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Switzerland

LE25.0

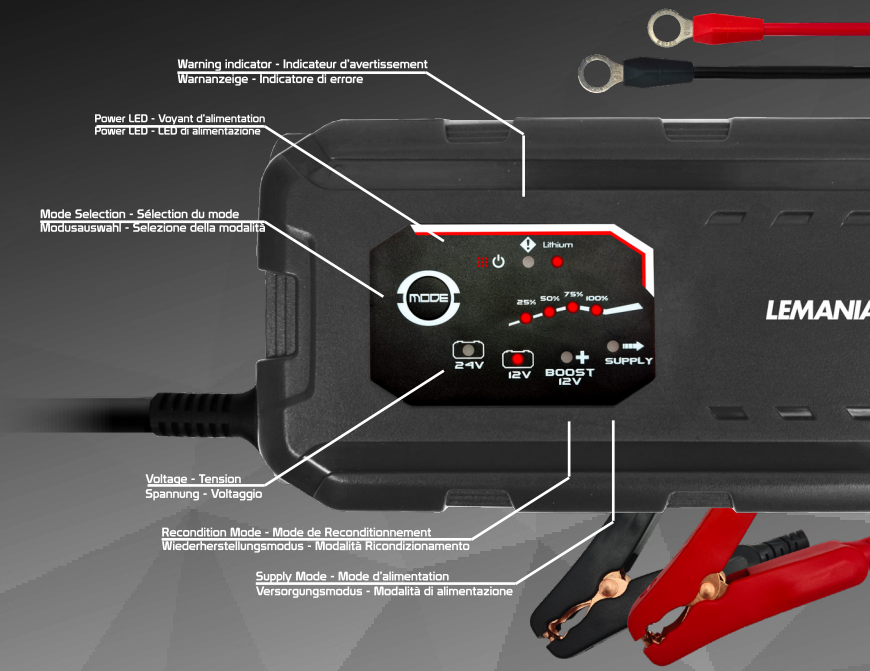
12/24V
25.0A

CHARGE – MAINTAIN – SUPPLY – RESTORE

INTRODUCTION

Thank you for purchasing this LEM1224250 Smart Battery Charger. This charger is compatible with most SLA batteries with capacities ranging from 50Ah-450Ah in 12V or 25Ah-230Ah in 24V, it may also be used with some WET, GEL and AGM etc as well as with 50Ah-230Ah LiFePo4 batteries. Before charging a battery, please refer to your batteries user manual or the manufacturers charging guidelines. Using a 7 step microprocessor controlled charging program, batteries can be recharged to almost 100% of their capacity and the charger can be left connected to the battery in maintenance mode for extended periods. The 16V boost 'recondition' mode can restore life into 'dead' batteries and help to break up the sulphate inside increasing their performance and capacity. The processor controls both the charging programs as well as the safety of the device as it waits for the battery to be correctly connected before charging.

FEATURES



WARNING

PLEASE READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE USING THE SMART CHARGER

WARNING! DO NOT ATTEMPT TO CHARGE A NON-RECHARGEABLE BATTERY

CAUTION:

-THESE BATTERY CHARGERS MUST BE USED ON THE HORIZONTAL FLOOR OR TABLE IN WARNING.

-NEVER ATTEMPT CHARGE BATTERIES THAT ARE NOT COMPATIBLE WITH THE CHARGER.

-DO NOT ATTEMPT TO USE THE CHARGER TO RECHARGE DRY OR PRIMARY CELLS OR BATTERIES THAT ARE NOT INTENDED FOR RECHARGING. DOING SO COULD RESULT IN FIRE OR EXPLOSIONS THAT MAY CAUSE PERSONAL INJURY OR PROPERTY DAMAGE.

-ALWAYS ENSURE THAT THE OUTPUT VOLTAGE AND CURRENT SPECIFICATIONS MATCH THE APPROPRIATE BATTERY TYPE.

-NEVER USE THE CHARGER UNDER REVERSE POLARITY CONDITIONS.

-SUITABLE FOR INDOOR USE ONLY.

-THE MANUFACTURER ASSUMES NO LIABILITY FOR DAMAGE RESULTING FROM UNAUTHORIZED OR INCORRECT USE.

