same table.

No	Signal	Designator	Status	Description
1	I/O Up Call1/Lamp1	CN10/1	**ON**: the voltage between CN10/1 &CN10/12 is	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 1. For 12 stop down collective control, it is the

			+24Vdc **OFF:** the voltage between CN10/1 &CN10/12 is 0Vdc	car Call/ Lamp of Floor 9. For 13-24 down collective, It is car Call / Lamp of floor 17.
2	I/O Up Call2/Lamp2	CN10/2	**ON:** the voltage between CN10/2 &CN10/12 is +24Vdc **OFF:** the voltage between CN10/2 &CN10/12 is 0Vdc	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 2. For 12 stop down collective control, it is the car Call/ Lamp of Floor 10. For 13-24 down collective, It is car Call / Lamp of floor 18.
3	I/O Up Call3/Lamp3	CN10/3	**ON:** the voltage between CN10/3 &CN10/12 is +24Vdc **OFF:** the voltage between CN10/3 &CN10/12 is 0Vdc	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 3. For 12 stop down collective control, it is the car Call/ Lamp of Floor 11. For 13-24 down collective, It is car Call / Lamp of floor 19.
4	I/O Up Call4/Lamp4	CN10/4	**ON:** the voltage between CN10/4 &CN10/12 is +24Vdc **OFF:** the voltage between CN10/4 &CN10/12 is 0Vdc	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 4. For 12 stop down collective control, it is the car Call/ Lamp of Floor 12. For 13-24 down collective, It is car Call / Lamp of floor 20.
5	I/O Up Call5/Lamp5	CN10/5	**ON:** the voltage between CN10/5 &CN10/12 is +24Vdc **OFF:** the voltage between CN10/5&CN10/12 is 0Vdc	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 5. For 12 stop down collective control, it is the car Call/ Lamp of Floor 13. For 13-24 down collective, It is car Call / Lamp of floor 21.
6	I/O Up Call6/Lamp6	CN10/6	**ON:** the voltage between CN10/6 &CN10/12 is +24Vdc **OFF:** the voltage between CN10/6&CN10/12 is 0Vdc	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 6. For 12 stop down collective control, it is the car Call/ Lamp of Floor 14. For 13-24 down collective, It is car Call / Lamp of floor 22.
7	I/O Up Call7/Lamp7	CN10/7	**ON:** the voltage between CN10/7 &CN10/12 is +24Vdc **OFF:** the voltage between CN10/7&CN10/12 is 0Vdc	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 7. For 12 stop down collective control, it is the car Call/ Lamp of Floor 15. For 13-24 down collective, It is car Call / Lamp of floor 23
8	I/O Up Call8/Lamp8	CN10/8	**ON:** the voltage between CN10/8 &CN10/12 is +24Vdc **OFF:** the voltage between CN10/8&CN10/12 is 0Vdc	For Full Collective Selective, this signal represents the UP Call/Lamp of floor 8 (not connected for 8 stops Full Collective Selective). For 12 stop down collective control, it is the car Call/ Lamp of Floor 16. For 13-24 down collective, It is car Call / Lamp of floor 24
9	GND	CN10/9	Ground (GND)	GND (Common of calls)
10	GND	CN10/10	Ground (GND)	GND
11	GND	CN10/11	Ground (GND)	GND

12	+24Vdc	CN 10/12	+24Vdc (The voltage between CN10/12 & CN10/9)	+24Vdc (Common of lamps).

11.11 CN11 Landing Down Calls and Lamps

All the signals of this Connector are Input/ Output Signals and are used to register the Landing down calls and drive the registered call lamp. For more details about the wiring of this connector according to the type of control (Full Collective selective or Down Collective), refer to sheet (10 of 16), and sheets (12 to 15 of 16) in the wiring diagram.

