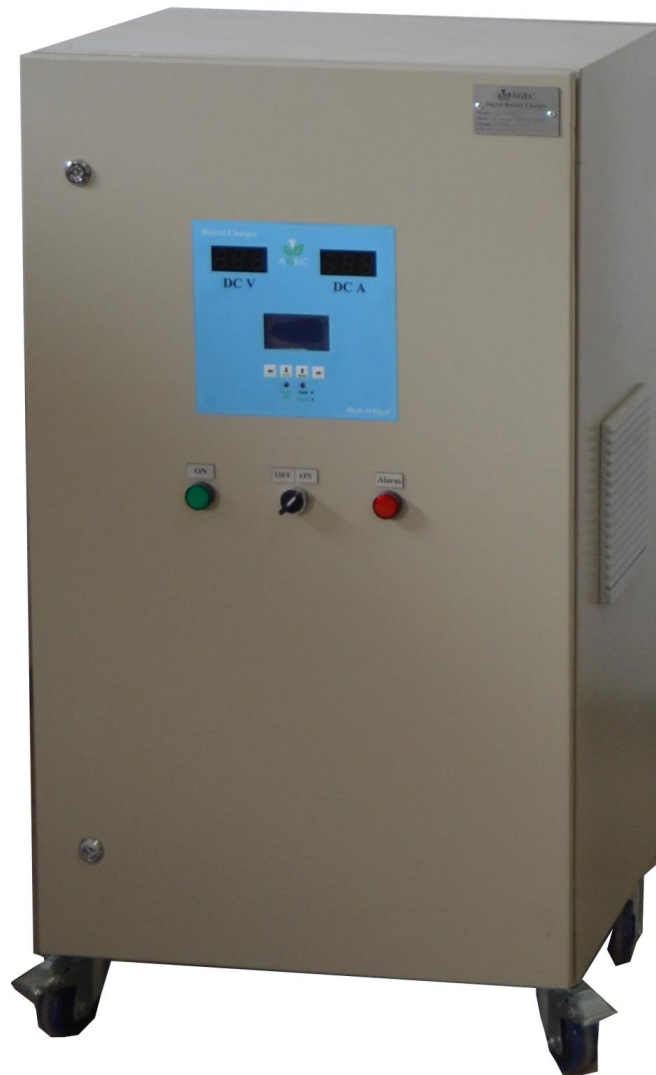




**A**dvanced **G**reen **E**nergy & **C**ontrol

## Digital Battery charger

**M A N U A L**



**D Series**  
**December 2017**

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**For your safety, please read the following before using.**

## **1. Safety Cautions**

### **⚠ Warning**

**1. It must be mounted on Panel.**

It may give an electric shock.

**2. Do not connect terminals while power on.**

It may give an electric shock.

**3. Do not disassemble and modify this unit. If it is necessary please contact us.**

It may give an electric shock and cause fire.

**4. Please check the terminals numbers when connecting power lines.**

It may cause fire.

**5. When cleaning the unit, do not use water or an oil-based detergent.**

It may cause an electric shock or fire and so the unit will be damaged.

**6. Please connect properly after checking the polarity.**

It may cause fire.

## **2. Features:**

1- Float and boost charging.

2- Charging voltage can be adjusted via display.

3- Boost time charging can be adjusted via display.

4- Current limit can be adjusted via display.

5- Ramp at start.

6- AC over and under voltage limits protection can be adjusted via display.

7- DC over and under voltage limits protection can be adjusted via display.

