










EagleTronic

EMVP – 12/24/36/48 V Multi Volt Charger Installation and User Manuals



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1. IMPORTANT SAFETY INSTRUCTION

1.1 IMPORTANT SAFETY INSTRUCTION

- (a) THIS MANUAL CONTAINS IMPORTANT SAFETY AND OPERATING INSTRUCTIONS
- (b) WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON IT IS OF THE UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ AND FOLLOW THE INSTRUCTIONS PROVIDED EXACTLY
- (c) TO REDUCE RISK OF BATTERY EXPLOSION, FOLLOW THESE INSTRUCTIONS AND THOSE MARKED ON THE BATTERY
- (d) NEVER SMOKE OR ALLOW AN OPEN SPARK OR FLAME IN THE VICINITY OF THE BATTERY OR ENGINE
- (e) USE CHARGER FOR CHARGING A LEAD-ACID BATTERY ONLY. IT IS NOT INTENDED TO SUPPLY POWER TO AN EXTRA-LOW-VOLTAGE ELECTRICAL SYSTEM OR TO CHARGE DRY-CELL BATTERIES. CHARGING DRY-CELL BATTERIES MAY CAUSE THEM TO BURST AND CAUSE INJURY TO PERSONS AND DAMAGE TO PROPERTY
- (f) NEVER CHARGE A FROZEN BATTERY
- (g) IF IT IS NECESSARY TO REMOVE BATTERY FROM VEHICLE TO CHARGE IT, ALWAYS REMOVE GROUNDED TERMINAL FROM BATTERY FIRST. MAKE SURE ALL ACCESSORIES IN THE VEHICLE ARE OFF IN ORDER TO PREVENT AN ARC
- (h) STUDY ALL BATTERY MANUFACTURER'S SPECIFIC PRECAUTIONS SUCH AS REMOVING OR NOT REMOVING CELL CAPS WHILE CHARGING AND RECOMMENDED RATES OF CHARGE
- (i) FOR A CHARGER HAVING AN OUTPUT VOLTAGE SELECTOR SWITCH, REFER TO THE CAR OWNER'S MANUAL IN ORDER TO DETERMINE THE VOLTAGE OF THE BATTERY AND TO MAKE SURE THE OUTPUT VOLTAGE IS SET AT THE CORRECT VOLTAGE. IF AN OUTPUT VOLTAGE SELECTOR SWITCH IS NOT PROVIDED, DO NOT USE THE BATTERY CHARGER UNLESS THE BATTERY VOLTAGE MATCHES THE OUTPUT VOLTAGE RATING OF THE CHARGER
- (j) NEVER PLACE THE CHARGER DIRECTLY ABOVE OR BELOW THE BATTERY BEING CHARGED; GASES OR FLUIDS FROM THE BATTERY WILL CORRODE AND DAMAGE THE CHARGER. LOCATE THE CHARGER AS FAR AWAY FROM THE BATTERY AS DC CABLES PERMIT
- (k) DO NOT OPERATE CHARGER IN A CLOSED-IN AREA OR RESTRICT VENTILATION IN ANY WAY
- (l) CONNECT AND DISCONNECT DC OUTPUT CLIPS ONLY AFTER SETTING ANY CHARGER SWITCHES TO THE OFF POSITION AND REMOVING AC CORD FROM THE ELECTRIC OUTLET. NEVER ALLOW CLIPS TO TOUCH EACH OTHER
- (m) FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:
 - (m.1) POSITION AC AND DC CORDS TO REDUCE RISK OF DAMAGE BY HOOD, DOOR, OR MOVING ENGINE PART;
 - (m.2) STAY CLEAR OF FAN BLADES, BELTS, PULLEYS, AND OTHER PARTS THAT CAN CAUSE INJURY TO PERSONS;
 - (m.3) CHECK POLARITY OF BATTERY POSTS. A POSITIVE (POS, P, +) BATTERY POST USUALLY HAS A LARGER DIAMETER THAN A NEGATIVE (NEG, N, -) POST;
 - (m.4) DETERMINE WHICH POST OF BATTERY IS GROUNDED (CONNECTED) TO THE CHASSIS. IF NEGATIVE POST IS GROUNDED TO CHASSIS (AS IN MOST VEHICLES), SEE ITEM (v). IF POSITIVE POST IS GROUNDED TO THE CHASSIS, SEE ITEM (m.6);
 - (m.5) FOR A NEGATIVE-GROUNDED VEHICLE, CONNECT THE POSITIVE (RED) CLIP FROM BATTERY CHARGER TO POSITIVE (POS, P, +) UNGROUNDED POST OF BATTERY. CONNECT THE NEGATIVE

