EU7500

Emergency Rescue Power Unit

"User manual"

Version: S2.06

Software: DC3PH180

Manufacture by: AFP ELEVATOR Co.

www.afpelevator.com

Contents:

:: Over view

Emergency Rescue Power Unit (EU7500)

Features:

- *Automatic function when the power supply is disconnected*
- *Automatic function in phase loss situations*
- *Automatic function when the power of the control panel is off*
- *With automatic charger and batteries function supervision*
- *High start torque*
- *With different timers for the motor suitable function supervision*
- *Suitable for various types of 3-phase motors with different powers*
- *Smart cabin movement distinguishing for reduction in power usage (low power using)*
- *Output protection*
- *LCD display for guiding and errors announcement*
- *It's designed for main motor with power* ***up to 7.5kw***

Introduction

Chapter1

A) Introductions:

Emergency Rescue Power Unit (Evacuation) , as an automatic rescuer , is especially designed for the car system movement in power down situations , as it guides the elevator car to the nearest floor and lets the passengers leave the cabin , with the BACK-UP batteries energy . So, the passengers are released from worries. In addition to have all these preferences, this unit is recommended for use in buildings with extended access time for emergency rescue.

1- Components and equipments available

1- The key of the light located inside the panel

*2- Switching **AC Inverter Board** with output protection **70 to 220** (700 W)*

*3-Main Board **(DC3PH)***

4-Phase control

5-Miniature fuses to protect batteries and AC line from short circuit

(F110 – EMR)

6-Main contactor

*7- Back up Batteries **5*12V 7AH***

8- Rail mounted terminals

9- Emergency contactor for conducting 3-phase that made by unit to the main motor

10-Circuit relays

11-Brake magnet & Door magnet Diodes

*12-Power supply main board **(70 To 24)***

*13-Battery charger **(220 To 70)***

14- The metal box panel that holds components and prevent them from damage

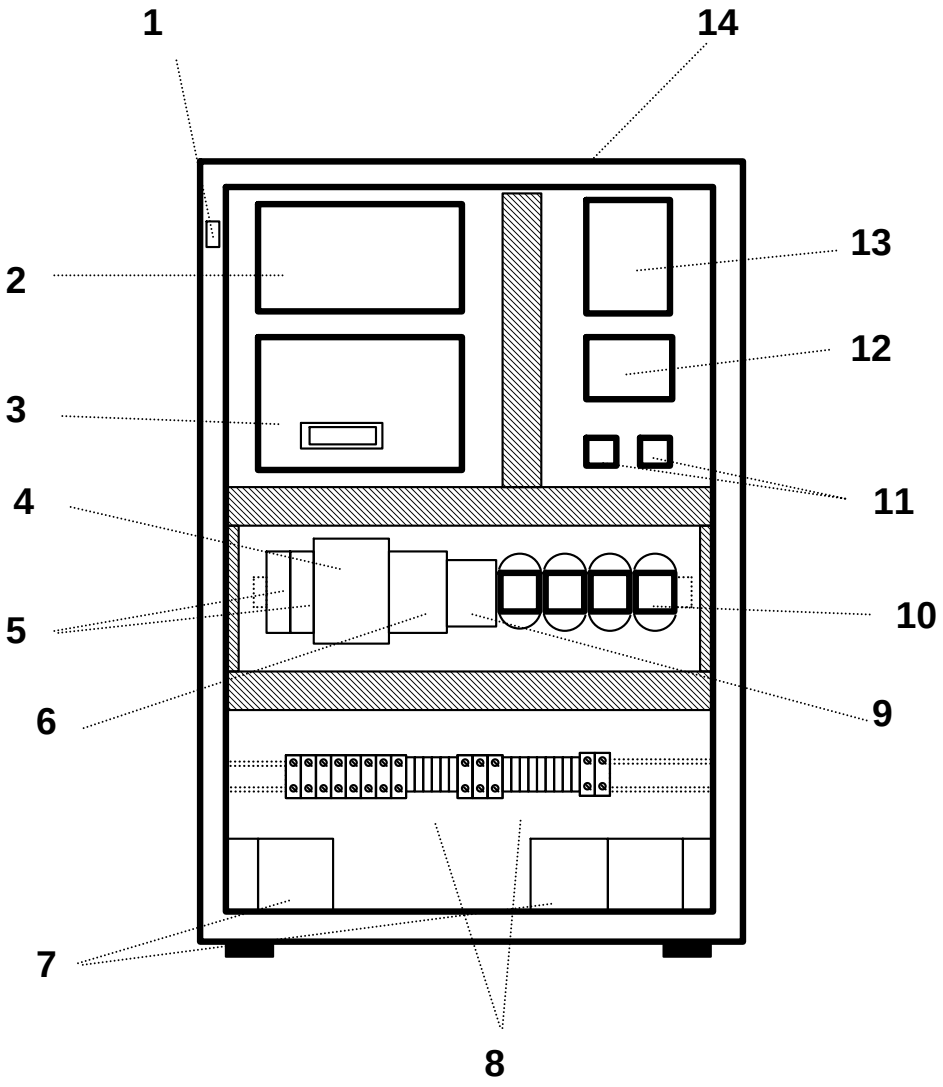
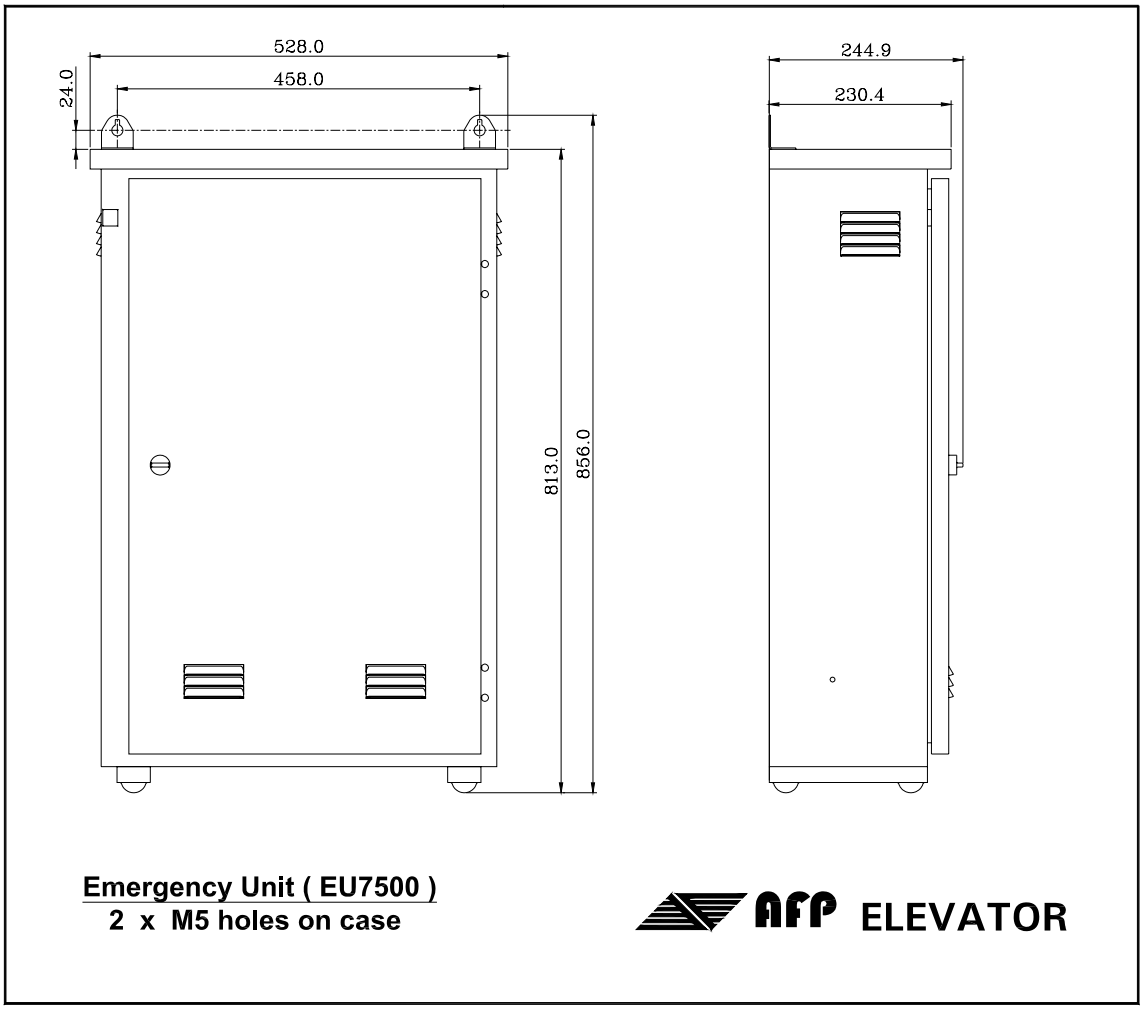


