T400Q

AC/DC Quattro Balance Charger/Discharger

Instruction Manual

⚠ Warning

❗ **Fire, physical damage, and personal injury may occur if the charger is used incorrectly.**

❗ **Please put this charger and the battery on a heat-resistant, non-inflammable and non-conductive surface while charging.**

❗ **NEVER leave the charger unattended during charging.**

❗ **The battery should be charged under a temperature of 0-40°C.**

❗ **Never use the charger in a rain or wet environment.**

❗ **Please disconnect the battery from the charger when charging is completed!**

Introduction

Thanks for purchasing SkyRC T400Q AC/DC Quattro Balance Charger/Discharger. This unit is simple to use, but the operation of the charger does require some knowledge on the part of the user. These operating instructions are designed to ensure that you quickly become familiar with its functions. It is therefore important that you read right through the Operating Instructions,Warning and Safety Notes before you attempt to use your new charger for the first time. We hope you have many years of pleasure and success with this charger.

SkyRC T400Q is a multi-function quattro balance charger/discharger with four independent circuits that can charge various chemistries batteries (LiPo/LiFe/LiIon/LiHV/NiMH/NiCd/Pb). The charger delivers up to 100W per port and can charge four batteries simultaneously at up to 12 amps each. It comes ready to charge in the most compact design yet while taking up minimal space in the pit area. And the handle design ensures the charger is convenient to carry. Additionally, Additionally, the charger also can charge AGM and Pb battery under a low temperature in the AGM and Cold modes.

Please BE SURE to read these INSTRUCTIONS, WARNING and SAFETY NOTES before you use the charger for the first time. It can be dangerous to mis-handle batteries and battery chargers, as there is always a risk of batteries catching fire and exploding.

LCD Display

Scroll Through the Main Menu
Stop Any Charge Processes

Alter Values
See the Status of Individual
Cells in Balance Charge Mode

Switch Between
Port A, B, C and D.

Output Socket

Resume or Start
Charge Processes

LED Indicator

Balance Port

Carrying Handle

DC Input 11-18V

Smart Ventilation Fan

AC Input 100-240V

Ventilation Slot
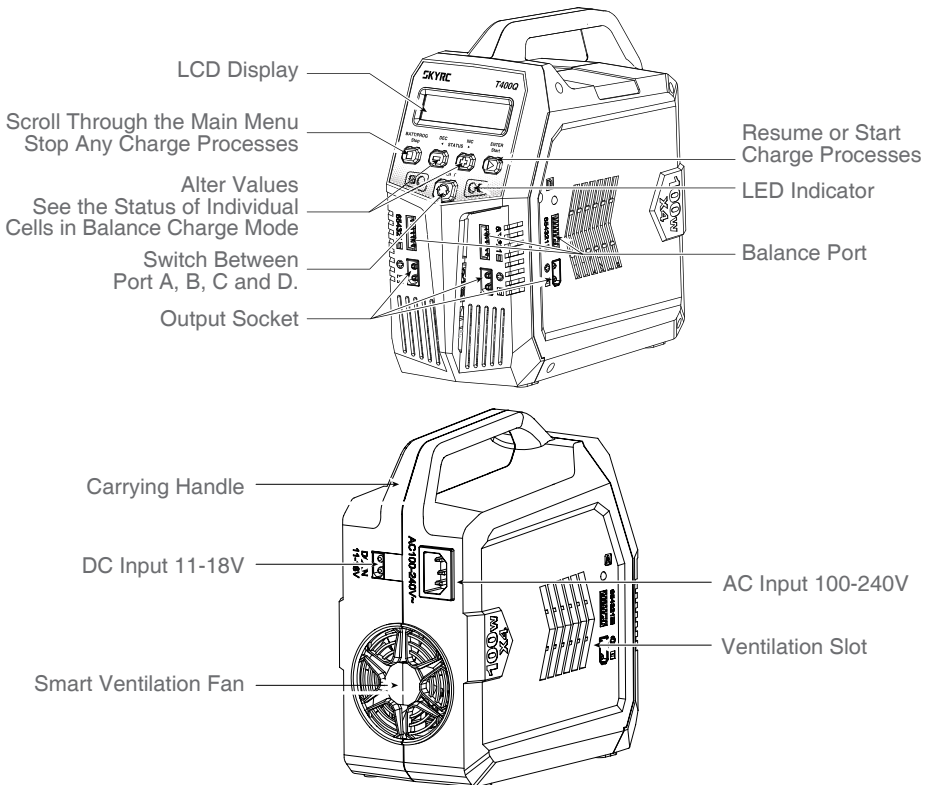
Features

4 Independent Ports
SkyRC T400Q allows you to charge four batteries of different chemistries simultaneously. The charger features 100 Watts on each port, with an overall output power of 400Watts.

Dual Input
The input of the charger is AC 100-240V or DC 11-18V. You can find peace of mind using the charge either indoors or outdoors.

Last Operation Remember
SkyRC T400Q will remember your last operation of charging/discharging before power off.

Optimized Software
SkyRC T400Q features the so-called AUTO function that sets the feeding current during charging or discharging. Especially for lithium batteries, the charger can prevent overcharging, which may lead to an explosion due to misoperation. It can disconnect the circuit automatically and alarm once any malfunction is detected. All the programs were controlled independently to maximize safety and minimize danger. Users can configure all the settings!

Voltage Calibration (For expert user only)
You can calibrate the voltage directly on the charger with a 6S LiPo battery. For more information, please contact us at info@skyrc.com

AGM Charge and Cold Charge
There are two more charging modes of AGM and Cold for Pb batteries. Under a low temperature (0°C/32°F), please charge AGM and Pb battery using these modes!

Terminal Voltage Control(TVC) (For expert user only)
The charger allows user to change the end voltage.

Balancing Individual Battery Cells
During charging and discharging, SkyRC T400Q can monitor and balance each battery cell individually. An error message will prompt, and the process will be ended automatically if the voltage of any single cell is abnormal.

Support Various Lithium Batteries
SkyRC T400Q can charge batteries of varying chemistries (LiPo/LiFe/Lilon/LiHV/NiMH/NiCd/Pb).

Battery Memory (Data Store/Load)
The charger can store up to 10 different charge/discharge profiles for each port. You can keep the data about the program setting of the battery for continuous charging or discharging. Users can call out these data any time quickly!

Re-Peak Mode of NiMH/NiCd

In re-peak charge mode, the charger can peak charge the battery once, twice or three times in a row automatically. This is good for making the battery fully charged.

Delta-peak Sensitivity for NiMH/NiCd

The automatic charge termination principle is that when the battery's voltage exceeds the threshold, the process will be terminated automatically.

Cyclic Charging/Discharging(CCD)

1 to 5 cyclic and continuous process of charge > discharge or discharge > charge is operable for battery refreshing and balancing to stimulate the battery's activity.

Automatic Charge Current Limit

You can set up the upper limit of the charging current when charging your NiMH or NiCd battery; it is useful for the NiMH battery of low impedance and capacity in the AUTO charging mode.

Battery Voltage Meter

The user can check battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage.

Battery Internal Resistance Meter

The user can check the battery's total internal resistance and each cell's internal resistance.

Capacity Limit

The charging capacity is always calculated as the charge current multiplied by time. If the charging capacity exceeds the limit, the process will be terminated automatically.

Processing Time Limit

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

Warning and Safety Notes

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.

❶ 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.

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

❶ The allowable AC input voltage is 100~240V AC and DC input 11-18V.

❶ This charger and the battery should be put on a heat-resistant, noninflammable and nonconductive surface. Never place them on a car seat, carpet or similar. Keep all the inflammable volatile materials away from operating area.

❶ 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.

Standard Battery Parameters

	LiPo	LiIon	LiFe	LiHV	NiMH	NiCd	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	2.4V/cell
Storage Voltage	3.8V/cell	3.7V/cell	3.3V/cell	3.90V/cell	n/a	n/a	n/a
Allowable Fast Charge	≦1C	≦1C	≦4C	≦1C	1C-2C	1C-2C	≦0.4C
Min. Discharge Voltage	3.0-3.3 V/cell	2.9-3.2 V/cell	2.6-2.9 V/cell	3.1-3.4 V/cell	0.1-1.1 V/cell	0.1-1.1 V/cell	1.8V~2.0 V/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 tofire or explode.

❶ **Never attempt to charge or discharge the following types of batteries.**

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).

Batteries that require a different charge technique from NiCd, NiMh, LiPo or Gel cell (Pb, Lead acid).

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.

❶ Please bear in mind the following points before commencing 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.

❶ 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 quickcharge 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 goldplated should be fitted to both ends. Always refer to the manual by battery manufacturer about charging methods,

recommended charging current and charging time. Especially, the lithium battery should be charged according the charging instruction provided by the manufacturer strictly. Attention should be paid to the connection of lithium battery especially.

Do not attempt to disassemble the battery pack arbitrarily.

Please get highlighted that lithium battery packs can be wired in parallel and in series. In the parallel connection, the battery's capacity is calculated by multiplying single battery capacity by the number of cells with total voltage stay the same. The voltages imbalance may cause fire or explosion .Lithium battery is recommended to charge in series.

❶ 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 charging. The final discharge voltage should be set up correctly to avoid deep-discharging. Lithium battery can not be discharged to lower than the minimum voltage, or it will cause a rapid loss of capacity or a total failure. Generally, lithium battery doesn't need to be discharged. Please pay attention to the minimum voltage of lithium battery to protect the battery. Some rechargeable batteries have a memory effect. If they are partly used and

recharged before the whole charge is accomplished, they remember this and will only use that part of their capacity next time. This is a memory effect. It is said that NiCd and NiMH batteries are suffering from memory effect. NiCd has more memory effect than NiMH.

Program Flow Chart

BATT/PROGRAM LiPo BATT	LiPo BALANCE CHG 2.0A 7.4V (2S)	LiPo CHARGE 2.0A 7.4V (2S)	LiPo FAST CHG 2.0A 7.4V (2S)	LiPo STORAGE 2.0A 7.4V (2S)	LiPo DISCHARGE 2.0A 7.4V (2S)
BATT/PROGRAM LiFe BATT	LiFe BALANCE CHG 2.0A 6.6V (2S)	LiFe CHARGE 2.0A 6.6V (2S)	LiFe FAST CHG 2.0A 6.6V (2S)	LiFe STORAGE 2.0A 6.6V (2S)	LiFe DISCHARGE 2.0A 6.6V (2S)
BATT/PROGRAM LiIo BATT	LiIo BALANCE CHG 2.0A 7.2V (2S)	LiIo CHARGE 2.0A 7.2V (2S)	LiIo FAST CHG 2.0A 7.2V (2S)	LiIo STORAGE 2.0A 7.2V (2S)	LiIo DISCHARGE 2.0A 7.2V (2S)
BATT/PROGRAM LiHV BATT	LiHV BALANCE CHG 2.0A 7.6V (2S)	LiHV CHARGE 2.0A 7.6V (2S)	LiHV FAST CHG 2.0A 7.6V (2S)	LiHV STORAGE 2.0A 7.6V (2S)	LiHV DISCHARGE 2.0A 7.6V (2S)
BATT/PROGRAM NiMH BATT	NiMH CHARGE CURRENT 2.0A	NiMH Auto CHARGE CURRENT 2.0A	NiMH DISCHARGE 0.1A CUT: 1.0V	NiMH RE-PEAK 1	NiMH CYCLE CHG>DCHG 1
BATT/PROGRAM NiCd BATT	NiCd CHARGE CURRENT 2.0A	NiCd Auto CHARGE CURRENT 2.0A	NiCd DISCHARGE 0.1A CUT: 1.0V	NiCd RE-PEAK 1	NiCd CYCLE CHG>DCHG 1
BATT/PROGRAM Pb BATT	Pb NORMAL CHG 2.0A 2.0V (1P)	Pb AGM CHG 0.1A 2.0V (1P)	Pb COLD CHG 0.1A 2.0V (1P)	Pb DISCHARGE 0.1A 2.0V (1P)	
BATT/PROGRAM BATT METER	4.20 4.19 4.19 V 0.00 0.00 0.00 V	MAIN 12.58V H4.20V L4.19V			
BATT/PROGRAM BATT RESISTANCE	5 3 3 mΩ 5 0 0 mΩ	TATAL: 16mΩ			
BATT/PROGRAM SYSTEM SETTING>	Safety Timer ON 120Min	Capacity Cut-Off ON 5000mAH	Temperature Unit Celsius	Rest Time CHG>DCHG 10Min	

Stop BATT PROG

Version HW:1.00 FW: 1.00	Load Factory Set Enter	DC Input Low Cut-Off 11.0V	Key Beep ON Buzzer ON	NiCd Sensitivity D.Peak 4mV	NiMH Sensitivity D.Peak 4mV

BATT/PROGRAM BATT MEMORY	[BATT MEMORY 1] ENTER SET->	BATT TYPE LiPo	BATT VOLTAGE 7.4V (2S)	CHARGE CURRENT 4.9A	DISCH CURRENT 2.2A	DISCHG VOLTAGE 3.0V/CELL
ENTER-3 Seconds	[BATT MEMORY 1] C:4.9A D:2.2A	[BATT MEMORY 1] LiPo 7.4V (2S)	SAVE PROGRAM SAVE….	SAVE PROGRAM ENTER	TVC=YOUR RISK 4.20V	
ENTER CHARGER LOAD……	LiPo BALANCE CHG 4.9A 7.4V(2S)	LiPo CHARGE 4.9A 7.4V(2S)	LiPo FAST CHG 4.9A 7.4V(2S)	LiPo STORAGE 4.9A 7.4V(2S)	LiPo DISCHARGE 2.2A 7.4V(2S)	
[BATT MEMORY 2] ENTER SET->	BATT TYPE NiMH	BATT VOLTAGE 2.4V (2S)	CHARGE CURRENT 3.3A	TRICKLE 100mA	PEAK DELAY 1Min	
[BATT MEMORY 2] C:1.0A D:1.0A	[BATT MEMORY 2] NiMH 2.4V (2S)	SAVE PROGRAM SAVE….	SAVE PROGRAM ENTER	DISCHG VOLTAGE 1.1V/CELL	DISCHG CURRENT 2.2A	
ENTER CHARGER LOAD……	NiMH CHARGE CURRENT 1.0A	NiMH Auto CHARGE CURRENT 1.2A	NiMH DISCHARGE 1.0A CUT: 2.0V	NiMH RE-PEAK 2	NiMH CYCLE DCHG>CHG 1	
[BATT MEMORY 3] ENTER SET->	BATT TYPE Pb	BATT VOLTAGE 4.0V (2P)	CHARGE CURRENT 3.3A	DISCHG CURRENT 1.5A	DISCHG VOLTAGE 1.7V/CELL	
Pb NORMAL CHG 2.0A 2.0V (1P)	ENTER CHARGER LOAD……	[BATT MEMORY 3] C:3.3A D:1.5A	[BATT MEMORY 3] Pb 4.0V (2S)	SAVE PROGRAM SAVE….	SAVE PROGRAM ENTER	
Pb AGM CHG 0.1A 2.0V (1P)	Pb COLD CHG 0.1A 2.0V (1P)	Pb DISCHARGE 1.5A 4.0V(2P)				

ENTER-3 Seconds

Explanation of Buttons

BATT PROG / STOP Button

It is used to stop the progress or go back to previous step/screen.

DEC Button

It is used to go through the menus and decrease the parameter value.

INC Button

It is used to go through the menus and increase the parameter value.

ENTER/Start Button

It is used to enter parameter or store parameter on screen.

PORT Button

It is used to switch between port A,B,C and D.

When you want to alter the parameter value in the program, press the ENTER/Start button to make it blink then change the value by pressing DEC and INC button. The value will be stored by re-pressing the ENTER/Start button. If there is another parameter can be altered in the same screen, when you confirm the first parameter value, the next parameter value will start to blink which means it is ready to alert.

When you want to start the progress, press and hold the ENTER/Start button for 3 seconds. When you want to stop the progress or go back to previous step/screen, press the BATT PROG/STOP button once. When you power on the charger, it will enter LiPo Battery balance program directly. You could change the mode (balance mode, normal charge mode, fast charge mode, store mode or discharge mode), enter the desired charging/discharging mode, set the referred parameter and start the progress.
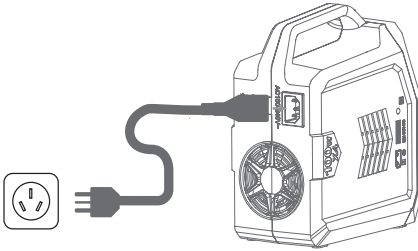
If you have no request for LiPo Battery program, please press the BATT PROG/STOP button to enter BATT PROGRAM screen.
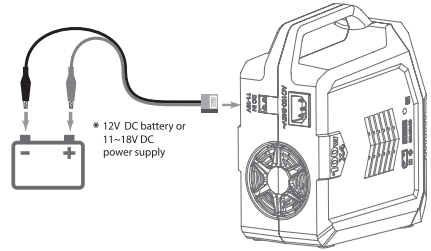
Power and Battery Connection

1. Connect to the power source
There are two ways to power SkyRC T400Q: DC 11-18V and AC 100-240V.

AC 100-240V Mains Power Supply:
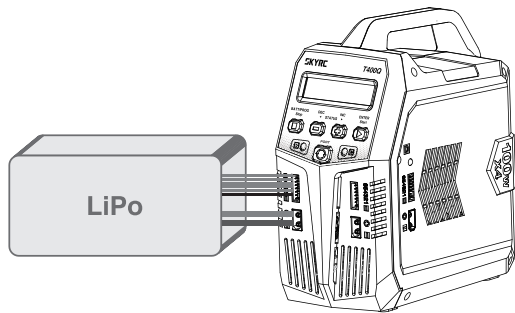
12V DC Battery / DC Power Supply:

✳ 12V DC battery or
11~18V DC
power supply

2. Connect the battery

⚠ **WARNING!** **TO AVOID SHORT CIRCUIT, ALWAYS CONNECT THE CHARGE LEADS TO THE CHARGER FIRST, AND THEN TO THE BATTERY. DISCONNECT THE PACK IN THE REVERSE ORDER**

1) LiPo Battery Connection

LiPo

For safety reasons, the default setting for charging Lithium (LiPo, LiIon, LiFe and LiHV) battery is using a balance adaptor to connect the battery and charger in Charge, Fast Charge, Balance Charge, Discharge and Storage modes.

But if the battery comes without balance wires, please proceed with the prompt message "No balance cable detected, push Enter to continue."

The balance wires of the battery must connect to the charger with the black wire aligned to the negative marking. Ensure correct polarity!

2) NiMH/NiCd or Pb Battery Connection
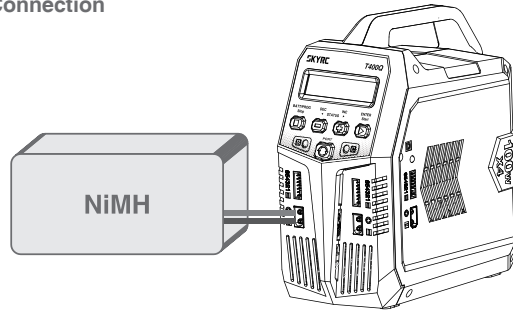
Charger Operation

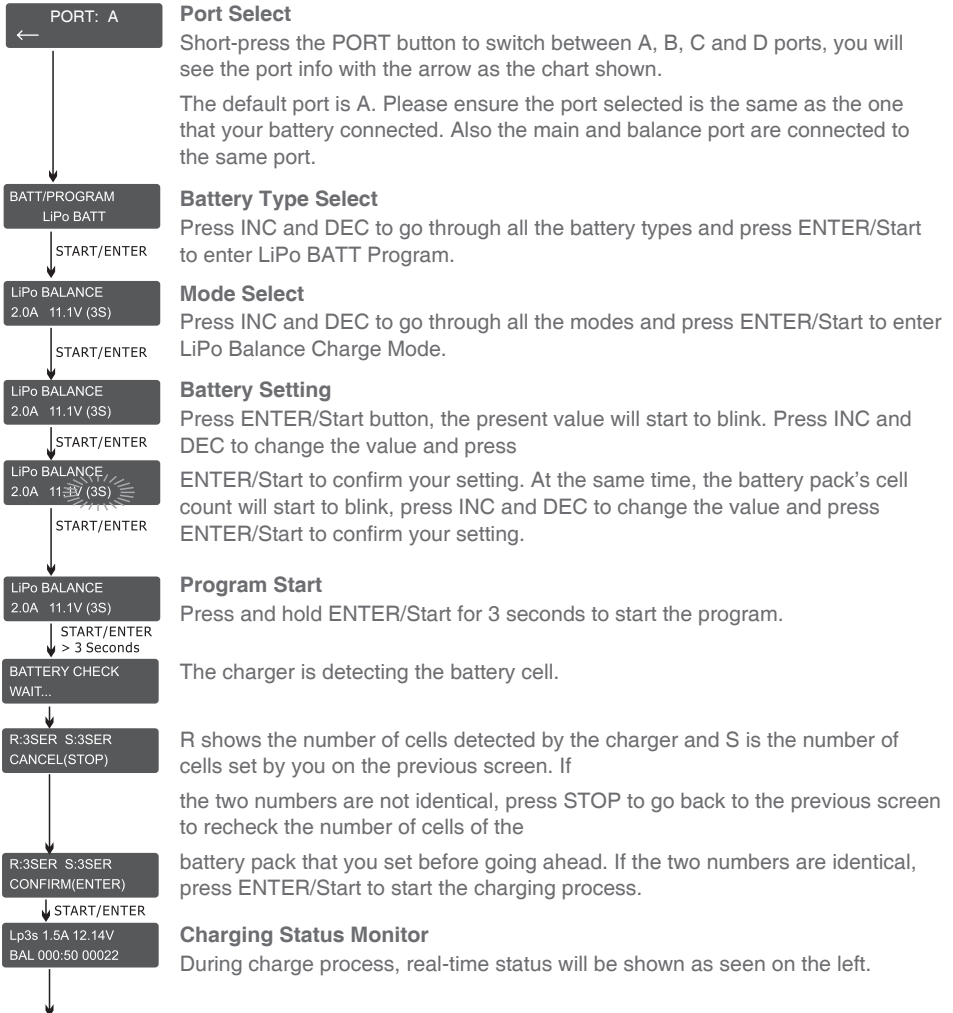Different battery type has different operation programs.