(BLACK) CLIP TO VEHICLE CHASSIS OR ENGINE BLOCK AWAY FROM BATTERY. DO NOT CONNECT CLIP TO CARBURETOR, FUEL LINES, OR SHEET-METAL BODY PARTS. CONNECT TO A HEAVY GAUGE METAL PART OF THE FRAME OR ENGINE BLOCK;

-(m.6) FOR A POSITIVE-GROUNDED VEHICLE, CONNECT THE NEGATIVE (BLACK) CLIP FROM BATTERY CHARGER TO NEGATIVE (NEG, N, -) UNGROUNDED POST OF BATTERY. CONNECT THE POSITIVE (RED) CLIP TO VEHICLE CHASSIS OR ENGINE BLOCK AWAY FROM BATTERY. DO NOT CONNECT CLIP TO CARBURETOR, FUEL LINES, OR SHEET-METAL BODY PARTS. CONNECT TO A HEAVY GAUGE METAL PART OF THE FRAME OR ENGINE BLOCK;

-(m.7) CONNECT CHARGER AC SUPPLY CORD TO ELECTRIC OUTLET;

-(m.8) WHEN DISCONNECTING CHARGER, TURN SWITCHES TO OFF, DISCONNECT AC CORD, REMOVE CLIP FROM VEHICLE CHASSIS, AND THEN REMOVE CLIP FROM BATTERY TERMINAL

(n) FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

-(n.1) CHECK POLARITY OF BATTERY POSTS. A POSITIVE (POS, P, +) BATTERY POST USUALLY HAS A LARGER DIAMETER THAN A NEGATIVE (NEG, N, -) POST;

-(n.2) ATTACH AT LEAST A 60 CM 6-GAUGE (AWG) INSULATED BATTERY CABLE TO A NEGATIVE (NEG, N, -) BATTERY POST;

-(n.3) CONNECT THE POSITIVE (RED) CHARGER CLIP TO THE POSITIVE (POS, P, +) POST OF BATTERY;

-(n.4) POSITION YOURSELF AND THE FREE END OF CABLE AS FAR AWAY FROM BATTERY AS POSSIBLE, THEN CONNECT THE NEGATIVE (BLACK) CHARGER CLIP TO FREE END OF CABLE;

-(n.5) DO NOT FACE BATTERY WHEN MAKING FINAL CONNECTION;

-(n.6) CONNECT CHARGER AC SUPPLY CORD TO ELECTRICAL OUTLET;

-(n.7) WHEN DISCONNECTING CHARGER, ALWAYS DO SO IN REVERSE SEQUENCE OF CONNECTING PROCEDURE AND BREAK FIRST CONNECTION WHILE STANDING AS FAR AWAY FROM BATTERY AS PRACTICAL

(o) USE OF AN ADAPTER IS NOT ALLOWED IN CANADA. IF A GROUNDING TYPE RECEPTACLE IS NOT AVAILABLE, DO NOT USE THIS APPLIANCE UNTIL THE PROPER OUTLET IS INSTALLED BY A QUALIFIED ELECTRICIAN

1.2 IMPORTANT NOTES

- Only experienced and qualified personnel, knowledgeable on batteries and safety requirements involved, most perform installation and maintenance.
- Installation and wiring must comply with all the applicable local and the national electrical codes.
- Protection devices as fuses or circuit breakers, must be located on the AC mains where the charger is connected. Check the product nameplate for voltage and phase requirements.
This charger can only charge motive power batteries of flooded lead-acid type. Strictly follow all setup and operating instructions to prevent damage to the battery and hazardous conditions.



DANGER! High Voltage

- Dangerous AC and DC voltages and currents are present in these systems even when external indicators and LEDs are completely off. Before performing any maintenance, make sure that the AC power and battery are disconnected.



DANGER! Explosive Gases

- Lead-Acid batteries generate an explosive mixture of oxygen and hydrogen during the normal charging process. Never smoke or allow sparks or flames in the vicinity of batteries. Ensure a sufficient ventilation to prevent explosive gases buildup.



