ProTek RC
A higher level of performance

PRODIGY 625
DUO TOUCH AC/DC

INSTRUCTION MANUAL

PTK-8519

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INTRODUCTION

Thank you for your purchase of the Prodigy 625 charger from ProTek R/C. The ProTek Prodigy 625 integrates the latest battery charging/discharging technology together with 2 touch back lit LCD screens. The 625 features integrated balance charging/discharging for 1 to 6 cell Lithium-Polymer (LiPo), high voltage Lithium-Polymer (liHV), Lithium-Ferrite (LiFe). The Prodigy 610 also supports charging and discharging nickel-cadmium (NiCd) and nickel-metal hydride (NiMH) batteries.

These operating instructions are designed to ensure that you quickly become familiar with the charger and its functions. It is therefore important that you read through the Operating Instructions, Warning and Safety Notes before you attempt to use your new charger for the first time.

⚠ WARNING charging and discharging batteries can be dangerous. Failure to read and fully understand these critical warnings and instructions may result in fire, personal injury or property damage.

⚠ NEVER leave charger unattended while in use. When charging/discharging lithium batteries, you should always remain in constant observation to monitor the process and react to potential problems that may occur.

⚠ DO NOT use this charger with Traxxas Lithium batteries with Traxxas iD™ connectors, due to the charger not being able to use the balance function with iD™ connectors.

⚠ DO NOT operate this charger around combustible materials, such as wooden tables, inside a vehicle or its engine compartment.

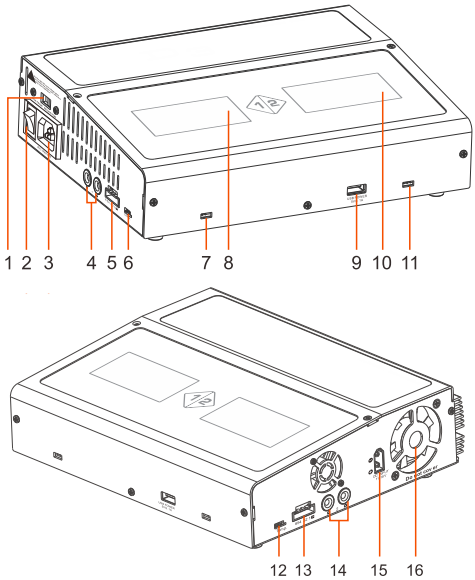
⚠ DO NOT attempt to charge or discharge damaged lithium batteries. Always place batteries in a fireproof LiPo Bag or metal box while using the charger.

⚠ DO NOT attempt to use low quality Lithium batteries with this charger. It is highly recommended you only use batteries that are sold and warranted by a reputable source.

⚠ It is recommended to keep a “Class A” fire extinguisher in the area of use of this charger.

ProTek R/C, its distributors and its retailers assume no liability for failure to comply with these safety instructions and warnings. After reading all provided information, if you DO NOT agree with these terms and conditions and are not prepared to accept complete liability for the use of this product, return this product immediately in new/unused condition to your place of purchase.

Failure to follow and understand these warnings and instructions is considered negligence by the operator and may negate any claims for damages incurred.



1. 110V or 220V Switch
2. Power Switch
3. AC Input
4. CH1 Output
5. CH1 Balance Port
6. CH1 Temperature Sensor Port
7. CH1 Firmware Upgrade Port
8. CH1 Touch Screen
9. USB
10. CH2 Touch Screen
11. CH2 Firmware Upgrade Port
12. CH2 Temperature Sensor Port
13. CH2 Balance Port
14. CH2 Output
15. DC Input
16. Cooling Fan

These warnings and safety notes are particularly important. Please follow the instructions for maximum safety; otherwise the charger and the battery can be damaged or at worst it can cause a fire.

⚠ Never leave the charger unattended when it is connected to its power supply. If any malfunction is found, TERMINATE THE PROCESS AT ONCE and refer to the operation manual.

⚠ Keep the charger well away from dust, damp, rain, heat, direct sunshine and vibration. Never drop it.

⚠ The allowable DC input voltage is 11~18V DC. The allowable AC input voltage is 110V or 220V AC.

⚠ This charger and the battery should be put on a heat-resistant, nonflammable and nonconductive surface. Keep all the flammable, volatile materials away from the operating area.

⚠ Make sure you know the specifications of the battery to be charged or discharged to ensure it meets the requirements of this charger. If the program is set up incorrectly, the battery and charger may be damaged. It can cause fire or explosion due to overcharging.

⚠ To avoid short-circuiting between the charge lead, always connect the charge cable to the charger first, then connect the battery. Reverse the sequence when disconnecting.

⚠ Never attempt to charge or discharge the following types of batteries:

- DO NOT use this charger with any Traxxas lithium batteries with the Traxxas iD™ connector. This charger cannot support balance charging through the iD™ connector. It is highly recommended to use the balance function always on lithium batteries with 2 cells or more.

- A battery pack, which consists of different types of cells (including different manufacturers).
- A battery that is already fully charged or just slightly discharged.
- Non-rechargeable batteries (Explosion hazard).
- A faulty or damaged battery.
- A battery fitted with an integral charge circuit or a protection circuit.
- Batteries installed in a device or which are electrically linked to other components.
- Batteries that are not expressly stated by the manufacturer to be suitable for the currents the charger delivers during the charge process.

⚠ Please keep in mind the following points before charging:

- Did you select the appropriate program suitable for the type of battery you are charging?
- Did you set up adequate current for charging or discharging?
- Have you checked the battery voltage? Lithium battery packs can be wired in parallel and in series, i.e. a 2 cell pack can be 3.7V (in parallel) or 7.4V (in series).
- Have you checked that all connections are firm and secure? Make sure there are no intermittent contacts at any point in the circuit.

※ Standard Battery Parameters

	LiPo	LiIon	LiFe	LiHV	NiCd	MiMH	Pb
Nominal Voltage	3.7V/cell	3.6V/cell	3.3V/cell	3.7V/cell	1.2V/cell	1.2V/cell	2.0V/cell
Max Charge Voltage	4.2V/cell	4.1V/cell	3.6V/cell	4.35V/cell	1.5V/cell	1.5V/cell	2.46V/cell
Storage Voltage	3.8V/cell	3.7V/cell	3.3V/cell	3.85V/cell	n/a	n/a	n/a
Allowable Fast Charge	≦1C	≦1C	≦4C	≦1C	1C-2C	1C-2C	≦0.4C
Min.Discharge Voltage	3.0-3.3V/cell	2.9-3.2V/cell	2.6-2.9V/cell	3.1-3.4V/cell	0.1-1.1V/cell	0.1-1.1V/cell	1.8V/cell

⚠ Be very careful to choose the correct voltage for different types of battery otherwise you may cause damage to the batteries. Incorrect settings could cause the cells to fire or Explode.

⚠ Charging

During charge process, a specific quantity of electrical energy is fed into the battery. The charge quantity is calculated by multiplying charge current by charge time. The maximum permissible charge current varies depending on the battery type or its performance, and can be found in the information by the battery manufacturer. Only batteries that are expressly stated to be capable of quick charge are allowed to be charged at rates higher than the standard charge current.

Connect the battery to the terminal of the charger: red is positive and black is negative. Due to the difference between resistance of cable and connector, the charger can not detect resistance of the battery pack, the essential requirement for the charger to work properly is that the charge lead should be of adequate conductor cross-section, and high quality connectors which are normally gold-plated should be fitted to both ends.

Always refer to the battery manufacturer about charging methods, recommended charging current and charging time. Lithium batteries should always be charged according to the charging instruction provided by the manufacturer.

Close attention should be paid to the connection of lithium batteries.

Never attempt to disassemble a battery pack.

⚠ Discharging

The main purpose of discharging is to clean residual capacity of the battery, or to reduce the battery voltage to a defined level. The same attention should be paid to the discharging process as the charging process. The final discharge voltage should be set up correctly to avoid deep discharging. Lithium batteries can not be discharged to lower than the minium voltage or it will cause a rapid loss of capacity or total failure.

Lithium batteries needs to be stored at 50% of the batteries capacity please pay attention to the minimum voltage of the lithium battery to protect them. Please see the battery parameters table on pg.7.

Lithium batteries are recommended to be discharged partially rather than fully. Frequent full discharging should be avoided if possible.

SPECIFICATIONS

- AC Input Voltage: 110V OR 220V
- Control: Touch
- Backlight: Adjustible (Off-100%)
- Dimension: 240 x200 x68mm
- Charge Current: 25.0A x2
- Charge Power: Max. 200W x2
- Balance Current: 400mA/cell
- DC Input Voltage: 11-18V
- Display Type: LCD Touch Resistive Screen x2
- Cooling System: Cooling Fan
- Weight: 1725g
- Safety Timer: 1-720min or Turn Off
- Discharge current: 5.0A x2
- Discharge Power: Max. 10W x2

- Memory: 20 Different charge/discharge profiles

- External port: 2-6s Balance socket-XH, temperature probe socket, battery socket, DC input, AC input, temperature sensor port for PC.

- Battery Types / Cells:
  LiPo/Lilon/LiFe/LiHV: 2-6S
  NiMH/NiCd: 1-16cells
  Pb: 2-24V

- Charge Voltage:
  LiPo: 4.18-4.22V/cell
  Lilon: 4.18-4.20V/cell
  LiFe: 3.68-3.80V/cell
  LiHV: 4.30-4.40V/cell

- Discharge cut-off voltage:
  NiMH/NiCd: 0.1-1.1V/cell
  LiPo: 3.0-3.3V/cell
  Lilon: 2.9-3.2V/cell
  LiFe: 2.6-2.9V/cell
  LiHV: 3.1-3.4V/cell
  Pb: 1.8V

Touch System

With the graphic touch controlled interface, the resistive touch LCD screen intuitively displays every charging status & information, which makes the operating procedures very easy. Users can enjoy a more convenient and comfortable “touch” experience.

Optimized Operating Software

The 625 simplifies and optimizes the operating procedures for users, it can protect your battery safely, and prolong the lifetime of the battery effectively; what's more, the charger allows users to self-define the charging parameters, so that you can configure other charging parameters according to your own requirements.

Charging Status Monitor

When the charger is working, you can check the battery capacity, battery voltage, charging time and internal resistance on the screen. More important, the voltage curve can be displayed on the screen, so you can monitor the charging status.

Internal Independent Lithium Battery Balancer

The 625 Charger employs an individual-cell-voltage balancer. It isn’t necessary to connect an external balancer for balance charging.

Balancing Individual Cells / Battery Discharging

During the process of discharging, the 625 can monitor and balance each cell of the battery individually. Error message will be indicated and process will be ended automatically if the voltage of any single cell is abnormal.

Fast/Non Balance and Storage Mode of Lithium Battery

“Fast/non balance charging is for 1s lithium only, whereas “store” state can control the final voltage of your battery, it is critical for lithium batteries to be stored at a voltage specific to your lithium batteries type and cell count. Lithium batteries will be damaged if stored at near full charged or fully charged charged state (please see table on pg.7)

Independent Balance function

When the battery performance declines and voltage difference increases, the balance function will work. The equalizer circuit will work independently and reduce the voltage difference to below 0.01V, which can prolong the lifetime of battery and reduce risks due to over discharge.

Memory Preset

The charger can store up to 20 different charge/discharge profiles for your convenience. You can keep the data pertaining to the program setting of the battery of continuous charging or discharging. Users can call out these profiles at any time without any special program setting.

Terminal Voltage Control (TVC)

The charger allows users to set the charge/discharge and voltage.

Capacity Limit

The charging capacity is always calculated as the charging current multiplied by time. If the charging capacity exceeds the limit, the process will be terminated automatically when you set the maximum value.

Processing Time Limit

You can also limit the maximum process time to avoid any possible defect.

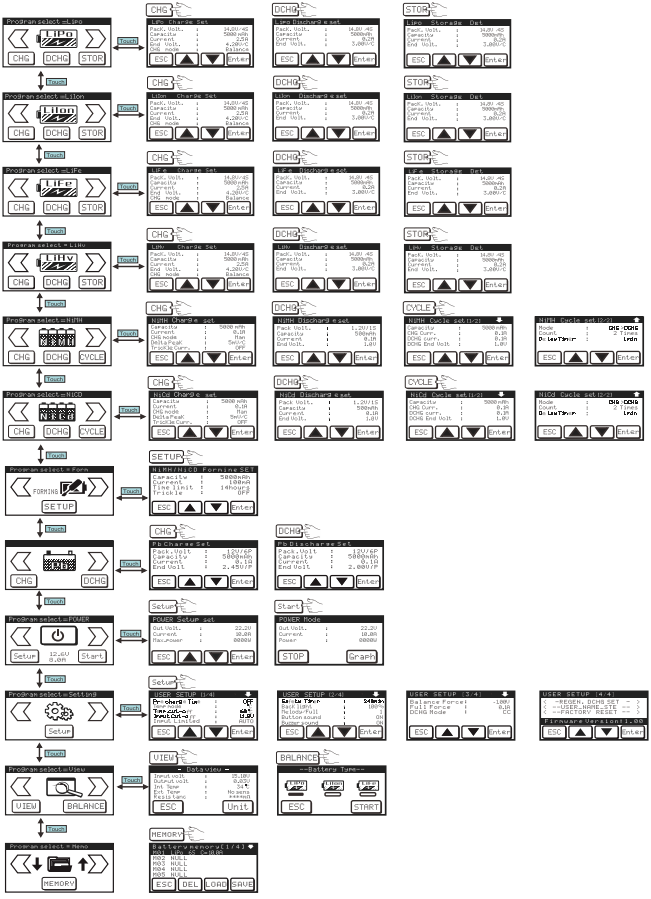
Internal Resistance of Battery Pack

Measure internal resistance of battery pack including all connections and leads.

Regenerative Discharging

The user can transfer the battery energy to the car lead acid battery or other energy storage equipment to unlock higher discharge amperages.

PROGRAM FLOW CHART



Depending on what battery type, the operating programs are different for each.

Battery type	Operation Program	Description
LiPo LiIon LiFe LiHV	Balance Charge	This charging mode is for charging LiPo/ LiFe/ LiIon/ LiHV battery in normal mode.
	Storage	This mode will either charge or discharge LiPo/ LiFe/ LiIon/ LiHV batteries to the appropriate voltage for storage.
	Discharge	This mode is for discharging LiPo /LiFe /LiIon /LiHV battery.
	Fast charge	This charging mode is for charging LiPo /LiFe /LiIon /LiHV 1s battery in normal mode without balancing. Fast charge is not recommended for lithium batteries with 2 or more cells.
NiMH NiCd	Auto mode	Charger automatically detects the connected NiMH/NiCd battery and control the charging current in the affordable range, and limit the maximum current does not exceed the setting value. Attention: Ensure to set the maximum charging current, or it may overcharge and damage the battery.
	Manual mode	Charger will charge the battery with setting current.
	Discharge	Charger will discharge the battery with setting current, operation same as lithium battery.
	Cycle	To increase the remaining usable battery life, cycling is strongly recommended. charger supports 1-5 times of charge › discharge or discharge › charge cycle.
Pb	Charge	This mode is for charging Pb battery
	Discharge	This mode is for discharging Pb battery.

1. Touch Screen Operation

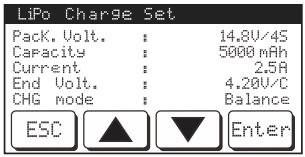
1). Press the Left and Right Arrows on the LCD Touch Screen to scroll through the main menu screens.
2). Press the action at the button of the LCD Touch Screen to enter that menu.
3). Press a parameter to highlight that parameter.
4). Press the Up and Down Arrows to edit the parameter.
5). Press “Enter” for more than 2 seconds to save the parameter and start working.
6). If there is more than one screen of parameters, press the top right corner of the LCD Touch Screen to scroll through the parameter screens.
7). Press “ESC” to return to the previous menu.
8). Press “Stop” to stop working.


Previous menu/Next menu

Charge

Discharge

Storage

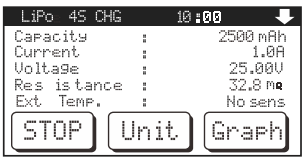


Back to the previous menu


Up


Down

Enter




Next screen

Stop

View cell voltage and internal resistance

View voltage curve during charging or discharging

2. Connection

The following describes the action process of the charger, using a lithium polymer battery charging program as an example.

1) Connecting power

You can attach the 625 directly to a 11-18V output power supply via the XT60 input cable.

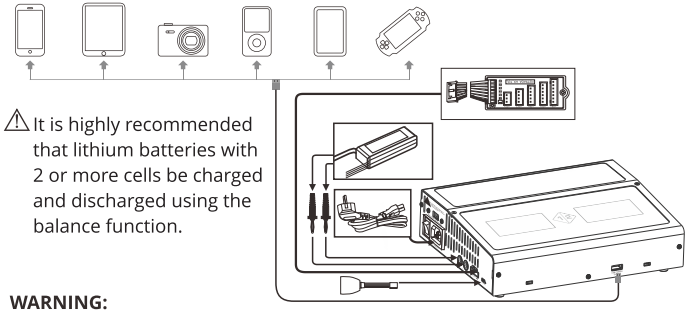
2) Connecting The Battery

Important!!! Before connecting a battery it is absolutely essential to check one last time that you have set the parameters correctly. If the settings are incorrect, the battery may be damaged, and could even burst into flames or explode. To avoid short circuits between the banana plugs, always connect the charge leads to the charger first, and only then to the battery. Reverse the sequence when disconnecting the pack.

3) Balance Socket

The balance wire attached to the battery must be connected to the charger with the negative marking. Take care to maintain correct polarity! (See the wiring diagram below.)

⚠ Ensure to connect the battery to balance port when charging LiPo, Lilon, LiFe and LiHV battery under balance mode.



⚠ It is highly recommended that lithium batteries with 2 or more cells be charged and discharged using the balance function.

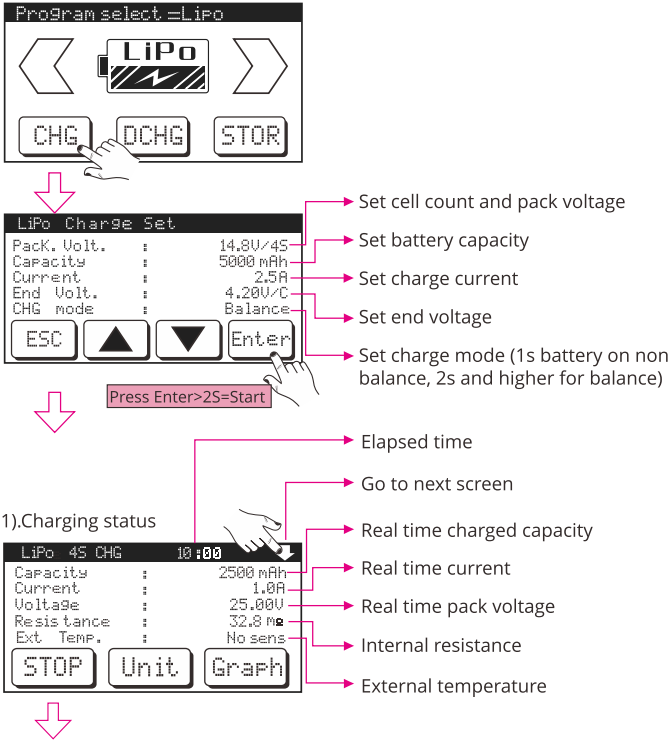
WARNING:

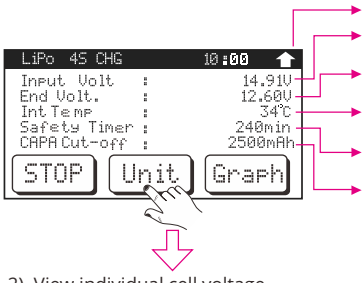
Failure to connect as shown in this diagram will damage this charger. To avoid short circuit between the charge lead always connect the charge cable to the charger first, then connect the battery. Reverse the sequence when disconnecting.

3. Charge Process

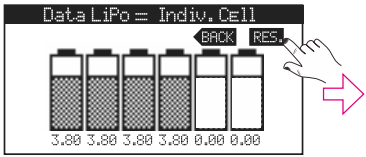
In this program, user can set the cell count, battery pack voltage, battery capacity, charge current, end voltage and charge mode. Press Enter for more than 2 seconds to start charging.

Notice: According to the battery capacity setting, charger will automatically set the charge current at a rate of 1C.

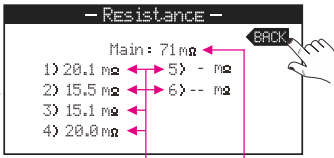




2). View individual cell voltage

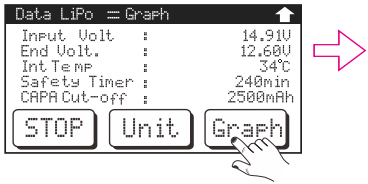


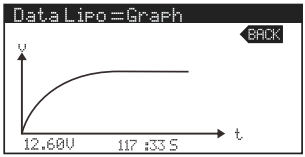
3). View individual cell voltage



Individual IR. Total IR.

4). View voltage curve graph during charging





BACK Back to previous screen

4). Stop process finished

Press the “STOP” button to stop charging.

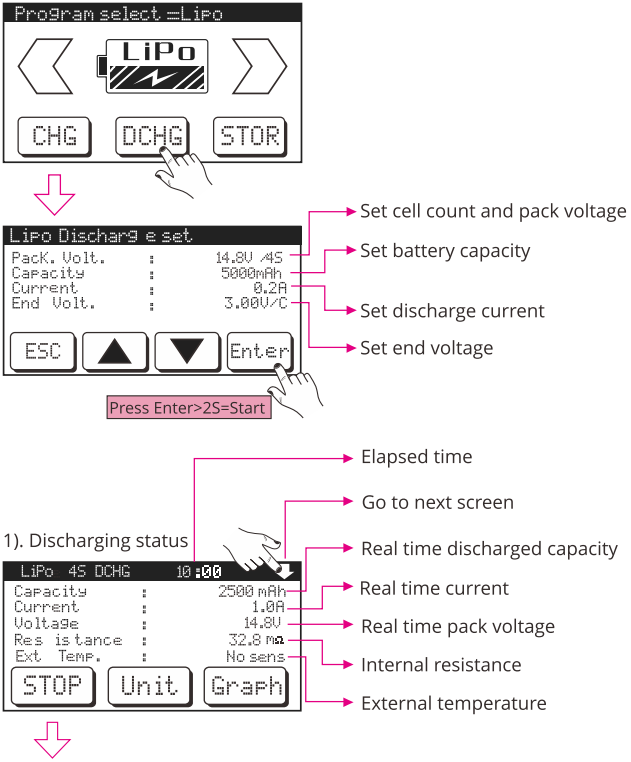
5). Process finished

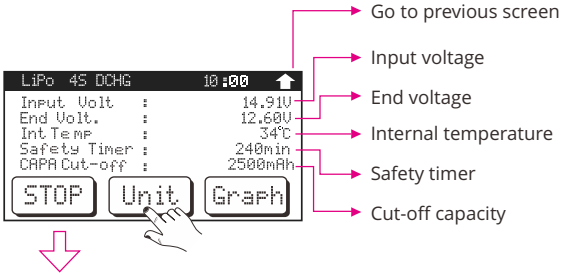
Charger will alarm once program finished.

4. Discharge program

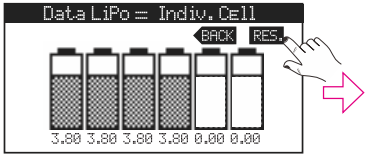
In this program, user can set the cell count, battery capacity, discharge current and end voltage.

Attention: Set the correct discharge end voltage, or it will cause over discharge and damage the battery.

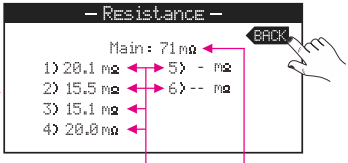




2). View individual cell voltage

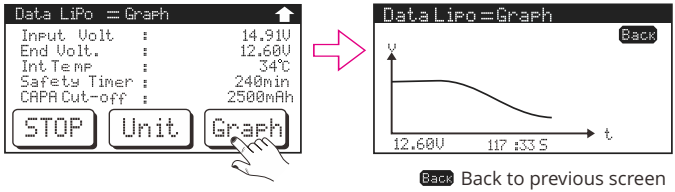


3). View individual cell voltage



Individual IR. Total IR.

3).View voltage curve graph during discharging



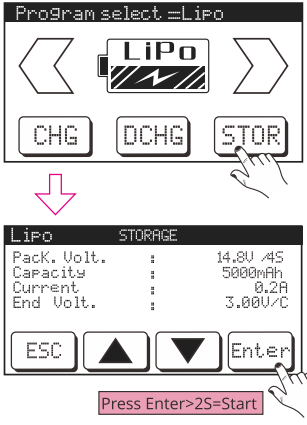
Back Back to previous screen

4).Stop process finished
Press the “STOP” button to stop charging.

5).Process finished
Charger will alarm once program finished.

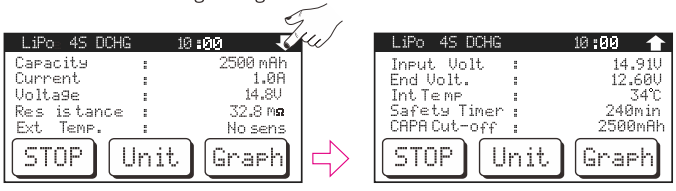
5. Storage Program for Lithium Battery

"STORAGE" is a function which is specialized for Lithium battery storage, its operation is same as the discharge program. To store your lithium battery for any period of time and extend the life of the battery this function is critcal.



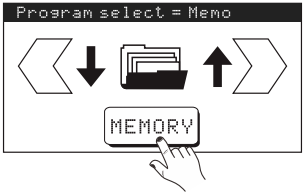
For different battery types, the end voltages are different, LiPo:3.7V, LiHV:3.85V, LiFe:3.4V, LiIon:3.6V. This is an intelligent program, it detects the battery voltage and will automatically charge or discharge the battery. Make sure to connect the battery to the balance port when using this program.

Real time status during storage



6. Battery Preset Profiles

The charger can store up to 20 different charge/discharge profiles for your convenience, and the stored profiles can be recalled quickly without having to go through the setup process.



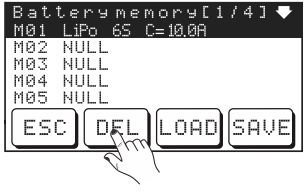
1). Save

When you finish setting the charging/discharging/storage parameters, please press ESC to return to the main menu screen, and go to MEMORY screen.

Press SAVE, the parameters you just entered will be saved.

2). Recall

To use a memory file, press it, then press LOAD.

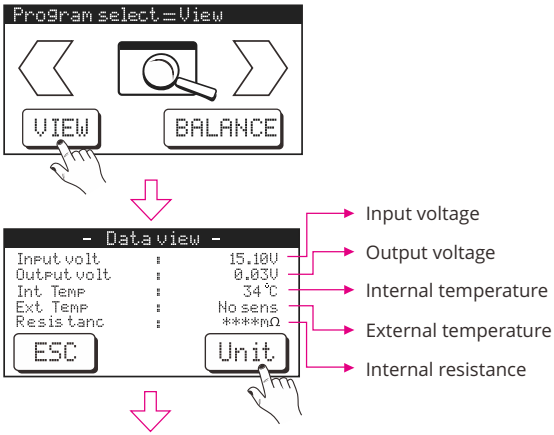


3). Delete

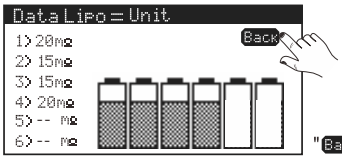
To delete a memory file, press it, then hold DEL for more than 2 seconds.

7. Data view

With this program, user can check the battery cell voltage, internal resistance, input voltage, output voltage, inner temperature and external temperature. Please connect the battery to charger output port (both main output and balance port).



Cell voltage and cell resistance

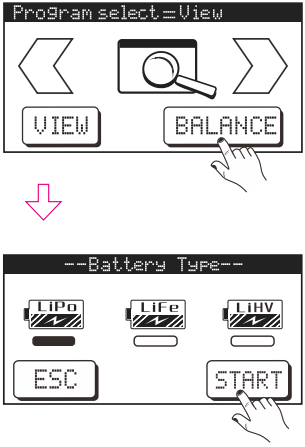


"Back" Back to the previous screen

8. Lithium battery balancer

This function is for unbalanced lithium battery packs, set the correct battery type when using this program, or it will damage the battery.

The equalizer circuit will work independently and reduce the voltage difference to below 0.02V, which can prolong the life of the battery and reduce risks due to over discharge.

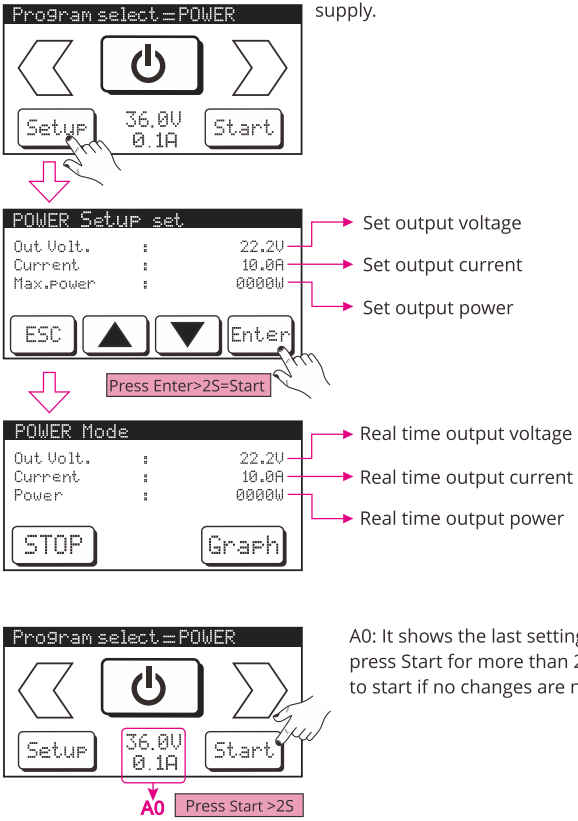


CAUTION:

Please check the battery type and settings carefully, or it may damage the battery.

9. Digital Power

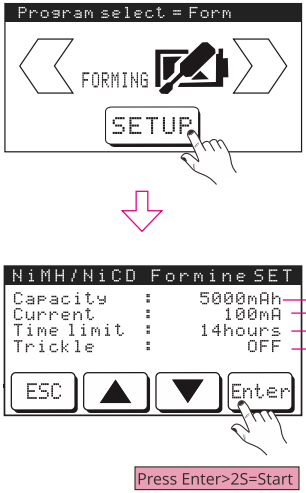
In this mode, the charger can provide a output power of DC3.0V-24V for other device, making one of the two channels act lik
supply.



A0: It shows the last setting here, press Start for more than 2 seconds to start if no changes are needed.

10. Forming Charge

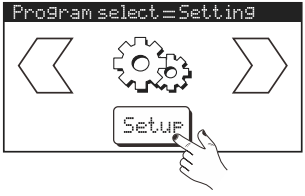
For NiMH/NiCd batteries that have been stored for a long time, the charger will charge the battery pack by a low current for a long time, which can depolarize and reactive battery.

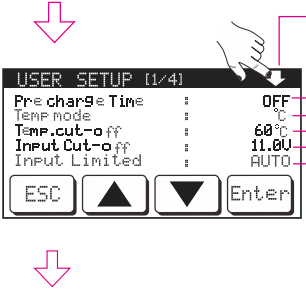


Notice: Please set the parameters in Setup menu when charger is powered on for the first time.

This charger can recognize battery cell count automatically. It has a pre-charge function which can reactivate the slightly over discharged cell. Users can set the pre-charge time (normally 2 minutes) in the menu. The more battery capacity, the more time is needed.

Attention: In the normal charge mode, always turn off the precharge program. DO NOT use this function unless you know the battery status very well. Stop the process immediately when battery voltage increase quite few, or it may cause danger!!!





Go to next screen

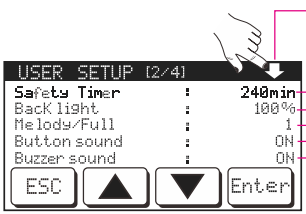
Set precharge time: OFF/1-10min.

Set temperature unit ℃/℉

Set cut-off temperature, ranges from 20 ℃ to 80℃(68-176℉)

Set input voltage, ranges from 11.0V to 18.0V

Set Input current limited value, 1.0A-55.0A/AUTO



Go to next screen

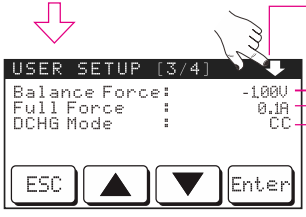
Set safety timer:OFF/1-720min

Set screen brightness: OFF/10%-100%

Set melody

Button sound:ON/OFF

Set buzzer volume:ON/OFF



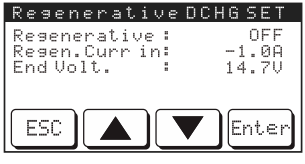
Go to next screen

Set balance force trigger voltage, for LiPo/LiFe/LiIon/LiHV battery ONLY.

