恒压恒流数控电源使用说明

Constant Voltage and Constant Current DC Power Supply Instruction

型号:RD6006/RD6006W/ RD6012/RD6012W/RD6018/RD6018W

Model: RD6006/RD6006W/ RD6012/RD6012W

修订时间 2020. 9. 17

Date: 2020. 9. 17

点击进入

CLICK VIEW

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型号:RD6006/RD6006W/ RD6012/RD6012W/RD6018/RD6018W

修订时间 2020-9-17

尊敬的用户，感谢您购买由杭州睿登科技有限公司出品的恒压恒流数控电源，为了让您更快了解本产品的全部功能，获得更好的使用体验，避免出现误操作，使用前请仔细阅读本说明并保留好，以便日后查阅。

注：本说明书对应固件版本 V1.30，不同固件版本下，界面或操作可能会有不同，使用时请注意。建议升级为最新固件，获取更好的使用体验。

目录

1.1 产品技术指标

产品型号	RD6006	RD6006W	RD6012	RD6012W	RD6018	RD6018W
输入电压范围	6-70.00V					
输出电压范围	0-60.00V					
输出电流范围	0-6.000A		0-12.00A		0-18.00A	
输出功率范围	0-360W		0-720W		0-1080W	
输入电压测量分辨率	0.01V					
输出电压设定测量分辨率	0.01V					
电流设定测量分辨率	0.001A		0.01A			
电池电压测量分辨率	0.01V					
输入电压测量精度	±(1%+5 个字)					
输出电压设定与测量精度	±(0.3%+3 个字)					
输出电流设定与测量精度	±(0.5%+5 个字)					
电池电压测量精度	±(0.5%+3 个字)					
充电时自动关闭电流	10mA		100mA			
输出纹波典型值	100mV VPP		250mV VPP@6A			
产品工作温度范围	-10℃~40℃					
外置温度传感器测量范围	-10℃~100℃/0℉~200℉					
外置温度传感器测量误差	±3℃/±6℉					
恒压模式响应时间	2ms（0.1A-5A 负载）					
恒压模式负载调整率	±(0.1%+2 个字)					
恒流模式负载调整率	±(0.1%+3 个字)					
容量测量范围	0-9999.99Ah					
能量测量范围	0-9999.99Wh					

容量与能量统计误差	±2%					
降压工作模式	压差>1V 且>10%					
散热风扇开启	输出电压>40V 或输出电流>4A 或系统温度>45℃		输出电流>8A 或系统温度>45℃			
散热风扇开启后关闭	输出电压<40V 且输出电流<3.9A 且系统温度<45℃		输出电流<7.9A 且系统温度<45℃			
过温保护	系统温度>80℃					
屏幕亮度设置	0-5 共 6 级					
显示屏幕	2.4 寸彩色液晶显示屏					
含包装重量	约 0.58Kg		约 0.61Kg		约 0.68Kg	
产品尺寸	167*81*65mm				167*81*69mm	
是否支持 USB 通信	是					
是否支持 WiFi 通信	否	是	否	是	否	是

1.2 核心功能

数字键盘+编码电位器组合调节	固件更新，后续可支持更多功能
10 组快捷存储调用数据	全新的 PC 端上位机软件
2.4 寸高清彩屏	支持 WiFi 联机/USB 联机
电池充电专用接口	支持安卓手机 App/苹果手机 App
一体化面板，装配好可直接接市电	多种显示界面

1.3 面板说明

1.3.1 前面板

A：电源开关	B：SHIFT 第二功能键
C：快捷存储键	D：电流/过流保护设置
E：电压/过压保护设置	F：micro USB 接口
G：电源输出负极/电池充电负极	H：电池充电正极（充电专用端子）
I：电源输出正极	J：输出开关键
K：编码电位器/取消键	L：方向键
M：ENTER/确认键	N：数字键盘
O：屏幕	

1.3.2 后面板

RD6006/RD6006-W

RD6012/RD6012-W

RD6018/RD6018-W

P：输入保险丝	Q：输出保险丝
R：电源输入接口	S：外置温度传感器接口
T：CR1220 电池仓	U：通信模块接口
V：风扇接口	

注意事项：

电源输入接口必须接 6-70V 的稳定直流，配套的外置温度传感器（如右图）插接到外置温度传感器接口，风扇接口不能外接或更换其他风扇当系统温度大于 80 度时显示 OTP 并关闭输出。CR1220 为时钟电池，只影响时钟功能。通信端口为专用端口请勿在此处接线。

WiFi 模块和 RS-485 模块如下图，需要工业 RS-485 或 WiFi 批量控制的客户请致电 0571-89050390。

1.4 操作说明

上电后首先显示开机图片，然后进入主界面。下面以 RD6012 为例介绍使用方法。

1.4.1 主界面

W:时间	X:按键声音
Y:按键锁定状态	Z:通信接口
AA:输出电压实际值	AB:输出电流实际值
AC:输出功率	AD:当前数据组

AE:恒压恒流状态	AF:保护状态指示
AG:电池充电指示	AH:电池相关信息显示区
AI:输出过流保护设定值	AJ:输出过压保护设定值
AK:输出电流设定值	AL:输出电压设定值
AM:输入电压	

1.4.2 使用说明

菜单操作中，红色或光标处为当前选中菜单，蓝色为未选中菜单，按动 ENTER 确认，按动编码电位器取消或者返回，按动方向键移动光标或切换菜单，旋转编码电位器更改设置，菜单界面中返回时自动保存设置。按住 0 键上电恢复出厂设置，按住 1 键上电恢复出厂校准值，按住 ENTER 上电进入 boot 模式。

1.4.2.1 电池充电功能说明

电池充电操作说明视频:http://qr17.cn/CRxtH1

上电后，电池相关信息显示区（AH）外部温度、容量、能量循环切换显示，电源输出时，容量、能量自动累计，关机后自动清零。

绿色端子接电池正极，黑色端子接电池负极，正确接电池后电池充电指示底色变红提示电池接好，然后按 ON/OFF 开始充电，同时电池图标变为绿色，当输出电流小于 0.1A（6006 为 10mA）时，自动关闭输出。带异口保护板的电池需要使用红黑端子充电，电池充电时的电压电流需要自行设定。充电功能不使用时可以用导线连接绿黑端子，防止干扰电池检测端，意外关断输出。

强烈建议使用原装充电器给电池充电，本机充电功能仅能起临时替代作用，不可长期使用，长期错误充电会损害电池寿命甚至起火爆炸，非专业人士请勿操作。常见电池电压见附录 2。

1.4.2.2 主界面电压电流设置

主界面电压电流设置操作说明视频:http://qr17.cn/CxTVZ9

按动 I-SET 键设定输出电流值，转动编码电位器可以直接调整输出值，按动左右方向键可以更改光标位置。也可以直接使用数字键盘输入按 ENTER 确认。如输入错误，可以按动编码电位器取消。

按动 V-SET 键可以设定输出电压值，方法类似。

先按 SHIFT+I-SET 键或 V-SET 键可以设定过流保护值或过压保护值，方法类似输出电流值设置。

M0 为上电默认数据组，手动操作修改设定后确认后自动记忆至 M0。

1.4.2.3 快捷存储和调出

快捷存储调出操作说明视频：http://qr17.cn/EpI5Pn

按动 MEM+数字键盘 1-9，可以将当前设定的输出电压值、输出电流值、过压保护值、过流保护值存储为快捷调用(如上图所示)，按动 ENTER 键确认，按动编码电位器取消。

