RED-G DISPLAY

Rescue device for Gearless Traction lifts UPS systems

USER MANUAL

ENGLISH

READ CAREFULLY THIS INSTRUCTION BEFORE PROCEEDING WITH THE INSTALLATION

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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.

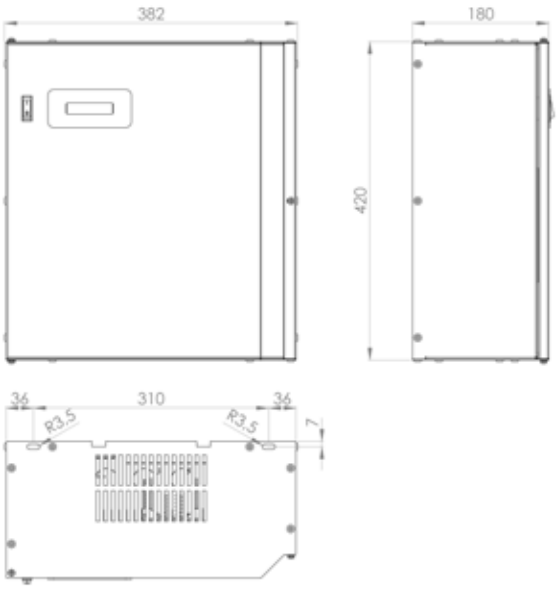
After put into operation and tested the device, remove the bridge made on the 4th pole to ensure proper operation in case of opening of the main power switch. Close the metal casing of the device to prevent accidental contact.

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.

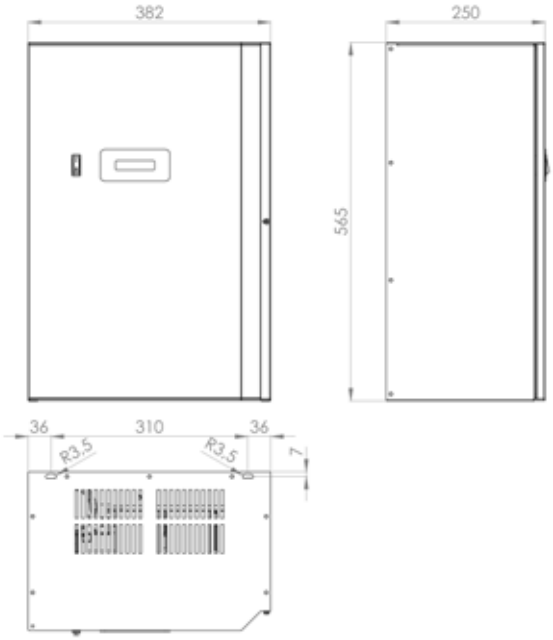
The examples and diagrams in this manual are included only for illustrative purposes.
The contents of this manual are subject to change without notice. In no event will accept the liability for damages, indirect or consequential damages resulting from the use or application of the device.

DIMENSIONS AND FASTENING

RED-G 2500-12 / RED-G 4000-21



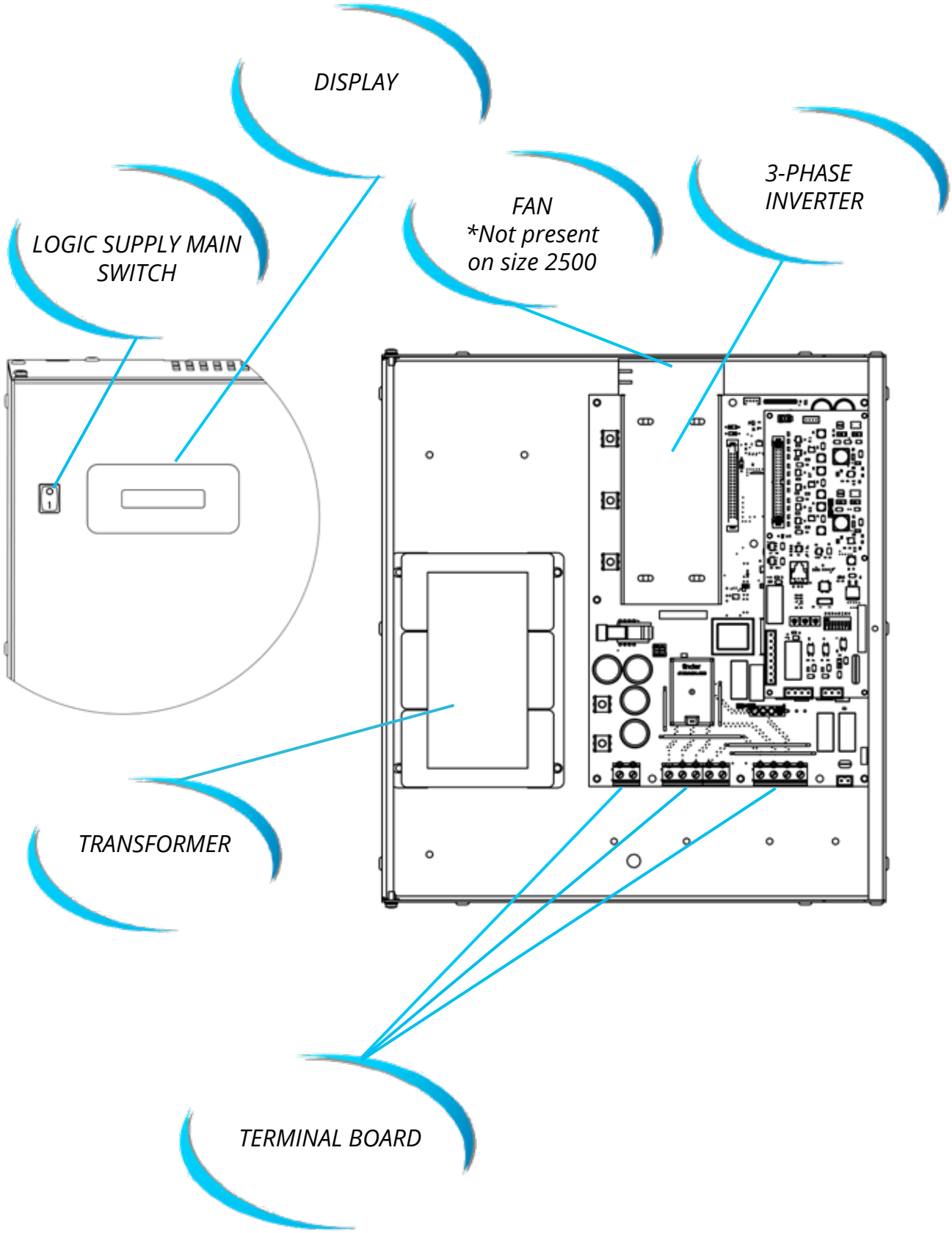
RED-G 8000-42



DEVICE / CODE	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)	WEIGHT (kg) without batteries
RED-G 2500-12 / REG2500D.41.00	382	420	180	22,5
RED-G 4000-21 / REG4000D.41.00	382	420	180	26
RED-G 8000-42 / REG8000D.81.00	382	565	250	44