Figure 1- EU7500 Components Placement

2- Dimension:



The weight: about 18kg

Figure 2- EU7500 Dimension

3- Description of the rail-mounted terminals:

Row	*Terminal name*	*Terminal size*	*Description*
			Power Terminals
1	*MP*	*RTP 10*	*Input Null*
2	*L1*	*RTP 10*	*Input 3-phase power*
3	*L2*	*RTP 10*	*Input 3-phase power*
4	*L3*	*RTP 10*	*Input 3-phase power*
5	*FL4*	*RTP 10*	*Single – phase input before 3-phase main key*
6	*R*	*RTP 10*	*Out put 3-phase power for control panel*
7	*S*	*RTP 10*	*Out put 3-phase power for control panel*
8	*T*	*RTP 10*	*Out put 3-phase power for control panel*
			Control Terminals
9	**BR1**	**RTP 2.5**	**Brake magnet output(+)**
10	**BR2**	**RTP 2.5**	**Brake magnet output(-)**
11	**MP**	**RTP 2.5**	**Null**
12	**DM1**	**RTP 2.5**	**Door magnet output(+)**
13	**DM2**	**RTP 2.5**	**Door magnet output(-)**
14	**FLC**	**RTP 2.5**	**Single–phase out put before main–key for control panel**
15	**U**	**RTP 2.5**	**Fast speed output**
16	**V**	**RTP 2.5**	**Fast speed output**
17	**W**	**RTP 2.5**	**Fast speed output**
18	**G22**	**RTP 2.5**	**Common terminal**
19	**LEI**	**RTP 2.5**	**Level flag input**
20	**LEF**	**RTP 2.5**	**Level flag output to control panel**
21	**O**	**RTP 2.5**	**Open door relay**
22	**C**	**RTP 2.5**	**Close door relay**
23	**CM**	**RTP 2.5**	**Common door relay**
24	**68 I**	**RTP 2.5**	**The end point of safety chain in the hoist way**
25	**68**	**RTP 2.5**	**The end point of safety chain for control panel**

Row	*Terminal name*	*Terminal size*	*Description*
26	**G90**	**RTP 2.5**	**The first point of safety chain**
27	**BA1**	**RTP 10**	**+ (In Battery)**
28	**BA2**	**RTP 10**	**- (In Battery)**
29	**UD**	**RTP 2.5**	**Used for the 3- phase car door**
30	**VD**	**RTP 2.5**	**Used for the 3- phase car door**
31	**WD**	**RTP 2.5**	**Used for the 3- phase car door**

Table1- 1: EU7500 Terminals

4- How Does It Work?