按动 SHIFT+数字键盘 1-9 可以快捷调出存储的数值(如上图所示)，按动 ENTER 键确认。在系统设置菜单中关闭调出确认后，不弹出窗口，直接修改设置值。

1.4.2.4 键盘锁定解锁

键盘锁定解锁操作说明视频：http://qr17.cn/BpKO6n

按动 SHIFT+LOCK 可以锁定或者解锁键盘。通信状态下自动锁定键盘右上角提示（不可手动解锁），手动断开连接时自动解锁键盘，右上角提示，连接异常断开 3 秒以后自动解锁键盘，键盘锁定状态下关机键正常使用。

1.4.2.5 系统设置

系统设置操作说明视频：http://qr17.cn/CXZ6KE

按动 SHIFT+MENU 进入系统设置菜单（如下图），按动 ENTER 键进入菜单，按动方向键选择设置选项，红色反显处为选中位置，旋转编码电位器改变设置。打开调出确认后，快捷调出会弹出确认窗口，关闭后快捷调出时直接修改设置值；打开调出输出后，快捷调出后会自动打开输出，关闭后，快捷调出时原输出状态不变；打开开机输出时，开机后自动打开输出，关闭时，开机后电源输出处于关闭

状态；打开按键声音后，按动按键蜂鸣器提示，右上角提示，关闭后按动按键为静音状态，右上角提示；打开开机图片后，开机先显示开机 logo 图片然后进入主界面，关闭后直接进入主界面；系统语言可以设置为简体中文、英文、德语、法语；背光可以设置为 0-5 共六级亮度；通信接口可以设置为 USB、WiFi 或 TTL，USB 接口为前面板 micro USB 接口，通信时右上角提示，WiFi 为通信模块接口插接 WiFi 模块，通信时右上角提示（手机 App 使用 WiFi 连接，WiFi 仅支持局域网内连接控制），修改接口返回重启后生效；通信速率可以设置为 9600，19200，38400,57600,115200，WiFi 下通信速率固定为 115200；设备地址可以从 1-255 之间设置；日期时间旋转编码电位器设置，修改后立刻保存，设置错误日期，会导致日期无法自动累加；测量速度为主界面回读电压电流的刷新率，可以设置为低中高三档。RD6018 增加了输出功率限制功能，设定最大功率后，电流会被自动调小至与设定电压乘积不超过设定功率值以保护前级电源，推荐设置值为前级电源的额定功率*95%。按动编码电位器返回，并自动保存设置。

1.4.2.6 主界面风格设置

主界面风格设置操作说明视频:http://qr17.cn/A7wxI1

按动 SHIFT+MENU 进入系统设置菜单，再按动右键进入如上图主界面风格设置菜单，按动 ENTER 后按动左右键可以设置为经典风格和曲线风格两种，红色反显为选中位置，按动编码电位器返回，并自动保存设置。经典风格为系统默认风格，大字体显示电压电流功率。曲线风格如上图，三条曲线的颜色分别对应输出电压电流和功率，D 为纵坐标的刻度，ENTER 实现曲线的开始暂停，旋转编码电位器实现曲线的纵坐标缩放。

1.4.2.7 存储数据设置

存储数据设置操作说明视频:http://qr17.cn/BIXyTs

按动 SHIFT+MENU 进入系统设置菜单，按动右键两次进入如下图存储数据设置菜单，然后按动 ENTER 键进入菜单，红色反显为选中位置，按动方向键选择数据组号。按动 I-SET 键设定输出电流储存值，转动编码电位器可以直接调整输出值，按动左右方向键可以更改单位；也可以直接使用数字键盘输入按 ENTER 确认；如输入错误，可以按动编码电位器取消。按动 V-SET 键可以设定输出电压储存值，方法类似。先按 SHIFT+I-SET 键或 V-SET 键可以设定过流保护储存值或过压保护储存值，方法类似输出电流储存值设置。按动编码电位器返回，并自动保存设置。

1.4.2.8 系统信息

系统信息操作说明视频:http://qr17.cn/DzVlOS

按动 SHIFT+MENU 进入系统设置菜单，然后再按动三次右键进入如上图系统信息菜单，可以查看序列号、固件版本和系统温度。

安卓手机 App 使用说明

2.1 手机 App 软件安装

本软件仅支持 Android5.0-Android10.0 系统使用，软件可能存在不兼容，请先预装测试。安装过程中会申请定位服务，请同意并打开定位，手机 App 请从文件管理器中打开安装。WiFi 模块不能在带电状态下插拔，会导致损坏。本说明书对应软件版本 1.1.2，不同版本会稍有不同，建议升级为最新软件，获取更好的使用体验。

2.1.1App 的下载

华为手机用户可以在应用市场直接搜索 RDseries 或 RDpower 下载，其他应用市场上架也在进行中，如果搜索不到可以下载后导入到手安装。RD6012 数控电源资料官网下载链接：

http://www.ruidengkeji.com/rddata/RD6012/RD6012.rar

备用百度盘下载链接：提取码：hju5

https://pan.baidu.com/s/1WlPH2vpIi5TYoMRH5OnfFA

图 1

国内用户需通过浏览器直接下载到电脑或者通过百度网盘软件下载压缩包，解压后将 apk 文件通过手机助手或者文件管理器导入到手机目录中，然后手机文件管理器中打开 apk 文件。可以使用谷歌 play 的用户请通过谷歌 play 搜索如不会下载或无法下载可以找客服人员索取下载链接。

2.2 安装完成

安卓 App 安装联机过程视频：

http://qr17.cn/CsVUb6

安装完成，手机 App 图标如图 1：

2.2.1 软件更新

点击 App 图标，App 启动后，系统

会自动后台检测 App 版本是否有更新，　　图 2

新版本会弹框提醒更新。谷歌 play 下载的 App 需要手动检测新版本。

2.2.2App 界面显示

安装完成成功连接后，App 主界面显示如图 2

BN：侧边栏	CB：设置
BO：点击连接或断开电源	CC：键盘锁定指示
BP：点击导出曲线数据	CD：状态指示
BQ：曲线图	CE：恒压/恒流状态指示
BR：输出电流实际值	CF：亮度
BS：输出电压实际值	CG：系统温度
BT：输出功率实际值	CH：快捷调出
BU：输入电压实际值	CI：电池电压
BV：输出电压设定值	CJ：外接探头温度
BW：输出电流设定值	CK：开机累计输出能量
BX：　ON/OFF 开关	CL：开机累计输出容量
BY：调整轮	CM：当前产品型号
BZ：向左移动光标	CN：产品序列号
CA：向右移动光标	CO：固件版本

3.2.3App 的使用

3.2.3.1 智能配网

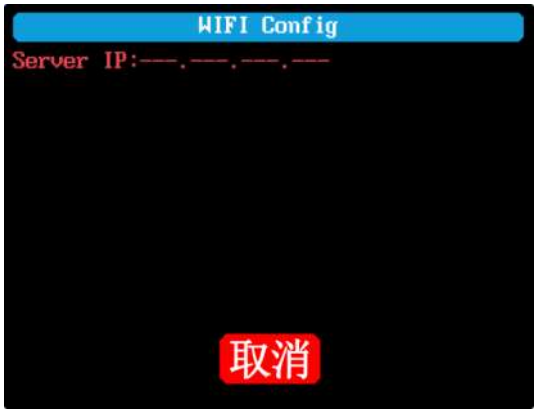


图 3

图 4

图 5

图 6

图 7

图 8

初次 WiFi 联网，先将 RD6012 的 WiFi 模块插好，然后给 RD6012 供电，WiFi 模块的蓝灯会闪烁一下。在系统设置中将通信接口设置为 WiFi 后重启 RD6012，然后将 RD6012 和手机都放置在靠近 2.4G 路由器的地方（此时手机也必须在同一个 2.4G 网络下，路由器关闭 AP 隔离 WMM 功能），RD6012 会等待手机连接如图 3。手机按 BN 呼出侧边栏，点击图 5 智能配网，出现图 6 输入 WiFi 密码并确认 2.4G 网络后点击确认，等待约 10 秒，RD6012 会获取手机的 IP 地址如图 7。确认显示之后勾选“设备显示 IP 地址”后点击确认等待约 20 秒，App 显示连接成功，RD6012 会自动启动，配网成功，返回到主界面后点击 BO 连接。如果配网失败，请给模块断电，重新操作一次（多次联网失败仔细观看联机过程视频并尝试用手机分享 WiFi 热点测试）。华为手机请关闭随机 MAC 地址：https://jingyan.baidu.com/article/a681b0decb7c4b7a18434683.html