SUGGESTED BATTERIES	NOMINAL CAPACITY	MAX INTERNAL RESISTANCE	MIN. DISCHARGE CONSTANT CURRENT (5min)
	18Ah	12mΩ	63A
	24Ah	11mΩ	105A
	40Ah	7mΩ	178A
	BATTERY TYPE: SEALED LEAD ACID BATTERY		

LAYOUT RED-G 2500-12 / RED-G 4000-21



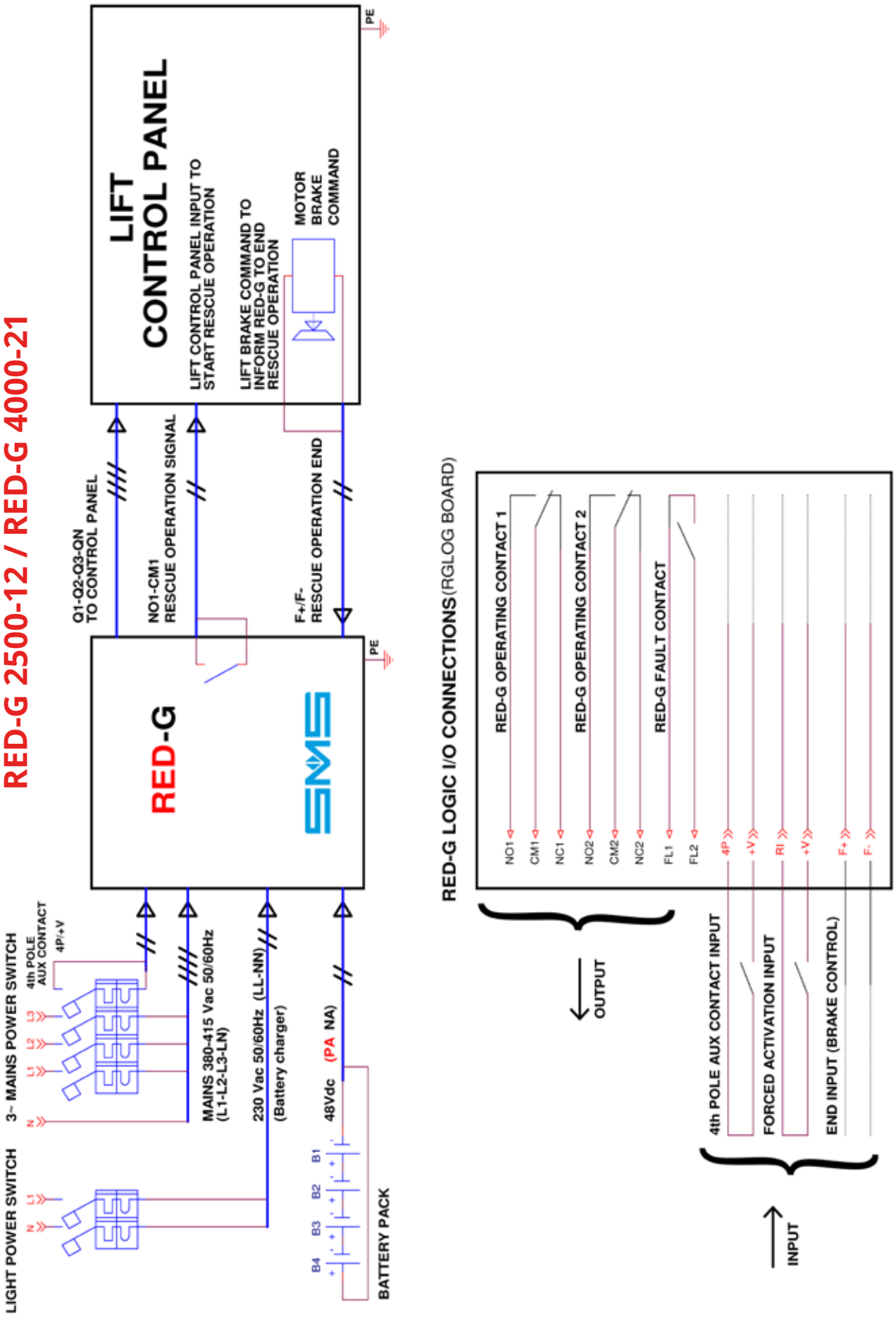
TECHNICAL DATA RED-G 2500-12

LIFT SYSTEM	
3-Phase Mains	3~380-415Vac 50Hz / 60Hz, with neutral (optional)
3-Phase Gearless Lift Motor Power	Up to 12kW
Max current through power supply connection	Up to 50A
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	2,5 kVA
3-Phase Output Overload	120% Rated Output Power for 10sec.
Output Voltage Waveform	Modified sine wave output
Rescue Operation Time Out	3 min 2.5KVA (max)/ 15 min 1.6kVA (max)
Circuit-Breaker Protection (IE)	Fuse 70A
BATTERIES AND BATTERY CHARGER	
Battery Type	Sealed and Maintenance free Lead Acid
Nominal battery Voltage	48V (N°4 units 12V in series)
Battery Capacity	18Ah minimum (Batteries Outside)
Battery Maximum Voltage	54V
Battery Charger Output Current	2,5A
Battery Charger Input	230Vac 50Hz / 60Hz +8/-15% 0,8A
MECHANICAL DATA	
Dimensions (WxHxD) mm	382X420X180
Enclosure Protection	IP20
Weight (without batteries)	22,5kg
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

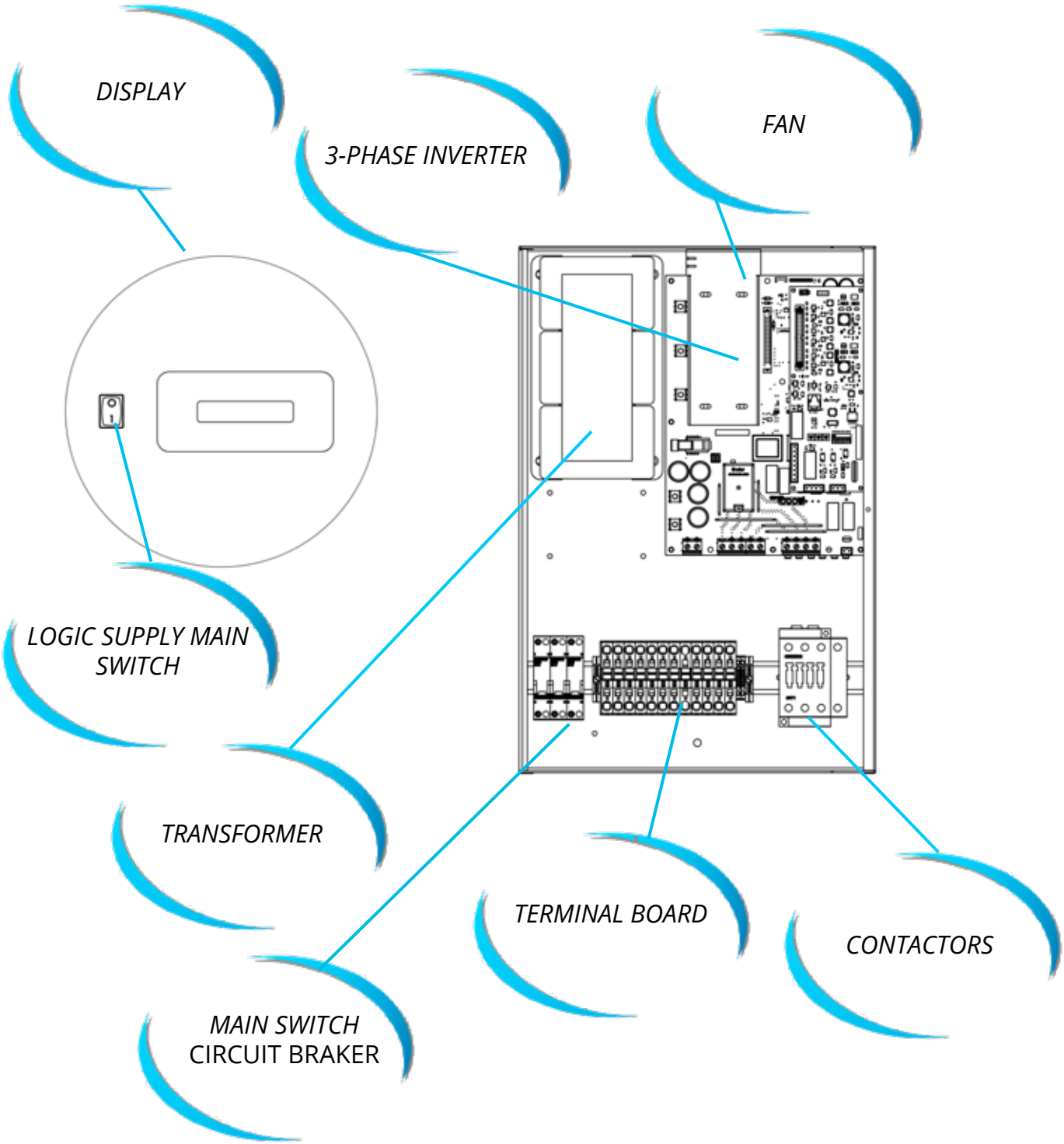
TECHNICAL DATA RED-G 4000-21

LIFT SYSTEM	
3-Phase Mains	3~380-415Vac 50Hz / 60Hz, with neutral (optional)
3-Phase Gearless Lift Motor Power	Up to 21kW
Max current through power supply connection	Up to 50A
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	4kVA
3-Phase Output Overload	120% Rated Output Power for 10sec.
Output Voltage Waveform	Modified sine wave output
Rescue Operation Time Out	3 min 4KVA (max) / 15 min 3kVA (max)
Circuit-Breaker Protection (IE)	Fuse 70A
BATTERIES AND BATTERY CHARGER	
Battery Type	Sealed and Maintenance free Lead Acid
Nominal battery Voltage	48V (N°4 units 12V in series)
Battery Capacity	18Ah minimum (Batteries Outside)
Battery Maximum Voltage	54V
Battery Charger Output Current	2,5A
Battery Charger Input	230Vac 50Hz / 60Hz +8/-15% 0,8A
MECHANICAL DATA	
Dimensions (WxHxD) mm	382X420X180
Enclosure Protection	IP20
Weight (without batteries)	26kg
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 RED-G 2500-12 / RED-G 4000-21



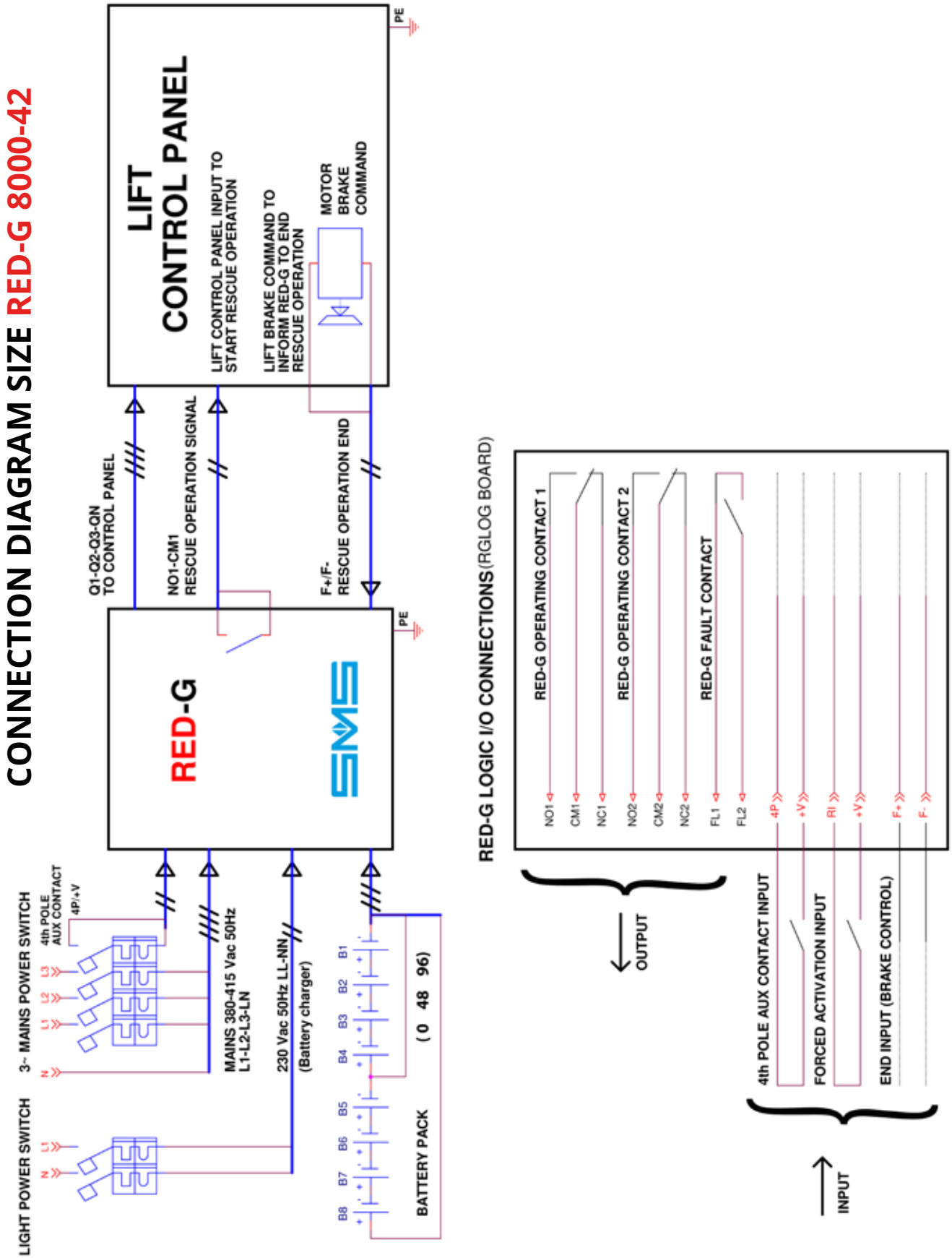
LAYOUT RED-G 8000-42



TECHNICAL DATA RED-G 8000-42

LIFT SYSTEM	
3-Phase Mains	3~380-415Vac 50Hz / 60Hz, with neutral (optional)
3-Phase Gearless Lift Motor Power	Up to 42kW
Max current through power supply connection	Up to 80A
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	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 8KVA (max) / 15 min 5kVA (max)
Circuit-Breaker Protection (IE)	63A
BATTERIES AND BATTERY CHARGER	
Battery Type	Sealed and Maintenance free Lead Acid
Nominal battery Voltage	96V (N°8 units 12V in series)
Battery Capacity	18Ah minimum (Batteries Outside)
Battery Maximum Voltage	108V
Battery Charger Output Current	2,5A
Battery Charger Input	230Vac 50Hz / 60Hz +8/-15% 1,6A
MECHANICAL DATA	
Dimensions (WxHxD) mm	382X565X250
Enclosure Protection	IP20
Weight (without batteries)	44kg
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 RED-G 8000-42



TECHNICAL SPECIFICATIONS

RED-G is an automatic rescue device for GEARLESS lift systems.
RED-G 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 is supplied by batteries and provides a stabilized output stabilized 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, please read it carefully before going on with the installation.

WORKING CYCLE

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

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

- The mains contactors are switched OFF, so the power supply, which normally comes from the mains, is cut.

- 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 switches ON the KE 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 ends its operation and shuts down after an adjustable time after the car stops at floor (F+/F- input OFF), in order to allow the door opening, so the people in the car can easily go out.
- When the RED-G 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 2500-12 / RED-G 4000-21 DISPLAY: CONNECT FIRST BATTERY CHARGER TO 230VAC ON M4 TERMINAL OF RGPOW BORAD. THEN CONNECT BATTERIES ON PA(+) AND NA (-) TERMINALS.

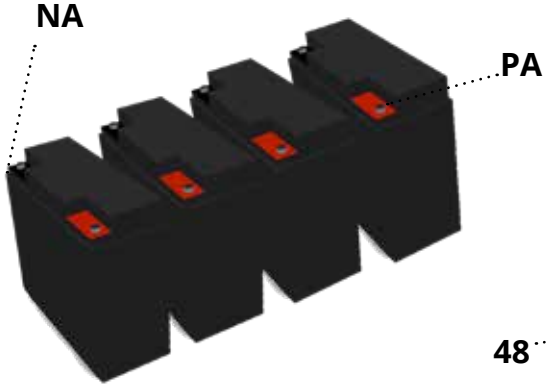
RED-G 8000-42 DISPLAY: SWITCH OFF THE RED-G MAIN SWITCH IE.

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.

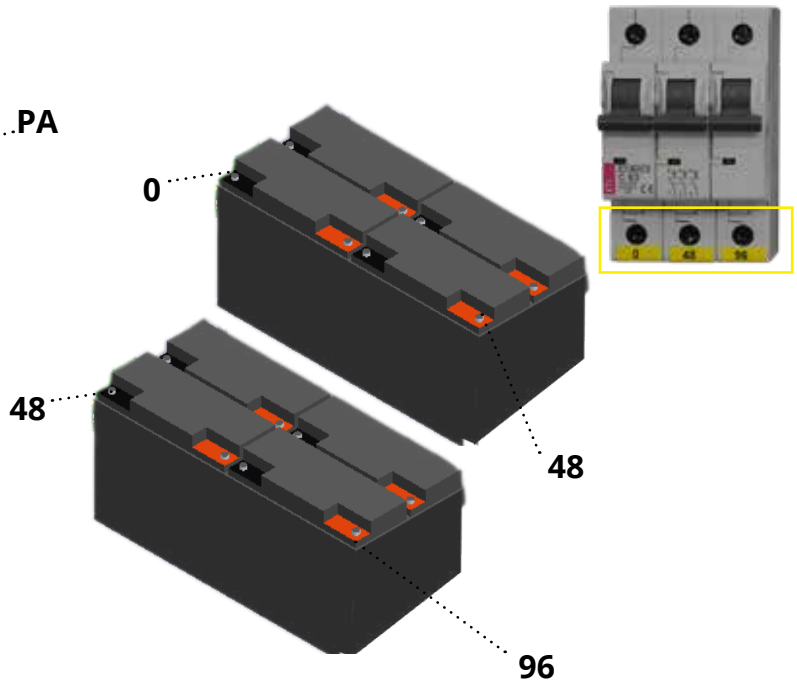
RED-G 2500-12 / RED-G 4000-21

- 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.



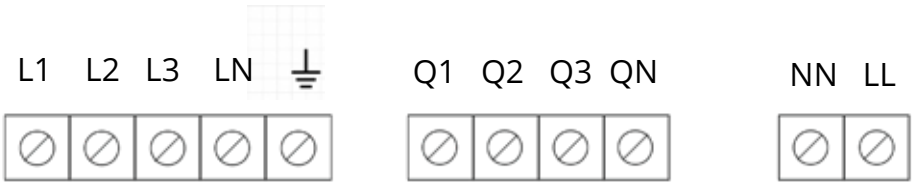
RED-G 8000-42

- CONNECT THE BATTERIES TO THE TERMINALS O, 48, 96 AS SHOWN IN THE DRAWING BELOW:
- MAKE CONNECTIONS BY MEANS OF 16 MMQ WIRES
- MAKE THE BRIDGES INDICATED IN RED.



POWER SUPPLY CONNECTION

- **RED-G 2500-12 / RED-G 4000-21** The terminals are on RGPOW board.
- **RED-G 8000-42** The terminals are on external terminal.



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.

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 RGLOG BOARD TO THE 4TH POLE OF THE MAINS GENERAL SWITCH.

SIGNAL CONNECTIONS

KEEP THE MAIN POWER SUPPLY OFF

On terminal M1 of RGLOG board:
Signal CM1 – NO1 – NC1 AND CM2 – NO2 – NC2, N°2 contacts of the KE relay are available; the KE relay is on during the whole rescue operation, so these contacts can be used to signal rescue operation active.

On terminal M3 of RGLOG board:
Connect terminals F+ F- from the motor brake coil.
Allowed voltage: 48 ÷ 230vdc +/-10%.

OPTIONAL CONNECTION: On terminal M1 of RGLOG board, signals FL1 – FL2 are available to indicate READY or FAULT status (FA relay). The contact between FL1 and FL2 is always closed, except when RED-G detects a malfunction or a failure.
This contact can be used also as a rescue operation active signal, setting dip switch n.3 on RGLOG board.

COMMISSIONING

LCD display on front panel see description at See page 22.

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 FOR SIZE RED-G 2500-12 / RED-G 4000-21,104V FOR SIZE RED-G 8000-42 OTHERWISE IT'S NECESSARY TO RECHARGE BATTERIES KEEPING THEM IN CHARGE FOR SEVERAL HOURS.

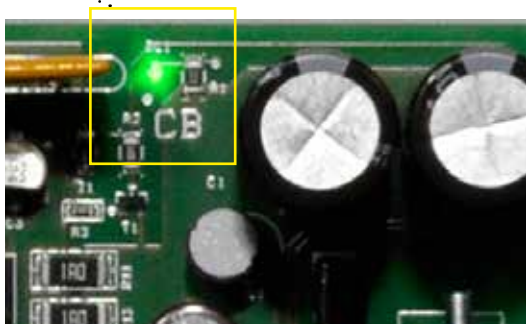
SWITCH ON THE MAIN POWER SWITCH.

ON

SWITCH ON THE RED-G 8000-42 DISPLAY MAIN SWITCH IE.

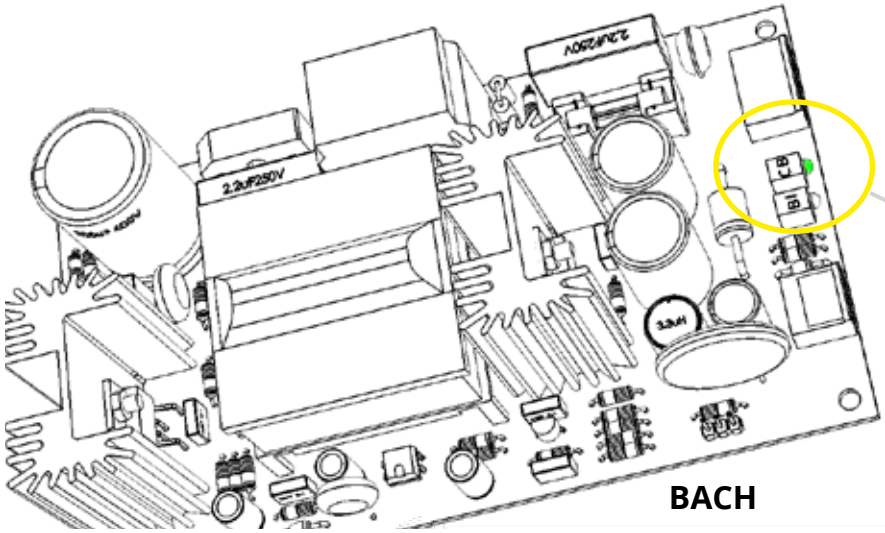
ON

RED-G 2500-12 / RED-G 4000-21

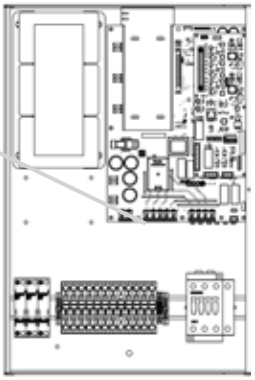


RGPOW

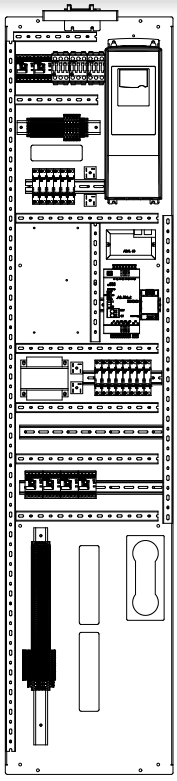
The CB green led on the integrated battery charger (board RGPOW) board must be light ON, showing that the battery charger is powered.



RED-G 8000-42



The CB green led on the 2nd battery charger (board BACH) must light ON, showing that the battery charger is powered.



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 IS CLOSED.

CHECK THAT THE LIFT WORKS PROPERLY THEN CHECK ON THE RGPOW BOARD THE STATUS OF THE FOLLOWING LEDS:

5V: 5V INTERNAL SUPPLY
MF: SINGLE PHASE AC SUPPLY
AR: MAINS CONTACTOR
AE: EMERGENCY OPERATION
BV: BATTERY VOLTAGE.

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 RGLOG 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 THE DISPLAY.

EMERGENCY OPERATION: During emergency operation, RED-G displays output voltage, battery voltage and load battery current.
Symbol '#' indicates that emergency operation is terminating because motor brake is open.

```
Vo=400V      #RUN
Vb=53.8V Ib=  80A
```

EMERGENCY END: During emergency end state, RED-G displays output voltage and battery voltage.
Emergency end state terminates when mains voltage turns on again or if 4th pole contact opens.

```
Vo=400V      END
Vb=53.8V
```

THE CAR RUNS AT LOW SPEED AND IT STOPS AT THE NEXT FLOOR, OPENING DOORS.

FOLLOWING MOTOR BRAKE CLOSING (BT LED TURNS OFF), RED-G SHUTS OFF AFTER THE TIME SET WITH THE P1 TRIMMER.

THE LIFT WORKS IN THE NORMAL SITUATION (MAIN SUPPLY).

During alarm state, RED-G displays an alarm code and its description.
In case of alarm, RED-G shows alarm code and description alternatively with the previous state that may be any of the above described.

AT THE END OF THE RESCUE CYCLE, COMMAND FC HOLDS ON TO KEEP THE EXTERNAL FAN OPERATING FOR A MAXIMUM TIME OF 2 MINUTES.

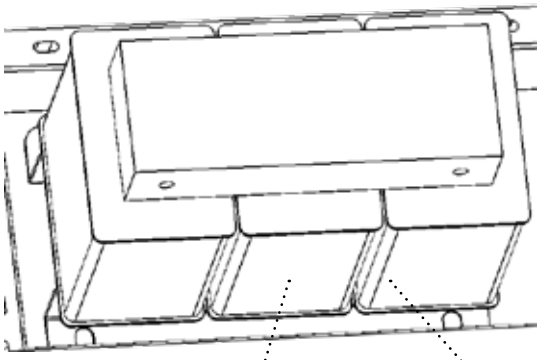
INSULATION TEST INSTRUCTIONS

RED-G 8000-42 DISPLAY: SWITCH OFF THE RED-G MAIN SWITCH IE.

OFF

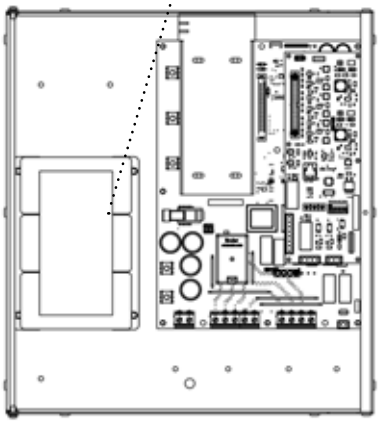
RED-G 2500-12 / RED-G 4000-21 DISPLAY: REMOVE FUSE 70A ON THE RGPOW BOARD.

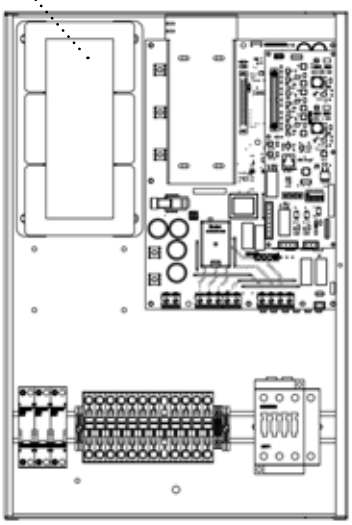
DISCONNECT THE YELLOW/ GREEN WIRE FROM EARTH TERMINAL.



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 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) FOR RED-G 4000-21**
- **BT8+, BT1- ENDS OF SERIES CONNECTED BATTERIES (0V, 96V) FOR RED-G 8000-42.**





TROUBLESHOOTING

PROBLEM: The rescue operation doesn't start:

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

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 doesn't show any fault on display.
Check if the phase sequence device of the control panel is working properly.
If not, try to invert 2 output phases of RED-G device. If problem persists, use a N.O. contact of RED-G 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 output voltage higher than the normal protection limit.

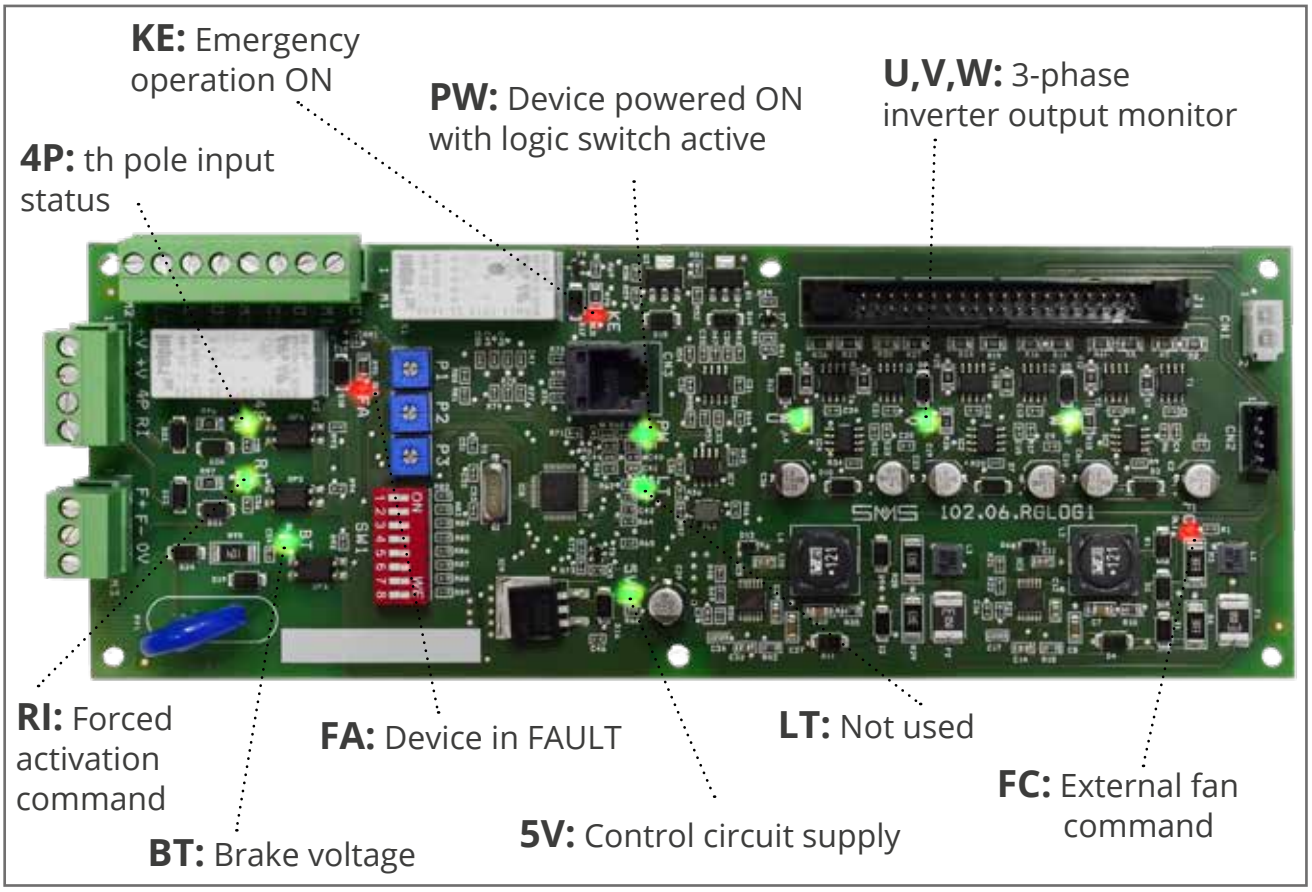
PROBLEM: The rescue operation starts, the car run, but it stops before reaching the floor:

