



ESI 12000

BATTERY CHARGER For Lead Acid batteries 1.2-120AH

User's Manual and Guide to Professional Battery Charging

INTRODUCTION

Thank you for your kind purchase of our ESI-12000 fully automatic switch mode battery charger. ESI-12000 was designed for charging a variety of SLA (sealed lead acid) batteries, widely used in motorcycles, cars and several other vehicles very easily. ESI-12000 will help you to use your battery much longer. Please read this user manual and follow the instructions carefully before using the charger.

SAFETY FEATURE

- Electronically safe against user's errors. The charger will not damage vehicle electronics.
- Though it was connected to battery for a long time, it is totally safe for battery. No risk of over charging.
- Full protection against wrong connection and against short circuit ensures safe charging operation.
- It has the "Spark" protection mechanism.
- Dust and splash proof.

BATTERY TYPES

The following recommendations should only be considered as guidelines. In the event of uncertainty always refer to the battery manufacturer's recommendations. ESI-12000 is suitable for charging all types of 12V lead-acid batteries: open batteries, MF, AGM and most GEL batteries. Battery sizes from 1.2 to 32AH. The charger can maintain batteries up to 120AH.

CAUTION FOR SAFETY

- ESI-12000 charger is designed to charge 12V lead-acid batteries from 1.2 to 32AH.
- However the charger can maintain batteries up to 120AH. Do not use the charger for any other purpose.
- The charger is not intended for use by young children or infirm person.
- Use safety glasses, gloves, and protective clothing and turn your head when connecting or disconnecting a battery.
- Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes. Seek medical advice.
- Do not use the charger with damaged cable. It must be repaired by an authorized technician.
- While charging, a battery can emit explosive gases, so it is important to avoid sparks or smoking in the immediate area.
- Avoid explosive and flammable substances such as fuel or solvents, and keep providing proper ventilation during charging.
- Do not charge a damaged battery.
- Do not charge a frozen battery.
- Do not place the charger on the battery while charging.
- Before charging, make sure the input is within stipulated rating level, otherwise charging performance may be seriously affected.
- Always check that the charger has gone over to maintenance charging mode before leaving the charger unattended and connected for long periods. If the charger had not gone over to maintenance charging within 3 days, this is an indication of a problem. In this case the charger must be disconnected manually.
- Disconnect the battery from the charger when charger is not connected to the power supply. This will reduce back drain current.
- Charging must be stopped immediately if battery is found to be too hot or leaks out liquid during charging.
- Only mount the charger on a flat surface.
- All batteries self soothe or later. A battery that fails during charging is normally taken care of by the chargers advanced control, but certain uncommon errors in the battery can still arise. Don't leave the battery charger unattended for a longer period of time.

CHARGING

Charging batteries mounted in a vehicle:

1. The power cord should be disconnected before connecting or disconnecting the battery leads.
2. Identify the pole that is grounded (attached to the chassis). Ground is normally connected to the negative terminal.
3. Charging a negatively grounded battery: Connect the red wire to the positive pole of the battery and the black cable to the vehicle's chassis. Be careful not to connect the black cable in the vicinity of a fuel pipe or battery.
4. Charging a positively grounded battery: Connect the black wire to the negative pole of the battery and the red cable to the vehicle's chassis. Be careful not to connect the red cable in the vicinity of a fuel pipe or the battery.

Charging of a battery not connected to a vehicle:

1. The power cord should be disconnected before connecting or disconnecting the battery lead
2. Connect the red wire to the positive pole of the battery and the black cable to the negative pole.

Connecting the provided cables with eyelet terminals:

Make sure that the cable is not being pinched or in contact with warm surface or sharp edges. When the cable is mounted on the battery, it should not be connected to the charger. Connect the eyelet terminals to the battery's poles - the red cable to the positive pole and the black cable to the negative pole. After this, the quick contact can be connected.

Reverse Polarity Protection

If the battery cable are connected incorrectly, the reverse polarity protection will make sure that the charger and the battery are not damaged. In this case, the red warning lamp will be lit.

Starting charging

1. Once you have checked that the battery leads have been connected correctly, you can start charging by connecting the charger to the wall socket. If the battery leads have been connected incorrectly, the polarity reversing protection will ensure that neither the charger nor the battery will be damaged. The fault indicating lamp will then come on. In this case, start from point 1 under "Connecting the charger".
2. The charging lamp or the maintenance charging lamp will now come on. When the maintenance charging lamp comes on the battery is fully charged. When the battery's voltage drops the charger will send a pulse to the battery. The pulse length depends on how much the voltage has dropped. The charger can be connected for months.
3. If nothing happens, if none of the lamps come on this may be due to the connection to the battery or chassis is poor or that the battery is faulty or had a too low terminal voltage. Another cause may be a lack of voltage in the wall socket.
4. Charging can be stopped at any time by disconnecting the charger's power cord. Always disconnect the power cord before disconnecting the battery leads. When you stop charging a battery fitted in a vehicle you should always disconnect the battery lead from the chassis. Before you disconnect the other battery lead.
5. If the charging lamp and maintenance charging lamp alternately flash the reason for this is the following:
 - If the lamps flash a few times per second then the battery is probably sulphated. If the lamp flashes more than 60 minutes the battery should be replaced.
 - If the flashing occurs with a few minutes interval then the battery has a high self-discharge and may need to be replaced.

