

# T series smart charger manual

Ver 1.1.179

# Introduction

T series is ISDT produced high-performance smart balance charger.

With T8 \ T6 \ T6 Lite

Please visit : [www.isdt.co](http://www.isdt.co) for more details on the functions of this smart charger, as well as purchase various accessories.

Functions of products will be kept on upgrading, the manual in your hand may be different from the actual operation; please refer to the actual functions.

This user guide update date is September 2017



## Revolution Starts Here

Innovative reform, Friendly to use

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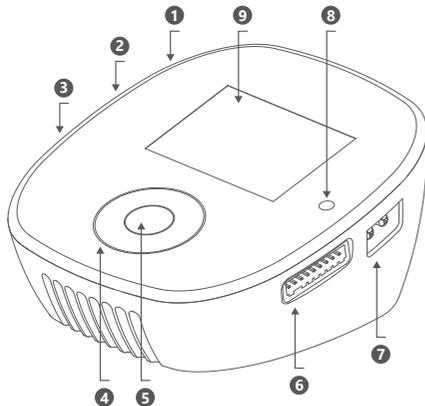
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## Warnings and Safety Tips

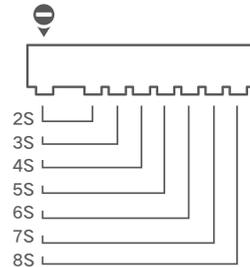
The following safety tips are essentially important. Please strictly follow the manual's instructions in operation to guarantee safety. Improper operation or incorrect working parameter settings may cause damages to the charger and battery and/or result to a fire.

- Do not use the charger in an unattended manner; in case of any functional abnormality, please stop using it and refer to the manual.
- Keep the charger away from dust, humidity, rain and high temperature, as well as avoid direct exposure to the sun and intense vibration.
- Charger power input for the DC T6 / T6 Lite (8-32V), T8 (12-40V), make sure the polarities are correct when connecting to the power supply.
- Please place the charger on a heat-resisting, non-flammable and insulating surface. Do not use it by placing it on the car's seats, carpet or other similar places. Keep inflammable and explosive objects away from operation areas of the charger.
- Make sure the heat emission hole at the bottom of the charger is uncovered while in use, and ensure the cooling fan smoothly extracts heat.
- Please fully understand the charging and discharging characteristics as well as the battery's specifications. Additionally, set up proper charging parameters in the charger. Incorrect setting of parameters can cause damage to the charger and battery and/or result to disastrous consequences such as fire or explosion.
- When charging or discharging is completed, please press the speed shuttle key to terminate current task, and remove the battery when the charger shows the standby screen.

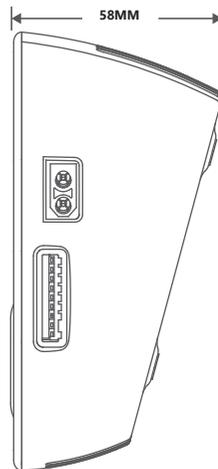
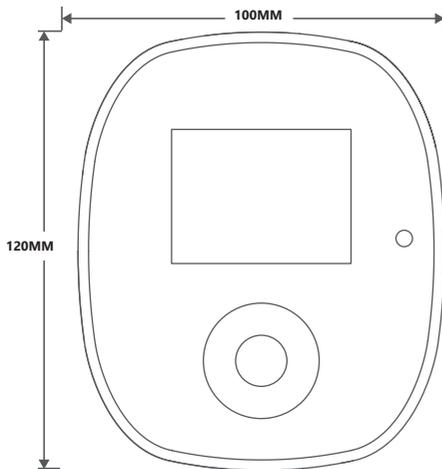
# Product Parameters and Characteristics



## Guide For the Connection of Balanced Port



- |                |                       |                 |
|----------------|-----------------------|-----------------|
| 1. Input port  | 4. Multi-function key | 7. Output port  |
| 2. Update port | 5. Enter key          | 8. Light sensor |
| 3. USB port    | 6. Balance port       | 9. Screen       |