3.2.3.2 正常联网

RD6012 启动后，会先连接 WiFi，然后检测手机 App 是否能连通，锁屏或 App 后台运行时，可能会无法连接，如果手机的 IP 地址发生变更需要先按左键然后按 ENTER 键重置网络，再次执行 3.2.3.1 智能配网过程。建议通过路由器设置手机 MAC 地址绑定 IP。

3.2.3.3App 操作

安卓 App 操作过程视频：http://qr17.cn/B1XFDT

点击 BV 设置输出电压，用右侧调整轮 BY 调整大小，然后用 BZ、CA 调整光标位置，然后点击 CB 设置参数。点击 BP 可以将电压电流曲线导出成表格文件，最长可以记录 24 小时的文件。

注：1：因安卓手机种类繁多，因此在个别品牌或者一种品牌的不同比例屏幕上 UI 界面显示不一样。

2：应用程序权限要求，允许程序安装时必要权限（允许后台运行，允许使用蓝牙，允许操作文件夹，允许读取应用列表等）而且在安装完毕后还要在手机中设置程序的权限：允许后台运行、锁屏不清理、允许自启动等（持续记录数据时防止系统强制退出 App）。

苹果手机 App 使用说明

3.1 手机 App 软件安装

3.1.1App 的下载

苹果 App 仅支持支持 IOS10.0-13.4　iphone6-iphone11，在苹果商店搜索“RDPower”下载，软件可能存在不兼容，请先预装测试。IOS13 下软件第一次打开会申请定位服务，请同意并在设置-隐私中打开定位。WiFi 模块不能在带电状态下插拔，会导致损坏。本说明书对应软件版本 1.1.8，不同版本可能会稍有不同，建议升级为最新软件，获取更好的使用体验。

3.2 安装使用

首次启动软件，IOS13 以上会提示如下页图 10，选择“使用 App 时允许”，软件运行时会提示如下页图 11，选择“无线局域网与蜂窝移动网络”。

苹果 App 安装联机过程视频：http://qr17.cn/EblPIu

安装完成，手机 App 图标如图：

3.2.1 软件更新

您可从苹果商店获取最新的软件，当前说明书对应的 IOS 软件版本为 1.1.8。

3.2.2App 界面显示

打开后界面显示如下页图 9

AN：点击连接或断开电源	BA：系统温度
AO：点击导出曲线数据	BB：数据组
AP：曲线图	BC：屏幕背光亮度
AQ：输出电压实际值	BD：电池电压
AR：输出电流实际值	BE：外接探头温度
AS：输出功率实际值	BF：开机累计输出能量
AT：输出电压设定值	BG：开机累计输出容量
AU：输出电流设定值	BH：当前产品型号
AV：输出开关按钮	BI：产品固件版本
AW：状态指示	BJ：产品序列号
AX：电池状态指示	BK：主界面
AY：恒压/恒流状态指示	BL：配网界面
AZ：输入电压测量值	BM：个人中心

3.2.3App 的使用

3.2.3.1 智能配网

图 9

图 10

图 11

图 12

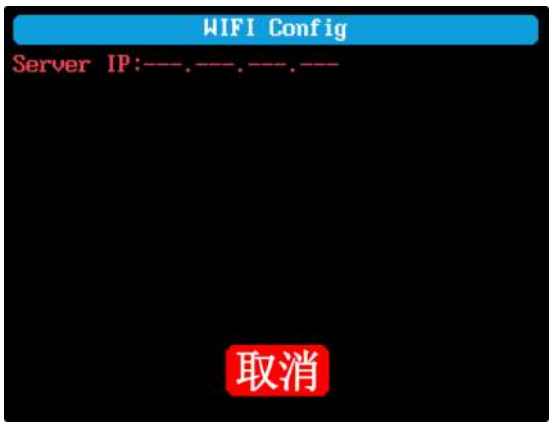


图 13

图 14

初次 WiFi 联网，先将 RD6012 的 WiFi 模块插好，然后给 RD6012 供电，WiFi 模块的蓝灯会闪烁一下。在系统设置中将通信接口设置为 WiFi 后重启 RD6012，然后将 RD6012 和手机都放置在靠近 2.4G 路由器的地方（此时手机也必须在同一个 2.4G 网络下，路由器关闭 AP 隔离 WMM 功能），RD6012 会等待手机连接如图 13。点击 BL 打开如图 12 智能配网界面，并输入无线密码。点击“初始化”，等待约 20 秒，RD6012 会获取手机的 IP 地址如图 14。然后点击配置网络，等待约 30 秒，App 显示连接成功，RD6012 正常启动，配网成功，返回到主界面后点击连接。如果配网失败，请给模块断电，重新操作一次（多次联网失败仔细观看联机过程视频并尝试用手机分享 WiFi 热点测试）。

3.2.3.2 正常联网

RD6012 启动后，会先连接 WiFi，然后检测手机 App 是否能连通，如果手机锁屏或 App 不在前台运行下，会无法连接；如果手机的 IP 地址发生变更需要先按左键然后按 ENTER 键重置网络，再次执行 3.2.3.1 智能配网过程。

3.2.3.3 手机 App 功能

苹果 App 操作过程视频：http://qr17.cn/ErgU8Z

点击 AT 或 AU 的输入框，输入数值设定电压电流，点击空白处返回，超出的值不能设定。点击 AO 可以将电压电流曲线导出成表格文件并分享到其他应用，最长可以记录 24 小时的文件。

点击个人中心可以设置软件语言或者获取使用帮助。

上位机软件的安装使用说明

安装软件需求：win7-win10 系统，带有网络连接的电脑。

本软件由杭州睿登科技有限公司开发，不带有病毒，如果杀毒软件提示请允许它的所有功能，否则会影响软件的正常运行。PC 上位机软件仅支持 win7-win10 系统，软件可能存在不兼容问题，如确切需要请先预装测试后购买产品。本说明书对应软件版本 1.0.0.8，如果软件版本不同可能功能会有所不同，建议升级为最新软件以期获取更多功能。

RD6012 数控电源资料主下载链接：
http://www.ruidengkeji.com/rddata/RD6012/RD6012.rar
备用百度盘下载链接：提取码：hju5
https://pan.baidu.com/s/1WlPH2vpIi5TYoMRH5OnfFA

4.1 软件安装

上位机安装视频：http://qr17.cn/De0s4c

4.1.1 解压文件

首次使用先安装驱动程序，打开 CH341SER 安装驱动，然后用 microUSB 线插上 RD6006/RD6012 等待电脑安装驱动完成。

4.1.2 安装软件

将压缩包解压到电脑 D 盘中，首先运行 Net framework4.7.2.exe 安装.net 环境，然后直接运行 RidenPowerSupply.exe 上位机软件。文件夹其他文件运行所需，不要删除。

名称	修改日期	类型	大小
Config	2019/12/3 9:51	文件夹	
Language	2019/12/3 9:51	文件夹	
Logo	2019/12/3 9:51	文件夹	
Picture	2019/12/3 9:51	文件夹	
Net framework4.7.2.exe	2019/11/1 16:39	应用程序	1,400 KB
RidenPowerSupply.exe	2019/11/29 8:43	应用程序	15,631 KB