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

LIST OF ALARM CODES AND DESCRIPTIONS

N° CODE	DESCRIPTIONS	MEANING
01	CONNECTION	Connection error, input and output inverted
02	OVERVOLTAGE P	Power section overvoltage
03	UNDERVOLTAGE P	Power section undervoltage
04	OVERVOLTAGE L	Logic section overvoltage
05	UNDERVOLTAGE L	Logic section undervoltage
06	CONTACTORS	Contactors stuck
07	OVERCURRENT	Peak overcurrent
08	OVERLOAD 1	Short time overload
09	OVERLOAD 2	Long time overload
10	TIMEOUT	Maximum emergency time expired

LOGIC BOARD "RGLOG" LAYOUT



P1: Shut off delay after brake closing,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	NOT USED	
2	NOT USED	
3	OFF: CONTACT BETWEEN "FL1 - FL2" NORMALLY CLOSED (RED-G OK)	ON: CONTACT BETWEEN "FL1 - FL2" NORMALLY CLOSED IN EMERGENCY
4	OFF: OUTPUT FREQUENCY 50 Hz	ON: OUTPUT FREQUENCY 60 Hz
5	OFF: OPERATION TEST PERFORMED USING BATTERY VOLTAGE	ON: OPERATION TEST PERFORMED USING MAINS VOLTAGE
6	NOT USED	
7	OFF: RESCUE OPERATION TIME OUT: 3 minutes at max power	ON: RESCUE OPERATION TIME OUT: 15 minutes at reduced power
8	OFF: TURNING CLOCKWISE REDUCES THE VOLTAGE OUTPUT UP TO 10%	ON: TURNING CLOCKWISE INCREASES THE VOLTAGE OUTPUT UP TO 10%

DISPLAY

a) POWER ON: During power on RED-G displays device size and software version.

```
RED-G4000   V1.00
   by SMS srL
```

b) READY: During ready state, RED-G displays mains voltage, battery voltage and battery charge current.

```
Vi=400V        RDY
Vb=53.8V Ic=1.3A
```

c) EMERGENCY OPERATION: During emergency operation, RED-G displays output voltage, battery voltage and load battery current.
Symbol '#' indicates that emergency operation is terminating because motor brake is open.

```
Vo=400V       *RUN
Vb=53.8V Ib= 80A
```

d) EMERGENCY END: During emergency end state, RED-G displays output voltage and battery voltage.
Emergency end state terminates when mains voltage turns on again or if 4th pole contact opens.

```
Vo=400V        END
Vb=53.8V
```

e) ALARM: During alarm state, RED-G displays an alarm code and its description.
In case of alarm, RED-G DISPLAY shows alarm code and description alternatively with the previous state that may be any of the above described.

```
 ALARM  Code:08
   OVERLOAD 1
```

POWER BOARD "RGPOW" LAYOUT

5V: 5V Internal supply

MF: Single phase AC supply

AR: Mains contactor

AE: Emergency operation

BV: Battery connected

CHECK 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 54Vdc with CB led on RGPOW board 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 display indicates 'UNDERVOLTAGE', batteries may have to be replaced. Remove the bridge done on the 4th pole .

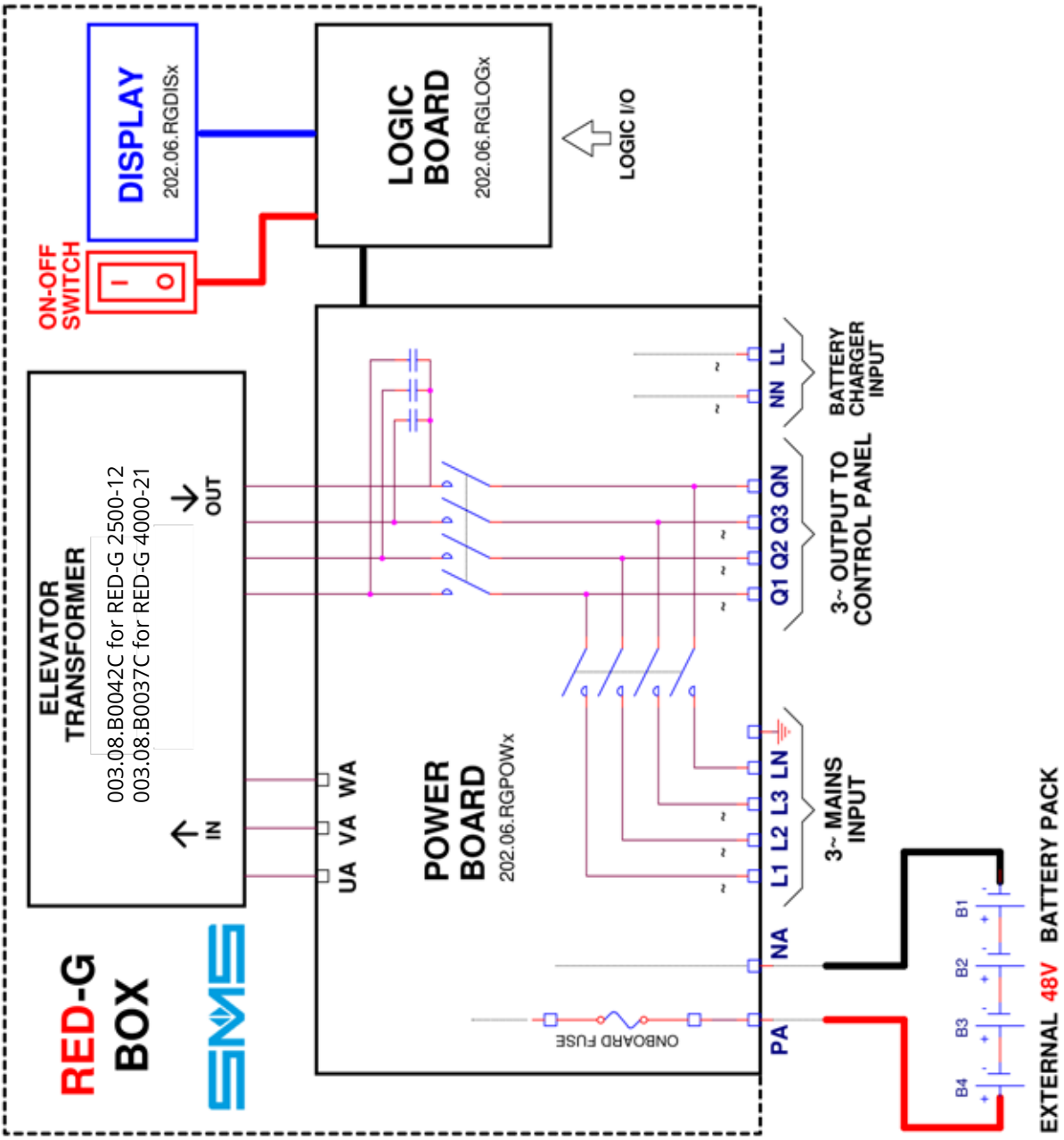
5) After some years of work, typically 4, replace the batteries and apply a label indicating the date of replacement.