## Product Parameters and Characteristics

	<b>T6 Lite</b>	<b>T6</b>	<b>T8</b>
Input Voltage	DC 8-32V	DC 8-32V	DC 12-40V
Maximum input current	30A	35A	35A
Output voltage	0-30V	0-30V	0-37V
<b>BattGO™</b> Support smart battery	Output support	Input/Output support	Input/Output support
Charge Current	0.1-25.0A	0.1-30.0A	0.1-30.0A
Discharge Current	0.1-5.0A	0.1-5.0A	0.1-5.0A
Max Charge Capacity	600W	780W	1000W
Max Discharge Capacity	20W	20W	20W
Balancing Current	1.5A/cell	1.5A/cell	2.2A/cell
Balance Cells	2-6S	2-6S	2-8S
USB Output	5V/2.1A	5V/2.1A	5V/2.1A
Color	black	black	multi-color cover
Supported Battery Type	LiFe/LiIon/LiPo/LiHv (1-6S) NiMH/Cd (1-16S) Pb (1-12S)	LiFe/LiIon/LiPo/LiHv (1-6S) NiMH/Cd (1-16S) Pb (1-12S)	LiFe/LiIon/LiPo/LiHv (1-8S) NiMH/Cd (1-21S) Pb (1-14S)
Display	2.4" 320x240 IPS LCD		
Operating Temperature	0-40°C		
Storage Temperature	-20-60°C		
Dimensions	100x120x58 mm		
Weight	305g		
Supported languages	English, German, French, Spanish, Japanese, Traditional Chinese, Simplified Chinese		

## Default Battery Type of Charger and Task Parameters

	NiCd/NiMH	Pd	LiFe	Lilon	LiPo	LiHv
Rated Voltage	1.20V	2.00V	3.20V	3.60V	3.70V	3.80V
Full Charge Voltage	1.40V	2.46V	3.65V	4.10V	4.20V	4.35V
Storage Voltage	Not supported	Not supported	3.30V	3.70V	3.80V	3.85V
Discharge Voltage	1.10V	1.90V	2.90V	3.20V	3.30V	3.40V
Pre-charge Voltage	0.90V	1.80V	2.60V	2.90V	3.00V	3.10V
Balance Charge	Not supported	Not supported	supported	supported	supported	supported
Unbalanced Charge	supported	supported	supported	supported	supported	supported
T6 Lite Support Cells	1-16S	1-12S	1-6S	1-6S	1-6S	1-6S
T6 Support Cells	1-16S	1-12S	1-6S	1-6S	1-6S	1-6S
T8 Support Cells	1-21S	1-14S	1-8S	1-8S	1-8S	1-8S
T6 Lite Max Charge Current	25.0A	25.0A	25.0A	25.0A	25.0A	25.0A
T6 Max Charge Current	30.0A	30.0A	30.0A	30.0A	30.0A	30.0A
T8 Max Charge Current	30.0A	30.0A	30.0A	30.0A	30.0A	30.0A

Please be cautious when selecting the charging parameters for different types of batteries; otherwise, the batteries may be damaged. Incorrect setting can result to fire and/or explosion.

## How to Confirm Charging Current

It is very important to know the maximum charging current of the battery as excessive current could influence the life span of battery and/or cause damages. In addition, excessive current can cause heating and/or explosion of the battery during the charging process.

The charging and discharging capacity of battery is usually marked with C value. Multiplying the charging C value and battery capacity equals to the maximum charging current supported by the battery. For example, for a 1000 mAh battery with a charging capacity of 5C, the maximum charging current would be  $1000 \times 5 = 5000\text{mA}$ ; therefore, the maximum charging current is 5A.

For a lithium battery, if it is impossible to confirm the supported charging C value, please set the charging current below 1C for the sake of its (lithium battery) safety.

The reference relation between C value and charging time: charging time  $\geq 60$  minutes / charging C value (it therefore needs around 60-70 minutes to complete charging with 1C). Due to differences in battery conversion efficiency, the period to complete the charging might be extended.