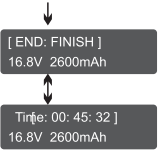| Battery Type	Working Mode	Description
LiPo LiHV LiIon LiFe	Balance Charge	This mode is for balancing charge the battery based on the charging rate the user set. It can balance each cells of the battery.
	Charge	This mode is for charging LiPo/LiHV/LiFe/LiIon battery based on the charging rate the user set.
	Fast Charge	This mode is for fast charging LiPo/LiHV/LiFe/LiIon battery based on the charging rate the user set.
	Discharge	This mode is for discharging LiPo/LiHV/LiFe/LiIon battery based on the discharging rate the user set.
	Storage	This mode is for storing the battery via charging or discharging its votlage to a specific storage value.
NiMH NiCd	Charge	This mode is for charging NiMH/NiCd battery based on the charging rate the user set.
	Auto Charge	In this program the charger detects the condition of the battery which is connected to the output and automatically charges the battery. Note: you should set up the upper limit of the charge current to avoid damage by excessive feeding current. Some batteries of low resistance and capacity can lead to higher current.
	Cycle Charge/ Discharge	1 to 5 cyclic and continuous process of charge>discharge or discharge>charge is operable for battery refreshing and balancing to stimulate the battery's activity.
	Re-Peak Charge	In re-peak charge mode, the charger can peak charge the battery once, twice or three times in a row automatically. This is good for confirming the battery is fully charged, and for checking how well the battery receives fast charges.
	Discharge	This mode is for discharging NiMH/NiCd battery based on the discharging rate the user set.
Pb	Charge	This mode is for charging Pb battery based on the charging rate the user set.
	Discharge	This mode is for discharging Pb battery based on the discharging rate the user set.
	AGM Charge	This mode is for charging AGM battery based on the charging rate the user set.
	Cold Charge	This mode is for charging Pb battery under a low temperature(0°C)based on the charging rate the user set.

Lithium Battery Program (LiPo/LiFe/LiIon/LiHV)

1, A memory profile is available for setting and storing pertinent information for up to 40 different program sets; each port can store 10 programs. Once a battery program is stored into memory, it will be retained until changed again manually. Recalling a program memory number makes the charger instantlyready to go!

2, If you do not wish to use the battery program memories, this charger can be manually set before each use.

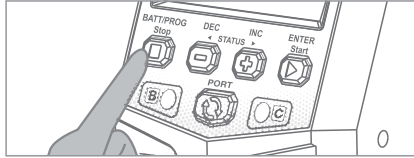The following flowchart shows how the program is set manually:

```
PORT:  A
←
```

Port Select

Short-press the PORT button to switch between A, B, C and D ports, you will see the port info with the arrow as the chart shown.

The default port is A. Please ensure the port selected is the same as the one that your battery connected. Also the main and balance port are connected to the same port.

```
BATT/PROGRAM
LiPo BATT
```

↓ START/ENTER

Battery Type Select

Press INC and DEC to go through all the battery types and press ENTER/Start to enter LiPo BATT Program.

```
LiPo BALANCE
2.0A  11.1V (3S)
```

↓ START/ENTER

Mode Select

Press INC and DEC to go through all the modes and press ENTER/Start to enter LiPo Balance Charge Mode.

```
LiPo BALANCE
2.0A  11.1V (3S)
```

↓ START/ENTER

Battery Setting

Press ENTER/Start button, the present value will start to blink. Press INC and DEC to change the value and press

```
LiPo BALANCE
2.0A  11.1V (3S)
```

↓ START/ENTER

ENTER/Start to confirm your setting. At the same time, the battery pack's cell count will start to blink, press INC and DEC to change the value and press ENTER/Start to confirm your setting.

```
LiPo BALANCE
2.0A  11.1V (3S)
```

↓ START/ENTER
> 3 Seconds

Program Start

Press and hold ENTER/Start for 3 seconds to start the program.

```
BATTERY CHECK
WAIT...
```

The charger is detecting the battery cell.

```
R:3SER  S:3SER
CANCEL(STOP)
```

R shows the number of cells detected by the charger and S is the number of cells set by you on the previous screen. If

the two numbers are not identical, press STOP to go back to the previous screen to recheck the number of cells of the

```
R:3SER  S:3SER
CONFIRM(ENTER)
```

↓ START/ENTER

battery pack that you set before going ahead. If the two numbers are identical, press ENTER/Start to start the charging process.

```
Lp3s 1.5A 12.14V
BAL 000:50 00022
```

Charging Status Monitor

During charge process, real-time status will be shown as seen on the left.

```
[ END: FINISH ]
16.8V  2600mAh
```
```
Time: 00: 45: 32 ]
16.8V  2600mAh
```

Program Complete

Once the battery is fully charged, the screen will read "END:FINISH" and the charger will emit a ringing sound. The charger also displays battery voltage, charged capacity and elapsed time.

Program Stop

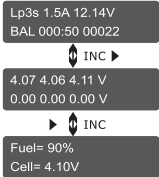During the charging process, press STOP to stop the charging process.

Video Tutorial Please scan and watch the tutorial video about how to charge LiPo battery in balance mode.

VARIOUS INFORMATION DURING THE PROCESS

Press INC or DEC during the charging or discharging process to view further pertinent information on the LCD screen.

```
Lp3s 1.5A 12.14V
BAL 000:50 00022
```
Real-time status: battery type, battery cell count, charge current, battery pack total voltage,working mode, elapsed time and charged capacity.

```
4.07 4.06 4.11 V
0.00 0.00 0.00 V
```
Voltage of each cell in the battery pack when the battery is connected with balance lead.

```
Fuel= 90%
Cell= 4.10V
```
Charged capacity percentage and average cell voltage of the battery pack.

- -
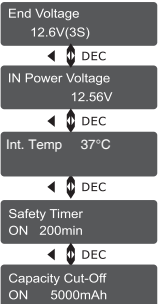
```
End Voltage
    12.6V(3S)
```
Final voltage when the program ends.

```
IN Power Voltage
          12.56V
```
Input voltage

```
Int. Temp    37°C
```
Internal temperature

```
Safety Timer
ON   200min
```
Safety timer ON and duration of time in minutes

```
Capacity Cut-Off
ON     5000mAh
```
Capacity cut-off ON and value of the set capacity limit.

NiMH/NiCd Battery Program

The T400Q offers the following NiMH/NiCd charge modes: Charge, Auto Charge, Discharge, Re-Peak and Cycle.

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU ARE CHARGING NIMH/NICD BATTERIES. CHARGING LIPO BATTERY UNDER NIMH/NICD BATTERY PROGRAM WILL CAUSE FIRE.

WARNING!

- -

NiMH/NiCd Charge Mode

```
BATT/PROGRAM
      BATT MEMORY
```
START/ENTER
```
NiMH CHARGER
CURRENT      2.0A
```
START/ENTER
```
NiMH 2.0A    5.42V
CHG  002:22  00106
```

```
[ END: FINISH ]
16.8V  2600mAh
```
```
[ TIME: 00: 45: 32 ]
16.8V  2600mAh
```

Battery Type Select
Press INC and DEC to go through all the programs and press ENTER/Start to enter NiMH BATT Program.

Press INC and DEC to go through all the modes and press ENTER/Start to select, and then the amp rate value will begin blinking. Use the DEC or INC button to adjust the value to the desired rate. Follow the instructions provided on your battery when setting the charge current. Press and hold the ENTER/Start button for 3 seconds to start charging.

Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, working mode, elapsed time and charged capacity.

Once the battery is fully charged, the screen will read "END: FINISH" and the charger will emit a ringing sound. You can press the STOP button at any time during the charging process to stop charging.

NiMH/NiCd Auto Charge Mode

In this mode, the charger automatically detects the connected NiMH or NiCD battery and determines the proper full charge and cut-off thresholds. Setting the upper charge current limit for safe levels based on your battery specifications will ensure safe

charging of your specific battery. If you are unsure of the maximum allowable charge rates, set the charger to a maximum of 1C (battery mAh/1000, e.g. 3200mAh = 3.2A).
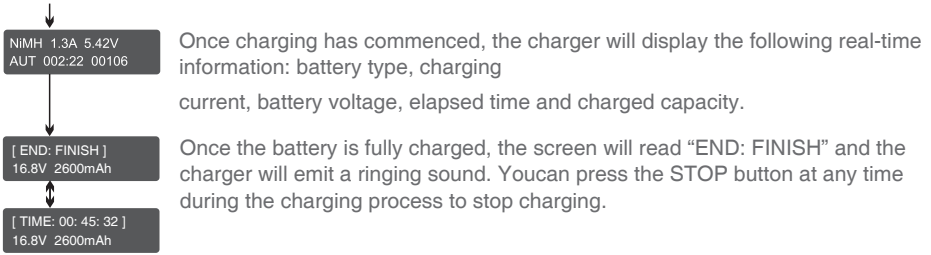
```
NiMH  Auto  CHARGE
CURRENT 1.3A
```
START/ENTER

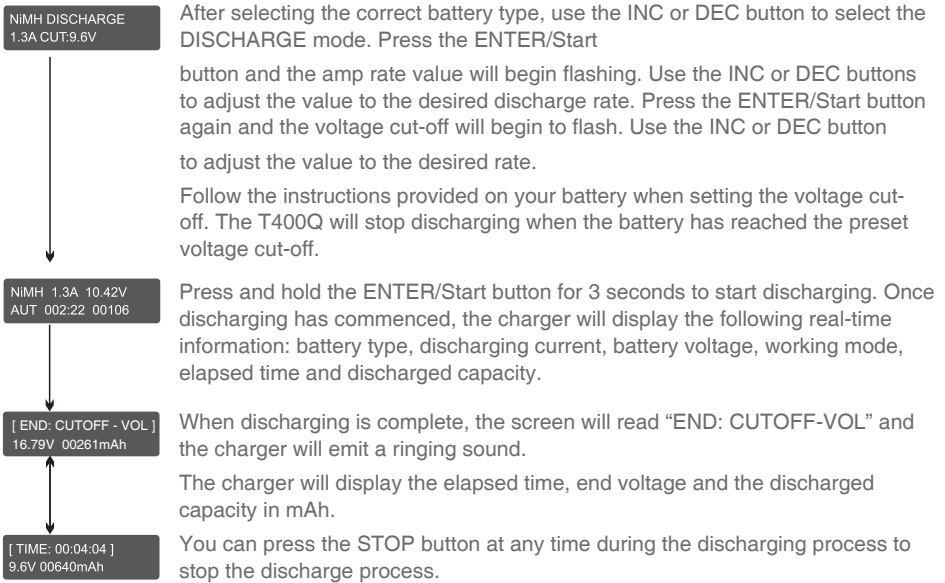After selecting the correct battery type, use the INC or DEC button to change the charge mode to the Auto CHARGE

setting. Press the ENTER/Start button and the amp rate value will begin flashing. Use the INC or DEC button to adjust the value to the desired rate. Follow the instructions provided on your battery when setting the upper charge amperage rate.

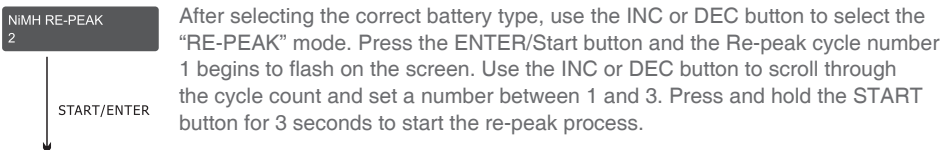Press and hold the ENTER/Start button for 3 seconds to start charging.

```
NiMH 1.3A 5.42V
AUT 002:22 00106
```

Once charging has commenced, the charger will display the following real-time information: battery type, charging

current, battery voltage, elapsed time and charged capacity.

```
[ END: FINISH ]
16.8V 2600mAh
```

```
[ TIME: 00: 45: 32 ]
16.8V 2600mAh
```

Once the battery is fully charged, the screen will read "END: FINISH" and the charger will emit a ringing sound. Youcan press the STOP button at any time during the charging process to stop charging.

NiMH/NiCd Discharge Mode

```
NiMH DISCHARGE
1.3A CUT:9.6V
```

After selecting the correct battery type, use the INC or DEC button to select the DISCHARGE mode. Press the ENTER/Start

button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired discharge rate. Press the ENTER/Start button again and the voltage cut-off will begin to flash. Use the INC or DEC button

to adjust the value to the desired rate.

Follow the instructions provided on your battery when setting the voltage cut-off. The T400Q will stop discharging when the battery has reached the preset voltage cut-off.

```
NiMH 1.3A 10.42V
AUT 002:22 00106
```

Press and hold the ENTER/Start button for 3 seconds to start discharging. Once discharging has commenced, the charger will display the following real-time information: battery type, discharging current, battery voltage, working mode, elapsed time and discharged capacity.

```
[ END: CUTOFF - VOL ]
16.79V 00261mAh
```

When discharging is complete, the screen will read "END: CUTOFF-VOL" and the charger will emit a ringing sound.

The charger will display the elapsed time, end voltage and the discharged capacity in mAh.

```
[ TIME: 00:04:04 ]
9.6V 00640mAh
```

You can press the STOP button at any time during the discharging process to stop the discharge process.

NiMH/NiCd Re-Peak Mode

Applicable to NiMH and NiCD batteries only, in re-peak mode the charger can peak charge the battery once, twice, or three times in a row automatically. This process is good for confirming that the battery is fully charged and for verifying how well the

battery can accept a fast charge. A five-minute cool-down delay occurs after each repeak charge.

```
NiMH RE-PEAK
2
```

```
START/ENTER
```

After selecting the correct battery type, use the INC or DEC button to select the "RE-PEAK" mode. Press the ENTER/Start button and the Re-peak cycle number 1 begins to flash on the screen. Use the INC or DEC button to scroll through the cycle count and set a number between 1 and 3. Press and hold the START button for 3 seconds to start the re-peak process.

```
NiMH  1.3A  10.42V
RPC  004:04  00686
```

Once the Re-Peak process has begun, the charger will display the following real-time information: battery type, charging current, battery voltage, elapsed time and charged capacity. Once the Re-Peak process has completed, the screen will read RE-PEAK FINISH and the charger will emit a ringing sound. The charger will display the charged or discharged capacity of the last cycle.

NiMH/NiCd Cycle Mode

The T400Q makes cycling of NiMH/NiCd batteries easy. The process of discharging and recharging (cycling) can be performed automatically with one simple step and will improve the performance of NiMH/NiCd batteries. We strongly recommend

cycling any battery that has been discharged and stored for a period of time. This will increase the remaining usable battery life and also improve the battery performance.

```
NiMH CYCLE
DCHG > CHG 2
```

START/ENTER

After selecting the correct battery type, use the INC or DEC button to select the CYCLE mode. The Cycle Mode gives you two cycling options: DCHG>CHG or CHG>DCHG. The DCHG>CHG option will first discharge the battery andthen recharge the battery.

```
NiMH CYCLE
CHG > DCHG 5
```

The CHG>DCHG option will first charge the battery and then discharge the battery. If this screen does not show your desired cycling option, press the ENTER/Start button once and this setting will begin flashing. Use the INC or DEC button to change this setting.

Pressing the START button again will cause the cycle count to begin flashing. Use the INC or DEC button to change this to the number of cycles you want the T400Q to run. The T400Q can cycle the battery a maximum of 5 times consecutively. Press and hold the ENTER/Start button for 3 seconds to start the Cycle Mode.

```
NiMH  0.5A  9.6V
D > C  004:04  00034
```

Once cycling has commenced, the charger will display the following real-time information: battery type, charging/discharging current, battery voltage, working mode, elapsed time and charged/discharged capacity. You will also see D>C or C>D. This will indicate which cycling order you have chosen. Either "D" or "C" will be flashing. This flashing indicates which part of the cycle is currently being executed.