In phase loss situation, the Emergency Power Unit acts **automatically**. **After 5 seconds** close the cabin door and door magnet; if the **safety chain** is O.K, turn the motor to the left to measure the currents of the circuit.

Then , turn the motor to the right to measure the new current , with comparing the two measured current , it turn the motor to one side that make the **less current**.

The cabin moved to desired floor until see the Level flag **(LEF)** in the Hoist way. Then the unit command to stop the motor, open the car door, turn off the cabin light and goes to **stand- by** situation. This situation goes on until the main power returns to the normal mode.

The **authorized time** for the car movement to arrive the floor in Emergency situation, is **150 seconds**.

If it reaches to the floor earlier, the car stopped and the remains time is for turning on the cabin light. Otherwise, after the time over, cabin stops and the Emergency unit goes to **stand -by mode.**

Important Instructions

Chapter2

1- Installation Guide to AFP EU7500:

	Installation Sequence	Descriptions
1	Install the **EU7500 panel** in suitable place in engine room	Near to controller panel.
2	**Dis**connect the main **3-phase** wires **R,S,T** from **elevator controller inputs**	**The Main power key** must be **turn off.**
3	**Connect** the main 3-phase to **L1,L2,L3, MP terminals** of the emergency power unit **EU7500**	Be careful in working.
4	Turn on the main key power; then the **Green LED** in phase control in **EU7500** should be light.	If there is **no green** light, **Reverse two phases.**
5	Turn off the main key power; Connect the **EU7500's R, S, T output terminals** to controller panel R, S, T input terminals.	The controller panel main power will pass from emergency power panel. **MP terminal** is common between **two panels**.
6	Disconnect **FLC** output wire from main panel and connect it to emergency power unit **EU7500's FL4 input terminal.**	The panel power light and **cabin light** secure from emergency power panel.
7	Emergency power unit **EU7500's FLC** output terminal should be connect to controller panel's **FLC input terminal**	
8	**BR1,BR2,DM1,DM2,UVW,G22,C,CM,68,G90** should be connect from emergency power panel to controller panel the same	**When the system power down**; if the safety circuit is OK, the brake power, the door opening magnet power and the main **motor 3-phase** (low frequency) secure from **the emergency power panel.**
9	Level flag **(LEF)** return wire in hoist way should be disconnect from controller panel and connect to emergency power panel's **LEI terminal**	
10	Connect emergency power panel **EU7500's LEF** terminal to controller panel **LEF terminal**	
11	To match the emergency power panel **EU7500** with different safety circuit voltage **(specially 24V safety circuit)** and to avoid from each problem **68I terminal** placed	

12	Connect the batteries to the **BA1 and BA2** terminals.	

Table1-2: Installation Sequence for EU7500

2- LCD Message Descriptions in EU7500:

The work situation	The Displayed Message	Description
NORMAL	V-BAT=68,VER=XX EMERGENCY UNIT	Normal mode for AC power supply , in this case batteries will charge
EMERGENCY	V-BAT=XX Im=XX EMERGENCY UNIT	Display the batteries voltage and software version after the system power down and go to emergency mode.
TESTING THE BEST SIDE	V-BAT=XX Im=XX TURN RIGHT Or LEFT	Testing the motor current in moving to left or right
MOVING CABIN IN THE BEST SIDE	V-BAT=XX Im=XX RIGHT OR LEFT IS OK	Selecting the best side to move the car in the selected way.
STOPPED	V-BAT=XX Im=XX 1- CABIN LEVEL 2- FAIL CURRENT 3-MOVETIME OVER 4-SERI STOP OPEN	Motor stopping because of : 1. The car is in leveling situations 2. The emergency power unit current is more than authorize current 3. The moving time over timer is active(after 150 sec) 4. The safety chain is not OK.

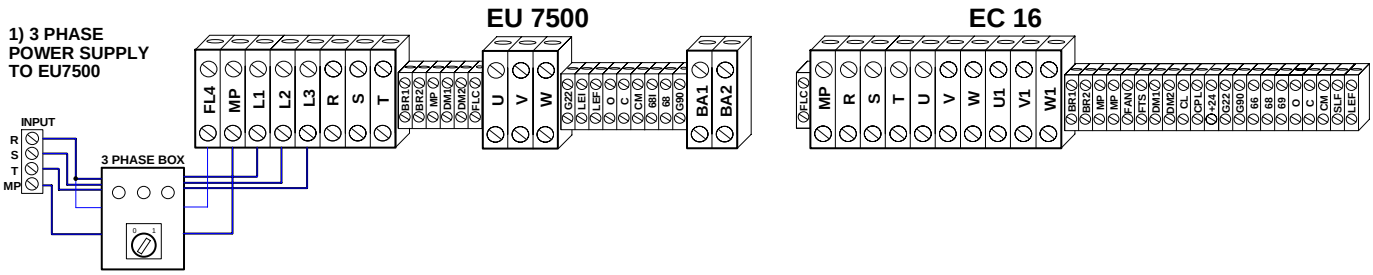
Table2-2: Description of LCD on EU7500

How To Wiring The Terminals?

