RED-G *MINI*

Rescue device for Gearless Traction lifts UPS systems

USER MANUAL

ENGLISH

READ CAREFULLY THIS INSTRUCTION BEFORE PROCEEDING WITH THE INSTALLATION

REV. 0 printed 03/2023

INDEX

SAFETY

The metallic case of the device has sharp edges. Handle it with care using suitable gloves for the purpose.

The device has a considerable weight. Lift it from the ground with appropriate means to avoid problems with your health.

The device has a considerable weight. Be careful once it has been lifted from the ground in supporting or fixing to a wall.

If the device is clearly damaged, missing parts, or the size of the device is not correct for the lift, absolutely do NOT proceed with the installation.

The installation, control and maintenance of the device must be carried out only by qualified personnel and only when the power supply is disconnected.
Improper installation can cause equipment malfunction, injury, or even death. Carefully follow the safety directives.

Before making any connections, make sure that the control panel is not supplied and that the IE in switch the device is off. Avoid any kind of external object enters the device as it can lead to its failure or hazardous conditions at the time of connection to the mains.

Connect the ground of the device to the installation ground for the protection against indirect contact, according to the safety directives. Properly protect all connections to prevent accidental contact.

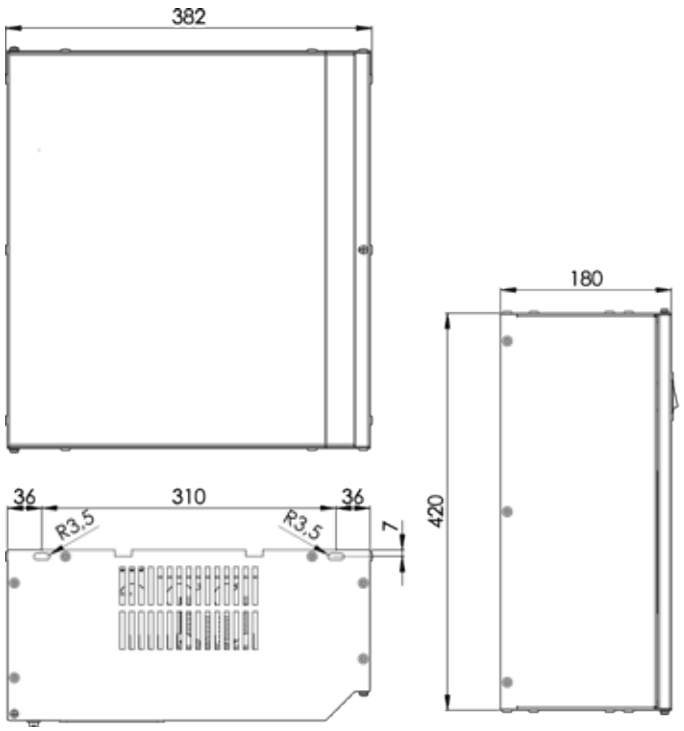
To ensure the proper functioning of the device and in order to avoid risks of fire, use cables of suitable section in function of the currents involved and considering the cable length required for installation.

After put into operation and tested the device, remove the bridge made on the 4th pole to ensure proper operation in case of opening of the main power switch. Close the metal casing of the device to prevent accidental contact.

The device is battery operated, normally not provided by SMS. Be sure to use batteries appropriate to the device and to the charging current indicated to avoid the risk of explosion due to the release of hydrogen.
Do not reverse the polarity of the batteries or short circuit. Consult the documentation provided by the battery manufacturer.

The examples and diagrams in this manual are included only for illustrative purposes.
The contents of this manual are subject to change without notice. In no event will accept the liability for damages, indirect or consequential damages resulting from the use or application of the device.