-DO NOT ATTEMPT TO CHARGE MORE THAN ONE BATTERY AT A TIME IN 12V.

-DO NOT ATTEMPT TO CHARGE FROZEN BATTERIES, DOING SO CAN BE EXTREMELY DANGEROUS.

-DO NOT ATTEMPT TO CHARGE BATTERIES THAT SHOW SIGNS OF DAMAGE AS THIS MAY CAUSE FIRES OR EXPLOSIONS.

-DO NOT ATTEMPT TO USE THE CHARGER IN DAMP CONDITIONS, SUBMERGE OR EXPOSE THE DEVICE TO RUNNING WATER OR RAIN.

-ONLY USE THE CHARGER IN A WELL-VENTILATED

ENVIRONMENT, DO NOT ATTEMPT TO CHARGE BATTERIES IN SEALED OR PRESSURIZED AREAS.
-NEVER ATTEMPT TO USE THE CHARGER NEAR VOLATILE OR FLAMMABLE SUBSTANCES OR WHILE IT IS PLACED ON A BATTERY AS GASSES RELEASED DURING CHARGING MAY CAUSE EXPLOSIONS OR DAMAGE TO THE CHARGER.
-DO NOT PLACE THE CHARGER ON WARM SURFACES OR COVER THE CHARGER OR BATTERY DURING CHARGING AND ENSURE THAT ALL VENTILATION SLOTS ARE CLEAR DURING OPERATION.
-DO NOT ATTEMPT TO START A VEHICLE WHILE THE CHARGER IS CONNECTED.
-BEFORE CARRYING OUT MAINTENANCE OR WORK WHEN YOU ARE NOT USING THE CHARGER ENSURE THAT IT IS DISCONNECTED.
-PREVENT SHORT CIRCUITS AND MAKE SURE NOT TO BRIDGE TERMINAL CONNECTIONS WHILE CONNECTING THE CHARGER TO THE BATTERY.
-CONNECT THE CHARGER TO THE BATTERY TERMINALS ONLY IN ACCORDANCE WITH THE INSTRUCTIONS. NEVER CONNECT THE CHARGER IN A DIFFERENT OR REVERSE ORDER AND MAKE SURE TO USE APPROPRIATE TOOLS WHEN LOOSENING OR REMOVING TERMINAL CONNECTORS.
-DO NOT TOUCH THE BATTERY TERMINALS, CLAMPS, OR RING TERMINALS WHEN THE CHARGER IS CONNECTED TO A POWER SOURCE.
-BEFORE CONNECTING THE CHARGER TO A VEHICLE ENSURE THAT THE BATTERY HAS BEEN DISCONNECTED. REMOVING THE BATTERY DURING CHARGING IS RECOMMENDED.
-IF THE BATTERY IS NOT REMOVED FROM THE VEHICLE OR DISCONNECTED THEN:
THE BATTERY TERMINAL NOT CONNECTED TO THE CHASSIS

HAS TO BE CONNECTED FIRST. THE OTHER CONNECTION IS TO BE MADE TO THE CHASSIS, REMOTE FROM THE BATTERY AND FUEL LINES. THE BATTERY CHARGER IS THEN TO BE CONNECTED TO THE MAINS SUPPLY.
AFTER CHARGING, DISCONNECT THE BATTERY CHARGER FROM THE MAINS SUPPLY. THEN REMOVE THE CHASSIS CONNECTION AND THEN THE BATTERY CONNECTION.
-DO NOT ATTEMPT TO USE THE CHARGER IF IT HAS SUFFERED A HARD KNOCK OR FALL, IF IT APPEARS TO BE DAMAGED OR MALFUNCTIONING IN ANY WAY. CONTACT YOUR DISTRIBUTOR FOR FURTHER ASSISTANCE.
-DO NOT UNDER ANY CIRCUMSTANCES ATTEMPT TO DISASSEMBLE OR REPAIR THE CHARGER YOURSELF AND CONTACT YOUR DISTRIBUTOR IF ANY ASSISTANCE IS REQUIRED. DO NOT INSERT FOREIGN OBJECTS INTO THE CHARGER
-BEFORE USING THE CHARGER ENSURE THAT IT IS IN GOOD CONDITION AND HAS NOT BEEN DAMAGED IN ANY WAY.
-DO NOT LIFT OR CARRY THE DEVICE BY PULLING ON THE POWER CABLES AND KEEP THE POWER CABLES AWAY FROM SOURCES OF HEAT, OIL OR SHARP EDGES DURING CHARGING AND STORAGE.
-IF A POWER CABLE IS DAMAGED, DO NOT USE THE CHARGER AND CONTACT YOUR DISTRIBUTOR FOR FURTHER ASSISTANCE.
-WHEN USING OR STORING THE CHARGER, KEEP THE CHARGER OUT OF REACH OF CHILDREN OR PETS.
-THE CHARGER CAN BE USED BY CHILDREN AGED FROM 8 YEARS AND ABOVE AND BY PERSONS WITH REDUCED PHYSICAL SENSORY OR MENTAL CAPABILITIES OR LACK OF EXPERIENCE AND KNOWLEDGE IF THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING THE USE