Chapter 3

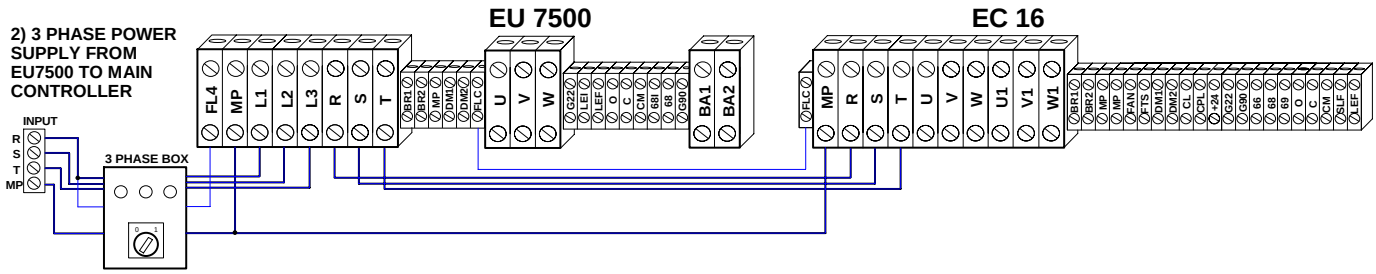
a) Wiring The Power System:

1- The main 3- phase power to EU7500 connection:



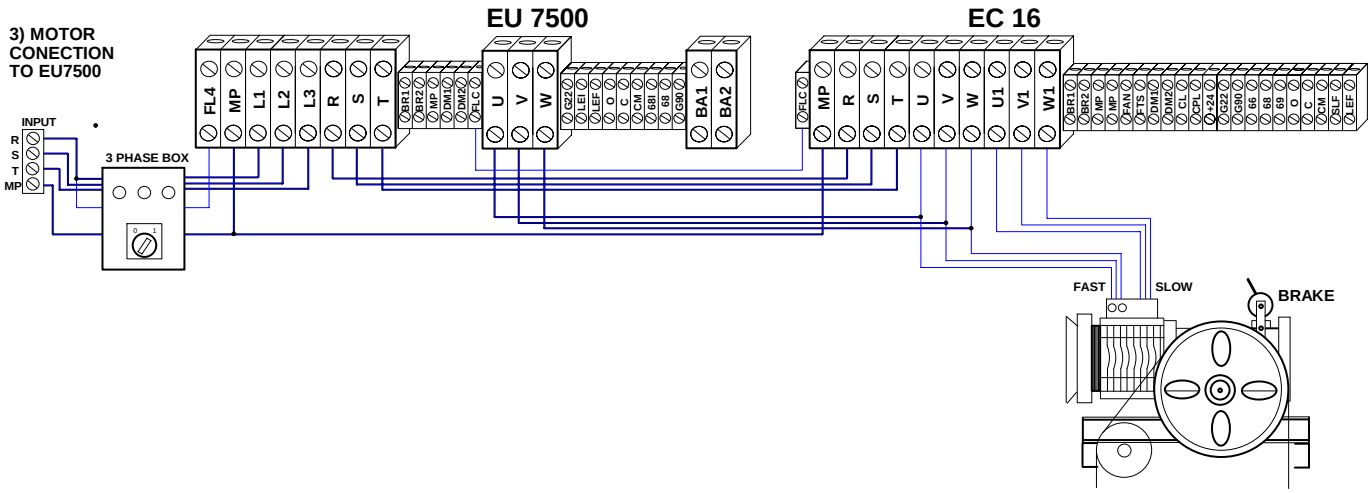
First of all connect the main power from the main power box to emergency power unit; after that the **Green LED** in control phase is **on**.

2- The main power for control panel through by EU7500 connection:



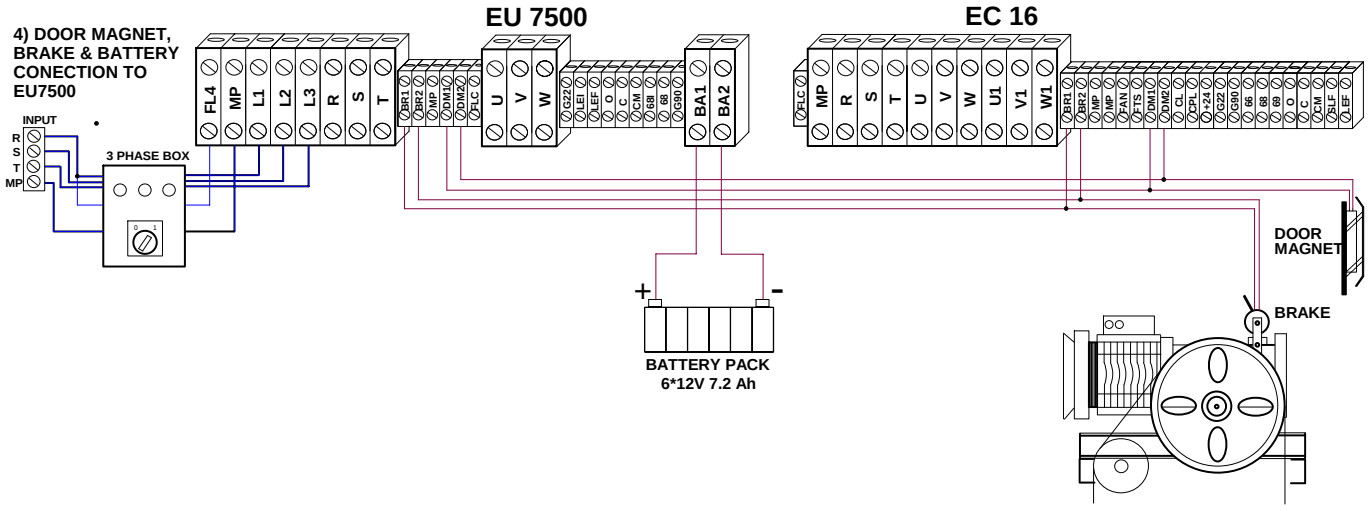
It must be connected the main power to the control panel by the emergency unit power output terminals. Also it must be connected the **FLC** terminal in control panel for turning it on.