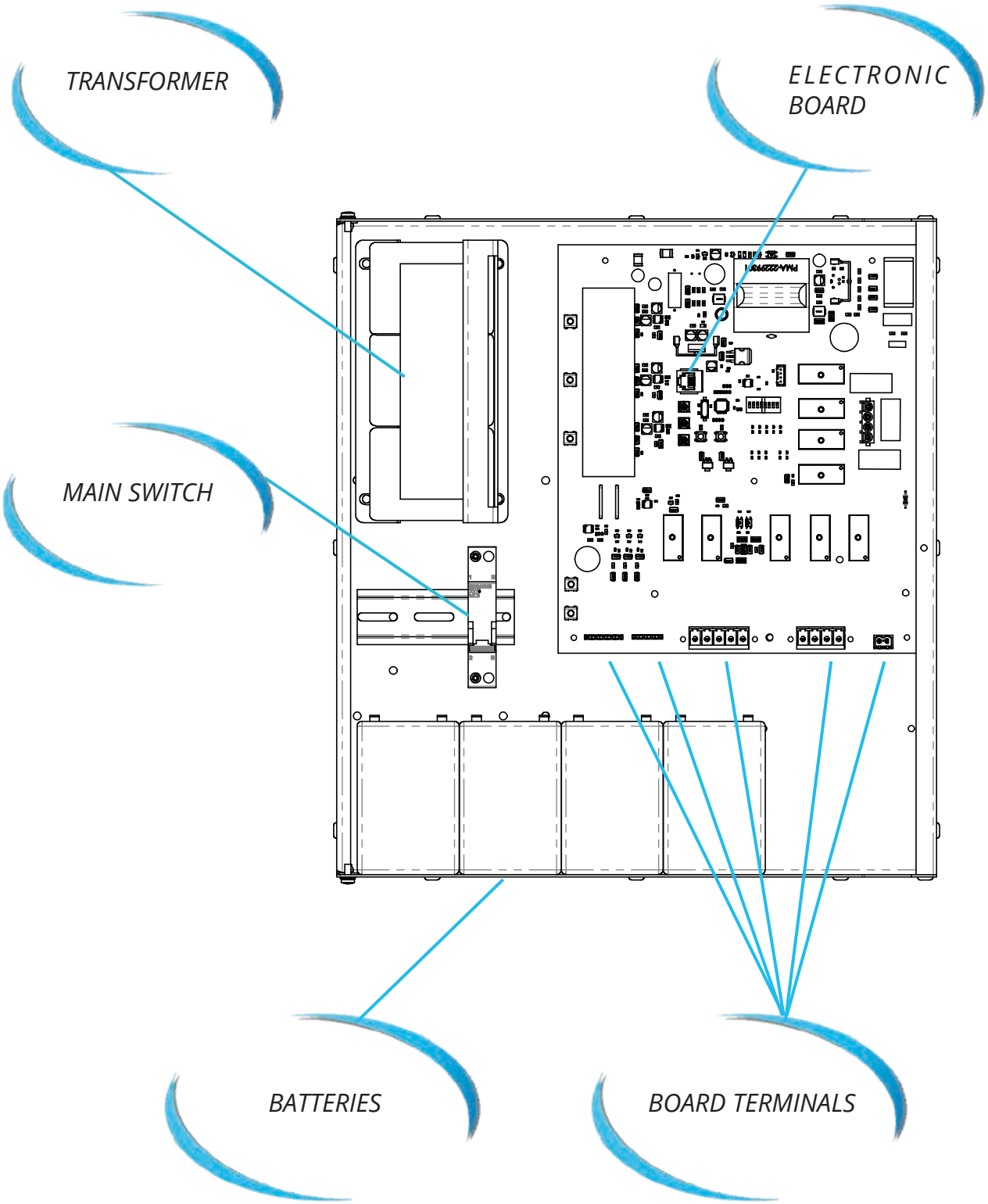
DIMENSIONS AND FASTENING



DEVICE / CODE	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)	WEIGHT (kg) without batteries
RED-G MINI 1800-08 / REG1800N.41.00	382	420	180	15,5

SUGGESTED BATTERIES	NOMINAL CAPACITY	MAX INTERNAL RESISTANCE	MIN. DISCHARGE CONSTANT CURRENT (5min)
	9Ah	15mΩ	40A
	BATTERY TYPE: SEALED LEAD ACID BATTERY		