No	Signal	Designator	Status	Description
1	I/O down Call/Lamp 1	CN11/1	**ON**: the voltage between CN11/1 &CN11/12 is +24Vdc **OFF:** the voltage between CN11/1 &CN11/12 is 0Vdc	This I/O Signal represents the down Call/Lamp of floor 1 for Full Collective And Down collective type control. (Not connected for 8 floors Full Collective Selective.
2	I/O down Call 2/Lamp 2	CN11/2	**ON**: the voltage between CN11/2 &CN11/12 is +24Vdc **OFF:** the voltage between CN11/2 &CN11/12 is 0Vdc	This I/O Signal represents the down Call/Lamp of floor 2 for Full Collective And Down collective type control.
3	I/O down Call3/Lamp 3	CN11/3	**ON**: the voltage between CN11/3 &CN11/12 is +24Vdc **OFF:** the voltage between CN11/3 &CN11/12 is 0Vdc	This I/O Signal represents the down Call/Lamp of floor 3 for Full Collective And Down collective type control.
4	I/O down Call4/Lamp 4	CN11/4	**ON**: the voltage between CN11/4 &CN11/12 is +24Vdc **OFF:** the voltage between CN11/4 &CN11/12 is 0Vdc	This I/O Signal represents the down Call/Lamp of floor 4 for Full Collective And Down collective type control.
5	I/O down Call5/Lamp 5	CN11/5	**ON**: the voltage between CN11/5 &CN11/12 is +24Vdc **OFF:** the voltage between CN11/5 &CN11/12 is 0Vdc	This I/O Signal represents the down Call/Lamp of floor 5 for Full Collective And Down collective type control.
6	I/O down Call6/Lamp 6	CN11/6	**ON**: the voltage between CN11/6 &CN11/12 is +24Vdc **OFF:** the voltage between CN11/6 &CN11/12 is 0Vdc	This I/O Signal represents the down Call/Lamp of floor 6 for Full Collective And Down collective control.
7	I/O down Call7/Lamp 7	CN11/7	**ON**: the voltage between CN11/7 &CN11/12 is +24Vdc **OFF:** the voltage between CN11/7 &CN11/12 is 0Vdc	This I/O Signal represents the down Call/Lamp of floor 7 for Full Collective And Down collective control.
8	I/O down Call8/Lamp 8	CN11/8	**ON**: the voltage between CN11/8 &CN11/12 is +24Vdc	This I/O Signal represents the down Call/Lamp of floor 8 for Full Collective

			OFF: the voltage between CN11/8 &CN11/12 is 0Vdc	And Down collective control.
9	GND	CN11/9	GND	GND(Common of calls)
10	GND	CN11/10	Ground (GND)	GND
11	GND	CN11/11	Ground (GND)	GND
12	+24Vdc	CN11/12	+24Vdc (The voltage between CN11/12 & CN11/9)	+24Vdc(Common of lamps)

11.12CN12 Car Calls and Lamps:

All the signals of this Connector are Input/ Output Signals and are used to register the car calls and drive the registered call lamp. For more details about the wiring of this connector according to the type of control (Full Collective selective or Down Collective), refer to sheet (10 of 16), and sheets (12 to 15 of 16) in the wiring diagram.

No	Signal	Designator	Status	Description
1	I/O car Call/Lamp 1	CN12/1	**ON**: the voltage between CN12/1 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/1 &CN12/12 is 0Vdc	This I/O Signal represents the car Call/Lamp of floor 1 for Full Collective And Down collective control.
2	I/O car Call2/Lamp 2	CN12/2	**ON**: the voltage between CN12/2 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/2 &CN12/12 is 0Vdc	This I/O Signal represents the car Call/Lamp of floor 2 for Full Collective And Down collective control.
3	I/O car Call3/Lamp 3	CN12/3	**ON**: the voltage between CN12/3 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/3 &CN12/12 is 0Vdc	This I/O Signal represents the car Call/Lamp of floor 3 for Full Collective And Down collective control.
4	I/O car Call4/Lamp 4	CN12/4	**ON**: the voltage between CN12/4 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/4 &CN12/12 is 0Vdc	This I/O Signal represents the car Call/Lamp of floor 4 for Full Collective And Down collective control.
5	I/O car Call5/Lamp 5	CN12/5	**ON**: the voltage between CN12/5 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/5 &CN12/12 is 0Vdc	This I/O Signal represents the car Call/Lamp of floor 5 for Full Collective And Down collective control.
6	I/O car Call6/Lamp 6	CN12/6	**ON**: the voltage between CN12/6 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/6 &CN12/12 is 0Vdc	This I/O Signal represents the car Call/Lamp of floor for Full Collective And Down collective control.
7	I/O car Call7/Lamp 7	CN12/7	**ON**: the voltage between CN12/7 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/7 &CN12/12 is 0Vdc	This I/O Signal represents the car Call/Lamp of floor 7 for Full Collective And Down collective control.
8	I/O car	CN12/8	**ON**: the voltage	This I/O Signal represents

	Call8/Lamp 8		between CN12/8 &CN12/12 is +24Vdc **OFF:** the voltage between CN12/8 &CN12/12 is 0Vdc	the car Call/Lamp of floor 8 for Full Collective And Down collective control.
9	GND	CN12/9	GND	GND(Common of Up calls)
10	GND	CN12/10	Ground (GND)	GND
11	GND	CN12/11	Ground (GND)	Not connected.
12	+24Vdc	CN 12/12	+24Vdc(The voltage between CN12/12&CN12/9)	+24Vdc

12 Extension Calls Board (Optional)

The UIC motherboard is designed to server up to 8 floors in full collective mode, or up to 12 down collective mode. However, an optional extension calls board is available to enable the UIC to serve up to 16 stops Full Collective selective or up to 24 stops Down Collective. The extension calls board is a (18.95 x 68.58) cm^2 board that contains three additional connectors and connected to the UIC Mother Board using JP3.

12.1 Connectors Description

12.1.1 CX1 Extension Landing up Calls Connector

All the signals of this Connector are Input/ Output Signals, which are used to register the Extension Landing up Calls and drive the registered call lamp. For more details about the wiring of this connector according to the type of control (Full Collective selective or Down Collective) refer to sheet (11 of 16), and sheets (12 to 15 of 16) in the wiring diagram.

No	Signal	Designator	Status	Description
1	I/O Up Call9 /Lamp 9	CX1/1	**ON**: the voltage between CX1/1 &CX1/12 is +24Vdc **OFF:** the voltage between CX1/1 &CX1/12 is 0Vdc	This I/O Signal represents the UP Call/Lamp of floor 9 in case of Full Collective Selective or the down Call/ Lamp of Floor 17 in case of 13-24 Down collective.
2	I/O Up Call10/ Lamp10	CX1/2	**ON:** the voltage between CX1/2 &CX1/12 is +24Vdc **OFF:** the voltage between CX1/2 &CX1/12 is 0Vdc	This I/O Signal represents the UP Call/Lamp of floor 10 in case of Full Collective Selective or down Call / Lamp of floor 18 in case of 13-24 Down collective.
3	I/O Up Call11/ Lamp11	CX1/3	**ON:** the voltage between CX1/3 &CX1/12 is +24Vdc **OFF:** the voltage between CX1/3 &CX1/12 is 0Vdc	This I/O Signal represents the UP Call/Lamp of floor 11 in case of Full Collective Selective or down Call / Lamp of floor 19 in case of 13-24 Down collective.
4	I/O Up Call12/Lamp 12	CX1/4	**ON:** the voltage between CX1/4 &CX1/12 is +24Vdc **OFF:** the voltage between CX1/4 &CX1/12 is 0Vdc	This I/O Signal represents the UP Call/Lamp of floor 12 in case of Full Collective Selective or down Call / Lamp of floor 20 in case of 13-24 Down collective.
5	I/O Up Call13/Lamp 13	CX1/5	**ON:** the voltage between CX1/5 &CX1/12 is +24Vdc	This I/O Signal represents the UP Call/Lamp of floor 13 in case of Full Collective

			OFF: the voltage between CX1/5&CX1/12 is 0Vdc	Selective or down Call / Lamp of floor 21 in case of 13-24 Down collective.
6	I/O Up Call14/Lamp 14	CX1/6	**ON:** the voltage between CX1/6 &CX1/12 is +24Vdc **OFF:** the voltage between CX1/6&CX1/12 is 0Vdc	This I/O Signal represents the UP Call/Lamp of floor 14 in case of Full Collective Selective or down Call / Lamp of floor 22 in case of 13-24 Down collective.
7	I/O Up Call15/Lamp 15	CX1/7	**ON:** the voltage between CX1/7 &CX1/12 is +24Vdc **OFF:** the voltage between CX1/7&CX1/12 is 0Vdc	This I/O Signal represents the UP Call/Lamp of floor 15 in case of Full Collective Selective or down Call / Lamp of floor 23 in case of 13-24 Down collective.
8	I/O Up Call6/Lamp 16	CX1/8	**ON:** the voltage between CX1/8 &CX1/12 is +24Vdc **OFF:** the voltage between CX1/8&CX1/12 is 0Vdc	This I/O Signal represents the UP Call/Lamp of floor 16 in case of Full Collective Selective or down Call / Lamp of floor 24 in case of 13-24 Down collective.
9	GND	CX1/9	GND	GND(Common of calls)
10	GND	CX1/10	Ground (GND)	GND
11	GND	CX1/11	Ground (GND)	GND
12	+24Vdc	CX1/12	+24Vdc(The voltage between CX1/12&CX1/9)	+24Vdc (Common of lamps).

12.1.2 CX2 Extension Landing down Calls Connector

All the signals of this Connector are Input/ Output Signals, which used to register the Extension Landing down Calls and drive the registered call lamp. For more details about the wiring of this connector according to the type of control (Full Collective selective or Down Collective refer to sheet (11 of 16), and sheets (12 to 15 of 16) in the wiring diagram.