3-The main motor to EU7500 & the control panel:



The emergency unit power out put ***(U, V, W)*** *must be connected to* ***(U, V, W)*** *output terminals in the control panels one by one.*

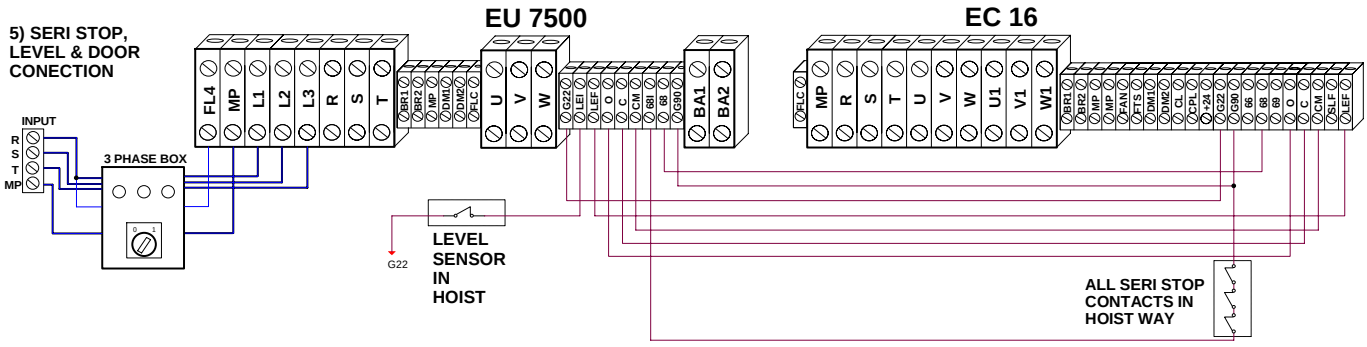
4- Door magnet and motor brake connection:



Note:

*For connecting the brake output terminal in **EU7500** to the brake output terminal in the control panel; it must be notice to **the polarization direction** to **prevent** from the **damaging to the Diode Bridge.***

5- The safety chain control terminals:



This part is for connecting the level flags, safety chain and door control terminal between the two units. This is notifying to this connection is just for the **Sematic doors.**

b) Installation Guide to different Elevator Doors:

1- The different Doors Setup in EU7500:

EU7500 *is usually designed for* ***Semi Sematic*** *or* ***Full sematic****.*

So that for the other doors it must be notified as fallows:

- *The* ***MP common Null*** *for* ***FERMATOR*** *or* ***BUS Doors*** *must be* ***the same*** *in both* ***EU7500 & Control panel.***
- *Also for* ***FERMATOR*** *doors; the* ***open & close control sequence*** *are the same in* ***both units****.*