## Task Setting

Task Settings	
LiPo-8S	4.20V
Current	30.0A
Task	Charge
Input Limit	3.3V/Cell
Start	
Back	

Task Settings	
Battery Type	LiPo
Cells Voltage	4.20V
Cell Count	8S
Current	30.0A
Task	Charge
Input Limit	
Back	

### Input/Output BattGo smart battery

### Input/Output normal battery

Connect PSU to charger, wait until charger is in standby then connect your battery to charger. Short Press , you will see task setting below:

### Input/Output BattGo smart battery

LiPo-8S	Auto-detect battery type, battery cells
Current	Settings based on BattGo battery's parameter
Task	Select charge/discharge and storage
Input Limit	BattGo battery as input source, input limit could be set to 3.8v/cell or 3.3v/cell
Start	Start task
Back	Back

# Task Setting

## Input/Output normal battery

Battery Type	Battery type selection
Cells Voltage	End voltage slight adjustment, range $\pm 0.05v$
Cell Count	Battery cell selection, auto detection if balance port is connected
Current	Current selection, charge / store (T6 Lite) 0.1-25.0A (T6 T8) 0.1- 30.0A, discharge 0.1- 5.0A
Task	Select the task contents Charge / Discharge // Storage
Input Limit	Start task
Back	back

T series charger will charge battery in series, make sure output port is connected. For lithium battery, in order to detect each cell's voltage and make sure battery is well balanced, we strongly suggest user to connect balance port to do balance charging. When try to do unbalanced charging, before starting charger will give you warning.

### ● Storage function

While Select storage function, if battery voltage is lower than storage voltage, charger will perform charging task. If battery voltage is higher than storage voltage, charger will perform discharging function. While in charging and discharging, to save task time, charger will not do precise balancing.

When task finishes, there might be difference between setting voltage and real voltage. This is totally normal.

# Task Setting

## ● **Over-discharging battery reactivate and repair function**

Over-discharging battery reactivate and repair function

After charging task initiates, if battery voltage is lower than pre-charging voltage, charger will charge battery at 0.1A to reactivate and repair. After battery voltage is higher than pre-charging voltage, charger will charge battery as setting. This procedure can protect over-discharging battery then reactivate and repair

## ● **Resistance detection**

Charger support resistance detection. This function can only be used while charger is doing balancing charging. After initiating charging task in 2~3 minutes, charger can measure cell resistance. In different battery capacity, battery resistance is different. Generally speaking, higher the remaining capacity is, resistance is lower.

During resistance measurement, charger will adjust instantaneous current. So during charging if you find any sudden change of current, this is normal.

This value of resistance is not as precise as professional resistance meter. Resistance is only used for comparison for each cell. Also charging current influence resistance accuracy.