Once the Cycle process has completed, the screen will read CYCLES FINISH and the charger will emit a ringing sound. The charger will display the charged or discharged capacity of the last cycle.

Additional NiMH/NiCd Process Information

During the NiMH/NiCd battery charging/discharging process, the T400Q can display a variety of information. Using the INC or DEC buttons, you can also view the following information:

```
Safety Timer
ON 200min
```
Safety Timer Setting

```
Capacity Cut-Off
ON 5000mAh
```
Capacity Limit Setting

```
Int. Temp    37°C
```
Internal Temperature

```
In Power Voltage
12.56V
```
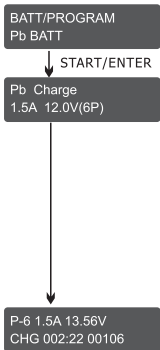Input Voltage

```
NiMH Sensitivity
D.Peak 4mV/CELL
```
Delta Peak Voltage Sensitivity Setting

Pb Lead-Acid Battery Program

This program is only suitable for charging Pb(lead-acid) batteries with nominal voltage ranging from 2 to 20V which are significantly different from NiMH/NiCd batteries. Pb batteries are suggested to charge with a low current of 0.1C and cannot be used for fast charging. Please follow the instructions provided by the battery manufacturer. The T400Q offers the following Pb charge modes: Charge and Discharge.

Pb Charge Mode

```
BATT/PROGRAM
Pb BATT
```
START/ENTER
```
Pb  Charge
1.5A  12.0V(6P)
```

```
P-6 1.5A 13.56V
CHG 002:22 00106
```

After selecting the correct battery type, use the INC or DEC button to change it to the NORMAL CHG mode.

Press the ENTER/Start button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired charge rate. The amp rate should be set to 1/10th of capacity. For example, if you are charging a 20Ah battery the charge rate should be set to 2A. Follow the instructions provided on your battery when setting the amp rate.

Press the ENTER/Start button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC button to set the voltage and the number of cells. Press and hold the ENTER/Start button for 3 seconds to start charging.

Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, working mode, elapsed time and charged capacity.

When charging is complete, the screen will read FINISHED and the charger will emit a ringing sound.

Pb AGM Charge Mode

```
Pb  AGM CHG
1.5A  12.0V(6P)
```

```
P-6 1.5A 13.56V
CHG 002:22 00106
```
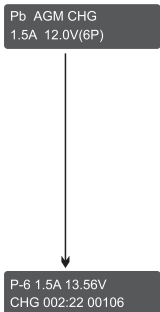
After selecting the correct battery type, use the INC or DEC button to change it to the AGM CHARGE mode. Press the ENTER/Start button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired charge rate. The amp rate should be set to 1/10th of capacity. For example, if you are charging a 20Ah battery the charge rate should be set to 2A. Follow the instructions provided on your battery when setting the amp rate.

Press the ENTER/Start button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC button to set the voltage and the number of cells. Press and hold the ENTER/Start button for 3 seconds to start charging.

Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, working mode, elapsed time and charged capacity.

When charging is complete, the screen will read FINISHED and the charger will emit a ringing sound.

Pb Cold Charge Mode

Pb COLD CHG
1.5A 12.0V(6P)

After selecting the correct battery type, use the INC or DEC button to change it to the Pb COLD CHG mode. Press the ENTER/Start button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired charge rate. The amp rate should be set to 1/10th of capacity. For example, if you are charging a 20Ah battery the charge rate should be set to 2A. Follow the instructions provided on your battery when setting the amp rate.

Press the ENTER/Start button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC button to set the voltage and the number of cells. Press and hold the ENTER/Start button for 3 seconds to start charging.

P-6 1.5A 13.56V
CHG 002:22 00106

Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, working mode, elapsed time and charged capacity.

When charging is complete, the screen will read FINISHED and the charger will emit a ringing sound.

Pb Discharge Mode

Pb Discharge
1.5A 12.0V(6P)

After selecting the correct battery type, use the INC or DEC button to change it to the Pb Discharge mode. Press the ENTER/Start button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired discharge rate. Follow the instructions provided on your battery when setting the amp rate.

Press the ENTER/Start button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC button to set the voltage and the number of cells. Press and hold the ENTER/Start button for 3 seconds to start discharging.

P-6 1.0A 13.56V
DCH 005:10 00964

Once discharging has commenced, the charger will display the following real-time information: battery type, discharging current, battery voltage, working mode, elapsed time and discharged capacity.

When charging is complete, the screen will read FINISHED and the charger will emit a ringing sound.

Additional Pb Process Information

During the Pb battery charging/discharging process, the T400Q can display a variety of information. Using the INC or DEC buttons you can also view the following information:

Capacity Cut-Off
ON 5000mAh

Capacity Limit
Setting

Safety Timer
ON 200min

Safety Timer
Setting

In Power Voltage
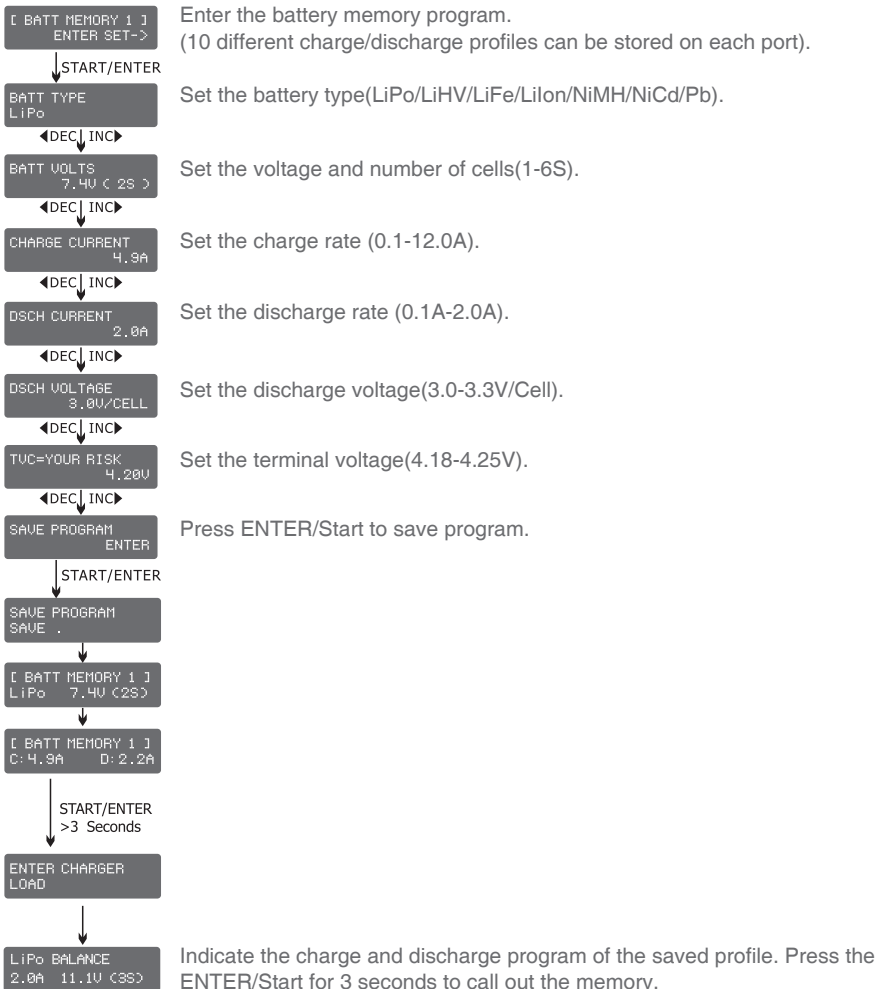12.56V

Input
Voltage

Int. Temp   37°C

Internal
Temperature

Battery Memory Set and Call Out

The charger can store up to 10 different charge/discharge profiles on each port for your convenience, and the stored profiles can be recalled quickly without having to go through the setup process. When you want to alter the parameter value in the program, press ENTER/Start to make it blink then change the value with INC or DEC. The value will be stored by pressing ENTER/Start once.
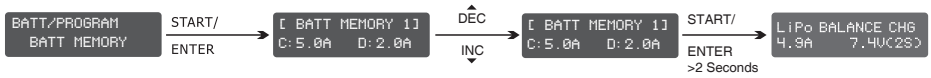
Note: All following screen are taking 2S(7.4V) LiPo battery for example.