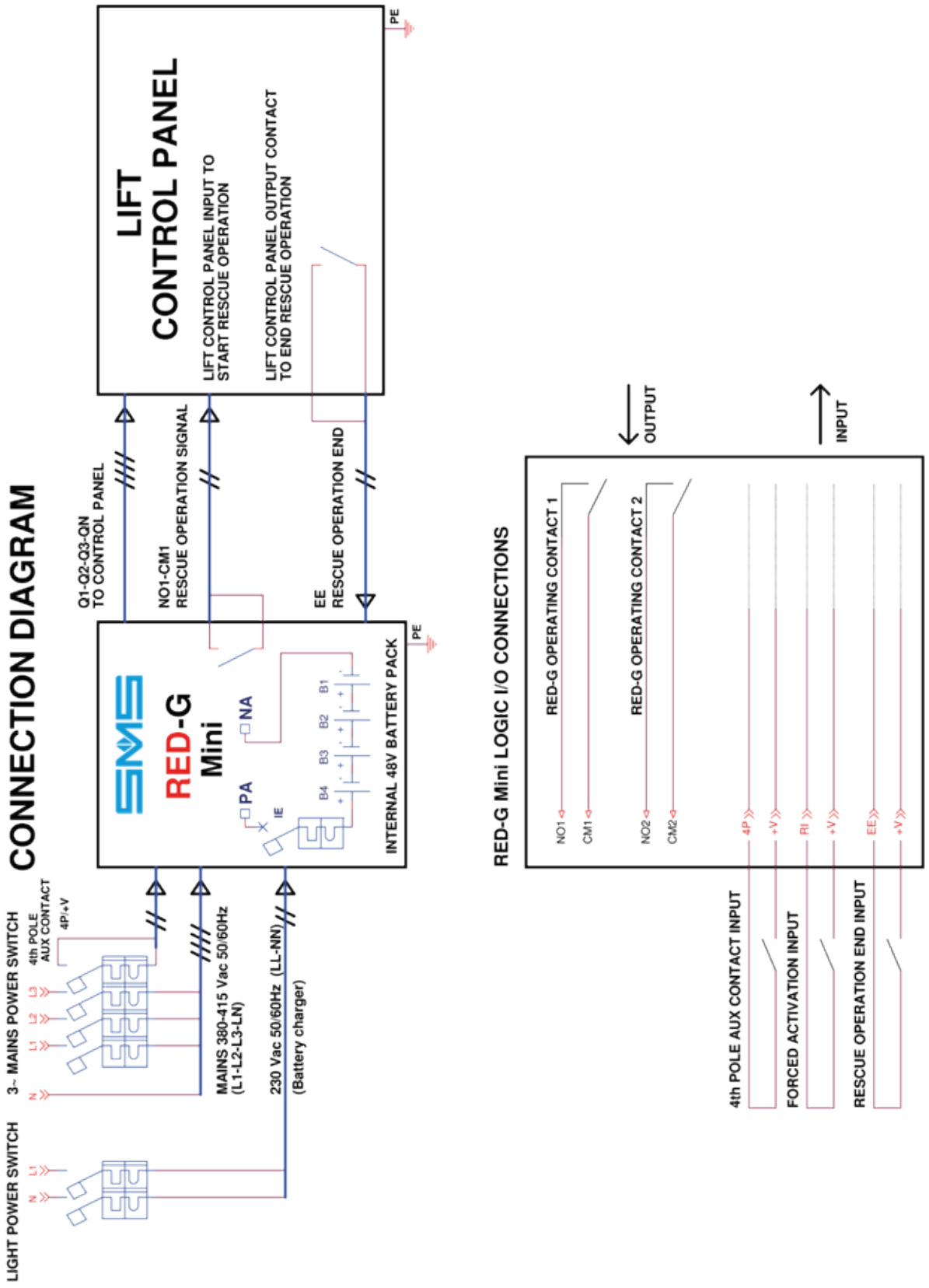
LAYOUT


TRANSFORMER
ELECTRONIC BOARD
MAIN SWITCH
BATTERIES
BOARD TERMINALS

TECHNICAL DATA

LIFT SYSTEM	
3-Phase Mains	3~380-415Vac 50Hz / 60Hz, with neutral (optional)
3-Phase Gearless Lift Motor Power	Up to 8kW
Max current through power supply connection	Up to 12A
RESCUE OPERATION	
Recommended motor speed during rescue operation	1/20 normal speed
3-Phase Output Voltage	3~400Vac, with neutral (optional)
3-Phase Output Frequency	50Hz / 60Hz
3-Phase Rated Output Power	1,8 kVA
3-Phase Output Overload	120% Rated Output Power for 10sec.
Output Voltage Waveform	Modified sine wave output
Rescue Operation Time Out	3 min 1.8KVA (max)
Circuit-Breaker Protection (IE)	32A automatic switch
BATTERIES AND BATTERY CHARGER	
Battery Type	Sealed and Maintenance free Lead Acid
Nominal battery Voltage	48V (N°4 units 12V in series)
Battery Capacity	9Ah minimum
Battery Maximum Voltage	54V
Battery Charger Output Current	1A
Battery Charger Input	230Vac 50Hz / 60Hz +8/-15% 0,5A max
MECHANICAL DATA	
Dimensions (WxHxD) mm	382X420X180
Enclosure Protection	IP20
Weight (without batteries)	15,5kg
ENVIRONMENT	
Ambient Temperature	0°C 45°C
Humidity	Up to 95% non-condensing
Altitude	1000m without derating (max 2000m)
Storage Temperature	-25°C 70°C