4.2 软件的使用

4.2.1 上位机联机

双击桌面上的图标 Riden Power Supply 就可以打开上位机软件。

WiFi 联机为测试功能，由于部分电脑的兼容性不好，无法连接的请忽略。此

功能不做任何保证，我们也将根据客户反馈结果决定是否保留。

电脑 WiFi 联机视频：http://qr17.cn/E2poO5

点击 WiFi 并输入 WiFi 名称和密码，RD6012 通信接口设置成 WiFi，并重启，RD6012 显示如下图 15，然后点击 WiFi 配网，等待约 1-5 秒 RD6012 显示如下图 16，点击下一步，等待约 20 秒，上位机提示连接成功，然后单击联机。

USB 联机：RD6012 通信接口设置成 USB 连接好电脑打开上位机，上位机提示串口更新，点击联机。

<table>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>图 15</td><td>图 16</td></tr>
</table>

4.2.2 软件使用介绍

上位机使用视频：http://qr17.cn/Ad6LAz

选择好通信端口、波特率、从机地址（默认为 001），点击“联机”开始通信，联机成功后会自动锁定数控电源按键，意外断开 3 秒后电源按键自动解锁，同时“联机”按钮变为“断开”；点击“打开”可以打开数控电源输出，同时按钮变为“关闭”。

4.3 功能介绍

上位机软件界面主要有基础功能、固件升级、Logo 升级、检查版本更新及语言的选择等。

CP：	电压电流曲线	CQ：	电池信息/快捷调出
CR：	校准微调	CS：	RD/DPS 系列切换
CT：	语言选择	CU：	软件更新
CV：	关于	CW：	输入电压
CX：	输出电压实际值	CY：	输出电流实际值
CZ：	输出功率实际值	DA：	系统温度（摄氏度）
DB：	系统温度（华氏度）	DC：	恒压恒流状态
DD：	保护状态	DE：	背光亮度

DF:	同步系统时间至 RD6012	DG：	输出电流设定值
DH：	输出电压设定值	DI：	固件版本
DJ：	序列号	DK：	产品型号

4.3.1 基础功能

上位机的基础功能包括：电压电流的设置、快捷输出、校准微调、亮度调节及电压电流曲线导出调整旋钮或者输入数字可以改变设置电压电流，按钮上方图表会显示实时的电压电流曲线。在曲线图上滚动滚轮可以实现缩放，双击曲线自适应，右键可以清除曲线或者将曲线导出成图片或 excel。

4.3.2 校准微调

校准微调需要拥有五位半以上的万用表的专业电子人士操作；校准微调会改变系统设置，误操作可能会超出硬件极限值导致损坏，由此导致的损坏不纳入保修范围！产品的极限误差一般会比标称误差小很多，当误差接近甚至大于标称误差时，请首先确认测量仪器是否准确。

点击校准微调输入密码“168168”可以进入校准微调界面或者保存校准微调数据（输入此密码代表接受上述红字协议），联机后读取校准数据，通过点击箭头实现微调数值。根据一次函数 y=kx+b，常数 b 相当于零点值，斜率 k 相当于比例值，调整这两个数值就能尽量去接近实际测量的数值。

校准微调操作视频：http://qr17.cn/CR6QGO

将输出电压设置为 1V，调整电压输出零点使万用表显示接近 1V，将输出电压设置为 30V（半量程），调整输出电压比例值使万用表显示值接近 30V；同理设置为 0.1A 和 6A（半量程）可以校准电流输出零点和电流输出比例；将输出电压设置为 1V 调整回读电压零点使 RD6012 显示电压值与万用表测量值一致，同理设置 30V 可以校准回读电压比例值，同理设置为 0.1A 和 6A 可以校准电流回读零点和电流回读比例（此部分不提供技术支持，看不懂的客户请自行丰富相关知识）。

4.3.3 高级功能

高级功能可以按照表格中的设定值变换输出电压电流，每步时间 1-9999s 可调，最多 200 步，可以自动输出也可手动输出，编程输出或者其他操作过程中不能切换界面，必须停止后才能切换。

4.3.4 RS485 多机通信

多机通信是通过 485 总线控制多台电源，最多可同时控制 32 台，适用于工控领域，USB 转 485 和 485 模块需要另购。可以一键控制所有电源输出电压电流，也可以分别设置。

首先用 USB 转 485 将多台连接好后，选择合适的端口号和波特率，然后将每个 RD6006 设置不同的设备地址（见 1.4.2.5 系统设置），然后点击搜索后点击连接。在右侧图标内可以修改单台的电压电流，在下方可以批量设定电压电流，由于 RS485 是轮询操作，当 32 台 RD6006 时一个操作可能会延迟 12 秒。

在 RS485 界面中连接后不可切换界面，断开连接后方可切换。

4.3.4 固件升级

固件升级操作视频：http://qr17.cn/FGlBYd

首先按住 Enter 给 RD6012 供电，进入 boot 模式，连接好电脑，待模式信息中提示产品为 boot 模式后点击【固件升级】，弹出固件升级提示框，然后点击【立即升级】即可（可以在正常模式下升级，如果不能正常启动时，必须进入 Boot 模式升级，WiFi 下暂时未开放固件升级）。

固件升级过程中，界面显示如下：

4.3.5 开机图片更新

开机图片更新操作视频：http://qr17.cn/A5exBw

点击【开机图片更新】，弹出升级提示框，点击选择图片，（安装包内提供了一些 Logo 样张可以测试）

点击【图片导入】即可，更新完成会自动重启

4.3.6 软件更新

点击 CU，系统会自动后台检测是否有新版本，如有新版本会弹框提醒更新。

4.3.6 语言的选择

点击 CT，可以设置中文、英文、法语、德语四种语言。

4.3.7 关于

点击 CV，可查看当前版本号、发布时间及版权信息等

附录

附录 1：中文版本更新说明

2020-9-12：增加 RD6018 说明并把所有软件说明更新到最新版本。
2020-5-18：充电部分增加说明，增加英文版
2020-5-13：将 RD6006 与 RD6012 说明书结合
2019-12-3：中英文增加 WiFi 联机不能可靠保证说明
2019-11-25：修改文中错误，并在所有 WiFi 联机处加上每个步骤大约时间。

附录 2：常见电池电压对照表

电池种类	标称电压(V)	充电截止电压(V)	放电截止电压(V)	应用	特点
三元锂电	3.7	4.2	3	数码设备	容量大，可充电
磷酸铁锂	3.2	3.65	2.5	电动车/电动工具	放电电流大，可充电
铅酸蓄电池	12	14.4	10.5	汽车/电动车	价格实惠可充电
干电池	1.5	--	0.9	遥控器/时钟	价格实惠,应用广泛,不可充电
镍铬电池	1.25	1.5	1.1	玩具	可充电,价格实惠,有记忆效应
镍氢电池	1.2	1.4	0.9	玩具/剃须刀	可充电,无记忆效应

附录 3：常见电动车电池电压对照表

电动车标称电压	电芯材料	串联节数	放电截止电压(V)	充电截止电压(V)
48V	三元	14	42	58.8
	三元	13	39	54.6
	磷酸铁锂	16	40	58.4
	铅酸蓄电池	4	42	57.6
36V	三元	10	30	37
	磷酸铁锂	12	30	43.8
	铅酸蓄电池	3	31.5	43.2
24V	三元	7	21	29.4
	磷酸铁锂	8	20	29.2
	铅酸蓄电池	2	21	28.8

注：充电截止电压大于 60V 的电池，都不能使用数控电源来充电，会造成产品损坏。

Constant Voltage and Constant Current DC Power Supply Instruction

Model: RD6006/RD6006W/ RD6012/RD6012WRD6018/RD6018W

Date: 2020. 9. 17

Dear users, thank you for purchasing the constant voltage constant current DC power supply produced by Hangzhou Ruideng Technology Co., Ltd. In order to let you know more about the full function of this product, get a better experience and avoid misuse. Please read this instruction carefully before using it. Keep it for future reference.

Note: This instruction is corresponding to firmware V1.30, the page and operation may be different under different firmware versions, please pay attention when using it. We do recommend you to download the latest firmware for better experience.

Content

1.1 Technical Parameter

Model	RD6006	RD6006-W	RD6012	RD6012-W	RD6012	RD6018-W
Input voltage range	6-70.00V					
Output voltage range	0-60.00V					
Output current range	0-6.000A		0-12.00A		0-18.00A	
Output power range	0-360W		0-720W		0-1080W	
Input voltage measurement resolution	0.01V					
Output voltage setting measurement resolution	0.01V					
Output current setting measurement resolution	0.001A		0.01A			
Battery voltage measurement resolution	0.01V					
Input voltage measurement accuracy	±(1%+5 digits)					
Output voltage accuracy between setting and measurement	±(0.3%+3 digits)					
Output current accuracy between setting and measurement	±(0.5%+5 digits)					
Battery voltage measurement accuracy	±(0.5%+3 digits)					
Automatic cut off current value when charging	10mA		100mA			
Output ripple typical	100mV VPP		250mV VPP@6A			
Working temperature range	-10℃~40℃					
External sensor Temperature detection range:	-10℃~100℃/0℉~200℉					
External sensor Temperature detection accuracy:	±3℃/±6℉					
Constant voltage mode response time	2ms（0.1A-5A Load）					
Constant voltage mode load regulation	±(0.1%+2 digits)					
Constant current mode load regulation	±(0.1%+3 digits)					
Capacity measurement range	0-9999.99Ah					
Energy measurement range	0-9999.99Wh					
Capacity and energy statistical error	±2%					
Buck working mode	Voltage drop >1V and >10%					
Cooling fan start condition	Output voltage>40V or Output current>4A or System temperature>45℃		Output current>8A or System temperature>45℃			

Cooling fan shut down condition when working	Output voltage <40V and Output current <3.9A and System temperature <45℃		Output current <7.9A and System temperature <45℃			
Over temperature protection	System temperature >80℃					
Screen brightness setting	0-5(6 level in total)					
Screen	2.4 inch color HD display					
Weight(with package)	About 0.58kg		About 0.61kg		About 0.68kg	
Product dimension	167*81*65mm				167*81*69mm	
Support USB communication	yes					
Support WiFi communication	No	yes	No	yes	No	yes

1.2 Core Function

·Keypad + encoder potentiometer combination adjustment
·10 data groups for storage and call out
·Firmware update, support more functions later
·2.4 inch HD color display
·Dedicated terminal for battery charging
·Brand new PC software
·Support WiFi communication /USB communication
·Support Android/ IOS APP
·Support multiple display interfaces

1.3 Panel Instruction

1.3.1 Front Panel

A: Power button	B: SHIFT Second function button
C: Quick storage button	D: Current/Over current protection setting
E: Voltage/Over voltage protection setting	F: Micro USB port
G: Power supply output negative terminal/ Battery charging negative terminal	H: Battery charging positive terminal (Dedicated terminal for battery charging)
I: Power supply output positive terminal	J: Output switch
K: encoder potentiometer/Cancel button	L: Direction button
M: Enter/ Confirm button	N: keypad
O: Screen	

1.3.2 Back Panel

RD6006/RD6006-W

RD6012/RD6012-W

RD6018/RD6018-W

P: Input fuse	Q: Output fuse
R: Power source input interface	S: External temperature sensor interface
T: CR1220 battery socket	U: Communication module interface
V: Fan interface	

NOTE:

Power source input interface must be connected to 6-70V constant DC power source. The external sensor cable (as shown on right) must be connected to the external temperature sensor interface. The fan interface cannot be connected to other fans. When the system temperature is higher than 80℃, the output will be shut down and show OTP on the scrren. CR1220 is the clock battery (Please prepare by yourself), it can power on the clock function. Communication interface is a special interface, please don't connect to other modules or cables.

You can see the Wi-Fi module and RS-485 module in the picture below. If you need RS-485 for industrial batch test and it is not on sale now, if you want to use that, please contact us.

1.4 Operation Instruction

After power-on, it will show boot image first, and then enters the main page. We use RD6012 as example to introduce how to use it.

1.4.1 Main Page

W: Time	AF: Protection status indication
X: Button tune	AG: Battery charging indication
Y: Button lock status	AH: Battery related information display area
Z: Communication interface	AM: Input voltage
AA: Actual output voltage value	AL: Output voltage preset value
AB: Actual output current value	AK: Output current preset value
AC: Output power	AJ: Over voltage protection value
AD: Current data group	AI: Over current protection value
AE: Constant voltage Constant current status	

1.4.2 Operation Introduction

In the menu operation, the icon in red or cursor is the currently selected menu, the icon in blue is not selected, press **ENTER** to confirm, press the encoder potentiometer to cancel or return, press the direction button to move the cursor or switch menu, rotate the encoder potentiometer to change the setting, the settings will be automatically saved when returning from the menu page. Press and hold the 0 button and power on to restore the factory settings, press and hold the 1 button and power on to restore the factory calibration value, press and hold ENTER and power on to enter the boot mode.

1.4.2.1 Battery Charging Function Introduction

Battery charging operation video：https://youtu.be/irTbqfqtgU0

After power-on, at battery related information display area, external temperature, capacity and energy will loop display. When there is output current: capacity, energy automatically accumulated, and automatically cleared after shutdown.

The green terminal is connected to the positive pole of the battery, and the black terminal is connected to the negative pole of the battery. After the battery is correctly connected, the battery charging indicator turns red and the battery is connected. Press ON/OFF to start charging, the battery charging indicator turns green. When the actual output current is lower than 0.1A (10mA for RD6006), the output will be shut down automatically. Battery with protection board need to be charged with red and black terminals. The charging voltage and current should be set on your own. When the charging function is not in use, you can connect the green and black terminals with a cable to prevent interference with the battery detection terminal and accidentally turn off the output.

It is strongly recommended to use the original charger to charge the battery. The charging function of this machine can only serve as a temporary replacement, not for long-term use. There is a risk of fire and explosion during the charging process. Non-professionals should not operate. (*COMMON BATTERY VOLTAGE can be check in Appendix 2.*)

1.4.2.2 Main Page Output Voltage and Output Current Setting

Output voltage and current setting operation video：https://youtu.be/S6Kan66dNsk

Press “**I-SET”** button to set the output current value, you can use encoder potentiometer to adjust the output value directly, press the direction button to move the cursor. Of course you can use keypad to enter the value, and press “**ENTER**” to confirm. If you set the wrong value, you can press encoder potentiometer to cancel.

Press “**V-SET”** button to set the output voltage value, the operation method is similar to output current setting.

Press **“SHIFT”**+ “**I-SET”** button / **“SHIFT”**+ “**V-SET”** button to set the over current protection/ over voltage protection value. The operation method is similar to output current setting.

M0 is the default data group when RD6006 is powered on, manually modify the settings will automatically be record to M0 after confirmation.

1.4.2.3 Data Group Quick Storage and Call out

Data group quick store and call out operation video：https://youtu.be/eo5saPjOGpo

Press **“MEM”**+ keypad button 1-9, you can store the output voltage value, output current value, over voltage protection value, over current protection value

into the corresponding data group(as shown above), then press **“ENTER”** to confirm, or press the encoder potentiometer to cancel.

Press **“SHIFT”**+ keypad button 1-9 to quick call out the saved data (as shown above). Press **“ENTER”** to confirm, or press the encoder potentiometer to cancel.

1.4.2.4 Keypad lock and unlock

Keypad lock operation video：https://youtu.be/zxpmasJyQ6Y

Press **“SHIFT”+”LOCK”** to lock or unlock the keyboard. And the keypad will be automatically locked when communication starts, there will be  displayed on the top (cannot unlock manually), and the keypad will be automatically unlocked when the connection disconnected manually, there will be  displayed, the keypad will be automatically unlocked when the connection disconnected abnormally, and the power off button can be used when the keypad is locked.

1.4.2.5 System Setting

System setting operation video：https://youtu.be/Q9d3rIgIrOc

Press **“SHIFT”+”MENU”** to enter the system setting menu as shown below, press **“ENTER”** to enter the menu, press direction button to select option, the option in red is the option be chosen, rotate the encoder potentiometer to change setting.

Turn on the “**Take OK**”, a confirmation window will pop up when you quick call out a data group. If you turn it off, the setting values will be modified directly when you call out a data group.

Turn on the **“Take out”**, the output will be turn on automatically when you call out a data group. If you turn it off, the output will keep the previous status.

Turn on the **“Boot Pow”,** it will turn on the output automatically when start. If you turn it off, the output will keep OFF status when started.

Turn on the **“Buzzer”,** you will hear button tune when press the button, and there will be  on the top. If you turn it off, there will not be button tune when

press the button, and there will be  on the top.

Turn on the **“Logo”**, it will display Logo first and then enter the main page when boot RD6006. If you turn it off, you will enter the main page directly.

The system language supports Simplified Chinese, English, German and France for the time being; the screen brightness can be set from level 0 to level 5; The communication interface can be set to USB, Wi-Fi or TTL, **USB** interface is the Micro-USB interface on the front panel interface, you can see the  on the top when communication starts. **Wi-Fi** interface is the Wi-Fi module inserted to the communication interface, you can see the  on the top when communication starts (connect mobile phone by Wi-Fi, WiFi function only support connection control in LAN), **TTL** is not available for the time being; When the interface is changed, you need to reboot RD6006 to apply the modification. The baud rate can be set to 9600/19200/38400/57600/115200 under USB mode; The Baud rate under Wi-Fi is fixed at 115200. Device address can be set from 001-255. You can set the date and time by rotating the encoder potentiometer, the setting will be saved immediately after modification. Please do not set a wrong time, it may cause that the date will not be automatically accumulated. Press the encoder potentiometer to return, and the set value will be saved automatically. **Upd.R.** is the refresh rate of read back voltage and current in the main page, you can set it to low, middle and high. We add output power limit function, when you set that, the current will be adjusted automatically to the value which multiply by set voltage value will not exceed the power limit, so that it can protect the input PSU, it is recommended to set the output power value at (rated power of PSU*95%). Press encoder potentiometer to return and save the settings.

1.4.2.6 Main Page Display Style Setting

Main interface display style setting operation video：https://youtu.be/f51VDiY2VHE

You can press SHIFT + MENU to enter the system setting menu, and then press the right button to enter the main page style setting menu as shown above. Press ENTER and then use direction button to set classic style or curve style. The pattern in red is the style being chosen. Press the encoder potentiometer to return and save the settings. The classic style is the system default style, it shows the voltage, current and power in large font. The curve style is as shown above, the color of the three curves corresponds to the output voltage, current and power. D is the scale of the ordinate, Press **“ENTER”** to start or pause the curve, and rotate the encoder potentiometer to scale the ordinate of the curve.

1.4.2.7 Storage Data Setting

Data group setting in manual operation video：https://youtu.be/i1kTeurS13I

You can press SHIFT + MENU to enter the system setting menu, and then press the right button twice to enter the data storage setting menu as shown below, press ENTER to enter the setting menu, the icon in red is the chosen data group, press the direction button to select data group number. Press “**I-SET”** button to set the storage output current value, then rotate the encoder potentiometer the adjust the output value, press the direction button to move the cursor. You can also set the value with keypad, press ENTER to confirm. If you set the wrong value, you can press the encoder potentiometer to cancel. Press “**V-SET”** button to set the storage output voltage value, the operation method is similar to storage output current setting.

Press **“SHIFT”**+ “**I-SET”** button or **“SHIFT”**+ “**V-SET”** button to set the storage over current protection/ storage over voltage protection value. The operation method is similar to storage output current value setting. Press encoder potentiometer to return, and the data will be automatically saved.

1.4.2.8 System Information

System information operation video：https://youtu.be/Um4NQObeeJE

You can press SHIFT + MENU to enter the system setting menu, and then press the right button three times to enter the system information menu as shown above. You can view the SN number, firmware version and system temperature here.

Android APP Instruction

2.1 Mobile Phone APP Installation

This App only supports Android 5.0 to Android 10.0 operating system, and there may be incompatibilities problems between APP and operating system, please install and test the software before buying the product. It will apply for location service, please agree and turn on the location service. After downloading the mobile APP zip-file, please install the APP in file manager. Don't install or remove Wi-Fi module when the powered on, otherwise it will be damaged. This instruction is made for version 1.1.2, there will be little difference between different versions, and we do recommend you to download the latest APP for better experience.

2.1.1 APP Download

You can download the APP in Google Play by searching RDPower.
You can also download the RD60XX APP zip-file in this URL:
https://drive.google.com/open?id=1LNymuq8olL32XDJXZFeQow7xtbuP6bMI

2.2 Installation Introduction

After the installation, you can see the icon as shown below:

2.2.1 APP Update

Click the APP icon, After the APP starts, it will automatically detect whether there is a new version, and it will remind you by popping the window. You need to check if there is a new version by manual detecting.

2.2.2 APP Interface Display

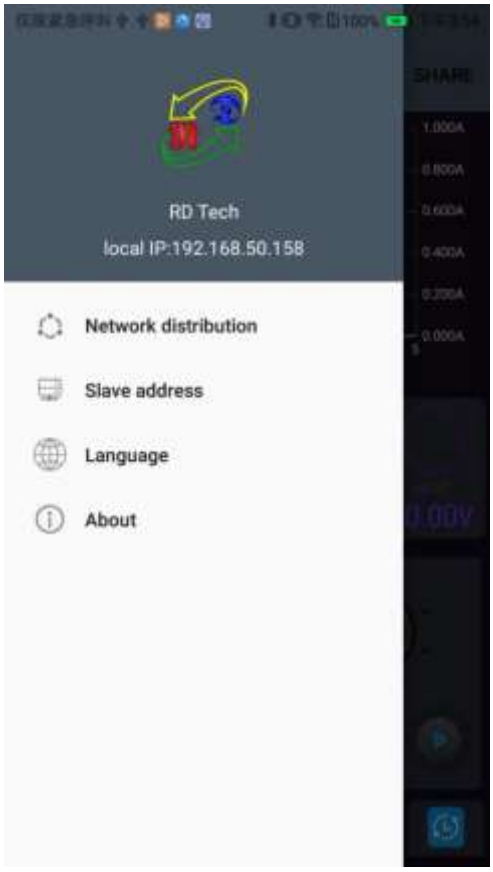
When finish the installation and succeed in connection, it will show the main page as shown in the right picture.

BN: call out/ shut down sidebar	CB: set button
BO: connection button	CC: keypad lock indication
BP: export data to mobile phone folder	CD: protection status indication
BQ: data curve	CE: constant voltage/ constant current status
BR: actual output current	CF: screen brightness
BS: actual output voltage	CG: system temperature
BT: actual output power	CH: data group quick call out
BU: input voltage	CI: battery voltage
BV: preset voltage value	CJ: external sensor temperature detecting value
BW: preset current value	CK: accumulated output power
BX: ON/OFF button	CL: accumulated output capacity
BY: setting wheel	CM: model being connected
BZ: move the cursor to the left	CN: product SN number
CA: move the cursor to the right	CO: product firmware version

2.2.3 APP Operation

2.2.3.1 Network Distribution

	
Picture 3	Picture 4



Picture 5

Picture 6

Picture 7

Picture 8

Connect Wi-Fi for the first time, please insert the WiFi board to the right place, then power on RD6012, you will see the blue LED blinks once. Set the communication interface to WIFI, restart RD6012, then place the RD6012 and the mobile phone close to the 2.4G router (the mobile phone must also be under the same 2.4G network, and the router must disable the AP isolation function and the WMM function).