OF THE CHARGER IN A SAFE WAY AND UNDERSTAND THE HAZARDS INVOLVED.
-CHILDREN SHALL NOT PLAY WITH THE APPLIANCE. CLEANING AND USER MAINTENANCE SHALL NOT BE MADE BY CHILDREN WITHOUT SUPERVISION.
-STORE THE CHARGER IN A DRY, CLEAN, WELL-VENTILATED ENVIRONMENT AND ENSURE CABLES ARE STORED SAFELY AND CORRECTLY.
-IF POSSIBLE DO NOT USE EXTENSION CABLES. IMPROPER USE OF EXTENSION CABLES CAN RESULT IN FIRE OR ELECTRICAL SHOCKS. IF USE OF AN EXTENSION CABLE IS ABSOLUTELY NECESSARY ENSURE THAT THE CONNECTORS ARE OF THE SAME SHAPE, SIZE AND NUMBER OF PINS AS THE CHARGER. ENSURE THAT THE CABLE IS IN GOOD CONDITION, IS NOT FRAYED OR HAS EXPOSED WIRING AND IS OF GOOD QUALITY. -BATTERIES CONTAIN LEAD AND ACID THAT CAN BE DANGEROUS IN CONTACT WITH SKIN OR EYES CAUSING BURNS OR BLINDNESS. LEAD IS DANGEROUS DURING PREGNANCY.
-IN CASE OF CONTACT WITH SKIN RINSE THE AREA IMMEDIATELY WITH WATER AND NEUTRALIZE THE ACID WITH A MILD ALKALINE SOLUTION SUCH AS MILK. IF EXPOSED TO ELECTROLYTE, RINSE THE AREA WITH A STRONG STREAM OF WATER. IN ALL CIRCUMSTANCES SEEK THE ASSISTANCE OF A MEDICAL PROFESSIONAL.
-IN CASE OF CONTACT WITH THE EYES, RINSE WITH CLEAN WATER FOR AT LEAST 10 MINUTES WHILE WAITING FOR THE ASSISTANCE OF A MEDICAL PROFESSIONAL.
-TO PREVENT ELECTROSTATIC DISCHARGES DO NOT USE THE CHARGER WHILE WEARING CLOTHING MADE OF SYNTHETIC MATERIALS.

SPECIFICATIONS

Input Voltage	220-240VAC, 50/60Hz.
Power Consumption	460W
Input Current	4A RMS. Max
Cut off Voltage	28.8V±0.6V or 28.4V±0.6V or 14.4V±0.29V or 14.2±0.29V or 13.6V±0.5V or 16.5V±0.5V
Charging Current	25A±10% or 12.5A±10% or 5.0A±10% or 1.5A±0.5A
Trickle Current	1.5A±0.5A, interval ±1second
Battery Type (Lead Acid)	12V Lead acid battery: 50Ah~450Ah; 24V Lead acid battery: 25Ah~230Ah.
Battery Type (LiFePo4)	12V Lithium: 50Ah~230A 24V Lithium: 25Ah~230Ah.
IP Rating	IPX4
Operating Temperature	0°c - +40°c (+10°c - +30°c LiFePo4)
Fuse	5A