CONNECTION DIAGRAM



TECHNICAL SPECIFICATIONS

RED-G MINI is an automatic rescue device for GEARLESS lift systems.
RED-G MINI has to be installed on the 3-phase 400Vac mains; in case of power failure, powered by batteries, it fully supplies the lift system with the necessary power to move the car at reduced speed and open doors at floor.
RED-G MINI is supplied by batteries and provides a stabilized output voltage, and it is suitable for any lift installation.

This manual provides you the necessary information about wiring, put on service and the operation of RED-G MINI, please read it carefully before going on with the installation.

WORKING CYCLE

RED-G MINI detects the mains power failure (even of a single phase) and after a few seconds the rescue operation starts:

- RED-G MINI cuts mains supply by means of built-in relays.

- Next, the 3-phase inverter switches ON in order to reproduce the mains voltage, through the elevator transformer, and supply the control panel.

- RED-G MINI switches ON a relay output, in order to inform the control panel that a rescue operation is running: the control panel must be set to move the car in low speed, reach the floor level and open the door.

- RED-G MINI ends its operation and shuts down after an adjustable time after the car stops at floor (EE input OFF), in order to allow the door opening, so the people in the car can easily go out.

- When the RED-G MINI operation comes to end, the lift system is put again in the original operation condition, connected to the mains.

A new rescue operation would be carried out only after the mains supply comes back and then it misses again.

BATTERIES CONNECTION

SWITCH OFF THE MAINS SWITCH AND 230Vac SWITCH.

OFF

RED-G MINI: SWITCH OFF THE RED-G MINI MAIN SWITCH IE.

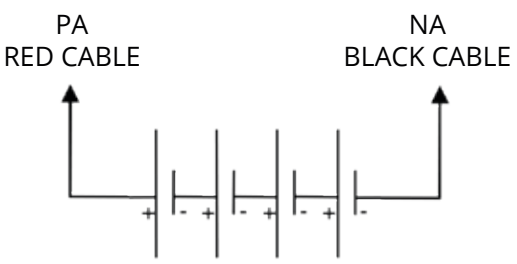
OFF

Pay attention to avoid short circuit between battery terminals and respect the polarity of the connections between the batteries and between batteries and RED-G MINI.

RED-G MINI

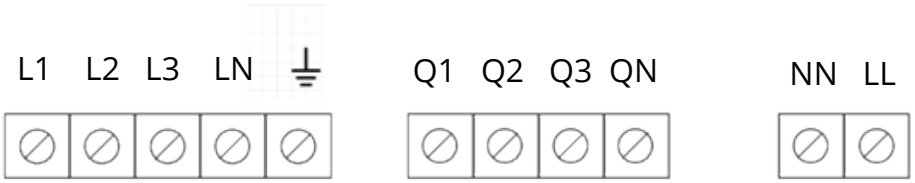
- **CONNECT THE BATTERIES IN SERIES AND THE TERMINALS PA,NA TO THE BATTERIES, AS SHOWN IN THE FOLLOWING DRAWING,**
- **MAKE CONNECTIONS BY MEANS OF 10MMQ WIRES.**

OFF



POWER SUPPLY CONNECTION

• RED-G MINI The terminals are on board.



CUT OFF THE LIFT SYSTEM MAIN POWER, THEN CONNECT THE 3-PHASE MAINS AND THE NEUTRAL TO THE TERMINALS L1 – L2 – L3 – LN (NEUTRAL optional) OF RED-G MINI.

CONNECT THE SUPPLY VOLTAGE OF THE LIFT SYSTEM (CONTROL PANEL) TO THE TERMINALS Q1 – Q2 – Q3 – QN (NEUTRAL optional). CONNECT THE YELLOW/GREEN "⏚" TERMINAL TO THE EARTH.

• CONNECT SIGNALS +V-4P ON TERMINAL M2 OF BOARD TO THE 4TH POLE OF THE MAINS GENERAL SWITCH.

SIGNAL CONNECTIONS

KEEP THE MAIN POWER SUPPLY OFF

On terminal M2:
Signal CM1 – NO1 AND CM2 – NO2 , N°2 contacts are available; and they can be used as signal rescue operation active.
Contact specifications: 250Vac 8A.