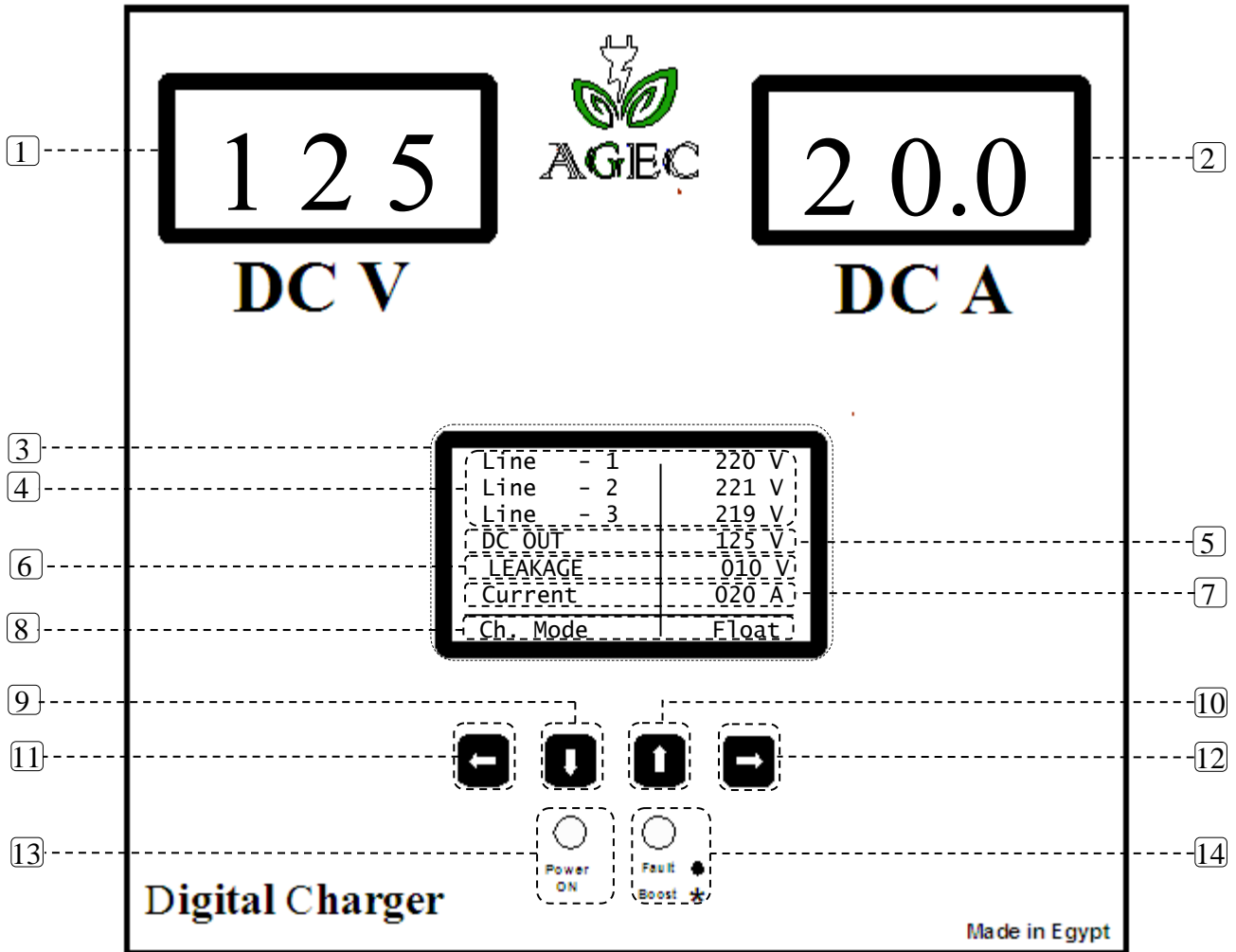
8- Earth leakage voltage limits protection can be adjusted via display.

9- All setting stored in EEPROM.

10- The last fault is automatically stored.