Set full force

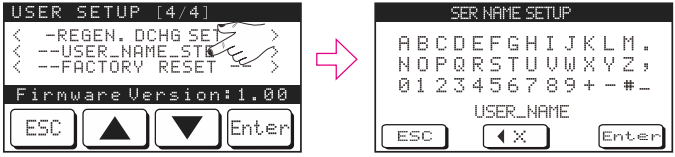
Set discharge mode CC or CV, for LiPo/LiFe/LiIon/LiHV/Pb battery ONLY.

Set regenerative discharge parameter: Function ON/OFF,discharge current, End voltage

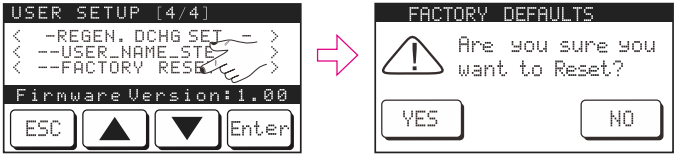


Notice: When in this program, Pb battery is recommended to connect to the charger input port, DO NOT use NiMH/NiCd as a “battery power”.

Users can set the user name and it will be displayed once the charger is powered on.



Factory reset: This operation will delete all your personal data, and reset all settings to the manufacturer default settings.



DO NOT use it unless you are sure it is necessary.

ERROR MESSAGE

⇨ Voltage of one cell in the battery pack is too high.

⇨ The battery balance connection is wrong. Please check the connector and cable.

⇨ Temperature too high, please check the temperature sensor and take cooling measures.

⇨ Output power is higher than setting in digital power mode

⇨ Output current is higher than setting in digital power mode

⇨ Limited time is reached

⇨ Limited capacity is reached

⇨ External temperature too high

⟹ Incorrect polarity connected

⟹ Process interrupted

⟹ Output short circuit

⟹ Input voltage error

⟹ Charger fault

⟹ Battery total voltage is lower than setting value, please check the cell count.

⟹ Battery total voltage is higher than setting value, please check the cell count.

⟹ Voltage of one cell in the battery pack is too low.

COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

European Compliance Information
Declaration of Conformity

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the European EMC Directive 2004/108/EC.

Product(s): Battery balance charger
Item Numer(s): PTK-8519

EN 55014-1:2006
EN55014-2:1997+A1:2001
EN61000-3-2:2006
EN61000-3-3:2008

Instructions for disposal of WEEE by users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections 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.

WARNING: This product can expose you to cancer and or reproductive harm. For more information go to: www.p65.ca.gov

WARRANTY & SERVICE

Thank you for purchasing the ProTek R/C Prodigy 625 Duo AC/DC Battery Charger. We will do our best to provide you with comprehensive after sale service and protect your rights and interests. ProTek R/C guarantees this item to be free of defects in materials and workmanship for (1) year after the original purchase date. The warranty only applies to material or operational defects that are present at the time of purchase; ProTek R/C reserves the right to repair or replace the item. Warranty will not cover items that have been modified, disassembled, or otherwise misused according to the item's instructions. Proof of purchase is required to submit a warranty claim.

This charger is designed exclusively and only for the types of batteries stated in this Instruction Manual. ProTek R/C, its distributors and its retailers assume no liability for failure to comply with these safety instructions and warnings. After reading all provided information, if you DO NOT agree with these terms and conditions and are not prepared to accept complete liability for the use of this product, return this product immediately in new/unused condition to your place of purchase. Failure to follow and understand these warnings and instructions is considered negligence by the operator and may negate any claims for damages incurred.

Below is Considered Incorrect Use:

- Failure to follow and understand instructions and warnings.
- Not monitoring this charger, battery or power supply while in use.
- Operating this charger near, on or around flammable materials.
- Operating this charger without the battery being placed in a flame-resistant box or bag.
- Operating this charger with Traxxas lithium batteries using the Traxxas iD™ connector.
- Improper use of the product (abusive use, out of specification use).
- Failure to adapt settings for proper function (improper connections, installations or setup, etc.).
- Operating in inadequate conditions (using in direct sunlight, rain, rust from rain, humid conditions, etc.).
- Improper maintenance (presence of dirt, dust, cooling fans not working).
- Disassembly, modifications by the user (modifying original connectors, wires components, etc.).
- Mechanical or electrical damages due to external causes.

Product features, specifications and information mentioned in this manual are subject to change without notice.