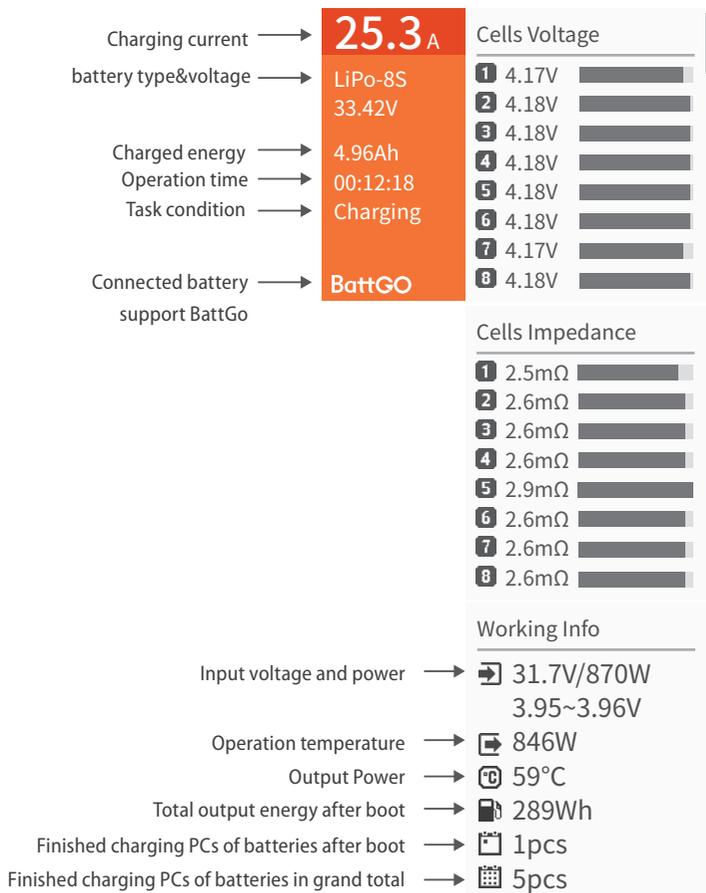
## ● **Charging process complete.**

During charging process, screen displays orange, after charging completion screen will change to green or blue. After charging completion, voltage difference between each cell is less than 20mV, screen will turn to green. If you are in hurry, it's good to stop the charging process. If keep charging, charger will continue balancing battery, if voltage difference is less than 10mV, screen will turn to blue. After that, charger will continue to precise balancing battery. If difference is small enough, after charging completion, charger jump to blue directly.

Due to the performance of different kinds of battery, after charging completion, voltage will fall a little. This is normal. For battery used for a lot of times, this will occur more often. Charging with higher current this circumstance would occur too.

Kind notice: For field charging, if you would like to do quick charging, when screen shows green it's ok to stop charging. If you would like to do precise charging, wait until blue.

# Working Parameters Display



## Fast Charging

Press  to check more info :

Voltage for each cell, resistance for each cell, operation status, input status, output status.

Resistance for each cell will display while charger is doing balance charging for at least 3 min.

Detail info for input/output only available while connecting with BattGo smart battery,

# Working Parameters Display

25.3 <small>A</small>	Cells Voltage	
LiPo-8S	<b>1</b>	4.17V
33.42V	<b>2</b>	4.18V
4.96Ah	<b>3</b>	4.18V
00:12:18	<b>4</b>	4.18V
Charging	<b>5</b>	4.18V
BattGO	<b>6</b>	4.18V
	<b>7</b>	4.17V
	<b>8</b>	4.18V

BattGo smart battery input info

## BattGO

BattGO  
 2017-07-28  
 LiPo-6S  
 20000 mAh

Battery brand  
 Production date  
 Battery type and cell  
 Battery capacity

Max charging C →

2C

25C ←

Max discharging C

Battery circulation →

10

0 ←

Times of over temperature

Battery overcharging times →

0

0 ←

Times of over discharge

BattGo smart battery output info

## BattGO

BattGO  
 2017-08-18  
 LiPo-8S  
 16000 mAh

5C

50C

19

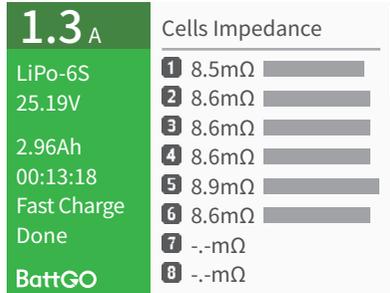
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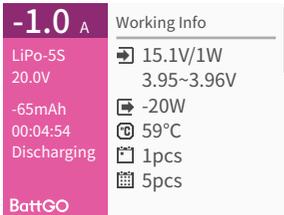
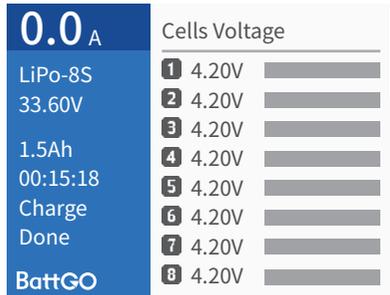
0