LED ON 	POWER ON/STANDBY MODE
LED ON 	MODE 1 - CHARGING 24V
LED ON 	MODE 1.1 - LiFePo4 24V
LED ON 	MODE 2 - CHARGING 12V
LED ON 	MODE 2.1 - LiFePo4 12V
LED ON 	MODE 3 - SUPPLY
LED FLASHING FAST 	MODE 4 - BOOST
LED FLASHING SLOW 	MODE 4 - BOOST IN PROGRESS
LED ON 	MODE 4 - BOOST COMPLETED

MODES

Charging Function:
All modes are intended to charge batteries with a capacities ranging from 50-450Ah (12V battery) 25-230Ah (24V battery) under normal conditions

Charge LED – These four LEDs are labeled left to right 25%, 50%, 75%, 100%. These LEDs indicate the state of charge once the battery is charged and the 100% LED is illuminated the charger will go into maintenance mode automatically (except for LiFePo4).

STAND BY
When connected to the mains power the charger stays in standby mode until a battery is connected or a program is selected by the user.

Battery Voltage Detection
•Once the charger is connected to both the battery and the AC power input it will run an initial test to determine the voltage of the connected battery.

MODE 1 (28.8V/12.5A) 24V Battery
Connect the positive and negative clamps to the terminals of the battery, ensure that the polarity is correct, then connect the AC power and press the MODE button to select . If no other action is taken the charger will start the charging process at 12.5A±10%. The 100% LED will illuminate when the battery is fully charged to 28.8V±0.6V and the charger will go into maintenance mode automatically and keep the battery fully charged using a <1.0A trickle current and 1.5A maintenance charge.

MODE 1.1 (28.4V/12.5A) 24V LiFePo4 Battery
To charge a LiFePo4 battery connect the positive and negative clamps to the terminals of the battery, ensure that the polarity is correct, then press the MODE button until both and are illuminated. If no further action is taken the charger will automatically start to charge with a current of 12.5A±10%.at 28.4V. Once the battery is fully charged to 28.4V±0.6V the charger will stop the charging process.

MODE 2 (14.4V/25A) 12V Battery
Connect the positive and negative clamps to the terminals of the battery, ensure that the polarity is correct, then connect the AC power and press the MODE button to select . If no other action is taken the charger will start the charging process at 25A±10% The 100% LED will illuminate when the battery is fully charged to 14.4V±0.29V and the charger will go into maintenance mode automatically and keep the battery fully charged using a <1.0A trickle current and 1.5A maintenance charge.

MODE 2.1 (14.2V/25A) 12V LiFePo4 Battery
To charge a LiFePo4 battery connect the positive and negative clamps to the terminals of the battery, ensure that the polarity is correct, then press the MODE button until both and are illuminated. If no further action is taken the charger will automatically start to

charge with a current of 25A±10%.at 14.2V. Once the battery is fully charged to 14.2V±0.29V the charger will stop the charging process.

MODE 3 13.6V SUPPLY (13.6V/5.0A)
With the charger connected to the mains supply but not to any battery or load hold the MODE button for more than 3 seconds, the SUPPLY LED will illuminate. Connect the positive and negative clamps to the terminals of the battery or load, ensure that the polarity is correct and the charger will start the supply program at 13.6V±0.5V constant voltage and 5A±10% constant current. If the voltage drops to 12.0V or below, the charger will automatically cut off and return to standby mode.

MODE 4 16V boost (16V/1.5A) 12V battery only CAUTION: LEAD ACID BATTERY ONLY
This mode is used to recondition batteries with a capacity from 50-450Ah under normal conditions. Warning! The high voltage applied in this mode may cause some water loss, for optimal results the battery must be disconnected from the vehicle. Connect the positive and negative clamps to the terminals of the battery, ensure that the polarity is correct, then connect the AC power and press the MODE button to select BOOST 12V. If no other action is taken the charger will then start the reconditioning program at 16.5V±0.5V and 1.5A±0.5A. If the battery is deeply discharged and sulphated the reconditioning program may continue for up to 4 hours at which point if the battery is not able to reach 13.6V the process will terminate. If the battery reaches 13.6V then the charger will automatically switch to the 12V charging mode.