TEMPERATURE PROTECTION

ESI-12000 is protected from being overheated. The power will be reduced if the ambient temperature is raised.

MAINTENANCE

The charger is maintenance free. Note that disassembly of the charger is not permitted and will void the warranty. If the power cord is damaged, the charger must be sent to the manufacturer. The cord can be cleaned with a soft damp cloth and mild cleanser. The charger should be disconnected from the power while cleaning.

EQUIPMENT

ESI-12000 is delivered with a set of battery leads with battery pole clamps and a set of battery leads with eyelet terminal.

TECHNICAL SPECIFICATION

Voltage AC	170-260 VAC, 50-60Hz
Back current drain*	<10mA/min
Voltage	Charging voltage-Nominal : 12V, 14.4V
Output	Max. 50mA/min. Max 0.25A
Current	0.5A max
Ambient Temperature	-20°C to +50°C, power is reduced automatically at increased ambient temperature.
Cooling	Natural convection
Charging cycle	ESI-12000 is a multistage fully automatic charger
Type of batteries	All types of 12V lead-acid batteries (VRLA, MF, VRLA/AGM and GEL)
Battery capacity	1.2 to 32AH, up to 120AH for maintenance
Dimension	142 x 51 x 36 mm (L x W x H)
Enclosure class	IP 65**
NET Weight	0.3 kg

- * Back Current-Drain is what the charger used to drain the battery if the power cord is disconnected.
- ** Quality of the current and voltage are very important. High current ripple heats up the battery and makes the positive electrode age prematurely. High voltage ripple could harm other equipment connected to the battery. ESI-12000 produces a high quality current and voltage with very low ripple.
- *** If the power connected is the full European contact type, the battery charger has insulation class IP63, except in Switzerland where IP 65 is valid.

CHARGING TIME

Please be kindly informed the length of time for bulk-charging

Battery Size (Ah)	Time to 80% charge (h)
2	2
8	8
20	20
60	60



- It starts charging as charger is automatically on and off until it reaches about 14.4V. Charging proceeds with almost constant current.
- When charging completed with almost constant current, charging proceeds with almost constant voltage till fully charged.
- As charger continuously monitors the terminal voltage in order to determine if a maintenance charging should be initiated.
- If the battery voltage becomes to under 14V, it starts to charge and stops at 14.4V and it continues this process till the AC power supplying is stopped.

ESI 12000



SMART BATTERY Charger
for all types of Automotive batteries

Manual Battery Charger Instructions

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web to separate the lanthanides from other elements occurring with them they are chemically combined with specific substances to form lanthanide compounds with low solubility oxalates and fluorides for example a process known as ion exchange is then used to separate the lanthanides from each other in this process a solution of the

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web dec 12 2019 here s a list of the 15 elements that are lanthanides which run from atomic number 57 lanthanum or ln and 71 lutetium or lu lanthanum symbol ln atomic number 57 cerium symbol ce atomic number 58 praseodymium symbol pr atomic number 59 neodymium symbol nd atomic number 60 promethium symbol pm

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web jan 1 1997 the lanthanides comprise the largest naturally occurring group in the periodic table there are more than 100 minerals known to contain lanthanides but the only two of commercial importance are monazite and bastnaesite the chapter discusses the production of lanthanide elements by electrolysis of fused salts and by metallothermic reduction

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web the fifteen elements shown in table pageindex 1 from lanthanum la 4f 0 to lutetium lu 4f 14 are lanthanoids ln may be used as a general symbol for the lanthanoid elements although lanthanoids scandium sc and yttrium y are sometimes called rare earth elements they are relatively abundant in the earth s crust

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web nov 1 1998 production of lanthanides has shown a continuous increase in recent years 50 taking all these facts into account it is reasonable to consider the development of corrosion protection methods using this family of compounds at first the lanthanide elements principally cerium were used in protection against corrosion at high

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web lanthanides metals peptides and proteins selectivity abstract the essential biological role of rare earth elements lay hidden until the discovery in 2011 that lanthanides are specifically incorporated into a bacterial methanol dehydrogenase *analytical separations of the lanthanides basic sciencedirect* - Jul 07 2023

web jan 1 2000 powell describes displacement chromatography and elution chromatography as the two principal methods for separating lanthanide cations by ion exchange chromatography in displacement chromatography the ions to be separated are first sorbed onto a column of the resin the analyte metals are eluted from the column

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web feb 4 2021 the lanthanides are located on the top row of the two rows of elements found below the main body of the periodic table placing the lanthanides and the actinides the row below the lanthanides below the other elements is just a matter of aesthetics the lanthanides belong to period 6 like cesium barium and hafnium