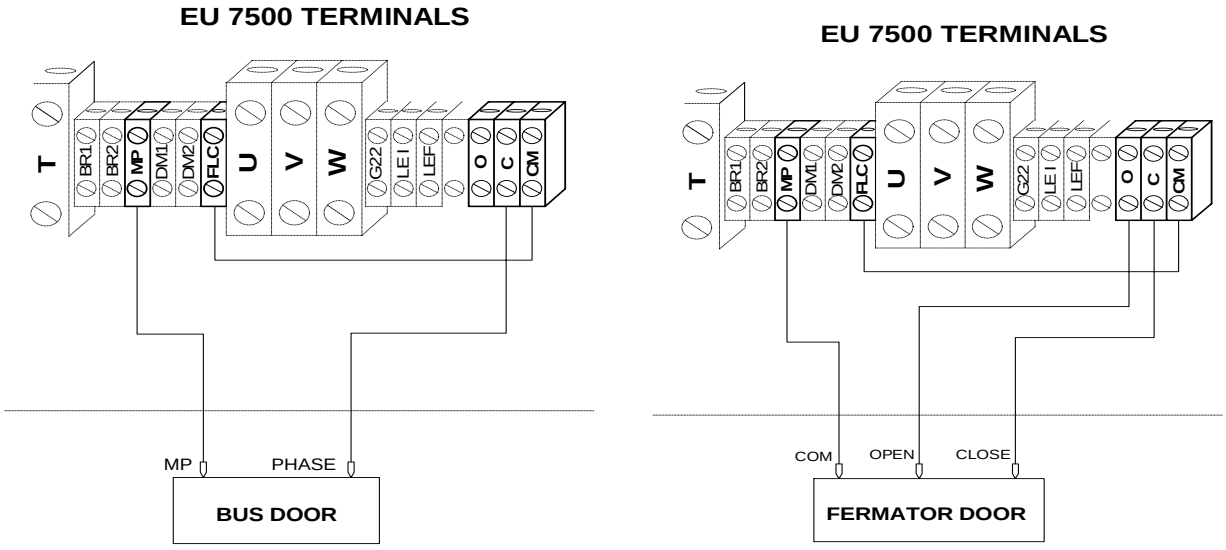
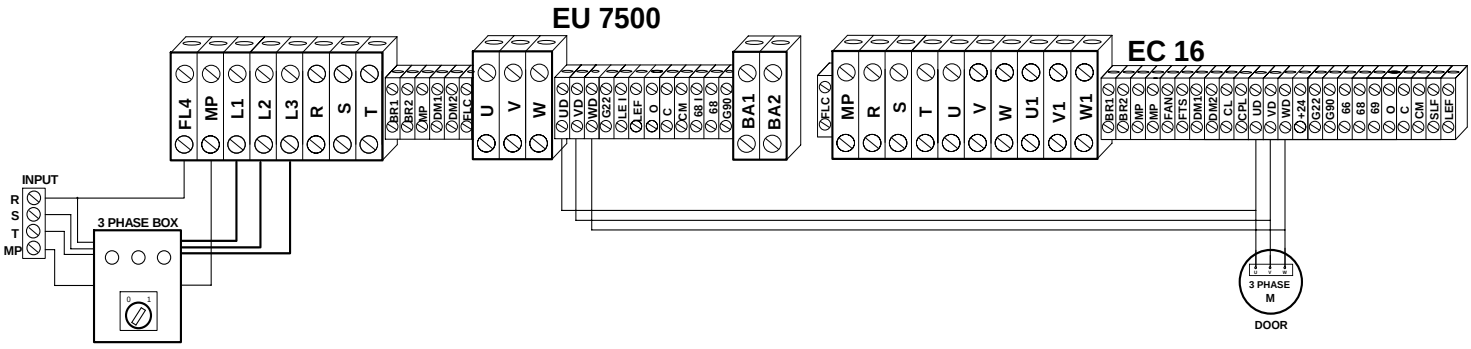


Figure 3- the different Doors Setup in EU7500

2- three-Phase Car Door:



Note: *For these situations it must be notified to our company to provide the unit by the* ***special Software and Hardware****.*

Figure 2-5 in chapter 5 *could show how to wiring these doors with special hardware.*

Testing Process

Chapter 4

1- Testing processes:

Row	Follow It	Result
1	*Connect the **F110 fuse in EU7500***	*The main contactor in **EU7500** panel should be absorbed and the charger board **(68V)** turns on (the red & green LED in up part, right side of the box) then controller panel EC16 should be turn **on**.*
2	*Connect the **EMR key** in **EU7500***	*The Main board in emergency unit turns on. **Batteries voltage** displayed, it should be about **68V**. In case of **AC power supply**, the contactor and all relays should be absorbed.*
3	***F110 fuse** or **3-phase main key** in engine-room and **FLC key** should be **turn off**.*	*If the car is stocked between **two floors** and the **safety Chain** is OK, first the door is closed and the DC relay absorbed. After checking the **safety Chain** again, **the emergency power system** tests the two sides of movement and selects the side that is less current. Then it makes the car to move on this way until reach to the nearest floor.*

Table1-4: TEST SEQUENCE

2- Important Notes:

Row	Notes
FIRST	For **U, V, W connection**s use the **1.5 mm²** wire.
SECOND	The **BA1-BA2** terminals are for the **positive & negative Electrode**s in Batteries that placed in **EU7500**. These must be connected to the panel.
THIRD	With Connecting **the F110 fuse**, the main1 contactor absorbs and we will have three phases in **R, S, T** output terminals of emergency panel.
FORTH	The **F110 fuse** can turn on &off the control panel. In this case the battery charger is active in Emergency Unit. With cutting off the **EMR** fuse (**20 A**) the emergency unit is turning off too.
FIFTH	*Be careful about the installing the brake diode bridge terminals **(BR1-BR2**) and door magnet diode bridge terminals **(DM1, DM2)** in the right way. The wrong installation may cause to damage them.*
SIXTH	*In Emergency mode, if the **safety Chain cut off,** the motor will **stop** until the safety chain is o.k.*
SEVENTH	*The maximum time for emergency unit to move the car and reach the passenger to the nearest floor is **150sec.** the remaining time is showed on **LCD.** If the car does not arrive to the floor in this time, the motor will stop. It must be tested this part with passenger in difference floor carefully to be ensure of safety act of system.*
EIGHTH	*The permanent cabin light should be **100W at the most**. In system power down, it will turn off and with power up condition; it will be back to the normal mode.*
NINTH	*For recovering the batteries, it must be **discharge the batteries** once in a month by the repair-man. It is necessary to change them every **two year**.*
TENTH	*In replacing the panel fuses, please pay attention to their specification on the panel tray.* ***Charger board**'s fuses **(4 Amp)**; **Power supply board**'s fuse **(4A)**;* ***Inverter board**'s fuse **(15A)**. **Main board's** fuse **(20A)**.* ***Caution: Be aware that not to connect the wire instead of fuse.***

Table2-4: IMPORTANT POINTS

Caution:

If the displayed voltage for the batteries on the LCD is 50 volts, it must be stopped the testing process to give the time the batteries to charge.