Pulse Rescue Dead Battery (LEAD ACID BATTERY ONLY)
At the start of the charging program the charger detects the battery voltage and automatically starts the pulse charging program if the voltage is between 4.5V±0.29V to 10.5V±0.29V (12V battery) or 15V±0.5V to 21V±0.42V (24V battery).This process will continue until the battery voltage reaches 10.5V±0.29V (12V battery) or 21V±0.42V (24V battery), once the battery reaches these levels the charger will continue according to the selected program.

MODES

Abnormality Protection
The charger will automatically protect itself if it detects abnormal conditions such as, short circuit, 12V battery voltage below 4.5±0.5V, 24V battery voltage below 15V±0.25V, open circuit or reverse polarity connection. When any of these conditions are detected the charger will return to standby mode . In addition to this will illuminate if the connections to the battery are reversed.

Overheat protection
During the charging process if the charger becomes too hot for some reason it will reduce its output to protect itself from damage.

Changing between modes.
To change mode, press the MODE button until the desired. Once the mode button is pressed, after 0.5 seconds the charger will change its mode.
a. 12V batteries are compatible with the following modes: Standby, Mode 2, Mode 2.1, Mode 3 and Mode 4. The charger will cycle in this order. Please note that to access model 3 the charger must be powered, not connected to the battery and the mode button must be pressed for 3 seconds. Once this is complete the charger can be connected to the battery, ensuring that the connections are correct as polarity protection is disabled.
b. 24V batteries are compatible with the following modes: Standby, Mode1. Mode 1.1. The Charger will cycle in this order.
If a battery is not disconnected from the charger once fully charged, the charger will remain in the trickle charging mode even if the user attempts to change the mode manually. This protects fully charged batteries from damage.

Charging status indication

LED 25%	LED 50%	LED 75%	LED 100%	Charging Status
Flashing	OFF	OFF	OFF	Under 25%
ON	Flashing	OFF	OFF	Under 50%
ON	ON	Flashing	OFF	Under 75%
ON	ON	ON	Flashing	Under 100%
ON	ON	ON	ON	Fully Charged

Memory function
This Smart Battery charger has a unique memory function (not applicable to the 13.6V Supply and 16V boost mode). The charger returns to last selected mode automatically when power is switched on after a cut in AC power.

OPERATING INSTRUCTIONS

Please read these instructions carefully before using the smart charger.

1. Before attempting to charge a battery, ensure that the terminals are clean. Remove any corrosion if present and make sure that any of the removed materiel does not contact the eyes.
2. Ensure that the area around the battery is well ventilated as explosive gasses may be released during charging. There must be no sources of ignition, sparking wires, open flames or other anywhere near the battery.
3. If the battery is of the AutoFill type, manufactured by Dagenite or Exide for example, the glass halls and long filler cap must be left in place during charging.
4. Connect the clamps in the following order
a. First connect the positive clamp (red color) to the positive terminal post.
b. Second connect the negative clamp (black color) to the negative terminal post or to the chassis remote from the battery and fuel line.
5. Connect the charger to the mains supply, it will turn on, detect the battery voltage, and start the charging process automatically. If the clamps are incorrectly connected the fault indicator will illuminate, repeat step 4 correctly.
6. If a mode other than charging is required, press the mode button until the desired mode is selected. Note: to select the 13.6V continuous supply mode the mode button must be held for more than 3 seconds when the clamps are not connected to the battery Warning! Reverse polarity protection is disabled in this mode.
7. If a battery is not fully charged after a maximum of 75 hours, the charger must be disconnected manually.
8. When the charger is no longer needed disconnect the battery charger from the mains supply then remove the chassis or negative post connection and finally the positive post connection. Store the charger safely.

WARRANTY INFORMATION:
The warranty of this unit depends on the conditions granted by your retailer. The manufacturer shall have no liability whatsoever at any time for any warranty, personal injury or property damage. Transport is never included.
Please dispose of the packaging in a responsible manner. It should be recycled by your local amenity or placed in appropriate recycling bins. Never dispose of electrical equipment or batteries in your domestic waste. Have them recycled by your retailer or your local amenity.