DANGER! Corrosive Substances

- Lead-Acid batteries contain a sulfuric acid (H_2SO_4) solution, which is capable of causing very severe skin burns and can induce permanent blindness if splashed onto eyes. Always wear correct eye and body protection when near batteries. In case of contact with eyes, flush immediately with clean water for at least 15 minutes, and seek professional medical attention immediately.
- The weight of battery chargers can crush hands and feet if care is not taken when installing and handling them. Use adequate handling equipment and install chargers in a stable location.
- This charger has been designed for indoor use only. It must be installed in a well ventilated, cool, dry and clean place. Do not expose to rain, snow, moisture, dust and corrosive substances.
- To reduce the risk of fire, install chargers on a floor of non-combustible material.
- Never place the charger directly above or below the battery being charged; gases or fluids from the battery may damage the charger. Locate the charger as far away from the battery as DC cables permit.
- The shipping pallets and all packaging materials must be removed for proper and safe operation.
- Do not block the ventilation openings of the charger.
- Do not install or operate charger if it has been dropped during transport or damaged in any way.
- Never charge a frozen battery.
- Inspect AC and DC cables for damage to the insulation. Replace damaged cables immediately, with cables of the same type and length. Do not extend the DC charging cables, as it may cause improper operation of the charger, and damage the battery.
- The manufacturer is not responsible and the warranty is void if the product is damaged due to negligence, abuse, misuse, accident, modification, alteration, tampering and faulty installation.

2. INSTALLATION



CAUTION!

The charger can be installed, configured and serviced by qualified personnel only



CAUTION!

Read and understand Chapter 2 “Important Safety Instructions” before installing, configuring, servicing or using the charger.

PRELIMINARY INSPECTION

- Unbox the charger and remove all packaging materials.
- Inspect the unit for potential damages, loose screws and missing parts.
- Ensure that the ventilation openings are not obstructed.

OPERATING CONDITIONS

Storage Temperature:	-25°C to 55°C
Operating Temperature:	-25°C to 40°C
Humidity:	0% to 70%

The charger has been designed for indoor use only. It must be installed in a well ventilated, cool, dry and clean place. Do not expose to rain, snow, moisture, dust and corrosive substances.

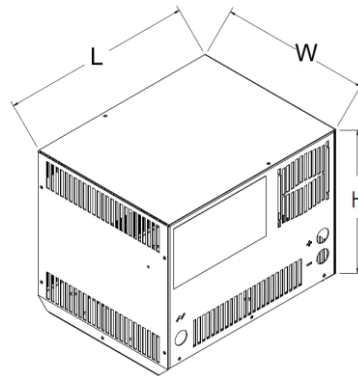
To reduce the risk of fire, install chargers on a floor of non-combustible material.

INSTALLATION OF AC INPUT CABLE and PLUG

Depending on the applicable local regulations and the electrical ratings of the chargers, certain units are supplied with AC input cable & plug included (plug-in models) and others are supplied without AC input cable and/or plug (cord connected models).

In cord-connected models, the AC input cable and plug should be installed by a qualified electrician, in accordance to the local and national electrical code, together with the proper fuses, breakers and disconnect switches.

DIMENSION



T6 cabinet mm (inches)
L366 (14.40) x W283 (11.14) x H295 (11.61)

MODEL TYPE

EMVP-25: AC input 105/120/135 Vac 60Hz
DC output:
Automatic Battery Voltage detection with Ia (constant current) charging curve.
Max output current 25A
Output voltage range 5V-68V

EMVP-50: AC input 208/220/240 Vac 60Hz
Automatic Battery Voltage detection with Ia (constant current) charging curve.
Max output current 50A
Output voltage range 5V-68V

INPUT VOLTAGE SETTINGS

The battery chargers are equipped with two adjustment blocks for AC input nominal voltage selection and charging curve optimization.