Tables and Diagrams

Chapter 5

1- EU7500 terminals connection to EC16 Control Panel:

EU7500 Terminal	AFP control Terminals	Description
FL4	…….	The input phase for EU7500
FLC	FLC	The output phase for EU7500
MP	MP	Null
L1,L2,L3	……	Input 3-phase power
R,S,T	R,S,T	Output 3-phase power
U,V,W	U,V,W	Main motor fast speed 3-phase power
BR1	BR1	Brake magnet terminals
BR2	BR2	
DM1	DM1	Door magnet terminals
DM2	DM2	
LEI	……	Level flag input from the hoist way
LEF	LEF	Level flag output from EU7500 to EC16
G90	G90	The first point of the safety chain
68I	…….	The end point of the safety chain in the Hoist way
68	68	The end point of the safety chain output
G22	G22	Common terminals(0 volt)
O	O	Open terminal for door control
C	C	Close terminal for door control
CM	CM	Common terminal for door control

Table1-5: ***EU7500 terminals connection to EC16 Control Panel***

2- EU7500 Terminals Descriptions:

Row	Terminal Name	Terminal Size	Description
1	MP	RTP 10	Input Null
2	L1	RTP 10	Input 3-phase power
3	L2	RTP 10	Input 3-phase power
4	L3	RTP 10	Input 3-phase power
5	FL4	RTP 10	Single – phase input before 3-phase main key
6	R	RTP 10	Out put 3-phase power for control panel
7	S	RTP 10	Out put 3-phase power for control panel
8	T	RTP 10	Out put 3-phase power for control panel
9	BR1	RTP 2.5	Brake magnet output (+)
10	BR2	RTP 2.5	Brake magnet output (-)
11	MP	RTP 2.5	Null
12	DM1	RTP 2.5	Door magnet output (+)
13	DM2	RTP 2.5	Door magnet output (-)
14	FLC	RTP 2.5	Single–phase output before main–key for control panel
15	U	RTP 2.5	Fast speed output
16	V	RTP 2.5	Fast speed output
17	W	RTP 2.5	Fast speed output
18	G22	RTP 2.5	Common terminal
19	LEI	RTP 2.5	Level flag input
20	LEF	RTP 2.5	Level flag output to control panel
21	O	RTP 2.5	OPEN DOOR RELAY
22	C	RTP 2.5	CLOSE DOOR RELAY
23	CM	RTP 2.5	COMMON DOOR RELAY
24	68I	RTP 2.5	The end point of safety chain in the hoist way
25	68	RTP 2.5	The end point of safety chain for control panel
26	G90	RTP 2.5	The first point of safety chain
27	BA1	RTP 10	(+)
28	BA2	RTP 10	(-)
29	UD	RTP 2.5	Used for the 3- phase car door
30	VD	RTP 2.5	Used for the 3- phase car door
31	WD	RTP 2.5	Used for the 3- phase car door

Table2-5: ***EU7500 terminals description***

3- EU7500 Internal Wiring:

