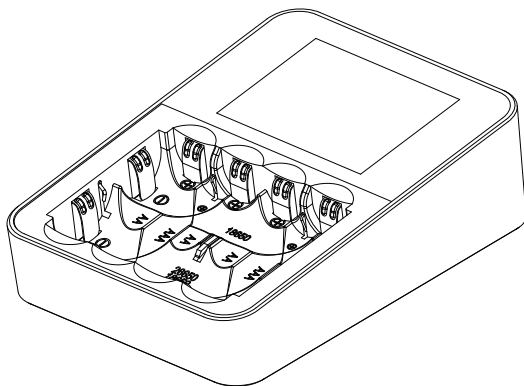




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C4 智能充电器操作说明书

C4 Smart Charger Operating Instructions

Changes in specifications and data will not be further noticed.

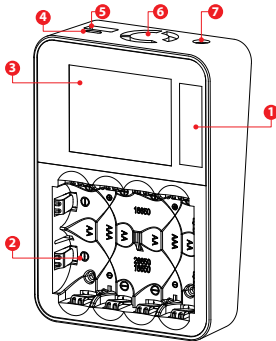
Disclaimer and warning

Thank you for purchasing the ISDT C4 smart charger.

C4 is one of the smart chargers which has excellent performance and supports almost all types of batteries, such as Li-Ion, LiHV, LiM-R, Ni-Ni, Ni-MH, Ni-cd, LiFePO4, Eneloop. It has high angle visible IPS display, detailed parameter and task progress. Different types batteries can be put into different slots and operate independently. The charger will identify battery type and choose the matched charging way.

Read this user manual and follow the instructions carefully before using your new charger.

1. Never charge a non-rechargeable battery;
2. Keep the charger away from humidity and high temperature while charging, and ensure the cooling fan heats sinking smoothly;
3. Do not let the children close to the charger. And do not leave the charger unattended.
4. Make sure the charging and discharging parameters is correct. Incorrect setting of parameters will result in disastrous consequences.
5. When the charging or discharging is completed, please cut off the power and remove the battery as soon as possible.



- | | |
|-------------------------|--------------|
| 1 Touch Key | 5 USB Port |
| 2 Battery Slot | 6 Fan Outlet |
| 3 IPS Display | 7 DC Input |
| 4 Micro USB Update Port | |

Specification

| | |
|-----------------------------|--|
| Model | C4 |
| Input Power | DC 12V - 2.5A |
| Circuit Power | max. Charge power 25W max. Discharge power 10W |
| Battery Count | 1 - 4 single cells, cylindrical |
| Battery Size | AAA, AA, 10440, 10500, 12500, 12650, 13500, 13650, 14500, 14650, 16650, 17650, 18650, 20650, 22650, 26650 |
| Operating Voltage Range | 0.2V - 5.0V/slot |
| Battery Chemistry Type | NiMH, NiCd, NiZn, Eneloop, Li-Ion, LiHV, LiFePO4 |
| Charge Current Range | 0.1A - 3.0A/slot |
| Discharge Current Range | 0.1A - 1.5A |
| Operation Modes | Charge, Discharge, Storage, Cycle, Activation, Analysis |
| Cycle Count | 1 - 99 cycles |
| Display | 320x240 IPS LCD |
| Beep Sound | Multi-tone |
| Temperature Sensors | 5 for inner |
| Operating Temperature | 0°C - 40°C |
| Calibration | Factory calibration |
| Voltage Measurement | ±10mV internal resolution |
| Current Measurement | ±10mA internal resolution |
| Standby Current Drain | <0.05mA/battery |
| External Ports | DC Input, Micro USB Link, USB power output |
| USB Power Output | DC 5V / 2.1A |
| Firmware Update | Yes |
| Reverse polarity protection | support |
| Over temperature protection | support |
| Over capacity protection | support |
| Dimensions (LxWxH) | 122x85x38mm |
| Material | PC+ABS casing, aluminum heatsink |
| Weight | 153g(approx.) |

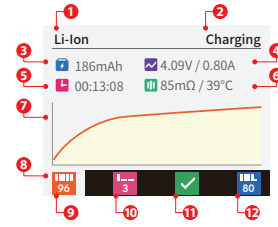
* The lateral length of batteries need to be controlled in 65mm-66.7mm

Task setting

Multiple combination manner could be used to charge-discharge, storage or circulate batteries, like 4s AA / 2s AAA/2s 18650/1s 26650.

Automatic mode

- 1) Connect the charger to a AC outlet (100-240V) or vehicle adapter.
- 2) Put the battery into C4 according to the positive and negative pole, then the boot screen comes up and will show charging state (as below pic) after buzzer 3 times.



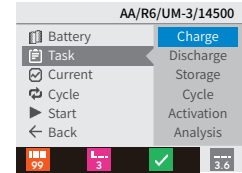
Interface

1. Battery type
2. Operation status
3. Capacity charged
4. Present voltage & current
5. Task operation time
6. Resistance & temperature
7. Voltage curve
8. Taskbar
9. Battery charge percentage
10. Battery discharge percentage
11. Charged finished
12. Battery circulate percentage

The taskbar shows each task status in one visual way, means charging, means discharge, activate, means circulate, analyze. After any task is completed, the will displayed on the screen instead of battery percentage. Each detailed task page would be cycle through the windows. Use button to cycle between modes.

manual mode

Put the battery into matched slot, and then the charger will start charge task automatic after buzzer 3 times. Meanwhile, users could touch the touch key to stay in the task page and change each parameter manually. The items are as follows:



| | |
|-----------------|--|
| Battery types | Select battery type |
| Task | Select task content: Charge, Discharge, Storage, Cycle, Activation, Analysis |
| Current setting | Select current: charge/storage: 0.1-3.0A, discharge: 0.1A-1.5A |
| cycle index | cycle index: 1-99 |
| Start task | Start to execute task |
| Back | Back |

How to confirm battery types

Usually, there are battery type or rated voltage on the battery surface. Users could compare the below list to confirm it. The charger will identify battery type automatically based on testing the voltage of batteries. And please select the battery types manually if the charger choose the wrong one.

* NiZn, LiHV batteries need to selected manually.

Default battery types of charger and task parameters

| | NiCd/NiMH | NiZn | Li-Ion | LiHV | LiFePO4 | Eneloop |
|---------------------|-----------|-------|--------|-------|---------|---------|
| Rated Voltage | 1.20V | 1.5V | 3.70V | 3.80V | 3.30V | 1.20V |
| Full charge voltage | 1.65V | 1.9V | 4.2V | 4.35V | 3.65V | 1.65V |
| Storage voltage | X | X | 3.70V | 3.80V | 3.20V | X |
| Discharge voltage | 0.90V | 1.20V | 3.10V | 3.30V | 2.90V | 0.90V |

Default charging current: AAA/10440-0.5A
AA/10500-1A
18650-2A
26650-2.5A

Default charging current would be selected automatically according to the length of battery. Please select the current manually if the battery has long length and small capacity, like 14650/16650 etc.

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 $1000 \times 5 = 5000$ 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 ≥ 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.

Storage functions

Please select storage functions if the battery will not be used for a long time. When selecting storage functions, automatic charging task can be initiated if the battery is lower than the preset storage voltage; likewise, automatic discharging task can be initiated if the battery voltage is higher than the preset storage voltage.

Circulative function

In this mode, the battery could be charging and discharging up to 99 cycles. And the memory effect of rechargeable battery could be erased under this mode as well.

Activation function

The charger would identify the battery as a non-rechargeable battery if it over-voltage into 0V. Users could select this mode to reconditioning the battery. Please change the battery if it still could not be charged after many times activation.

Battery activation use a low current to cycle charge-discharge-charge the battery. The battery would be activated in cyclical process. Sometimes it needs 2~3 *battery to complete activate it.

Analyze function

This function is applied to the battery which is stored for more than 2 weeks or with weak discharge performance. And this function could be also used to identify and match the battery capacity.

USB charge function


The maximum output of USB port is 2.1A. The charger could charging battery and your phone at same time. The battery charging power will be reduced automatically when charging over USB.

internal resistance measurement function

The charger is equipped with a function of measuring the cells' internal resistance. The cell voltage should be measured and calculated after the charging task has been initiated for 10s. The battery internal resistance can slightly vary under different electric quantities while the measured resistance value is usually relatively low as the electric quantity is large.

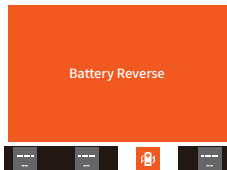
The charging current should be adjusted instantly as the charger measures the internal resistance of the battery; therefore, it is normal phenomenon for acute change of current to occur during charging.

Judgment of complete charging


After the charging is completed, the  will displayed on the screen instead of battery percentage. It is normal for voltage decline to occur due to different performances. As the number of the charge cycle grows, the performance decreases, and the voltage decline phenomenon becomes obvious. To charge the battery with a larger current would also cause a more obvious voltage decline after the charging is complete.

battery short circuit and reverse polarity protection

When the battery was reversed or short circuit, the charger would continue to prompt error until it has been take off. And the corresponding slots status will be showed as below:



System default

Touch the  button under light condition (no rechargeable battery) to make the system default pop up, and the items are as follows:

| Settings | |
|--------------------|---------|
| System Information | ... |
| Factory Parameter | ... |
| Language | English |
| Volume | Low |
| Backlight | High |
| Capacity Limit | On |
| Auto Charge | 3s |
| Cycle Display | 10s |
| ← Back | |

| System Information | system software information |
|--------------------|---|
| Factory Parameter | reset to factory defaults |
| Language | Default language setting |
| Volume | Three gears: high, medium, low; and off |
| Backlight | Three gears: high, medium, low |
| Capacity Limit | Set the maximum battery capacity |
| Auto Charge | Set the wait time for auto-charging |
| Cycle Display | cycle modes details in manual or Auto way |
| Back | back |

Buzzer volume: the default is OFF, the operation sound would be blocked, but not the sound of error warning.

firmware upgrade

ISDT always focus on pursuit of perfection. Every performance and algorithm improvement, visual optimization is built slowly over time by all the engineers. And all of this reflected in the firmware. More details about latest firmware please check our website.

C4 smart charger upgrade steps:

1. Connect the C4 and PC with a Micro USB cable
2. Power on the C4 to start work, and then the charger will enter into firmware upgrade mode automatically.
3. Use the "Update program" to start update according to the prompts.

FAQ

- Q:** Why the charger could not identify the battery?
A: Pull out and plug in the battery again to ensure all connections are reliably contacted; Please check whether the positive and negative electrode of the battery is well connected. And please try to put it into another slot see if the battery could be identified. Or please check whether the battery is over-voltage to an empty voltage. If the error reminder continues, please check whether the metal parts on the battery interface are oxidized or burned resulting in unreliable connection.
Q: Could I use the C4 to discharge a Li-ion or alkaline non-rechargeable battery? I try to verify the battery capacity.
A: The C4 could be used to discharge non-rechargeable battery. But please note: Never charge a non-rechargeable battery.
Q: Error in power on self-testing:

A: 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.


Q: I put 4 AA batteries into C4 and set the charging current to 3A, why the actual current could not reach to 3A?

A: The maximum charging power is 30W. The charger would be automatic change to a proper current to start charge if the setting exceeded the total power.

Product qualification declaration

C4 smart charger conforms to relevant EC command and relevant commands in B: 2010, CHAPTER 15, FCC

| Testing standards | result |
|-----------------------------|--------|
| EN 61000-6-3:2007 + A1:2011 | Yes |
| EN 61000-6-3:2007 | Yes |

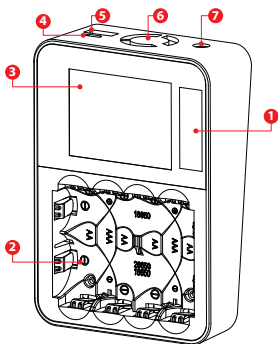

For electronic products with this marking in their manuals, please separately dispose them with family garbage. When a charger gets spoiled and cannot be used anymore, please take it to a nearby garbage station or recycle center.

安全注意事项:

感谢您购买ISDT C4充电器

C4是一款几乎能充所有类型电池的智能充电器，如Li-Ion、LiHv、IMR、INR、ICR、Ni-MH、Ni-Cd、LiFePO4、Eneloop电池，性能优异。配有高可视角度IPS显示屏，详尽的参数、任务进程详细显示。各通道可放入不同类型电池，执行不同任务，独立工作，并且能够针对不同类型的电池，采用不同的充电特性和充电方式。在使用本产品之前，请阅读这些说明和警告。

1. 请勿使用非充电电池；
2. 使用过程中确保充电器远离热源及潮湿环境，并注意通风散热；
3. 切勿让儿童操作充电器，请勿让充电器离开视线范围工作；
4. 正确设定电池充放电的参数，错误的设定可能导致意外；
5. 使用结束后，应尽快断开输入电源及移除电池。



- | | |
|----------------|---------|
| 1 触摸板 | 5 USB输出 |
| 2 电池插槽 | 6 风扇出风口 |
| 3 IPS显示屏 | 7 电源输入口 |
| 4 Micro USB升级口 | |

产品参数

| | |
|---------------|--|
| 型号 | C4 |
| 输入功率 | DC 12V - 2.5A |
| 功率 | 最大充电功率5W 放电功率 10W |
| 支持电池数量 | 1 - 4节圆柱形电池 |
| 电池尺寸 | AAA, AA, 10440, 10500, 12500, 12650, 13500, 13650, 14500, 14650, 16650, 17650, 18650, 20650, 22650, 26650 |
| 工作电压范围 | 0.2V - 5.0V / 每插槽 |
| 电池类型 | NiMH, NiCd, NiZn, Eneloop, Li-Ion, LiHv, LiFePO4 |
| 充电电流范围 | 0.1A - 3.0A / 每插槽 |
| 放电电流范围 | 0.1A - 1.5A |
| 操作模式 | 充电, 放电, 存储, 循环, 激活, 分析 |
| 循环次数 | 1 - 99 |
| 显示 | 320 × 240 IPS LCD |
| 蜂鸣音 | 多音调 |
| 温度传感器 | 内部5个 |
| 工作温度 | 0°C - 40°C |
| 校准 | 工厂校准 |
| 电压测量精度 | ± 10mV |
| 电流测量精度 | ± 10mA |
| 待机流失 | < 0.05毫安/电池 |
| 外部端口 | DC输入, Micro USB Link, USB电源输出 |
| USB电源输出 | DC 5V / 2.1A |
| 固件升级 | 是 |
| 反接保护 | 支持 |
| 温度保护 | 支持 |
| 过容保护 | 支持 |
| 尺寸(长 × 宽 × 高) | 122 × 85 × 38毫米 |
| 材料 | PC+ABS外壳, 铝散热片 |
| 重量 | 153克(约) |

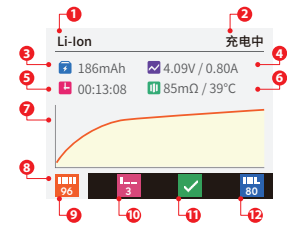
* 横向电池槽摆放尺寸需控制在65mm-66.7mm

任务设定

在此充电器中，可以以多种组合方式对4节AAA和/或2节AAA/或2节18650/或1节26650电池进行充电、放电、存储、循环等操作。

自动模式

- 1) 电源插头插入标准的100-240伏交流电插座或者车充，将电源线连接到充电器；
- 2) 将电池上的正极(+)和负极(-)与充电器上的正极(+)和负极(-)相匹配放入电池插槽；屏幕将显示开机画面，在三次蜂鸣声后(在此期间，正在对电池状态进行诊断)，显示屏将会显示充电状态，如下图：

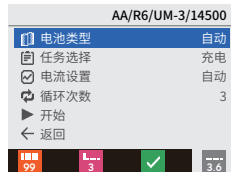


界面释义

1. 当前插槽电池类型
 2. 当前工作状态
 3. 此电池已充放电量
 4. 当前电压及电流
 5. 工作时间
 6. 此电池内阻及温度
 7. 电压曲线记录
 8. 任务快速预览栏
 9. 充电进行中及电池电量百分比
 10. 放电进行中及电池电量百分比
 11. 充电完成
 12. 循环进行中及电池电量百分比
- * 在任务快速预览栏中，可以直观显示各插槽任务状态， 为充电， 为放电， 为活化、循环及分析为，所有任务在完成后将会有代替电池电量百分比，在使用过程中将会循环切换各任务详情界面，用户也可以通过触摸按键切换显示各任务详情。

手动设置模式

将电池放入匹配的插槽中，充电器将在三次蜂鸣声后自动为电池执行自动充电，在此期间，轻触“触摸按键”，充电器将停留在任务设置界面，可手动修改各项参数，如下图：



| | |
|------|------------------------------------|
| 电池类型 | 电池类型选择 |
| 任务选择 | 选择任务内容，充电、放电、存储、循环、活化、分析 |
| 电流设置 | 电流选择，充电/存储 0.1- 3.0A, 放电 0.1- 1.5A |
| 循环次数 | 循环次数可选1-99次 |
| 开始 | 开始执行任务 |
| 返回 | 返回 |

如何选择电池类型

通常在电池外皮上会有电池类型或额定电压字样，可对照上表判断电池类型。充电器自动判断电池类型依据检测到的电压，对于自动识别类型错误的电池，请手动修正。

* NiZn, LiHv电池需要手动选择类型。

充电器预设电池类型及任务参数

| | NiCd/NiMH | NiZn | Li-Ion | LiHv | LiFePO4 | Eneloop |
|------|-----------|-------|--------|-------|---------|---------|
| 额定电压 | 1.20V | 1.5V | 3.70V | 3.80V | 3.30V | 1.20V |
| 满充电压 | 1.65V | 1.9V | 4.2V | 4.35V | 3.65V | 1.65V |
| 存储电压 | 不支持 | 不支持 | 3.70V | 3.80V | 3.20V | 不支持 |
| 放电电压 | 0.90V | 1.20V | 3.10V | 3.30V | 2.90V | 0.90V |

默认充电电流: AAA/10440-0.5A
AA/10500-1A
18650-2A
26650-2.5A

默认充电电流根据长度自动选择，对于长度较大，容量较小的电池进行充电时，如 12650/ 13650/ 14650/ 16650等，请手动调节电流大小。

如何确定充电电流

在充电前必须先了解清楚所用电池允许的最大充电电流,使用过大的电流对电池充电会对电池的寿命造成影响甚至损坏,过大的电流充电也会造成充电过程中电池发热甚至爆炸。

电池充放电能力一般以C数来标识,充电C数乘以电池容量就是电池所支持的最大充电电流,例如1000mAh的电池,标识充电能力为0.5C,那么最大充电电流为:1000*0.5=500mA,也就是最大支持0.5A充电。

对于锂电池而言,如果无法确定电池所支持的充电C数,为了安全起见请将充电电流设定在不大于1C的值。

充电C数与充电时间的参考关系:充电时间≥60分钟/充电C数(例如使用1C充电,充电完成时间大约需要60~70分钟),由于电池转换能效的差异,此时间有可能会有所延长。

存储

当锂电池需要长时间存放不使用时,建议采用此模式。选择存储功能时,电池如果低于预设存储电压,将自动进行充电任务;电池电压如高于预设存储电压,将自动进行放电任务。

循环

此模式下可以充/放循环99次。循环模式可消除可充电电池的记忆效应。

活化

当IMR电池过放到0V时,充电器会显示该电池为不可充电电池。这时可选择活化功能,即可对电池进行修复,如经过多次活化仍无法充电,建议更换有问题电池。

电池活化是通过电池的充电-放电-充电的循环方式,通常使用很低的速度将电池充饱。循环过程同时活化电池,有时需要2-3个循环才使电池完全被激活。

分析

适用于存放超过两个星期以上的电池,或者放电性能较弱的电池;此模式同时可以检测电池容量配对。

USB充电功能

USB最大输出2.1A,可与电池充电同时进行,当USB有输出时,电池充电功率会自动降低以满足USB输出。

内阻测量功能

本充电器具有电芯内阻测量功能,在充电任务开始后大约10秒钟可以测量并计算出电池内阻,电池内阻在不同电量时会存在差异,一般来说电量较多时测得的内阻值会较低。充电器对电池进行内阻测量时,会瞬间调整充电电流,因此充电过程中发现电流有突变属于正常现象。由于内阻测量方式的差异,无法实现类似于专业内阻测量仪绝对数测量。充电电流的大小对内阻测量的准确性有一定影响,大容量低内阻的电池,需要较大的充电电流方能准确测量出内阻。