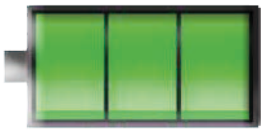
On terminal M1:
Connect terminals EE and +V for End Emergency input.
Connect terminals 4P and +V to activate 4th pole input.
Connect terminals RI and +V to activate forced emergency operation.

COMMISSIONING

CHECK THAT ALL THE CONNECTIONS ARE CORRECT.

CHECK THAT THE BATTERIES ARE PROPERLY AND SAFELY CONNECTED.

CHECK THAT ALL THE WIRES USED HAVE PROPER SECTION.



MAKE SURE THAT THE BATTERIES HAVE ENOUGH CHARGE TO CARRY ON A RESCUE CYCLE.

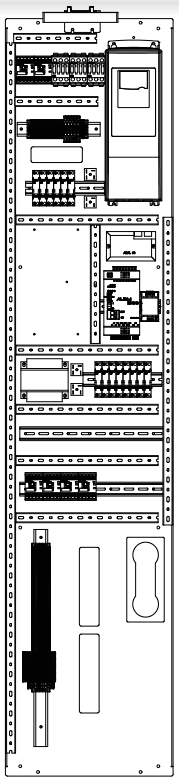
THE BATTERY VOLTAGE SHOULD BE HIGHER THAN 52V OTHERWISE IT'S NECESSARY TO RECHARGE BATTERIES KEEPING THEM IN CHARGE FOR SEVERAL HOURS.

SWITCH ON THE MAIN POWER SWITCH.

ON

SWITCH ON THE MAIN SWITCH IE.

ON



SET THE CONTROL PANEL TO MOVE THE CAR IN LOW SPEED AND STOP IT WHEN THE NEAREST FLOOR IS REACHED, IF THE KE CONTACT OF RED-G MINI IS CLOSED.

MAKE A CALL ON THE LIFT, LET IT RUN FOR A WHILE, THEN OPEN THE MAIN POWER SWITCH AND THE AUXILIARY LIGHT SWITCH WHEN THE CAR IS BETWEEN TWO FLOORS.

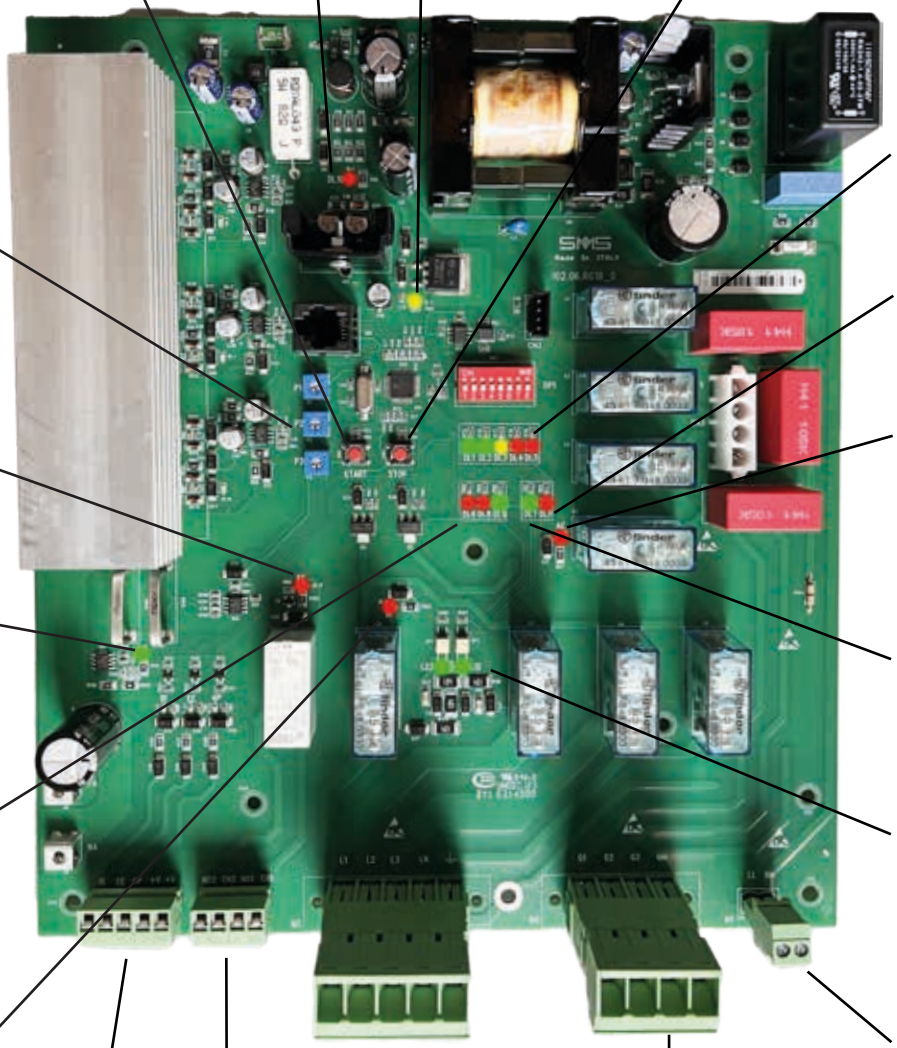
MAKE A JUMPER BETWEEN THE TERMINAL +V AND 4P ON BOARD, BECAUSE IF THE 4TH POLE IS OPEN, THE LIFT CANNOT PERFORM THE RESCUE OPERATION.