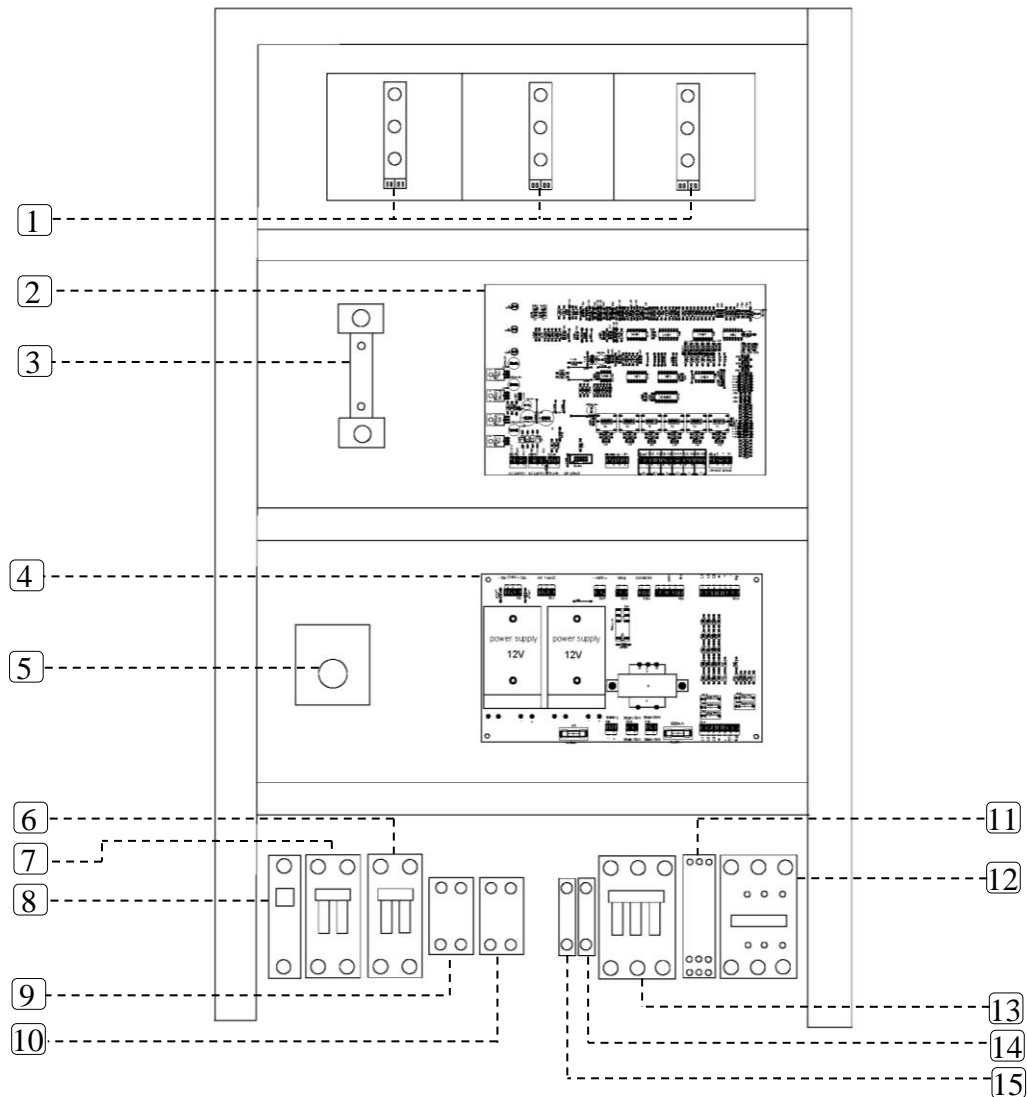
## 3. Panel identification

### 3.1. Front



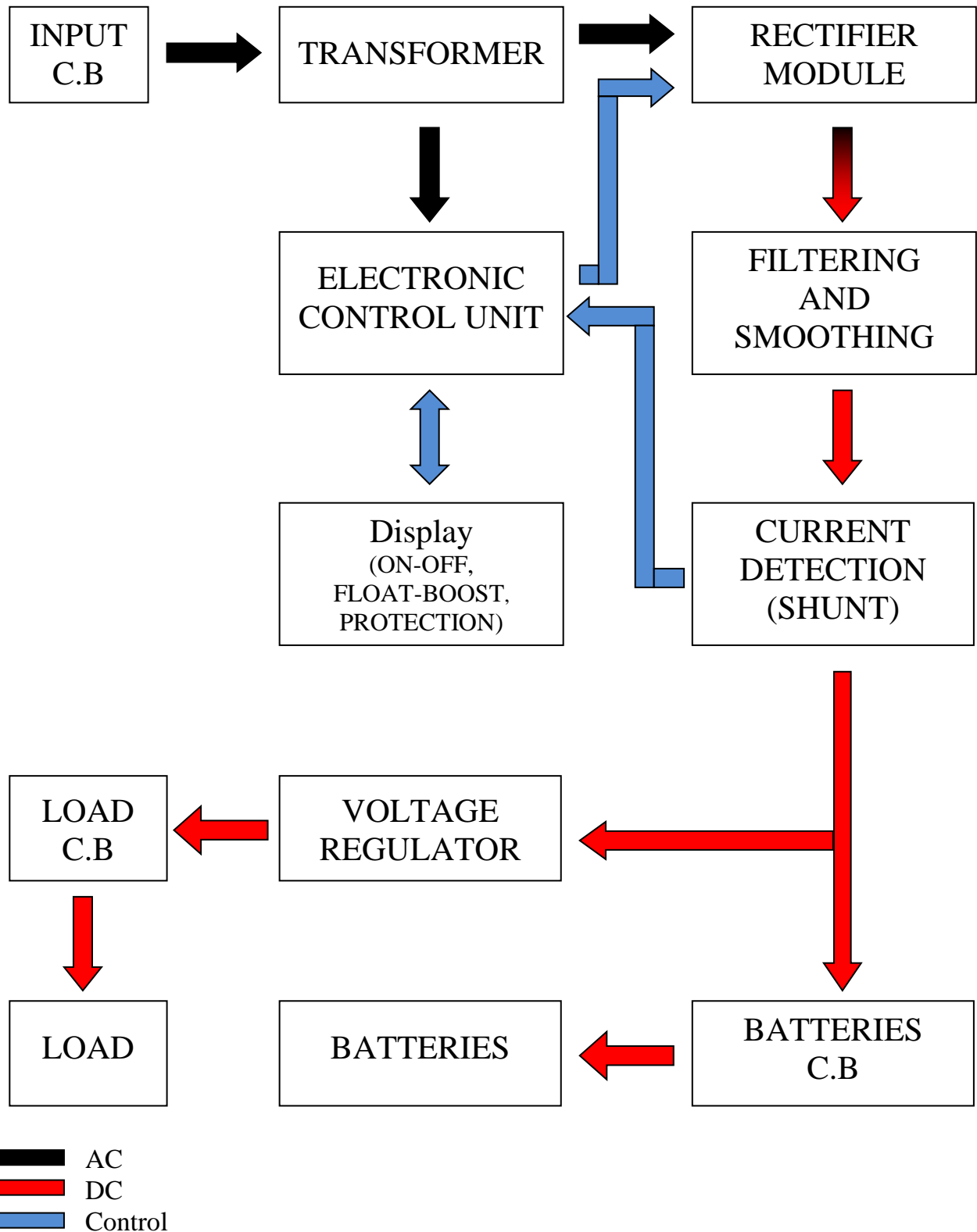
- 1 DC V - Output DC voltage measurement
- 2 DC A - Output DC current measurement
- 3 Graphical LCD display shows measurements, settings and faults.
- 4 Input AC 3 phase voltage measurement.
- 5 Output DC voltage measurement
- 6 Earth Leakage voltage measurement
- 7 Output DC current measurement
- 8 Charger mode operation (Float or Boost)
- 9 Down arrow key (decrease para. value in edition mode, set float mode in run mode)
- 10 Up arrow key (increase para. value in edition mode, set boost mode in run mode)
- 11 Left arrow key (select para. and exit in edition mode, restart in protection mode)
- 12 Right arrow key (store para. value and enter in edition mode, Ack. in protection mode)
- 13 Charger status (Power ON led) Green
- 14 Fault led (Continuous) or Boost charging (Flashing) Red