1, Battery Memory Set

```
[ BATT MEMORY 1 ]
    ENTER SET->
```
Enter the battery memory program.
(10 different charge/discharge profiles can be stored on each port).

START/ENTER

```
BATT TYPE
LiPo
```
◄DEC | INC►

Set the battery type(LiPo/LiHV/LiFe/LiIon/NiMH/NiCd/Pb).

```
BATT VOLTS
      7.4V ( 2S )
```
◄DEC | INC►

Set the voltage and number of cells(1-6S).

```
CHARGE CURRENT
           4.9A
```
◄DEC | INC►

Set the charge rate (0.1-12.0A).

```
DSCH CURRENT
          2.0A
```
◄DEC | INC►

Set the discharge rate (0.1A-2.0A).

```
DSCH VOLTAGE
       3.0V/CELL
```
◄DEC | INC►

Set the discharge voltage(3.0-3.3V/Cell).

```
TVC=YOUR RISK
          4.20V
```
◄DEC | INC►

Set the terminal voltage(4.18-4.25V).

```
SAVE PROGRAM
          ENTER
```
Press ENTER/Start to save program.

START/ENTER

```
SAVE PROGRAM
SAVE .
```

```
[ BATT MEMORY 1 ]
LiPo  7.4V (2S)
```

```
[ BATT MEMORY 1 ]
C:4.9A   D:2.2A
```

START/ENTER
>3 Seconds

```
ENTER CHARGER
LOAD
```

```
LiPo BALANCE
2.0A  11.1V (3S)
```
Indicate the charge and discharge program of the saved profile. Press the ENTER/Start for 3 seconds to call out the memory.

2, Battery Memory Call Out

Press ENTER/Start to enter into the battery memory program.
Press INC or DEC to select the stored profile.

| BATT/PROGRAM BATT MEMORY | START/ ENTER → | [BATT MEMORY 1] C:5.0A D:2.0A | DEC ↑ INC ↓ | [BATT MEMORY 1] C:5.0A D:2.0A | START/ ENTER >2 Seconds | LiPo BALANCE CHG 4.9A   7.4V(2S) |

Press and hold ENTER/Start for 3 seconds to start the program.

System Setting

It will be operated with the default value of the essential user settings when it is powered on for the first time.The screen displays the following information in sequence and the user can change the value of parameter on each screen.

When you want to alter the parameter value in the program, press ENTER/Start to make it blink then change the value with INC or DEC. The valuewill be stored by pressing ENTER/Start once.

ITEM	SELECTION	DESCRIPTION
Safety Timer ON 120Min	OFF/ ON (120 Min)	When you start a charge process, the internal safety timer automatically starts running at the same time. This is programmed to prevent overcharge the battery if it proves to be faulty, or if the termination circuit cannot detect the battery full. The value for the safety timer should be generous enough to allow a full charge of the battery.
Capacity Cut-Off ON 5000mAH	OFF/ ON (100-50000 mAh)	This program sets the maximum charge capacity that will be supplied to the battery during charge. If the delta peak voltage is not detected nor the safety timer expired by any reason, this feature will automatically stop the process at the selected capacity value.
Temperature Unit Celsius	Celsius Fahrenheit	You can choose the temperature displayed by Celsius or Fahrenheit as you like.
Rest Time CHG>DCHG 10Min	1-60Min	A rest time allowing the battery to cool down between charging/ discharging cycle.
NIMH SENSITIUITY D:PEAK 4MU NICD SENSITIUITY D:PEAK 4MU	Default: 4mV/Cell 3-15mV/Cell	This program is for NiMH/NiCd battery only. When the charger detects the delta peak value reaches the value you set, the charger will say the battery is fully charged.
Key Beep ON Buzzer ON	OFF/ON	The beep sounds at every time touching the buttons to confirm your action. The beep or melody sounded at various times during operation to alert different mode changes.
DC INPUT LOW CUT-OFF 11.0V	10.0-11.0V	There will be error message when DC input voltage is lower than the preset value.
LOAD FACTORY SET ENTER		Press ENTER to load factory default setting.
VERSION HW:1.00 SW:1.00		It indicates the hardware and firmware version.

Battery Voltage Meter

The user can check battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage.

Please connect the battery to the charger main battery lead and balance wires to balance socket.

This diagram shows the correct way to connect your battery to check the voltage.

LiPo

```
BATT/PROGRAM
    BATT METER
```
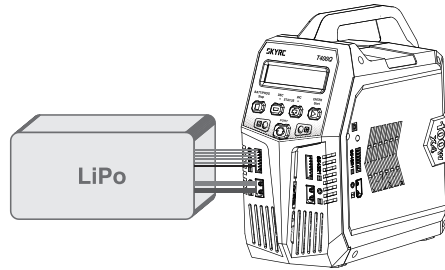
START
ENTER

Press ENTER/Start to enter the Lithium Battery Meter program.

```
4.20  4.19  4.19 V
4.18  4.18  4.19 V
```

INC▶

The screen indicate each cell's voltage.

```
MAIN 25.13V
H4.200V  L4.182V
```

The screen indicate the total voltage, the highest voltage and the lowest voltage.

Battery Resistance Meter

The user can check battery's total resistance, the highest resistance and the lowest resistance.

Please connect the battery to the charger main battery lead and balance wires to balance socket.

This diagram shows the correct way to connect your battery to check the voltage.

LiPo

```
BATT/PROGRAM
BATT RESISTANCE
```
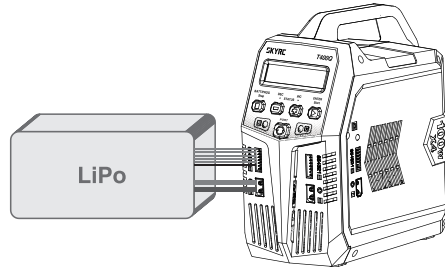
Start
Enter

Press ENTER/Start to enter the Lithium Battery Resistance program.

```
012 005 005   mΩ
006           mΩ
```

INC▶

The screen indicate each cell's resistance.

```
 TATAL: 28mΩ
H: 12mΩ   L: 5mΩ
```

The screen indicate the total resistance, the highest resistance and the lowest resistance.