1. NOMINAL VOLTAGE SELECTION 1-phase
This setting is present on chargers designed to operate at different nominal AC input voltages, for specs 1x120VAC or 1x208/240VAC (North American specs).
A screw type terminal block is used for setting this charger.
2. CHARGING CURVE OPTIMIZATION
This setting is present on all chargers, and it's intended to compensate for AC input voltage fluctuations at the installation place.
It is recommended to check the actual value of the available AC input voltage at the installation site, and adjust the output current of the charger accordingly.
A screw type terminal block is used for this setting in all chargers: a single wire needs to be moved in these models,

RECOMMENDED OPERATING SEQUENCE

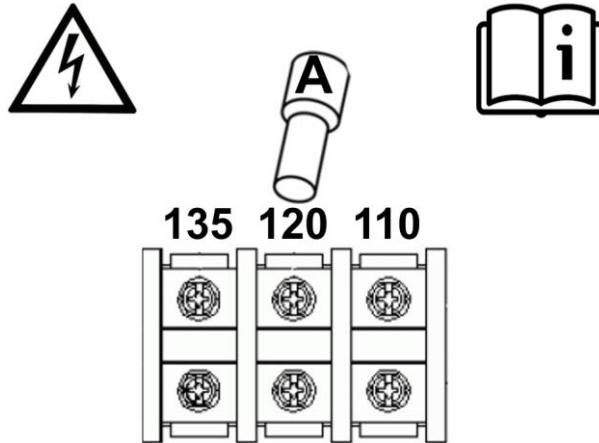
- Disconnect the charger from the AC input and from the battery.
- Measure the AC input voltage, using an adequate voltmeter.
- Open the cabinet or the front door of the charger.
- Find the terminal blocks for NOMINAL VOLTAGE SELECTION and CHARGING CURVE OPTIMIZATION.
- Make the necessary adjustments at the NOMINAL VOLTAGE SELECTION section.
- Make the necessary adjustments at the CHARGING CURVE OPTIMIZATION section.
- Double check that all connections are properly tightened.
- Close the cabinet or the front door of the charger.
- Connect the charger to the AC input.
- Connect the battery to the charger and verify the correct operation, by measuring the DC output current and DC output voltage

2.1 INSTALLATION 1-phase 1x120Vac 60Hz

2.1.1 CHARGING CURVE OPTIMIZATION

Please remove screws from the top and left/right sides in order to open the top cover of the charger.
Please set the internal adjust terminal block with correct AC voltage setting according to AC voltage detect in the AC input line

Charger model with 1 -wire only



0LSP00BA2010

AC INPUT VOLTAGE ADJUSTMENT

The adjustment of the power transformer taps is required for safe and efficient operation.

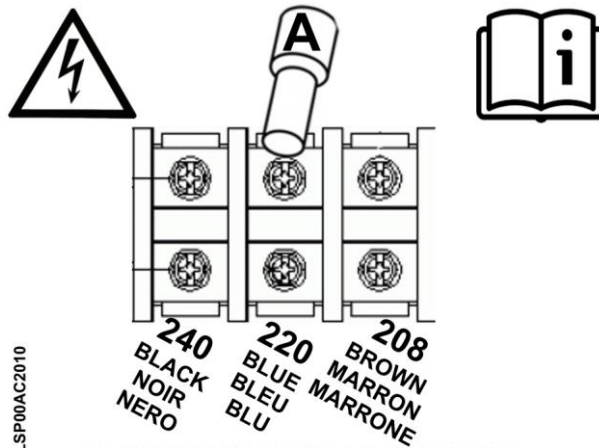
Measure the AC input voltage and adjust the setting accordingly.

2.2 INSTALLATION 1-phase 1x208/240Vac 60Hz

2.2.1 CHARGING CURVE OPTIMIZATION

Remove screws from the top and left/right sides in order to open the top cover of the charger.
Please set the internal adjust terminal block with correct AC voltage setting according to AC voltage detect in the AC input line

Charger model with 1 -wire only



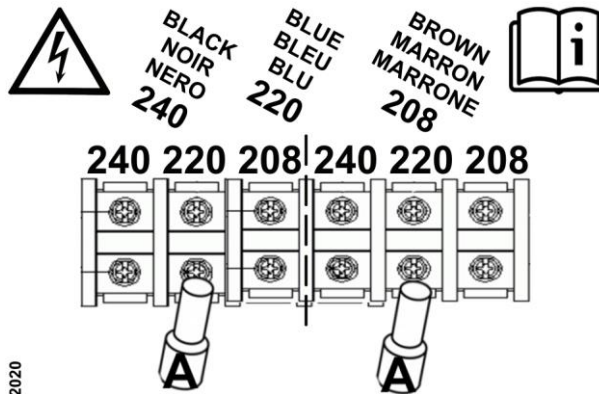
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AC INPUT VOLTAGE ADJUSTMENT

The adjustment of the power transformer taps is required for safe and efficient operation.
Measure the AC input voltage and adjust the setting accordingly.