## 3.2. Inside



- 1 Thyristors modules 40A -1600V for rectifier.
- 2 C.C.U Charger control unit.
- 3 Shunt resistor 60 mV / 60 A.
- 4 P.U Power unit card.
- 5 Silicon diode 70A-400V for reverse polarity.
- 6 2-pole circuit breaker 40 A DC – Load C.B.
- 7 2-pole circuit breaker 40 A DC – Battery C.B.
- 8 Fuse 40A for reverse polarity.
- 9 Terminal connection for battery.
- 10 Terminal connection for load.
- 11 Phase sequence for phase rotation.
- 12 Transformer input contactor with coil 220 VAC and contact 40A.
- 13 3-pole circuit breaker 32A AC – Input C.B.
- 14 Neutral terminal connection.
- 15 Earth terminal connection.

### 3.3 Block diagram



## 4. Operations Procedures:



### 4.1 Start up :

First when connect power to the charger the LCD will show the following:

**AGEC**  
Optimal solution  
TEL:002-02-26230107  
Thank you for using  
our products  
**MADE IN EGYPT**

Then

TO START NORMAL  
PRESS <-ARROW  
TO START UNPROTECT  
PRESS ->ARROW

Now press left arrow  to run the charger normally with protection or press right arrow  to run the charger without protection for maintenance and change settings


The display will show “please wait” and if there are any faults, the voltage will increase in ramp shape and then show all measurements

**PLEASE WAIT**

Then

Line - 1	220 V
Line - 2	221 V
Line - 3	219 V
DC OUT	125 V
LEAKAGE	010 V
Current	020 A
Ch. Mode	Float

### 4.2 Settings :



We need to adjust the operation parameters and protection parameters so we will go to “edition mode” by pressing right arrow key  for 3 sec until the screen show “parameters setting”

**PARAMETERS  
SETTING**

Then

^ arrow to increase  
v arrow to decrease  
> arrow to store  
< arrow to select

**AC OVER  
240 V**

- To increase the AC over value press up arrow key 
- To decrease the AC over value press down arrow key 

- To store settings press right arrow key  the display will show

**STORE OK**

Then

^ arrow to increase  
 v arrow to decrease  
 > arrow to store  
 < arrow to select

---

**AC OVER  
235 V**

- To go to the next parameter press left arrow key 

^ arrow to increase  
 v arrow to decrease  
 > arrow to store  
 < arrow to select

---

**AC UNDER  
180 V**

- Do the previous steps for all parameters
- Parameters list:

Parameter	Default	Min	Max	Unit
AC over voltage	235	230	250	V
AC under voltage	180	180	200	V
DC over voltage	145	120	145	V
DC under voltage	90	80	110	V
Leakage +- Current	40	10	50	V
Float voltage	125	110	130	V
Boost voltage	135	float	140	V
Boost time	2	1	10	Min
Trip delay	5	1	10	Sec

- After adjust all parameters, the display will show:

**PARAMETERS END**

---

Right -> to repeat  
Left <- to escape

- To repeat press right arrow key  the display will show

**PARAMETERS  
SETTING**

Then

^ arrow to increase  
 v arrow to decrease  
 > arrow to store  
 < arrow to select


---

**AC OVER  
240 V**




- To exit press left arrow key  the display will show


Line - 1	220 V
Line - 2	221 V
Line - 3	219 V
DC OUT	125 V
LEAKAGE	010 V
Current	020 A
Ch. Mode	Float

- To select boost mode charging, press up arrow key  for 3 sec until the Ch. Mode become boost and red led flashing.