ADVANCED DIAGNOSTICS

The Smart Charger will indicate error conditions to the user by a series of blinking LED lights. Based on the order and frequency the user will be able to ascertain the potential reason for the error condition. The table below describes the charger's diagnostic and error conditions.

SEQUENCE	MESSAGE
Error LED, 25%, 50%, 75% & 100% LEDs: All LEDs will flash on and off at a 5hz interval.	Battery will not hold charge: 1.The battery may have been damaged, deeply discharged or drained 2.The batteries actual capacity is too low (nominal capacity<50Ah 12V or 25Ah 24V) 3.Nominal capacity of battery meets with the specified range, but the actual capacity is far below the specified capacity range 4.Internal resistance of the battery is too high.
	Bulk charge timeout 1.The batteries capacity is too high, actual capacity>>450Ah 12V or 230Ah 24V 2.Battery carry high power load during charging, battery can't be fully charged by bulk charge timeout charging, 3.Possible Battery plate short circuit.
Failure LED is "on" solid; no blinking	Reverse polarity
Standby Mode	The battery is under 4.5±0.1V in any mode (except for Supply Mode)

Abnormality protection

In the case of a short circuit, open circuit, reversed polarity connection or battery voltage below 4.5V±0.10V (for 12V battery), or 15V±0.5V (for 24V battery), the charger will automatically turn off the charge or supply program and will immediately reset the system back to standby mode to avoid damage to the battery or charger. Under reverse polarity connection conditions, the LED will illuminate to indicate an error.

Temperature protection

During the charging program, if the charger is too hot, it will reduce the output power or cut off the power automatically to protect itself from damage.

ADVANCED DIAGNOSTICS

Q: If the battery does not reach a voltage of 13,6V after 4 hours of BOOST CHARGE, the LED keeps blinking. Why?
A: If the LED keeps blinking it is to notify the user of an abnormal battery state. The battery cannot be recovered even after Boost Charge.

Q: After 4 hours of BOOST CHARGE, if the battery can reach 13,6V. Does the charger automatically switch to the NORMAL CHARGE mode? Or should it be done manually?
A: If the battery is recovered after the BOOST CHARGE, it will automatically continue to charge following a Normal Charge program.

Q: Can the charger be connected to a small capacity 12V battery of 25- 40Ah? What will happen, can the charger be used to recharge smaller batteries?
A: As the max output of the charge is 25A, if it is connected to a small capacity battery, the battery voltage will rise quickly due to the fast absorption and internal resistance. The charger may indicate that the battery is fully charged or abnormal even if not fully charged. The 7A charger would be more suited for these smaller batteries.

Q: After connecting the charger to the battery, after a few seconds or minutes the charger indicates that it is fully charged, and all LEDs are ON. Is the battery already fully charged?
A: If such a battery has normal characteristics however the actual capacity is very low, the charger will indicate it is fully charged in a short period of time shortly even the actual capacity is still very low. Try the Boost mode for 4 hours.

Q: If the charger is connected to a large battery (120-250Ah) and is recharging correctly, the 20%, 50%, 75% LEDs are ON, and the 100% is blinking. The Charger has even been left overnight. What might be the problem? Is the charger not charging the battery or is the battery not able to be charged to 100%?
A: If the light 100% is blinking, the charger is on the absorption step. The charging current in absorption step drops to ~1.5A. As such if the battery capacity is large / has a high self-discharge rate / the battery is loaded, the absorption step can take a long time. In effect the battery is already charged to more than 80% and can be used normally.

Q: If the charger is connected to a large 24V battery and starts recharging automatically but recognizes the battery as 12V. Why does it start in 12V?
A: The charger has an inbuilt ability to detect 12V or 24V batteries. It will make sure that 12V batteries are not charged in 24V, to prevent damage from occurring. Under special conditions, a 24V battery may mislead the charger to recognize it as a 12V battery: if it is overly discharged between 5V-14.7V, The battery voltage remains at 12V and increases by less than 2V during the 2-minute analysis period. This abnormal condition will not cause any safety issues or result in damage to the battery or charger however the charger will not be able to fully charge the battery.

Q: Is the temperature sensor used to detect the temperature of the Charger or the Battery?
A: The temperature sensor used to detect the battery and environment temperature, the charger will use the battery temperature to adjust the charging program.

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