RD6012 will wait for the phone to connect as shown in Picture 3. Press **"BN"** to call out the sidebar, clicks on the **"Network distribution"** as shown in Picture 5, then enter the WiFi password and confirm you are using 2.4G network as shown in Picture 6. After 10 seconds, the RD6012 will obtain the IP address of the mobile phone as shown in Picture 4. Then click "Next", fill in the WIFI password as shown in Picture 7, click "CONFIRM" below, wait for about 20s, it will show success as shown in Picture 8, then RD6012 will automatically restart, the distribution network is successful, return to the main interface and click **"BO"**(Connection). If the distribution network fails, please power off the module and re-operate in the same way (multiple networking failures you can watch the video and try to use the hotspot of the mobile phone to test). If you use Huawei brand phone, please turn off the random MAC address function.

3.2.3.2 Proper Wi-Fi Connection

Android APP download and connection operation video:
https://youtu.be/QwyBEUCnp9c

When power on RD6012, it will connect Wi-Fi first, and then detect if it can be connected to APP, and it may not be connected successfully if the phone is under screen-lock status or the APP is running at the background. If the IP address of the phone has changed, you need to press the "left direction" button and then press "ENTER" button to reset the net, repeat 3.2.3.1 operation.

2.2.3.3 APP Operation

Android APP operation video: https://youtu.be/hqrF4keTfbE.

Click **"BV"** to set the output voltage, and use the wheel **"BY"** to adjust the value, the **"BZ"**, **"CA"** to change the position of cursor, click **"CB"** to set the parameter. Click **"BP"** to exports the voltage-current curve to excel file, up to 24 hours document can be recorded.

NOTE:

1. There are many kinds of Android phone, so the user interfaces maybe different on some brand phones or different scales of the same brand.
2. Application permission requirements, allow the necessary permissions when the APP is installed (allow background running, using Bluetooth, operation on the folder, reading the application list, etc.) and also set the permissions of the APP after installation: Allow background running, never shut down when lock screen, allow self-starting (it is used to prevent the system from forcibly exiting the APP when recording data), etc.

IOS APP Instruction

3.1 Mobile Phone APP Installation

3.1.1 APP Download

IOS APP can only supports IOS10.0-13.4 system, please search “RDPower” in the APP store to download, or search “RD6006” to find the APP，and there may be incompatibilities problems between APP and operating system.The software opened under IOS13 will apply for location service for the first time. Please agree and open the location in Settings-Privacy. Don’t install or remove Wi-Fi module when the power is on, or else it will be damaged. This instruction is made for version 1.0.1, there will be little difference between different versions, we do recommend you to download the latest App for better experience.

3.2 Installation and Operation

IOS APP download and connection operation video ： https://youtu.be/nH2HYwop0TE

You can see the APP icon (as shown on the right) when finished the installation.

The first time you start the APP, there will be prompt as shown in Picture 10 if your mobile phone system is IOS13 or above, choose “Allow when using APP”, if your system is under IOS13, you can see the prompt as shown in Picture 11, please choose ”Wireless LAN and cellular mobile network”.

3.2.1 APP Update

You can download the latest the software at APP store, this instruction is corresponding to IOS APP version 1.0.9.

3.2.2 UI Instruction

You can see the user interface as shown in Picture 9.

AN: connection button	BA: system temperature
AO: export data to mobile phone folder	BB: data group
AP: data curve	BC: screen brightness
AQ: actual output voltage	BD: battery voltage
AR: actual output current	BE: external sensor temperature detecting value
AS: actual output power	BF: accumulated output power
AT: preset voltage value	BG: accumulated output capacity
AU: preset current value	BH: model being connected
AV: output ON/OFF button	BI: product firmware version
AW: protection status indication	BJ: product SN number
AX: battery status indication	BK: main page
AY: constant voltage/ constant current status	BL: network distribution page

AZ: input voltage measurement value	BM: personal center

3.2.3 APP Operation

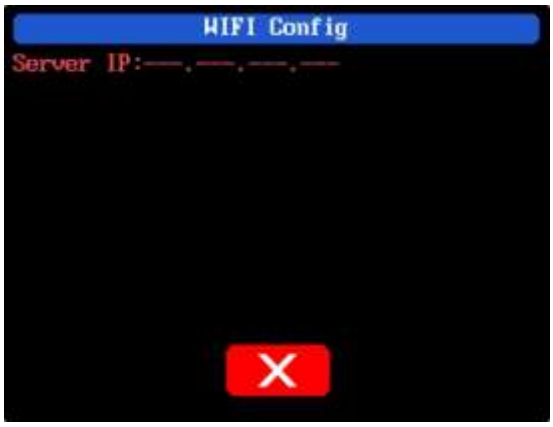
3.2.3.1 Network Distribution

Picture 9

Picture 10

Picture 11

Picture 12



Picture 13

Picture 14

Connect Wi-Fi for the first time, please insert the WiFi board to the right place, then power on RD6012, you will see the blue LED blinks once. Set the communication interface to WIFI, restart RD6012, then place the RD6012 and the mobile phone close to the 2.4G router (the mobile phone must also be under the same 2.4G network, and the router must disable the AP isolation function and the WMM function).

RD6012 will wait for the phone to connect as shown in Picture 13. Press **"BL"** to jump to the network distribution page and enter the password. Click "**Initialization**" and wait about 20 seconds, RD6012 will obtain the IP address of the mobile phone as shown in Picture 14. Then click "**Configure Network**", wait about 30s, it will show

success on the APP, then RD6012 will start normally, the distribution network is successful, return to the main interface and click **“AN”**(Connection). If the distribution network fails, please power off the module and re-operate in the same way (multiple networking failures you can watch the video and try to use the hotspot of the mobile phone to test).

3.2.3.2 Proper Wi-Fi Connection

When power on RD6012, it will connect Wi-Fi first, and then detect if it can be connected to APP, and it may not be connected successfully if the phone is under screen-lock status or the APP is running at the background. If the IP address of the phone has changed, you need to press the “left direction” button and then press “ENTER” button to reset the net, repeat 2.2.3.1 operation.

3.2.3.3 APP Operation

IOS APP operation video: https://youtu.be/lXSw1CM9IY8.

Click **“AT”** / ”**AU**” text label and enter the value to set the output voltage/ output current, then click at the blank area to return, if you enter a value exceeds the limit, it cannot be applied. Click **“AO”** to exports the voltage-current curve to excel file, up to 24 hours document can be recorded.

Click the personal center to set the software language or get help to use the APP.

PC Software Installation and Operation Instruction

Requirement: Win 7-Win10 system and the computer has Internet connection.

This PC software is designed by Hangzhou Ruideng technology CO., LTD, it has no virus, if your anti-virus software prompts for a virus warning, please allow all its features, otherwise it will affect the normal operation of the software. PC software supports Win7-Win10 system, and there may be incompatibilities problems, if you really need it, please install and test the software before buying the product. This instruction is made for version 1.0.0.8, there will be little difference between different versions, and we do recommend you to download the latest App for better experience.

RD6012 digital power supply file download link:
https://drive.google.com/open?id=1LNymuq8olL32XDJXZFeQow7xtbuP6bMI

4.1 Software Download

PC software download and basic operation video:
https://youtu.be/mjt1RMaah1Y

4.1.1 Unzip Files

The first time you use this software, you need to install the driver program first, you need to click CH341SER to install the driver, the insert a Micro USB cable into RD6006/RD6012/RD6018 and wait for the computer to install the driver.