OPTIMISATION DE LA COURBE DE CHARGE

Charger model with 2 -wires



0LSP00AC2020

AC INPUT VOLTAGE ADJUSTMENT

The adjustment of the power transformer taps is required for safe and efficient operation.
Measure the AC input voltage and adjust the setting accordingly.

OPTIMISATION DE LA COURBE DE CHARGE

3. OPERATION

PROGRAMMING SEQUENCE

A) Connect the Charger to the AC input and press the ON/OFF Main Switch.
The display shows the message:

**Charger Ready
No Battery**

B) Connect the Battery
the battery can be connected without any pre-setting of the charger.
After the battery connection and the recognition of the battery by the control board, the display shows alternatively these messages for 10 seconds:

**PRSS BTTN RE-START
TO CHANGE PROGRAM**

**...WAITING . .
CHARGER SETTING**

If the push-button “RE-START” is not pressed within 10 seconds period, the charge begins automatically, and the charge parameters are set automatically, following these rules:

- The Maximum time limit is the same that was programmed in the previous charge cycle.
The factory setting for this parameter is 8 h.
- The Ah limit is the same that was programmed in the previous charge cycle.
The factory setting for this parameter is 600 Ah.
- The Maximum voltage limit is calculated as the 140% of the measured battery voltage.

If the button “RE-START” is pressed during the 10 seconds period, the display visualizes the measured battery voltage:

**Battery Voltage
xx.xx V**

Where “xx.xx” is the voltage of the battery connected.

C) Parameter: [Maximum time limit]

Press button “EQ” The display shows the next parameter available

**Set Charge Time
12 Hours**

By pushing the push-buttons “EQ” and “RE-START”, set the desired charge time in the following range:

Min programmable time: 1 h.
Maximum programmable time: 30 h.

By pushing the push-button “MULTI FUNC”, the value is saved.

D) Parameter: [Ah limit]

Press button "EQ" The display shows the next parameter available

**Set Ah Limit
2000 Ah**

By pushing the push-buttons "EQ" and "RE-START", set the desired Ah limit in the following range:

Min programmable Ah: 5 Ah.
Maximum programmable Ah: 3000 Ah.

By pushing the push-button "MULTI FUNC", the value is saved.

E) Parameter: [Maximum voltage limit]

Press button "EQ" The display shows the next parameter available

**Set VOLT Limit
xx.xx V**

By pushing the push-buttons "EQ" and "RE-START", set the desired max voltage limit in the following range:

Min programmable "max" battery voltage: 1 V.
Maximum programmable "max" battery voltage: 70 V.
Default value is 140% of the measured battery voltage.

By pushing the push-button "MULTI FUNC", the value is saved.

F) Scroll program parameters [Charging process Begin]

Press button "EQ" The display shows the next stage available

**Start Charge
PRSS EQ & RESTRT**

By pushing the push-buttons together "EQ" and "RE-START", the charge process begins.

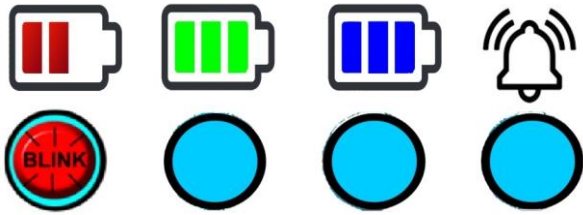
CHARGING PROCESS BOARD

At the connection of the battery, if the battery and the AC input are properly connected, the charger cycle starts automatically.

According to the internal settings, the charge DC current follows the programmed curve.
When the charger output is active and a DC output current is present, LEDs blink.

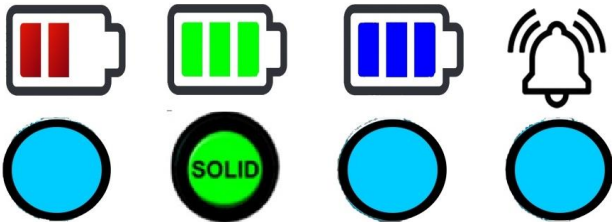
Colour RED (blink)
During the charging.