AFTER A FEW SECONDS, THE RESCUE OPERATION STARTS, AND YOU CAN FOLLOW THE PROGRESS CHECKING LEDS.

IT IS POSSIBLE TO FORCE AN EMERGENCY OPERATION BY ACTIVATING RI INPUT (ONLY IF 4TH POLE IS ON) EVEN IF MAINS IS PRESENT.
TO STOP THIS FORCED EMERGENCY DEACTIVATE RI INPUT

IT IS ALSO POSSIBLE TO FORCE AN EMERGENCY OPERATION BY PRESSING START BUTTON FOR AT LEAST 2 SECONDS.
TO STOP THIS FORCED EMERGENCY IT IS NECESSARY TO PRESS STOP BUTTON

LOGIC BOARD LAYOUT



DL10 indicates that the battery charger supply is present.

STOP button:
Stops an emergency cycle, if it started by pressing START button.

START button:
Forced emergency activation. To stop it press STOP button.

DL3 indicates that logic 5V supply is present.

TRIMMER
P1: Delay from EE input deactivation (10s-40s)
P2: Output voltage regulation, basing on DIP8
P3: Starting delay after mains failure (L12 and/or L23 OFF) (4s-36s)

Load level leds:
DL1-10%
DL2-90%
DL3-100%
DL4-110%
DL5-120%.

DLF: Fault led

KE: Emergency ongoing led

AE: Control panel output activation led

DL19: Battery voltage is present

DL7: Blinking if RED-G MINI awaiting;
ON if emergency cycle ongoing

Battery leds:
DL6: Low battery voltage
DL9: Battery voltage too high
DL8: Battery fully charged

L12 and **L23** leds: Mains present

IR: Mains insulation led

M5: 230vac supply for battery charger

M2: Emergency ongoing contact (normally open)

M4: Output to the control panel

M1:
RI: Emergency forced activation input.
EE: Emergency end
4P: 4th pole input
+V: Input common
(RI EE 4P)

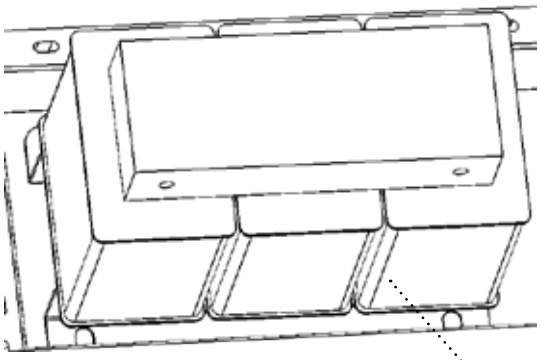
M3: Mains input

INSULATION TEST INSTRUCTIONS

RED-G MINI: SWITCH OFF THE RED-G MINI MAIN SWITCH IE.

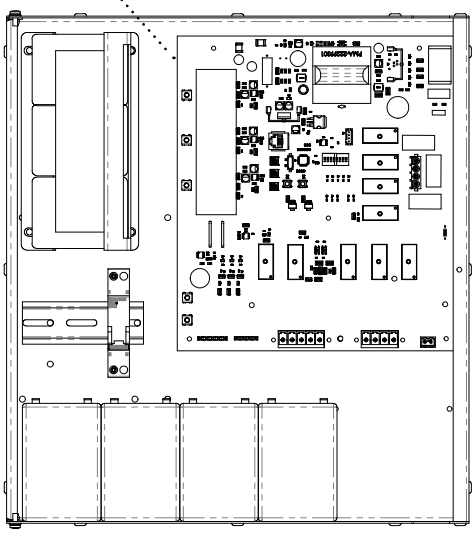
OFF

DISCONNECT THE YELLOW/ GREEN WIRE FROM EARTH TERMINAL.