No	Signal	Designator	Status	Description
1	I/O Down Call9/Lamp 9	CX2/1	**ON**: the voltage between CX2/1 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/1 &CX2/12 is 0Vdc	This I/O Signal represents the DOWN Call/Lamp of floor 9 in case of Full Collective Selective or the down Call/ Lamp of Floor 9 in case of 13-24 Down Collective (DC).
2	I/O Down Call10/ Lamp10	CX2/2	**ON:** the voltage between CX2/2 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/2 &CX2/12 is 0Vdc	This I/O Signal represents the DOWN Call/Lamp of floor 10 in case of Full Collective Selective or down Call / Lamp of floor 10 in case of 13-24 Down Collective (DC).
3	I/O Down Call11/ Lamp11	CX2/3	**ON:** the voltage between CX2/3 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/3	This I/O Signal represents the DOWN Call/Lamp of floor 11 in case of Full Collective Selective or down Call / Lamp of floor 11 in case of

			&CX2/12 is 0Vdc	13-24 Down Collective (DC).
4	I/O Down Call12/Lamp 12	CX2/4	**ON:** the voltage between CX2/4 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/4 &CX2/12 is 0Vdc	This I/O Signal represents the DOWN Call/Lamp of floor 12 in case of Full Collective Selective or down Call / Lamp of floor 12 in case of 13-24 Down collective.
5	I/O Down Call13/Lamp 13	CX2/5	**ON:** the voltage between CX2/5 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/5&CX2/12 is 0Vdc	This I/O Signal represents the DOWN Call/Lamp of floor 13 in case of Full Collective Selective or down Call / Lamp of floor 13 in case of 13-24 Down collective.
6	I/O Down Call14/Lamp 14	CX2/6	**ON:** the voltage between CX2/6 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/6&CX2/12 is 0Vdc	This I/O Signal represents the DOWN Call/Lamp of floor 14 in case of Full Collective Selective or down Call / Lamp of floor 14 in case of 13-24 Down collective.
7	I/O Down Call15/Lamp 15	CX2/7	**ON:** the voltage between CX2/7 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/7&CX2/12 is 0Vdc	This I/O Signal represents the DOWN Call/Lamp of floor 15 in case of Full Collective Selective or down Call / Lamp of floor 15 in case of 13-24 Down collective.
8	I/O Down Call16/Lamp 16	CX2/8	**ON:** the voltage between CX2/8 &CX2/12 is +24Vdc **OFF:** the voltage between CX2/8&CX2/12 is 0Vdc	This I/O Signal represents the DOWN Call/Lamp of floor 16 in case of Full Collective Selective or down Call / Lamp of floor 16 in case of 13-24 Down collective.
9	GND	CX2/9	GND	GND(Common of calls)
10	GND	CX2/10	Ground (GND)	GND
11	GND	CX2/11	Ground (GND)	GND
12	+24Vdc	CX2/12	+24Vdc(The voltage between CX2/12 & CX2/9)	+24Vdc (Common of lamps).

12.1.3 CX3 Extension car Calls Connector:

All the signals of this Connector are Input/ Output Signals, which used to register the Extension car Calls and drive the registered call lamp. For more details about the wiring of this connector according to the type of control (Full Collective selective or Down Collective refer to sheet (11 of 16), and sheets (12 to 15 of 16) in the wiring diagram.

No	Signal	Designator	Status	Description
1	I/O Car Call9/Lamp 9	CX3/1	**ON**: the voltage between CX3/1 &CX3/12 is +24Vdc **OFF:** the voltage between CX3/1 &CX3/12 is 0Vdc	This I/O Signal represents the CAR Call/Lamp of floor 9 in case of Full Collective Selective or the car Call/ Lamp of Floor 9 in case of 13-24 Down collective.
2	I/O Car Call10/ Lamp10	CX3/2	**ON:** the voltage between CX3/2 &CX3/12 is +24Vdc **OFF:** the voltage	This I/O Signal represents the DOWN Call/Lamp of floor 10 in case of Full Collective Selective or down Call /

			between CX3/2 &CX3/12 is 0Vdc	Lamp of floor 10 in case of 13-24 Down collective.
3	I/O Car Call11/ Lamp11	CX3/3	**ON:** the voltage between CX3/3 &CX3/12 is +24Vdc **OFF:** the voltage between CX3/3 &CX3/12 is 0Vdc	This I/O Signal represents the CAR Call/Lamp of floor 11 in case of Full Collective Selective or down Call / Lamp of floor 11 in case of 13-24 Down collective.
4	I/O Car Call12/Lamp 12	CX3/4	**ON:** the voltage between CX3/4 &CX3/12 is +24Vdc **OFF:** the voltage between CX3/4 &CX3/12 is 0Vdc	This I/O Signal represents the CAR Call/Lamp of floor 12 in case of Full Collective Selective or car Call / Lamp of floor 12 in case of 13-24 Down collective.
5	I/O Car Call13/Lamp 13	CX3/5	**ON:** the voltage between CX3/5 &CX3/12 is +24Vdc **OFF:** the voltage between CX3/5&CX3/12 is 0Vdc	This I/O Signal represents the CAR Call/Lamp of floor 13 in case of Full Collective Selective or car Call / Lamp of floor 13 in case of 13-24 Down collective.
6	I/O Car Call14/Lamp 14	CX3/6	**ON:** the voltage between CX3/6 &CX3/12 is +24Vdc **OFF:** the voltage between CX3/6&CX3/12 is 0Vdc	This I/O Signal represents the CAR Call/Lamp of floor 14 in case of Full Collective Selective or car Call / Lamp of floor 14 in case of 13-24 Down collective.
7	I/O Car Call15/Lamp 15	CX3/7	**ON:** the voltage between CX3/7 &CX3/12 is +24Vdc **OFF:** the voltage between CX3/7&CX3/12 is 0Vdc	This I/O Signal represents the CAR Call/Lamp of floor 15 in case of Full Collective Selective or car Call / Lamp of floor 15 in case of 13-24 Down collective.
8	I/O Car Call16/Lamp 16	CX3/8	**ON:** the voltage between CX3/8 &CX3/12 is +24Vdc **OFF:** the voltage between CX3/8&CX3/12 is 0Vdc	This I/O Signal represents the CAR Call/Lamp of floor 16 in case of Full Collective Selective or car Call / Lamp of floor 16 in case of 13-24 Down collective.
9	GND	CX3/9	GND	GND(Common of calls)
10	GND	CX3/10	Ground (GND)	GND
11	GND	CX3/11	Ground (GND)	GND
12	+24Vdc	CX3/12	+24Vdc(The voltage between CX3/12&CX3/9)	+24Vdc (Common of lamps).

12.2 LED's Indication for Extension Calls Board:

The **Extension Calls Board** contains a number of LEDs designed to indicate the state of extension car calls, down calls and up calls situation. The following table explains in details the meaning of each LED. It is strongly recommended that you read and understand the function of each LED. It will greatly simplify debugging and troubleshooting problems that you may be experiencing. The symbol L is used to designate an LED; For example, L3 is a LED numbered 3 and it indicates Floor 11 car

call registered. Each of these LEDs is clearly marked on the Extension Calls Board for you to identify.

LED Designator	LED Status & Meaning
L1	Floor 9 car call registered.
L2	Floor 10 car call registered.
L3	Floor 11 car call registered.
L4	Floor 12 car call registered.
L5	Floor 13 car call registered.
L6	Floor 14 car call registered.
L7	Floor 15 car call registered.
L8	Floor 16 car call registered.
L9	Floor 9 down call registered.
L10	Floor 10 down call registered.
L11	Floor 11 down call registered.
L12	Floor 12 down call registered.
L13	Floor 13 down call registered.
L14	Floor 14 down call registered.
L15	Floor 15 down call registered.
L16	Floor 16 down call registered.
L17	Floor 9 up call registered.
L18	Floor 10 up call registered.
L19	Floor 11 up call registered.
L20	Floor 12 up call registered.
L21	Floor 13 up call registered.
L22	Floor 14 up call registered.
L23	Floor 15 up call registered.
L24	Floor 16 up call registered.

13 Voice Option Board (Optional)

The UIC motherboard is designed to fulfill the requirement of adding a voice option to indicate a floor landing or overload or full load by speaking not only by gong. The Voice Option board is a (4.12 x 6.76) cm^2 board that contains one output connector (JP2) to be connected to the speaker. The Voice Option Board is connected to the UIC Mother Board using JP8.

13.1 Connectors Description

The connector JP2 is a two pin connector used to drive the speaker output.

No	Signal	Designator	Status	Description
1	Speaker +	JP2/1	Speaker Driver	Capable of driving 2W/ 8-Ω speaker. Used only for Voice Option
2	Speaker -	JP2/2		
4	GND	JP2/4		GND
5	+5V	JP2/5		+5V
6	GND	JP2/6		GND