# Working Parameters Display

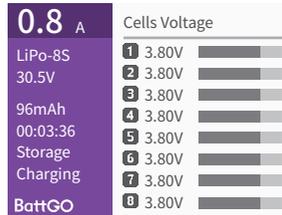
Fast charging complete



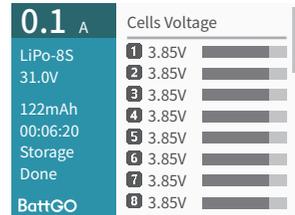
Precise Balance Charging



Discharge state



Storage status



Discharge / storage completion status

# System Default

	☰ Function	
	🇬🇧 Language	English
	📄 Firmware Sharing	...
	💬 System Information	...
	☑ System self-checking	...
	🔊 Volume	High
	🔔 Completion Tone	Repeat
	☀ Backlight	High
When using smart battery as input →	🔋 Max.input power	1000W
	🔋 Min.input voltage	12.0V
Input connecting to BattGo →	🔋 BattGO	...
Output connecting to BattGo →	🔋 BattGO	...
	← Back	

Max input power: when PSU could not meet max operation power(1000w), to protect PSU and charger working stability, user should adjust this value based on PSU. Eg:PSU with 12V/10A, this should be set to 120W.

Min input voltage: While using battery as input, this can help you avoid over discharge input battery. When charger detects input voltage is less than Min input voltage, charger will stop any on-going task and warn too low input voltage. Eg: 6S LiPo battery as input, set 21v as Min input to avoid over discharge battery.

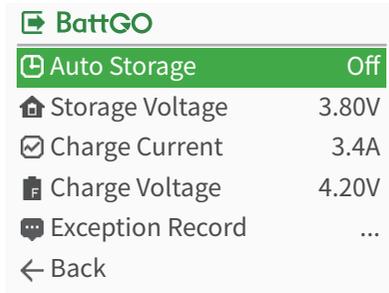
Beeper sound: When setting to off, this will mute operation sound, but won't mute warning alarm.

# System Default

In standby, long press to enter system setting.

Language	Support up to 7 languages
Firmware Sharing	By using ISDT sclinker, user can share firmware to same model.
System Information	Show firmware version
System self-checking	To check hardware is working properly
Volume	Beeper volume adjustment, high, middle low and off
Completion Tone	Single time or multiple time(1 time/ min)
Backlight	Back light adjustment, high, middle , low and auto
Max.input power	Input power range (T6 Lite)50-660W (T6)50-858W (T8)50-1100W
Min.input voltage	Input voltage range(T6 Lite/T6)8-32V (T8)12-40V
BattGO	Input connecting to BattGo battery, Storage, charge/discharge parameters could be adjusted.
BattGO	Output connecting to BattGo battery, Storage, charge/discharge parameters could be adjusted.
Back	Exit system menu

## System Default



Both input and output connecting to BattGo battery, system menu shows as below:

Auto Storage	When smart battery supports auto discharging, you can select after how many hours battery starts auto discharging.
Storage Voltage	Slight adjustment for storage voltage, from 0 to -0.20V
Charge Current	Charge current could be adjusted from 0 to Max current which smart battery could support.
Charge Voltage	Full voltage could be adjusted, from 0 to -0.10V
Exception Record	Over charge voltage, over discharge voltage, over temperature record
Back	back

## Troubleshoot

- Error in power on self-testing: the charger can automatically carry out a self-testing when connected to a power supply. A self-testing error warning sound should be heard when the charger is connected to the battery; power on after removing the battery for 5 minutes.
- Error for abnormal battery connection: pull out and plug in the battery again to ensure all connections are reliably contacted; if the error reminder continues, please check whether the metal parts on the battery interface are oxidized or burned resulting in unreliable connection.
- Error for unstable power voltage: check whether the battery socket is reliably connected, and whether the power of electric supply can match the input requirement of the charger. If capacity of PSU is less than charger's Max power, please adjust the max input power to match the power of electric supply in the system fault menu of the charger.

# Product Qualification Declaration

This smart charger conforms to relevant EC command and relevant commands in B: 2010, CHAPTER 15, FCC

Testing standards	Result
EN 55014-1:2006+ A1:2009+A2:2011	YES
EN 55014-2:1997+ A1:2001+A2:2008	YES



For electronic products with this marking in their manuals, please separately dispose them with family garbage. When a charger gets spoilt and cannot be used anymore, please take it to a nearby garbage station or recycle center.



WWW.ISDT.CO

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Changes in specifications and data will not be further noticed.