IN THE SAME CONDITIONS YOU TEST THE INSULATION OF THE DIFFERENT CIRCUITS OF THE CONTROL PANEL, TEST THE INSULATION OF THE CIRCUITS OF RED-G MINI TOWARDS EARTH AND TOWARDS THE OTHER CIRCUITS, ON THE TERMINALS:

- **400 TR TRANSFORMER**
- **LL BATTERY CHARGER SUPPLY 1~230VAC**
- **PA, NA ENDS OF SERIES CONNECTED BATTERIES (0V, 48V)**



TROUBLESHOOTING

PROBLEM: The rescue operation doesn't start:

SOLUTION: Check that the 4th pole is closed.
Check that RED-G MINI is powered.
Check that RED-G MINI doesn't show any fault on leds

PROBLEM: When the emergency operation starts, but the car doesn't run:

SOLUTION: Check that the car is not at any floor level.
Check that the control panel commands the reset operation and that drives the inverter with a reduced speed command.
Check that RED-G MINI doesn't show any fault on leds.
Check if the phase sequence device of the control panel is working properly.
If not, try to invert 2 output phases of RED-G MINI device. If problem persists, use a N.O. contact of RED-G MINI device (for example CM1-NO1) to bypass the contact of the phase sequence device during the emergency.
Check if the control panel shows an alarm due to the RED-G MINI output voltage higher than the normal protection limit.

PROBLEM: The rescue operation starts, the car runs, but it stops before reaching the floor:

SOLUTION: Check leds to see what is the protection that tripped.

DIAGNOSTICS

If DLF led is on, one of the following faults occurred:

- If no other led is on, timeout for max emergency time has expired during an emergency run;
- If load leds are on, there was an overcharge;
- If DL8 led is on, battery voltage is too high;
- If DL6 led is on, battery voltage is too low.

LISTA DEI LED

LED	COLOR	DIAGNOSTIC
DL1	GREEN	Mimimum load (10%)
DL2	GREEN	Normal load (90%)
DL3	YELLOW	Maximum load (100%)
DL4	RED	Overcharge (110%)
DL5	RED	Overcharge alarm (120%), max trip time 10s
DL6	RED	Battery discharged or low battery voltage
DL7	GREEN	Rescue cycle in action (blinking: RED-G MINI awaiting)
DL8	RED	Battery voltage too high
DL9	GREEN	Battery fully charged / blinking if battery voltage is good
DLF	RED	Fault occurred
DL10	GREEN	Battery charger supply is present
AE	RED	Control panel output active
KE	RED	Emergency is running
IR	RED	Mains insulated
DL19	GREEN	Battery voltage is present
L12	GREEN	Mains Phase 1 and 2 present
L23	GREEN	Mains Phase 2 and 3 present

TRIMMERS AND DIP SWITCH

P1: Shut off delay after input EE open detection,from 10 to 40 seconds.

P2: Adjusts the output voltage in according to DIP switch n° 8.

P3: Adjusts the time to start rescue operation from the power failure, from 4 to 36 seconds.

DIP SWITCH SW1		
N°	DESCRIPTION	
1 2	1 & 2 OFF: RESCUE OPERATION TIME OUT IS 3 MINUTES 1 & 2 ON: RESCUE OPERATION TIME OUT IS 1 MINUTE	
3	NOT USED	
4	OFF: OUTPUT FREQUENCY 50 Hz	ON: OUTPUT FREQUENCY 60 Hz
5	NOT USED	
6	NOT USED	
7	NOT USED	
8	OFF: TURNING P2 CLOCKWISE REDUCES THE VOLTAGE OUTPUT UP TO 10%	ON: TURNING P2 CLOCKWISE INCREASES THE VOLTAGE OUTPUT UP TO 10%

CHECKS AND MAINTENANCE

In any case of electric check or modification,
please be sure to open IE switch and keep the mains power supply off.

Verify periodically what follows, starting with mains voltage present:

1) Check that there is no oxidation on the battery terminals.

2) Check the integrated battery charger measuring the output voltage around 54Vdc with DL9 led lighted ON.

3) Switching OFF the mains power with 4th pole open, the rescue operation MUST NOT start.