SPARE PART LIST

DESCRIPTION	SMS CODE		
	RED-G 2500-12	**RED-G 4000-21**	**RED-G 8000-42**
CONTACTORS KR			003.07.CC450TK
3-PHASE TRANSFORMER TR	003.08.B0042C 2,5kVA	003.08.B0037C 4kVA	003.08.B0039C 8kVA
AUTOMATIC SWITCH 63A IE			003.12.3X063
FAN 12VDC 80x80x25		003.19.00008C	
BATTERY CHARGER 48V 2,5A			202.06.BACH1.48
LOGIC BOARD	202.06.RGLOG		
POWER BOARD	202.06.RGPOWA		202.06.RGPOWB
DISPLAY	202.06.RGDIS		

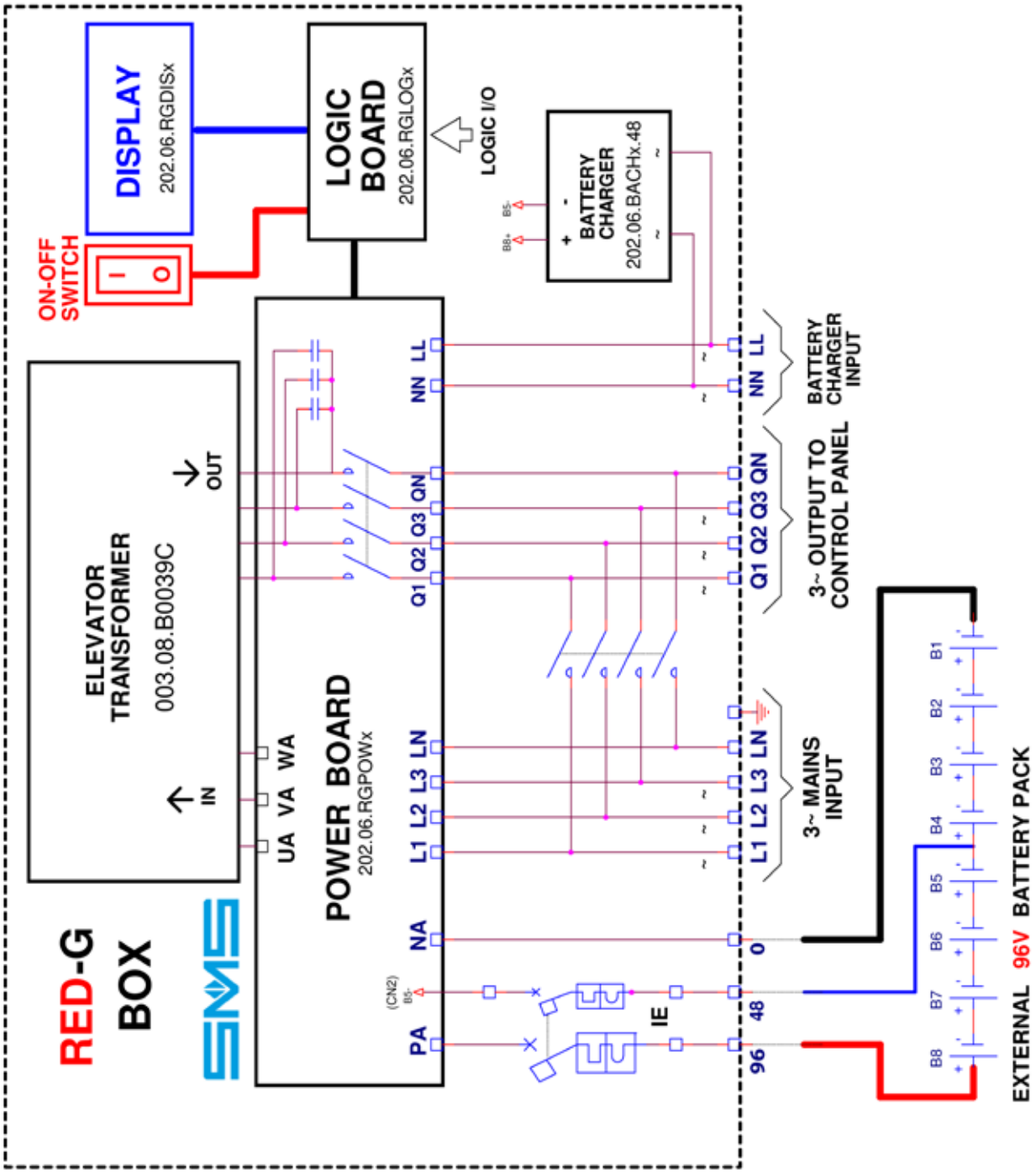
RED-G 2500-12 / RED-G 4000-21 INTERNAL DIAGRAM

INTERNAL DIAGRAM SIZE
RED-G 2500-12 / RED-G 4000-21



RED-G 8000-42 INTERNAL DIAGRAM

INTERNAL DIAGRAM SIZE
RED-G 8000-42



DECLARATION OF CONFORMITY

Manifacturer: **SMS s.r.l.**

Address: Via Guido Rossa, 46/48/50 – Loc. Crespellano 40053 Valsamoggia (BO) - Italy

Product: **EMERGENCY RESCUE DEVICE**

Model/Type: **RED – G**

The above mentioned products are in conformity to the requirements of the following European Directives:

- **2014/33/UE ‘LIFTS’**
- **2014/30/UE ‘EMC’**

To evaluate the conformity, the following STANDARDS have been taken into consideration:

- **EN 81.1: 2010**
- **EN 81.20: 2020**
- **EN 12015: 2020**
- **EN 12016: 2013**

DATE: 14.01.22

SMS S.R.L.
Presidente CdA
Ing. Ciro Adelmo Pilone

Ing. CIRO ADELMO PILONE
MANAGING DIRECTOR

For further information please contact:

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All possible contingencies which may arise during installation, operation or maintenance, and all details and variations of our equipment do not purport to be covered by the instructions retrieved from this guide. If further information is desired by purchaser regarding these documents, particular installation, operation or maintenance of our equipment, SMS S.R.L. should be contacted.

All the information in the user manual are indicative and can change without notice.

Our policy is under continuous development. Accordingly the design of our products may change at any time.