During the charging, the LED RED blinks and the Alarm/Warning LED is off.
In this condition the output current of the charger is present



Charging

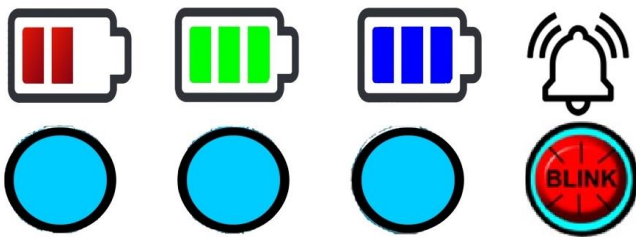
When the Charge is completed the control board stops the charge process. The LED GREEN is solid; the charge process is successfully completed.



End of the charge process

WARNING SIGNALS

The ALARM/WARNING RED LED will start blinking in these cases: Manual Stop



Warning Events

END OF CHARGING PROCESS

If the charge ends because the MAX PROGRAMMED CAPACITY is reached, the display shows the following message:

Volts	LIMIT.AH
Ah	Time

If the charge ends because the MAXIMUM PROGRAMMED VOLTAGE is reached, the display shows the following message:

Volts	LIM.VOLT
Ah	Time

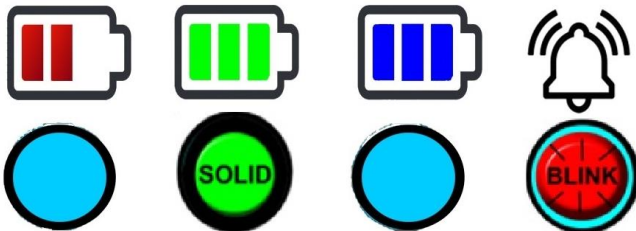
MANUAL STOP



DANGER!

Do not disconnect the battery while it's being charged! RISK OF EXPLOSION!
 Always stop the charger by pushing the STOP button, before disconnecting the battery.
 The ALAMR/WARNING LED needs to be in solid light, before to disconnect the battery.

Before to disconnect the battery, please check that leds RED, GREEN are not blinking.
 If the charger is providing current, it is recommended to press button "STOP/RE-START" in order to interrupt the charging.
 When the ALARM/WARNING LED blinks and the GREEN LED is solid, it means that the user has properly interrupted the charging or the equalization cycle by pressing the button "STOP/RE-START".
 If the user will press again the button "STOP/RE-START", the charger will restart the cycle from where it left off.



Stop Push-button pressed during the charge cycle or during an equalization cycle

If, during the charge, the button "RE-START" is pressed, the display gives the message (for 5 seconds):

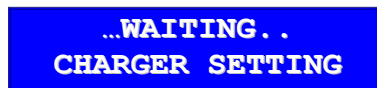


After 5 secs, the control board goes to the beginning of the programming sequence.

B) Connect the Battery

the battery can be connected without any pre-setting of the charger.

After the battery connection and the recognition of the battery by the control board, the display shows alternatively these messages for 10 seconds:



It is now possible follow again steps C)..D) .set new internal parameters and begin a new charging process

HOT DISCONNECTION



DANGER!

Do not disconnect the battery while it's being charged! RISK OF EXPLOSION!
Always stop the charger by pushing the STOP button, before disconnecting the battery.

When the RED, GREEN led blinks, the charger is active. Do not disconnect the battery!
When the RED, GREEN led shows a SOLID colour, it is possible to disconnect the battery.

According to the internal settings, the charge DC current follows the programmed curve.
When the charger output is active and a DC output current is present, LEDs blink.

OVER CURRENT PROTECTION

If, during the charge, the current exceeds a max value (programmable with password) for more than 5 seconds, the charge process stops and the display shows this message

Volts	MAX.CURR
Ah	Time

In this case it's advisable to CHECK THE AC VOLTAGE SETTINGS of the charger, maybe the setting is wrong the voltage taps selected is too low.

UNDER CURRENT PROTECTION

If, during the charge, the current exceeds a min value (programmable with password) for more than 5 seconds, the charge process stops and the display shows this message

Volts	MIN.CURR
Ah	Time

In this case it's advisable to CHECK THE AC VOLTAGE SETTINGS of the charger, maybe the setting is wrong the voltage taps selected is too high.