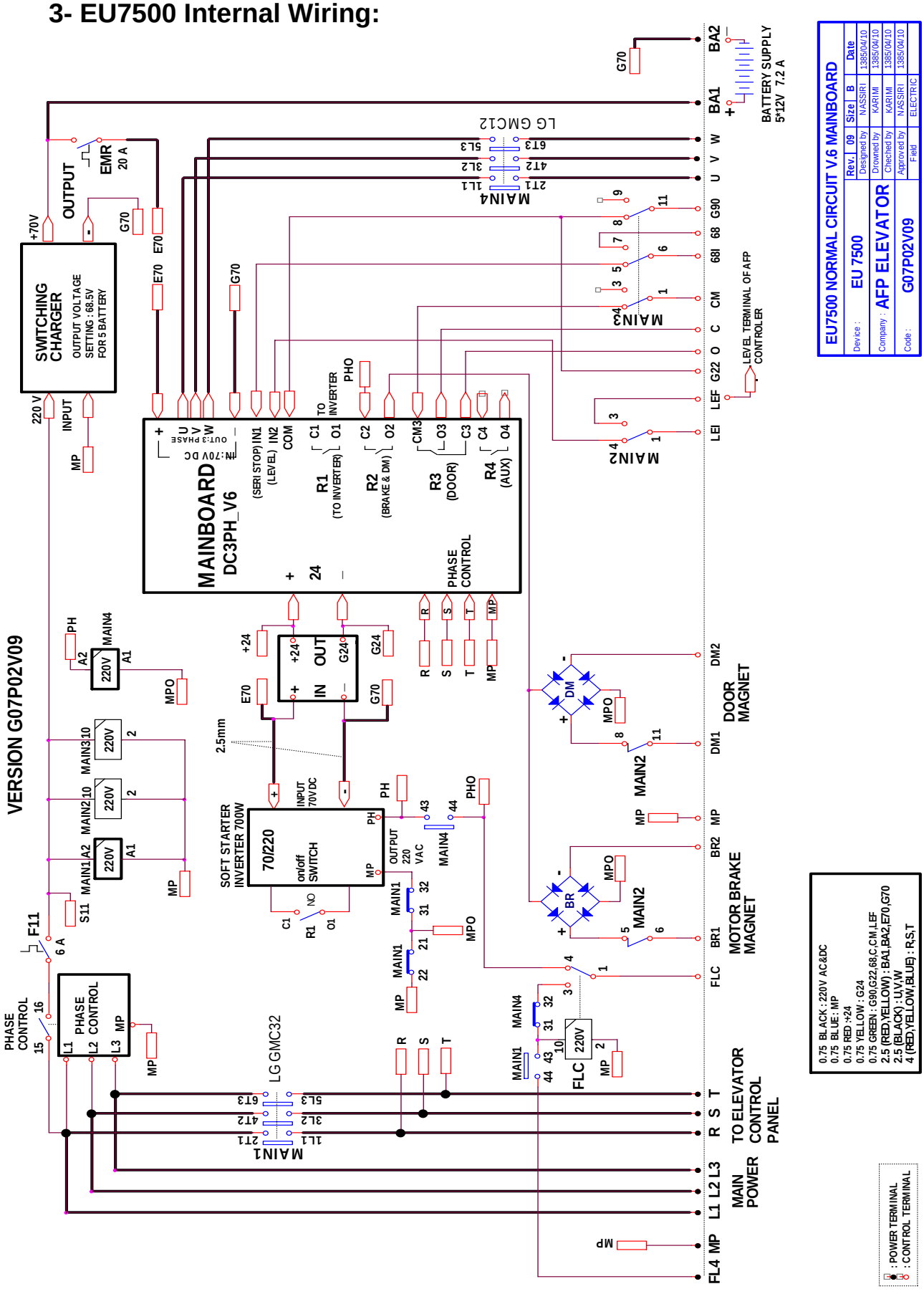


Figure 1- 5: The EU7500 Internal wiring

4- The 3-phase Door wiring in EU7500:

Note:

It must be used the special software for this case.

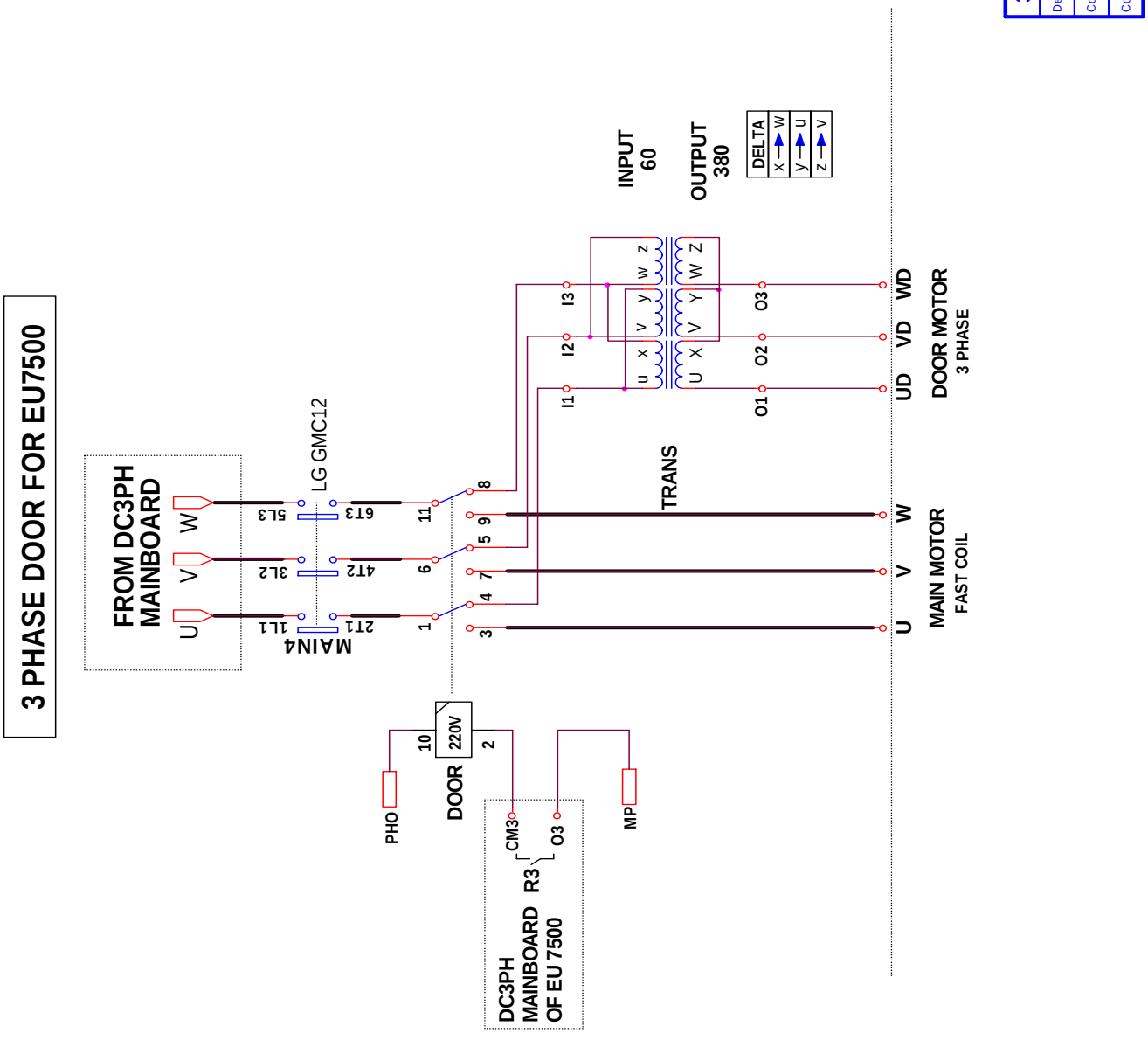


Figure 2 - 5: the 3-phase Door Setup in EU7500

Note: