

ULTRAMAT AC/DC EQ



OPERATING INSTRUCTION

Prior to use, please read this manual thoroughly.
Keep this manual in a convenient place for quick and easy reference.

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© BEFORE USE

Thank you for purchasing ULTRAMAT AC/DC EQ charger.

This system is extremely versatile and may be used by beginners and pros alike. In order for you to make the best use of your system, please read this manual carefully. If you have any difficulties while using your system, please consult the manual, our online Frequently Asked Questions (on the web pages referenced below), your hobby dealer, or the Graupner/SJ Service Center.

Due to unforeseen changes in production procedures, the information contained in this manual is subject to change without notice.

© SUPPORT AND SERVICE

• Customer support

Please feel free to ask any question by e-mail or phone. We've been trying to deal with your question. We are open from nine to six, Monday to Friday in Korea. We may respond to your question by e-mail as soon as possible when we are close.

• Internet sales site

Please feel free to contact "www.openhobby.com" to get all information on product features, specifications, running events and the newest product line up.

• A/S regulation

Only when the product is faulty after normal operation within the warranty period, we will repair the product for free based on our regulations. The repair will be paid for by the consumer when the damage is due to use in improper ways or beyond the warranty period.

• Warranty regulation

Refer the WARRANTY CARD in a Package.

© OPENHOBBY A/S CENTER

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Customer Service E-mail: service@openhobby.com

© SAFETY PRECAUTIONS

1. Do not attempt to charge incompatible types of rechargeable batteries. This charger is designed to only charge and discharge Nickel Cadmium, Nickel Metal Hydride, Lithium Ion, Lithium Polymer, and Lead Acid batteries.
2. Do not attempt to charge a dead or damaged battery.
3. 12V input from Pb battery or reliable 12V power supplier that can supply more than 7A current is needed
4. Make sure to place the charger on a firm level surface for charging.
5. Do not attempt to charge batteries at excessive fast charge currents. Check with your battery manufacturer for the maximum charge rate applicable to your battery.
6. Do not allow water, moisture or foreign objects into the charger and use in a well ventilated area
7. Do not place the battery or charger on or near a flammable object while in use. Keep away from carpets, cluttered workbenches, etc.
8. Do not leave the charger unattended while charging. Disconnect the battery and remove input power from charger immediately if the charger becomes hot and keep the charger and battery cool down before reconnecting. Young children should be supervised to ensure that they use the appliance safely
9. Do not disassemble the charger.
10. If lead-acid battery is used to charge battery, the battery terminal shouldn't be contacted to the chassis
11. Do not use automotive type battery chargers to power the charger.
12. Do not cover the air intake holes on the charger as this could cause the charger to overheat.
13. Connect the input leads to a 12V power supply first, then connect the battery.
14. Do not attempt to charge non-rechargeable batteries.
15. Please comply with Lilon, LiPo, LiFe safety before charging
16. Do not use the damaged AC Power cord.

© BOX CONTENTS



1. Charger 1EA
2. AC Power cord 1EA
3. Balance board 1EA
4. Balance cable 1EA
5. Charge cable 1set (RED/BK)

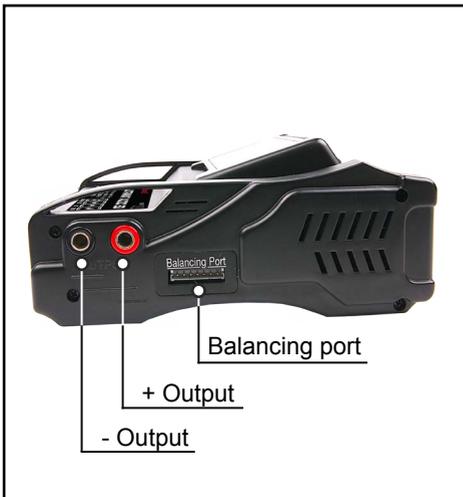
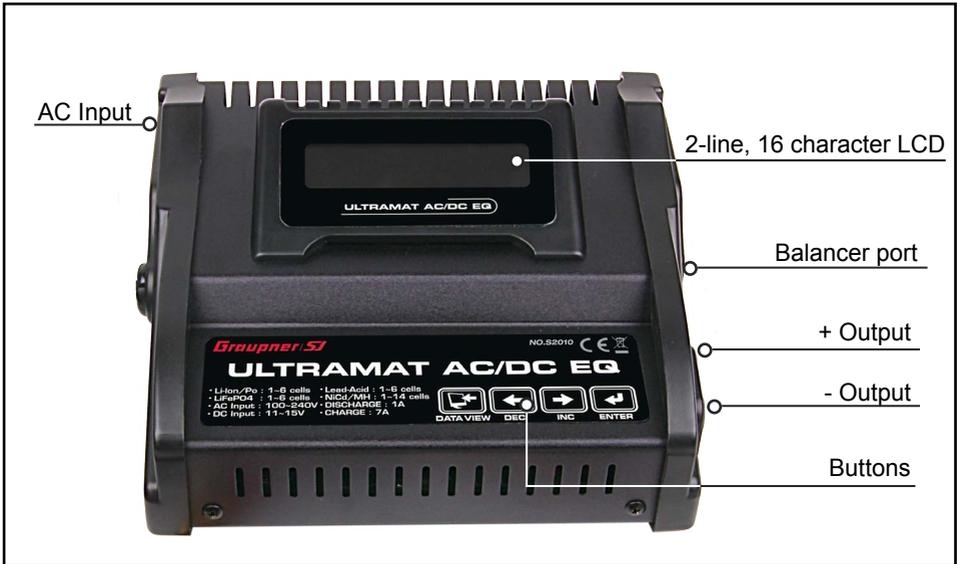
© SPECIFICATION

Input Voltage	11.0-15.0V DC or AC 100V ~ 240V / 50 ~ 60Hz
Battery Type & Cells	NiCd 1-14 cells / NiMH 1-14cells Lilon 1-6 cells/LiPO 1-6 cells, LiFe 1-6 cells (Type:3.6V or 3.7V or 3.3V) Pb Batt 1-6 cells (2V per cell)
Battery Capacity	100mAh ~ 9900mAh NiCd NiMH 100mAh ~ 50000mAh adjustable ONLY for Lilon, LiPo and LiFe
Charge Current	0.1A ~ 7A in 100mA steps (DC:80W, AC : 50W)
Discharge Current	0.1A ~ 1A in 100mA steps (auto limited to 5W maximum)
Trickle Charge Current	0 ~ 200mA
Balancing Current	Max. 280mA
Charge Termination	"zero delta V" peak detection for NiCd/NiMH "constant current / constant voltage"for Lilon/ LiPo/ LiFe and Pb
Delta Peak Sensitivity	3mV ~ 25mV for NiCd & NiMH batteries per cell
Cycling	Charge to Discharge / Discharge to Charge
Display Type	2-line, 16 black&white backlit character LCD
Dimensions	160 x 152 x 69 mm / 6.30 x 5.98 x 2.72 in
Weight	684 g / 24.13 oz
Memory	10

© FEATURES

1. Built in micro processor controls charge/ discharge, storage, balance system
2. NiCd, NiMH, Lilon, LiPo, LiFe, Pb batteries are available. Max 80W charge
3. NiCd and NiMH: Delta peak detection system, Lithium and Pb: Voltage detection system
4. 2-line, 16 black & white backlit character LCD
5. Selectable 3.6V or 3.7V or 3.3V, 1~6 cells Lilon battery
6. Support 0.1A~7.0A charge current, NiCd / NiMH 1-14cells, 1.2-16.8V
7. Support 10~1000mA discharge current, NiCd / NiMH 1-14cells, 1.2-16.8V
8. Support cycle mode (Charge to discharge / Discharge to charge).
9. Prevent form reverse connecting of Input, output terminal. Built in cell balancer
10. Built in DC 12V, 5.0A power supplier, 110-220V AC input.

© CHARGER CONTROL IDENTIFICATION



© POWER SOURCE

1. Connect charger to 12V DC power supply or AC110-220V
2. Connect the charger's red alligator clip to the positive (+) terminal on the power source and the black alligator clip to the negative (-) terminal. In case of DV 12V input, charger will display "INPUT BATTERY VLOTAGE ERROR" message if the input is below 11V or above 15V. In this case, please recheck the input power supply to make sure adequate power is present.
If AC power is being used as input power, do NOT try to connect the 12V DC power!

© BATTERY CONNECTION

When the power supplier is connected to the charger the below screen is displayed and the Setup screen is displayed after about 1 second

**Ultramat AD EQ
Graupner/SJ 1.00**

Connect charge cable to 4mm output banana sockets on charger with attention to polarity, red +, black -. If battery is not connected to charger correctly, the error message is appeared

- No battery : When a battery is not connected to the charger's output
- Open circuit : When a battery becomes disconnected during an operation
- Reverse polarity : When a battery is connected to the output in reverse

! CAUTION

Lithium batteries need to balance for more safety, if lithium batteries are charged without balance board, the balancing of lithium batteries is not performed.

© BATTERY TYPE SELECTION

Press BATT TYPE button twice to select Battery type

	Pofile [01] LiPo 2S 800	 DATA VIEW	 DEC	 INC	 ENTER
	↓				
Nixx	Pofile [01] Nixx 6S 3000	 DATA VIEW	 DEC	 INC	 ENTER
	↓				
LiPo	Pofile [01] LiPo 3S 3000	 DATA VIEW	 DEC	 INC	 ENTER
	↓				
LiFe	Pofile [01] LiFe 3S 3000	 DATA VIEW	 DEC	 INC	 ENTER
	↓				
Lilon	Pofile [01] Lilo 3S 3000	 DATA VIEW	 DEC	 INC	 ENTER
	↓				
Pb	Pofile [01] Pb 12V pack	 DATA VIEW	 DEC	 INC	 ENTER

※ The programming setup is applied differently when you press START/STOP button less than 1 Sec and longer than 1 Sec

Press ENTER button then battery type blinks and press ENTER button again then other value blinks. If you leave it for more than 3 sec without operating, the blinking is stopped. Press and hold ENTER button to start charge or discharge.

ULTRAMAT AC/DC EQ has 10 memories

It is used to store specific battery, charge, discharge and safety parameters, as well as being used to initiate charging, discharging, cycling/store mode functions

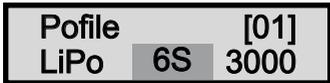
- Press ENTER button then the memory number blinks. Press INC/DEC buttons to select the memory number.



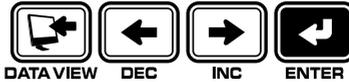
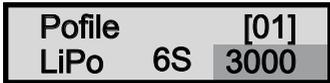
- Press ENTER button then BATTERY TYPE blinks. Press INC/DEC buttons to select battery type.



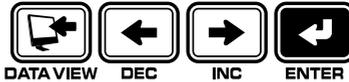
- Press ENTER button then battery cell blinks. Press INC/DEC buttons to set battery cell.



- Press ENTER button and INC/DEC buttons to set battery capacity.



- Press ENTER button to remove the cursor blinking.



- Press INC/DEC buttons to set charge current and charge voltage and then press ENTER button to remove the cursor blinking.



- Press INC button to access to DISCHARGE mode and press INC/DEC buttons to set discharge current and discharge voltage and then press ENTER button to remove the cursor blinking.



- ⑧ Press INC button to access to CYCLE mode and press INC/DEC button to charge/discharge sequence and repeating number and then press ENTER button to remove the cursor blinking.

LiPo	CYCLE D->C1
C=3.0A	D=1.0A



- ⑨ Press INC button to access STORE mode and press INC/DEC buttons to set charge/discharge and then press ENTER button to remove the cursor blinking.

LiPo	STORE
C=3.0A	D=1.0A



- ⑩ Press INC button to access to BLANCER mode and check if the setup is correct.

LiPo	BALANCER
(03)CELL	START



© NiCd, NiMH BATTERIES CHARGE/DISCHARGE

– NiCd, NiMH charge

- ① Go to Nixx mode

Profile	[01]
Nixx	5S 3000

- ② Press INC button to access to CHARGE mode

Nixx	CHARGE
C=3.0A	d=25mV/c



- ③ Press ENTER button shortly then the value of charge current blinks, press DEC/INC buttons to set the desired value of charge current.

Nixx	CHARGE
C=3.0A	d=25mV/c



- ④ Press ENTER button then the value of delta peak blinks, press DEC/INC buttons to set the desired value of delta peak.

Nixx	CHARGE
C=3.0A	d=25mV/c



- ⑤ Press and hold ENTER button to start charge battery.

BATTERY	CHECK
PLEASE	WAIT....

- NiCd, NiMH discharge

- ① Go to Nixx mode

Profile		[01]
Nixx	5S	3000

- ② Press INC button twice to access to DISCHARGE mode

Nixx	DISCHARGE	
D=1.0A		0.8V/C



- ③ Press ENTER button shortly then the value of discharge current blinks, press DEC/INC buttons to set the desired value of discharge current

Nixx	DISCHARGE	
D=1.0A		0.8V/C



- ④ Press ENTER button then the value of discharge cutoff voltage blinks, press DEC/INC buttons to set the desired value of discharge cutoff voltage

Nixx	DISCHARGE	
D=1.0A		0.8V/C



※ We recommend battery cells x 0.9V as the discharge cutoff voltage

- ⑤ Press and hold ENTER button to start discharge battery

BATTERY CHECK	CHECK
PLEASE WAIT...	WAIT...

- NiCd, NiMH cycle

- ① Go to Nixx mode

Profile		[01]
Nixx	5S	3000

- ② Press INC button 3 times to access to CYCLE mode

Nixx	CYCLE C->D1	
C=3.0A		D=1.0A



- ③ Press ENTER button shortly then the cycle sequence blinks, press DEC/INC buttons to set the desired cycle sequence

Nixx	CYCLE C->D1	
C=3.0A		D=1.0A



※ D->C : Discharge to Charge/ C->D : Charge to Discharge

- ④ Press ENTER button then the number of cycle blinks, press DEC/INC buttons to set the desired number of cycle

Nixx	CYCLE C->D1	
C=3.0A		D=1.0A



- ⑤ Press ENTER button shortly then the value of charge current blinks, press DEC/INC buttons to set the desired value of charge current

Nixx CYCLE C->D1
C=3.0A D=1.0A



- ⑥ Press ENTER button shortly then the value of discharge current blinks, press DEC/INC buttons to set the desired value of discharge current

Nixx CYCLE C->D1
C=3.0A D=1.0A



- ⑦ Press and hold ENTER button for more than 1sec to start charge cycle

BATTERY CHECK
PLEASE WAIT....

© LiPo, Lilon, LiFe BATTERIES CHARGE/DISCHARGE

– LiPo charge (ex : LiPo 7.4V, 5000mAh)

- ① Set the battery type, cell, capacity at MEMORY mode

Profile [02]
LiPo 2S 5000



- ② Press INC button to access to LiPo CHARGE mode

LiPo CHARGE
C=3.0A 4.20V/C



- ③ Press ENTER button shortly then the value of charge current blinks, press DEC/INC buttons to set the desired charge current

LiPo CHARGE
C=6.0A 4.20V/C



- ④ Press ENTER button shortly then the value of cell voltage blinks, press DEC/INC buttons to set the desired cell voltage

LiPo CHARGE
C=6.0A 4.20V/C



- ⑤ Press and hold ENTER button to start to charge battery

BATTERY CHECK
PLEASE WAIT....

※ The charge voltage setup

LiPo = 3.7V~4.3V Lilon = 3.6V~4.1V LiFe = 3.2V~3.7V

**BALANCER CON
NOT CONNECTED**

When the charge or discharge of lithium battery is started without connecting the balance board to the balance port of the charger.

**BALANCER CON
CONNECTED**

When the charge or discharge of lithium battery is started with connecting the balance cable to the balance port of the charger.

For safety purposes, this charger is designed to automatically deliver 1C charge rate to lithium batteries Example : LiPo cell of 1500mAh capacity : 1C = 1500mAh (= 1.5A) charge current.

⚠ CAUTION

The maximum voltage for Lilon is 4.1V per cell, LiPo is 4.2V per cell and LiFe is 3.7V per cell. Therefore, it is extremely important to choose the correct battery type to be charged, as each Lithium battery has the different voltage level. Otherwise, it may cause very serious damage to the batteries and increase the risk of a fire !

– LiPo discharge (ex: LiPo 7.4V, 5000mAh)

① Press INC button to access to DISCHARGE mode from LiPo CHARGE mode

**LiPo DISCHARGE
D=1.0A 3.0V/C**



② Press ENTER button shortly then the value of discharge current blinks, press DEC/INC buttons to set the desired discharge current

**LiPo DISCHARGE
D=1.0A 3.0V/C**



③ Press ENTER button shortly then the value of cell voltage blinks, press DEC/INC buttons to set the desired cell voltage

**LiPo DISCHARGE
D=1.0A 3.0V/C**



④ Press and hold ENTER button to start to discharge battery.

**BATTERY CHECK
PLEASE WAIT....**

Lithium battery is no needed to discharge, just discharge 20% when battery is stored

※ The discharge voltage setup

LiPo = 3.0V~4.0V Lilon = 2.9V~3.9V LiFe = 2.2V~3.2V

– LiPo cycle

- ① Press INC button to access to LiPo CYCLE mode from LiPo DISCHARGE mode

LiPo CYCLE C->D1
C=6.0A D=1.0A



- ② Press ENTER button then the sequence of cycle blinks, press DEC/INC buttons to set the desired sequence of cycle

LiPo CYCLE C->D1
C=6.0A D=1.0A



※ D->C : Discharge to Charge C->D : Charge to Discharge

- ③ Press ENTER button then the number of cycle blinks, press DEC/INC buttons to set the desired number of cycle

LiPo CYCLE C->D1
C=6.0A D=1.0A



- ④ Press ENTER button shortly then the value of charge current blinks, press DEC/INC buttons to set the desired value of charge current

LiPo CYCLE C->D1
C=6.0A D=1.0A



- ⑤ Press ENTER button shortly then the value of discharge current blinks, press DEC/INC buttons to set the desired value of discharge current

LiPo CYCLE C->D1
C=6.0A D=1.0A



- ⑥ Press ENTER button to start charge cycle

BATTERY CHECK
PLEASE WAIT....

– LiPo store

- ① Press INC button to access to LiPo STORE mode from LiPo DISCHARGE mode

LiPo STORE
C=6.0A D=1.0A



- ② Press ENTER button shortly then the value of charge current blinks, press DEC/INC buttons to set the desired value of charge current

LiPo STORE
C=6.0A D=1.0A



- ③ Press ENTER button shortly then the value of discharge current blinks, press DEC/INC buttons to set the desired value of discharge current

LiPo STORE
C=6.0A D=1.0A



- ④ Press ENTER button to start LiPo store

BATTERY CHECK
PLEASE WAIT....

– LiPo balancer

- ① Press INC button to access to LiPo BALANCER mode from LiPo STORE mode

LiPo BALANCER
(02)CELL START



- ② Press ENTER button to start LiPo balancer

BATTERY CHECK
PLEASE WAIT....

LiPo BALANCER
①3.83②3.78③0.00V

⚠ CAUTION

Lithium battery is very sensitive to temperature.
Much careful to the sudden temperature change

◎ Pb CHARGE/DISCHARGE

– Pb charge

- ① Set the battery type, cell, capacity at MEMORY mode

Profile [03]
Pb 12Vpack



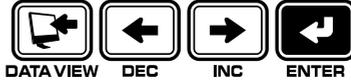
- ② Press INC button to access to Pb CHARGE mode

Pb CHARGE
C=3.0A



- ③ Press ENTER button shortly then the value of charge current blinks, press DEC/INC buttons to set the desired charge current

Pb CHARGE
C=3.0A



- ④ Press and hold ENTER button to start to charge battery

BATTERY CHECK
PLEASE WAIT....

– Pb discharge

- ① Press INC button to access to Pb DISCHARGE mode from Pb CHARGE mode

Pb DISCHARGE
D=1.0A



- ② Press ENTER button shortly then the value of discharge current blinks, press DEC/INC buttons to set the desired discharge current

Pb DISCHARGE
D=1.0A

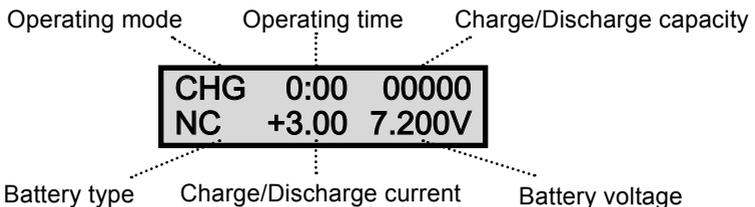


- ③ Press and hold ENTER button to start to discharge battery

BATTERY CHECK
PLEASE WAIT....

※ Pb battery don't have cycle function.

© DISPLAYS DURING CHARGE/DISCHARGE



– Operating mode

CHG	Charge mode	DCH	Discharge mode
C->D	Charge to Discharge	D->C	Discharge to Charge
BLC	When a battery is connected to balancer connector		

– Battery type

- NC : NiCd, NiMH
- LP : LiPo
- LI : Lilon
- LF : LiFe/A123
- PB : Pb

- If you press ENTER button then the charge or discharge is terminated.
- If you press and hold DATA VIEW button for more than 3 sec, you may check the programming setup status. Press DEC/INC buttons to go to other mode and press DATA VIEW button again to get back to the previous display. You may get the all information such as input/output voltage, battery voltage/ capacity, the voltage of the highest/ lowest cell, the voltage of each cell, the average voltage, the peak voltage, the balancer voltage, the peak temperature.

INPUT = 12.08V	ChgCAPA = 0mAh	CHG PEAK= 0.00V
OUTPUT = 8.08V	DchCAPA = 0mAh	DCHG AVR= 0.00V

LCB-[01] = 0.000V
LCB-AVG = 0.000V

When balancer connector is ported, this display is appeared. Press ENTER button then the value [01] blinks, press DEC/INC buttons to check the voltage of each cell.

LCB-MAX = 0.000V
LCB-MIN = 0.000V

It is the other display when balancer connector is ported you may check the max/min voltage

0.00 0.00 0.00V
0.00 0.00 0.00V

© ERROR MESSAGES

INPUT BATTERY
VOLTAGE ERROR

When input voltage is below 11.0V or exceeds 15V.

NO BATTERY

When a battery is not connected to the charger's output

OUTPUT BATTERY
REVERSE POLARITY

When a battery is connected to the output in reverse

OUTPUT CIRCUIT PROBLEM	When the circuit of the charger has a problem
CHECK THE BATT.. OPEN CIRCUIT	When a battery is disconnected during an operation
CHECK THE BATT.. OVER VOLTAGE	When wrong voltage is set while charging lithium or Pb battery
CHECK THE BATT.. LOW VOLTAGE	When wrong voltage is set, or battery is over discharged, while charging Lithium or Pb battery.
BALANCER VOLTAGE IS TOO HIGH	When voltage per cell is too high during balancing
BALANCER VOLTAGE IS TOO LOW	When battery cell voltage is low or battery cells are short-circuited during balancing
DONT CHARGE Lixx WITH THIS MODE	When the charger starts charging, discharging, or cycle for NiCd/MH, or Pb battery with connecting the balancing cable to the balancing port of the charger
OPEN BALANCER PORT	When balancer port is removed during balancing

© BATTERY CHARGE TIME CALCULATION

If you know the battery capacity, you may estimate charge time approximately

$$\text{Charge time (minute)} = [\text{Capacity (Ah)} / \text{Charge current (A)}] \times 60$$

Ex) If 7.2V 2000mAh NiCd battery is charged with 3.0V, charge time is $(2.0/3.0) \times 60$, approx 40 minutes It is just for your reference, not the correct time

© NEW BATTERY CHARGE

When the new NiCd/ NiMH are charged at the first time, charge process might be terminated within minutes, it is not because charger or battery have a problem, but because battery is not stabilized yet. In this case, you need to charge battery after increasing the delta peak value or to charge battery after discharging and cooling down battery.

Do not use the battery, if the charged capacity of battery exceeds battery capacity in specification. If such a phenomenon arises, repeat to charge and discharge more over 5 times and charge again. Such a phenomenon might arise till the third time charge.

© Pb BATTERY SAFETY

Pb battery needs to be charged every day. If the charged capacity of battery is dropped below 50%, this battery might not be recharged. The average charge time of Pb battery is 4~5 hours. Do not charge Car battery, the charger might get the serious damage

© Lilon, LiPo, LiFe BATTREIES SAFETY

1. Always charge the batteries that have Lithium ion or Lithium polymer mark and do not charge the batteries that have Lithium mark. Failure to do so will damage the batteries and may cause fire or personal injury.
2. Always charge the batteries that the cell voltage (3.3V / 3.6V / 3.7V) is written
3. Ensure that the charger and battery are placed on a non-flammable surface whilst charging.
4. Never charge Lithium ion/Polymer/Fe batteries inside a vehicle whatever the circumstances.
5. Always ensure that the charger is correctly set for the battery being charged, checking both voltage and capacity. Be particularly careful if using a series/parallel battery pack, or if using packs of different specifications with the same charger.
6. Never charge at a rate higher than that recommended by the cell manufacturer, this can be very dangerous.
7. Do not leave Lithium ion/Polymer/Fe batteries unattended whilst they are charging. Monitoring the batteries during charging is very important.
8. Always monitor the temperature of the battery being charged every few minutes. If the battery becomes hot to the touch, disconnect it from the charger immediately and allow to cool. Do not recommence charging until the battery and charger have been checked for compatibility and the charger settings have been confirmed as being correct.
9. In the unlikely event of the Lithium ion/Polymer/Fe battery catching fire DO NOT use water to attempt to put the fire out, instead use sand or a fire extinguisher designed for electrical fires.
10. When used correctly, Lithium ion/Polymer/Fe battery packs are as safe as any other type of rechargeable battery pack. However they do require different charge regimes to the longer established Nickel Cadmium and Nickel Metal Hydride technologies and have the potential of catching fire if severely mistreated.
11. If Lithium Polymer battery packs are short-circuited or severely over-charged elemental Lithium may be deposited internally, and if the battery pouch is damaged this can escape from inside the battery. If this occurs a fire may be caused, as elemental Lithium is highly reactive when exposed to water or moisture, producing flammable hydrogen gas and corrosive fumes. Elemental Lithium is not produced unless the battery pack is severely mistreated, so in normal usage there is no likelihood of explosion or fire.
12. Lithium Ion/Polymer battery packs must NEVER be discharged below 3 volts per cell (LiFe 2.0V) as this will result in damage to the cells. If the voltage is allowed to drop below 3 volts per cell the battery voltage may seem to recover following a charge, but the battery may not then give its full nominal capacity and a reduction in performance is likely - allowing the voltage to drop below 3 volts per cell will invalidate all warranty claims.
13. Never charge Lithium Polymer battery packs at greater than 4.2V per cell, Lithium Ion at 4.1V volts per cell or LiFe at greater than 3.7V per cell as this will cause irreversible damage to the cells and will invalidate all warranty claims.

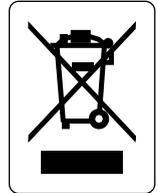
- 14. Never charge Lithium battery packs above their maximum charge rate. This can damage the pack and can be dangerous. Generally, Lithium Polymer packs should not be charged above 2C (2 x Capacity). However, some newer packs do allow charging at up to 5C, but charging at these higher rates will reduce the life of the pack.
e.g Pack of 2500mAh capacity : 2C = 5000mAh = 5A max charge current.
- 15. Do not use discharge rates in excess of those specified with the battery pack as this will result in a significant drop in voltage under load and will dramatically reduce the number of charge/discharge cycles the battery pack will give. If disposing of Lithium battery packs ensure that the pack is fully discharged by using a light bulb, electric motor or similar to completely discharge the pack.

	Do not allow any Lithium battery pack to short-circuit as this is likely to result in a minor explosion and consequent fire.
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- 16. Before charging any Lithium battery packs they should be closely inspected for any damage, such as punctures in the sleeving or if the battery has swollen or expanded in size. If any such damage is detected Do not charge, even if the battery otherwise appears to be brand new.
- 17. Before commencing charging always double check the settings on the charger to ensure it is set correctly for the battery pack to be charged. Using the wrong settings is likely to result in damage to the battery pack being charged and could result in the battery catching fire.

© ENVIRONMENT PROTECTION NOTES

This product must not be disposed of with other waste. Instead, it is the user's responsibility to their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the produce



© SAFETY APPROVAL

• DECLARATION OF CONFORMITY
We hereby declare that the flowing product



Product: Graupner/SJ ULTRAMAT AC/DC EQ Charger
Confirms with the essential protective requirements as laid down in the directive for harmonizing the statutory directives of the member states concerning electro-magnetic interference

The applicant may issue a DECLARATION of CONFIRMITY and apply the CE marking in accordance with European Union Rules

• KC Information

Product: Graupner/SJ ULTRAMAT AC/DC EQ Charger
국립전파 연구원의 전자파 적합등록을 획득하였습니다.



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