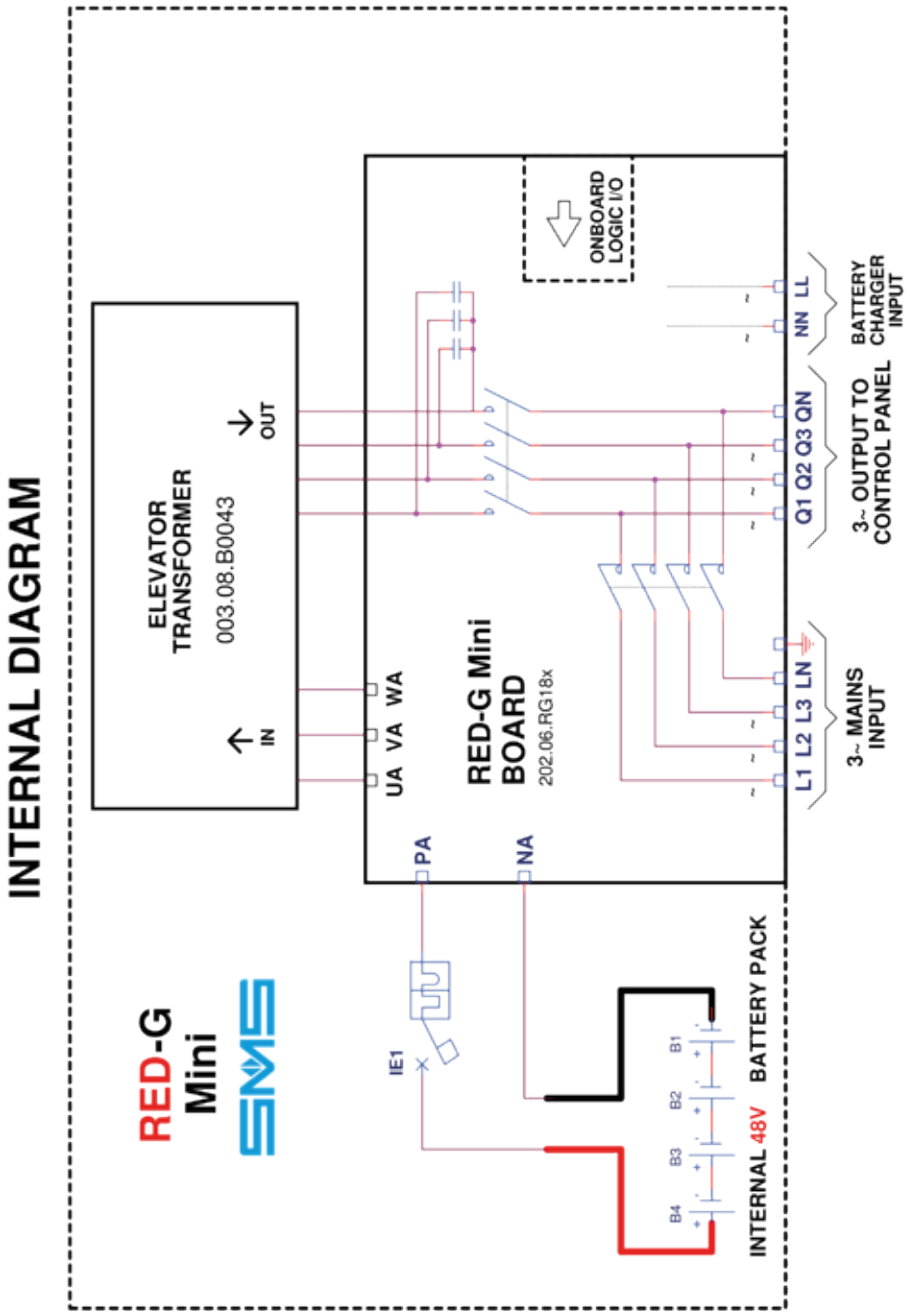
4) Closing the 4th pole with a bridge, rescue operation has to start and to finish properly. If rescue operation doesn't properly finish and DL6 led is ON, batteries may have to be replaced. Remove the bridge done on the 4th pole .

5) After some years of work, typically 4, replace the batteries and apply a label indicating the date of replacement.

SPARE PART LIST

DESCRIPTION	SMS CODE
3-PHASE TRANSFORMER TR	003.08.B0043 1,8kVA
AUTOMATIC SWITCH 32A IE	003.12.3X032
LOGIC BOARD	202.06.RG18

INTERNAL DIAGRAM



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