AC INPUT ERROR

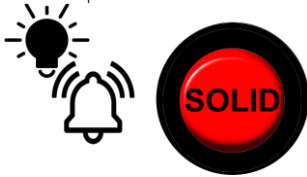
If, during the charge, the current is ZERO for more than 5 seconds, the charge process stops and the display shows this message:

CHECK DC FUSE AND AC INPUT

In this case it's advisable to CHECK:DC FUSE, AC INPUT and VOLTAGE SETTINGS

4. CONTROL BOARD ALARMS AND TROUBLESHOOTING

If the Alarm/Warning LED is solid means that the charge cycle or an Equalization cycle has been interrupted due to an alarm.



The display shows the cause of the alarm:

- Battery voltage too high
- Exceeded charging Time Out
- Battery Temperature too high
- Battery type mismatch, Charging current too low or wrong AC Input setting, Charging current too high

4.1 BATTERY VOLTAGE TOO HIGH

The battery voltage reached during the charging cycle or during the equalization cycle is too high, the charge cycle is terminated.

In order to fix this issue, it will be important check the battery status, evaluate voltage of every cell and check intercell connections.

It is recommended to check also the power connections in the DC Plug and DC Socket and in the charger inner parts, in order to identify if the torque of a power connection is insufficient.

The display shows:

CHARGING STOP
HIGH VOLTAGE

<i>ISSUE</i>	<i>CAUSES</i>	<i>FIX</i>
Alarms appear. During the charging cycle	Battery sulphated	Repair battery.
	Battery nominal voltage is not correct	Check compatibility between battery voltage and charger voltage
	One or more cells are shorted.	Repair battery.

4.2 TIME OUT

The battery voltage hasn't reached the gassing point within 12 hours of charge. Please check the battery nominal voltage and the charger nominal matching. Please check the AC input mains value and check the internal AC input setting of the charger. it will be important check the battery status, evaluate voltage of every cell and check intercell connections.

The display shows:
 CHARGING STOP
 80% NOT REACHED

<i>ISSUE</i>	<i>CAUSES</i>	<i>FIX</i>
Alarms appear. During the charging cycle	Wrong AC input settings.	Adjust AC input settings to lower voltage.
	Battery nominal voltage is not correct	Check compatibility between battery voltage and charger voltage
	Output fuse blown.	Replace output fuse and adjust AC input setting.
	One or more cells are shorted.	Repair battery.

4.3 TEMPERATURE TOO HIGH

CASE A) Temperature sensor installed on the battery

If a temperature sensor has been installed on the battery. During normal operation, if the control board detects an high temperature condition on the battery sensor, the charger will interrupt the charge and apply a cooling pause, at the end of the pause, the charger will restart from the point where it stopped.

CASE B) Temperature sensor installed on the charger

If a temperature sensor has been installed inside or outside the charger. During normal operation, if the control board detects an high temperature condition on the NTC100 sensor, the charger will interrupt the charge and apply a cooling pause, at the end of the pause, the charger will restart from the point where it stopped.

The display shows:
 CHARGING STOP
 HIGH TEMPERATURE

<i>ISSUE</i>	<i>CAUSES</i>	<i>FIX</i>
Alarms appear. During the charging cycle	AC input mains is too high or it is too low	Please check AC mains and the charger AC input setting
	Charger ventilation slots obstructed or bad location	Please check charger installation and location, in order to allow ventilation. Remove objects which may obstruct slots.
	Battery high temperature	Please check battery installation and battery location, in order to allow ventilation. Please evaluate to reduce the charger current

4.4 BATTERY TYPE MISMATCH

CASE A) BATTERY NOMINAL VOLTAGE LOW

The battery voltage is too low: the charge cycle doesn't begin.

CASE B) BATTERY NOMINAL VOLTAGE HIGH

The battery voltage is too high: the charge cycle doesn't begin.

CASE C) BATTERY NOMINAL VOLTAGE ERROR

The charge current is too high: the charger shuts down immediately.

The display shows:

CHARGING STOP

NOMINAL VOLTAGE, CURRENT TOO HIGH, HIGH VOLTAGE, LOW VOLTAGE, CHECK OUTPUT FUSE

<i>ISSUE</i>	<i>CAUSES</i>	<i>FIX</i>
Alarms appear. The charger is not starting	Battery not connected properly.	Check battery connectors/harness.
	Output cables reversed.	Check charger, connectors and battery polarities. Output fuse is probably blown.
	Battery nominal voltage is not correct	Check compatibility between battery voltage and charger voltage