Line - 1	220 V
Line - 2	221 V
Line - 3	219 V
DC OUT	135 V
LEAKAGE	010 V
Current	020 A
Ch. Mode	Boost

- To select float mode charging, press down arrow key  for 3 sec until the Ch. Mode become float and red led off.



Line - 1	220 V
Line - 2	221 V
Line - 3	219 V
DC OUT	125 V
LEAKAGE	010 V
Current	020 A
Ch. Mode	float

- To load default settings, switch off the controller, press up arrow key  then switch on the controller and still press up key.

Default values were  
stored

### 4.3 Faults :

When any fault occurs the fault red led will be on, power on green led will be off and the LCD will show the fault and the input power to the transformer will be removed by tripping the feeding contactor.

- To do acknowledge and stop siren press right arrow key 
- To do reset and restart the charger press left arrow key 

- You should note that when AC phase fault (over or under) occurs, the user should wait until the AC voltage become normal and wait more 30 sec after.
- We mean with this that AC fault automatically reset

AC Input IS OVER Please wait			
Inputs	Trip	curnt	U
LINE1	220	220	V
LINE2	242	235	V
LINE3	219	219	V

AC Input IS UNDER Please wait			
Inputs	Trip	curnt	U
LINE1	220	220	V
LINE2	170	175	V
LINE3	219	219	V



- But other faults should be cleared by the user.

DC Output IS OVER to Acknowledge press ->arrow to restart press <-arrow
<b>DC OUT = 150 V</b>

DC Output IS UNDER to Acknowledge press ->arrow to restart press <-arrow
<b>DC OUT = 85 V</b>

LEAKAGE IS OVER to Acknowledge press ->arrow to restart press <-arrow
<b>LEAKAGE= +45 V</b>

LEAKAGE IS OVER to Acknowledge press ->arrow to restart press <-arrow
<b>LEAKAGE= -47 V</b>

- Press right arrow key  to stop the siren
- Press left arrow key  to reset the fault, the charger will restart again.
- If the fault reason is still exist, the controller will go to fault window but if the fault reason disappeared, the charger will operate normally.

**If there is fault in the phase sequence:**

The screen will show phase failure as below

PHASE FAILURE

## 4.4 Last fault :

To see the last fault after it has been reset by the user

➤ Press left arrow key  for 3 sec

LAST EVENT

NO TRIP

LAST EVENT

INPUT OVER

LINE\_1 = 240 V

LAST EVENT

INPUT UNDER

LINE\_1 = 170 V

LAST EVENT

DC OUT OVER

DC\_OUT = 150 V

LAST EVENT

DC OUT UNDER

DC\_OUT = 85 V

LAST EVENT

LEAKAGE

LEAKAGE = +45 V

LAST EVENT

LEAKAGE

LEAKAGE = -47 V

LAST EVENT

PHASE FALIURE

## 5. Technical Specifications:

### 5.1 Electrical Specifications:

#### Inputs:

**Voltage range** : 220 VAC/1Ø or 380 VAC/3Ø

**Frequency range** : 50 or 60 Hz

#### Outputs:

**Boost voltage range** : 110% to 155%

**Float voltage range** : 80% to 123%

e.g. Charger 110 VDC (boost 120 to 170 and float 85 to 135).

**Output current** : from 20A up to 100A depending on demand

## 5.2 Mechanical Specifications:

**Dimension** : H cm \* W cm \* L cm

Where H,W and L variable depending on the power of the charger and the client demand.

## 5.3 Mechanical Protection:

**Temperature** : 0°C to +50°C

- The Charger components placed in a steel cell with suitable size to, also cured with electrostatic paint against corrosion and atmospheric circumstances.
- The Charger enclosure is provided with suitable cooling fans.

## 5.4 Electrical Protection:

- Over current and short circuit.
- Reversing the polarity of the Batteries.
- Failure of any phase (over and under can be adjusted).
- Over and under DC voltage which can be adjusted.
- Positive and negative earth leakage which can be adjusted.

## 6. Ordering information