任务结束判断

当任务执行结束时,在任务快速预览栏中将会显示✔代替电量百分比。电池在充放电结束后,由于性能的差异,电压会存在一定的回落,这属于正常现象。并且随着电池循环次数增多,性能逐步下降,这一现象会更明显。更大的充电电流进行充电,也会导致充满后电压回落的现象更加明显。

电池短路及反接保护

当装入电池反接或短路时,充电器将会连续报错,直至取下电池,相应的插槽状态将显示如下画面:



系统设定

在充电器所有电池插槽空置状态下,轻按触摸键○即可进入系统设置界面。



| | |
|--------|----------------------|
| 系统信息 | 系统信息、固件版本号等 |
| 恢复出厂设置 | 重置为出厂设定值 |
| 语言 | 系统语言设置 |
| 音量 | 蜂鸣器音量调节,分别为高中低以及关闭三档 |
| 背光亮度 | 屏幕背光亮度调节,分为高中低三档 |
| 容量限制 | 设置支持的最大电池容量 |
| 自动充电 | 开启自动充电模式等待时间 |
| 循环显示 | 循环切换各任务详情显示,分别为自动和手动 |
| 返回 | 返回 |

蜂鸣器音量:当设定为关时,将屏蔽操作声提示,但不会屏蔽错误提示音。

固件升级

ISDT出品的所有产品均在追求极致体验的道路上步履不停,每一次功效的提高,算法的提升,视觉的优化,都是研发工程师日积月累的成果,将它们累积在固件更新包中,在ISDT官网,你可以下载到最新的固件升级程序。

C4智能充电器升级步骤如下:

1. 用Micro USB数据线将PC与C4连接好;
2. 为C4连接电源开机,此时C4会自动进入固件更新模式;
3. 开启固件更新程序,按软件指引将固件更新至C4。

常见问题解答

Q 我已经在插槽内放入电池,但充电器没有反应?

A 重新拔插电池,并确保所有连接可靠接触,请检查电池正负极是否对充电器插槽的正负极接触良好,更改电池插槽是否能正常识别,测量电池是否过放到了空电压;如报错提示重复出现,须检查电池接触金属部件是否有氧化烧灼的现象影响接触可靠性。

Q 我通过C4给碱性或锂不可充电电池放电吗?我想验证它们的电池容量?

A 对一次性电池进行放电来确定它们的容量是可以的,但不要对它们进行充电操作;

Q 开机报错该如何处理?

A 开机自检时报错处理:充电器在上电时会自动执行自检程序,此时如果连接电池将可能会导致自检报错;报错后应移除电池,并断电5秒再上电。

Q 我已经将插槽内放入4个AA电池,并为每个电池设定了3A充电,为什么实际电流达不到3A呢?

A 请注意充放电功率限制,充电器最大充电功率为30W,当设定值超过充电器总功率时,充电器将会自动改为合适的电流进行充放电。

产品合格性声明

C4智能充电器符合相关的EC指令以及FCC第15章B: 2010相关指令。

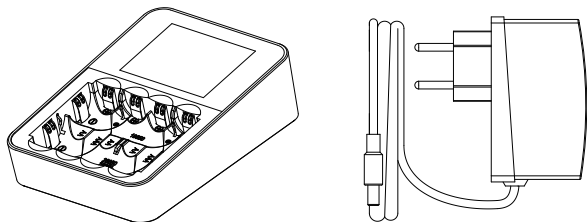
| 测试标准 | 结果 |
|-----------------------------|----|
| EN 61000-6-3:2007 + A1:2011 | 符合 |
| EN 61000-6-3:2007 | 符合 |



说明书中有此标志的电子产品,在处理时,请务必与家庭垃圾分开处理。请将报废的充电器拿去附近的垃圾收集中心或者循环使用中心。

包装内物品

请确认包装内包含下列物品: C4智能充电器, 电源适配器(插头规格因销售地区不同会有变化)



Package items

Package included:Please confirm the following items which is included in package :1x C4 smart charger,1 x power adapter(plug is different by region)