Warning and Error Message

In case of an error the screen will display the cause of error and emit an audible sound.

| REVERSE POLARITY | Incorrect polarity connected. |

| CONNECTION BREAK | The battery is interrupted. |

| CONNECT ERROR CHECK MAIN PORT | The balance connect is wrong. |

| BALANCE CONNECT ERROR | The balance connect is wrong. |

| DC IN TOO LOW | Input voltage less than 10V. |

| DC IN TOO HIGH | Input voltage higher than 22V. |

| CELL ERROR LOW VOLTAGE | Voltage of one cell in the battery pack is too low. |

| CELL ERROR HIGH VOLTAGE | Voltage of one cell in the battery pack is too high. |

| CELL ERROR VOLTAGE-INVALID | Voltage of one cell in the battery pack is invalid. |

| INT.TEMP.TOO HI | The internal temperature of the unit goes too high. |

| OVER CHARGE CAPACITY LIMIT | The battery capacity is more than the maximum capacity which the user sets. |

| OVER TIME LIMIT | The charging time is longer than the maximum charging time which the user sets. |

| CELL ERROR | The cell number is wrong. |

The Set Contains

SKYRC T400Q Charger
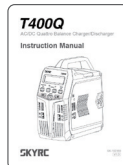
Instruction Manual

AC Power Cord

Specification

- DC Input Voltage:11-18V
- AC Input Voltage : 100-240V
- Display Type: 2x16 LCD
- Display Backlight: Blue
- Case Material: Plastic
- Controls: Five Buttons
- Case Size: 186*103*209mm
- Weight: 1610g
- External Port: 2-6S Balance Socket-XH, Battery Socket, DC Input.
- Delta Peak Detection for NiMH/NiCd: 3-15mV/cell / Default: 4mV/cell
- Charge Voltage: LiPo: 4.18-4.25V/S LiHV:4.25-4.35V/S

  LiFe: 3.58-3.7V/S LiIon: 4.08-4.2V/S

  PB: 2.40-2.45V/S
- NiMH/NiCd: Delta peak detection
- Balance Current: 500mA/cell
- Reading Voltage Range: 0.1-26.1V/cell
- Battery Types/Cells: LiPo/LiHV/LiFe/LiIon: 1-6S

  NiMH/NiCd: 1-15S

  Pb: 2-20V
- Battery Capacity Range:
- NiMH/NiCd: 100-50000mAh
- LiPo/LiHV/LiFe/LiIon: 100-50000mAh
- Charge Current: 0.1A-12.0A
- Charge Wattage: 100W X 4
- Discharge Current: 0.1A-2.0A
- Discharge Wattage: 10W
- Discharge Cut-off Voltage:
- NiMH/NiCd: 0.1-1.1V/S
- LiPo: 3.0-3.3V/S LiFe: 2.6-2.9V/S
- LiHV: 3.1-3.4V/S LiIon: 2.9-3.2V/S
- Pb: 1.8-2.0V/S
- Memory: The charger can store up to10 different charge/discharge profiles on each port.
- Charge Method: CC/CV for lithium types and lead (Pb) batteries

  Delta-peak Sensitivity for NiMH/NiCd.
- Capacity Cut-off: 100~50000mAh & OFF(default: 5000mAh)
- Safety Timer: 1~ 720min &OFF(default: 120mins)

Conformity Declaration

The T400Q satisfies all relevant and mandatory CE directives and FCC Part 15 Subpart B.

Test Standards	Title	Result
EN 60335-1:2012+A11:2014	Household and similar electrical appliances - Safety - Part 1: General requirements	Conform
EN 60335-2-29	Household and similar electrical appliances – Safety – Part 2-29: Particular requirements for battery chargers.	Conform
EN 55014-1:2017	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission	Conform
EN 55014-2:2015	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity Product Family Standard	Conform
EN 61000-3-2:2019	Electromagnetic compatibility (EMC) – Part 3-2: – Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)	Conform
EN 61000-3-3: 2013+A1:2019	Electromagnetic compatibility (EMC) - Part 3-3: Limitation of voltage supply systems for equipment with rated current ≤16 A.	Conform
FCC Part Subpart 15B	Title 47 Telecommunication PART 15 - RADIO FREQUENCY DEVICES Subpart B - Unintentional Radiators	Conform

This symbol means that you must dispose of electrical from the general household waste when it reaches the end of its useful life. Take your charger to your local waste collection point or recycling center. This applies to all countries of the European Union, and other European countries with a separate waste collection system.

Terminology

The voltage at which the battery's charge limit (capacity limit) is reached. The charge process switches from a high current to a low maintenance rate (trickle charge) at this point. From this point on further high current charging Would cause overheating and eventual terminal damage to the pack.

Final Discharge Voltage

the voltage at which the battery's discharge limit is reached. The chemical composition of the batteries determines the level of this voltage. Below this voltage the battery enters the deep discharge zone. Individual cells within the pack may become reverse polarized in this condition, and this can cause permanent damage.

A, mA

Unit of measurement relating to charge or discharge current.1000 Ma = 1 a (a=ampere,ma=milliampere)

Ah, mAh

Unit of measurement for the capacity of a battery (amperes x time unit; h = hour). If a pack is charged for one hour at a current of 2 a, it has been fed 2 ah of energy. It receives the same quantity of charge (2 ah) if it is charged for 4 hours at 0.5 A, or 15 minutes (=1/4 h) at 8 a.

C-rating

Capacity is also referred to as the 'C' rating. Some battery suppliers recommend charge and discharge currents based on the battery 'C' rating. A battery's '1C' current is the same number as the battery's rated capacity number, but noted in mA or amps. A 600mAh battery has a 1C current value of 600mA, and a 3C current value of (3 x 600mA) 1800mA or 1.8A. The 1C current value for a 3200mAh battery would be 3200mA (3.2A).

Nominal Voltage(V)

The nominal voltage of the battery pack can be determined as follows;

-.NiCd or NiMH: multiply the total number of cells in the pack by 1.2. A 8-cell pack will have a nominal voltage of 9.6 volts (8x1.2).

-.LiPo: multiply the total number of cells in the pack by 3.7. A 3-cell LiPo wired in series will have a nominal voltage of 11.1 volts (3x3.7).

-.LiIo: multiply the total number of cells in the pack by 3.6. A 2-cell LiIo wired in series will have a nominal voltage of 7.2 volts (2x3.6).

-.LiFe: multiply the total number of cells in the pack by 3.3. A 4-cell LiIo wired in series will have a nominal voltage of 13.2 volts (4x3.3).

-.LiHV: multiply the total number of cells in the pack by 3.7. A 4-cell LiIo wired in series will have a nominal voltage of 14.8 volts (4x3.7).

If the nominal voltage of the battery is not printed on the battery's label, consult your

battery manufacturer or supplier. Do not guess the rated voltage of battery.

Warranty and Service

Liability Exclustion

This charger is designed and approved exclusively for use with the types of battery stated in this Instruction Manual. SkyRC accepts no liability of any kind if the charger is used for any purpose other than that stated. We are unable to ensure that you follow the instructions supplied with the charger, and we have no control over the methods you employ for using, operating and maintaining the device. For this reason we are obliged to deny all liability for loss, damage or costs which are incurred due to the incompetent or incorrect use and operation of our products, or which are connected with such operation in any way.Unless otherwise prescribed by law, our obligation to pay compensation, regardless of the legal argument employed, is limited to the invoice value of those SkyRC products which were immediately and directly involved in the event in which the damage occurred.

Warranty and Service

We guarantee this product to be free of manufacturing and assembly defects for a period of one year from the time of purchase. The warranty only applies to material or operational defects, which are present at the time of purchase. During that period, we will repair or replace free of service charge for products deemed defective due to those causes.

This warranty is not valid for any damage or subsequent damage arising as a result of misuse, modification or as a result of failure to observe the procedures outlined in this manual.

Note:

❶ The warranty service is valid in China only.

❷ If you need warranty service overseas, please contact your dealer in the first instance, who is responsible for processing guarantee claims overseas. Due to high shipping cost, complicated custom clearance procedures to send back to China. Please understand SkyRC can't provide warranty service to overseas end user directly.

❸ If you have any questions which are not mentioned in the manual, please feel free to send email to info@skyrc.com