4.1.2 Unzip Files

Unzip the file to Disk(D) of the PC. You need to run Net framework4.7.2.exe to install the .Net environment, then click RidenPowerSupply.exe directly to use the software, please do not delete any files.

4.2 Software Operation

4.2.1 Software Connection

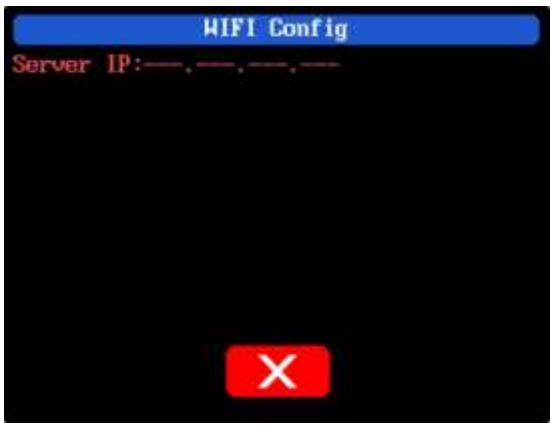
Double click **RidenPowerSupply.exe** to run the PC software.

WiFi connection is a test function, due to poor compatibility with some computers, if you cannot connect PC software via WiFi, please ignore this function. For this function, we do not provide any guarantee and technical support, and we will decide whether to keep this function based on customer feedback.

WiFi connection video link: https://youtu.be/ussQREniPuY

Click WiFi on the PC software and enter the WiFi name and password, set the communication interface to WIFI and reboot, you can see the display of RD6012 as shown in picture 15, and click "**WiFi Network**" to distribute network, wait RD6006 display as shown in picture 16(wait 1-5 seconds), click "NEXT", wait for a while (about 20 seconds), the PC software shows connection successful, then click "**Connect**" to communicate.

USB connection: Set RD6006 communication interface to USB and connect RD6006 and PC, the PC software prompts the serial port has been updated and clicks online.



Picture 15

Picture 16

4.2.2 PC Software Operation Instruction

Choose the right communication port, baud rate, slave address (default 001), click **"CONNECT"** to start communication. If the communication succeeds, the power supply button will be locked automatically, the buttons will automatically unlock after 3 seconds of accidental disconnection, and the **"CONNECT"** turns to **"DISCONNECT"**; Click **"ON"** to turn on the output of the power supply, and it will turn to **"OFF"**.

4.3 Functions Introduction

The PC software interface mainly has basic functions, firmware upgrade, Logo upgrade, version update detection and language setting...

CP: Voltage-Current Curve	DA: System Temperature(℃)
CQ: Battery information/ Data Group Quick Call Out	DB: System Temperature(℉)
CR: Calibration	DC: Constant Voltage/ Constant Current Status
CS: RD/DPS series switch	DD: Protection Status Indication
CT: Language	DE: Screen Brightness Setting

CU: Software Update	DF: Synchronize System Time
CV: About	DG: Output Current Preset value
CW: Input voltage	DH: Output Voltage Preset value
CX: Actual Output Voltage	DI: Firmware Version
CY: Actual Output Current	DJ: Serial Number
CZ: Actual Output Power	DK: Product Model

4.3.1 Basic Functions

PC software operation video: https://youtu.be/mjt1RMaah1Y

The basic functions of PC software: voltage/current preset, data group quick call out, calibration fine tuning, brightness setting, voltage and current curve exporting. You can rotate the wheel or enter the value to set the voltage and current, the graph above the button shows the real-time voltage and current curve. You can zoom in and out the curve by using the mouse wheel, double click the curve to auto adjusts the axis, you can right click on the curve to clean the curve or export the curve data to picture or excel.

4.3.2 Calibration

The calibration fine-tuning function needs to be operated by a professional electronic person who has more than five and a half multimeter. It will change the system setting, incorrect operation may exceeds the hardware limit and cause damage, and the resulting damage is not covered by the warranty! The limit error of the product is generally much smaller than the nominal error, when the error is close to or even higher than the nominal error, you need to check if the measuring instrument is accurate.

RD6006 calibration operation video: https://youtu.be/c9sn1wY2mjE

Click **“Calibration”** and enter the password “168168”, you can enter the Calibration Fine Tuning page (if you enter the password, by default you have accepted the above red letter agreement). It can read the calibration data after connection; click the arrow to fine tuning the data. According to the linear function y=kx+b, the constant b is equivalent to the zero value, the slope k is equivalent to the proportional value, adjust this two values so that the data will be close to the real test value.

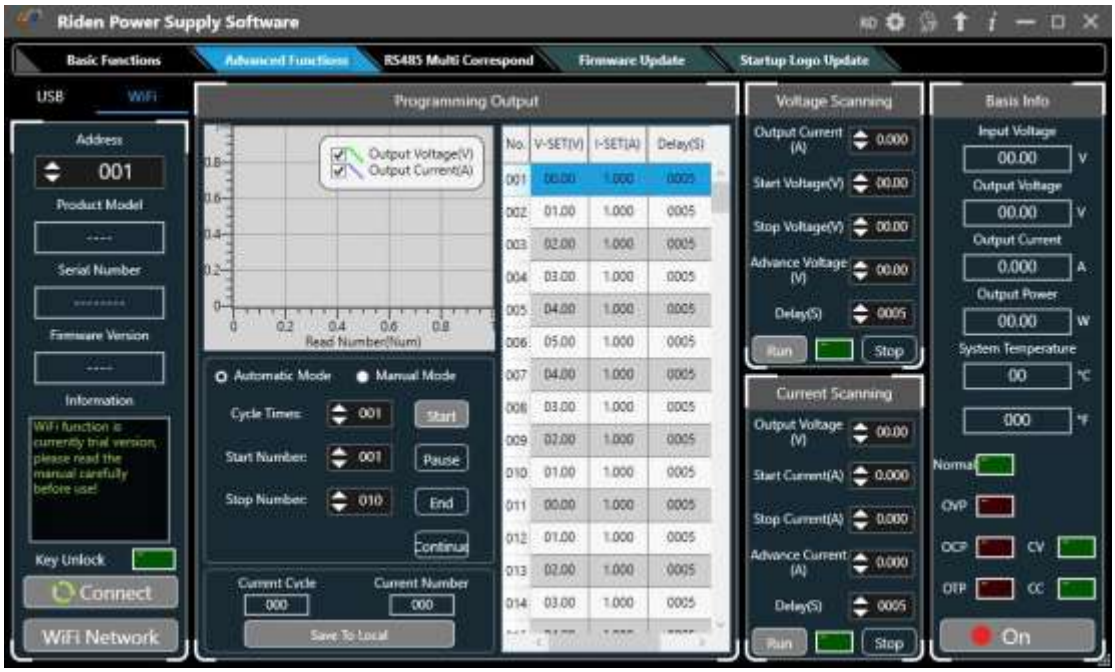
Set the output voltage at 1V, adjust the output voltage zero point to make the multimeter display close to 1V, and then set the output voltage at 30V, adjust the output voltage proportional value to make the multimeter display close to 30V. In the same way you can set 0.1A and 3A output current to calibrate the zero point and proportional value of the output current.

Set the output voltage at 1V and calibrate the actual output voltage zero point to make the actual output voltage displayed on RD6012 close to the value on multimeter. You can set 30V and calibrate the proportional value of actual output voltage. In the same way you can set 0.1A and 3A to calibrate the zero point and proportional value of the actual output current. (This section does not provide

technical support. If you do not understand, please check the related information).

4.3.3 Advanced Function

You can set the output voltage and current by chart in the advanced function page, you can set every step between 1 and 9999 seconds, you can set 200 steps max, it can output automatically or manually. You cannot choose other operation page when it performs programming output or other operations, you can only switch other page when it ends.

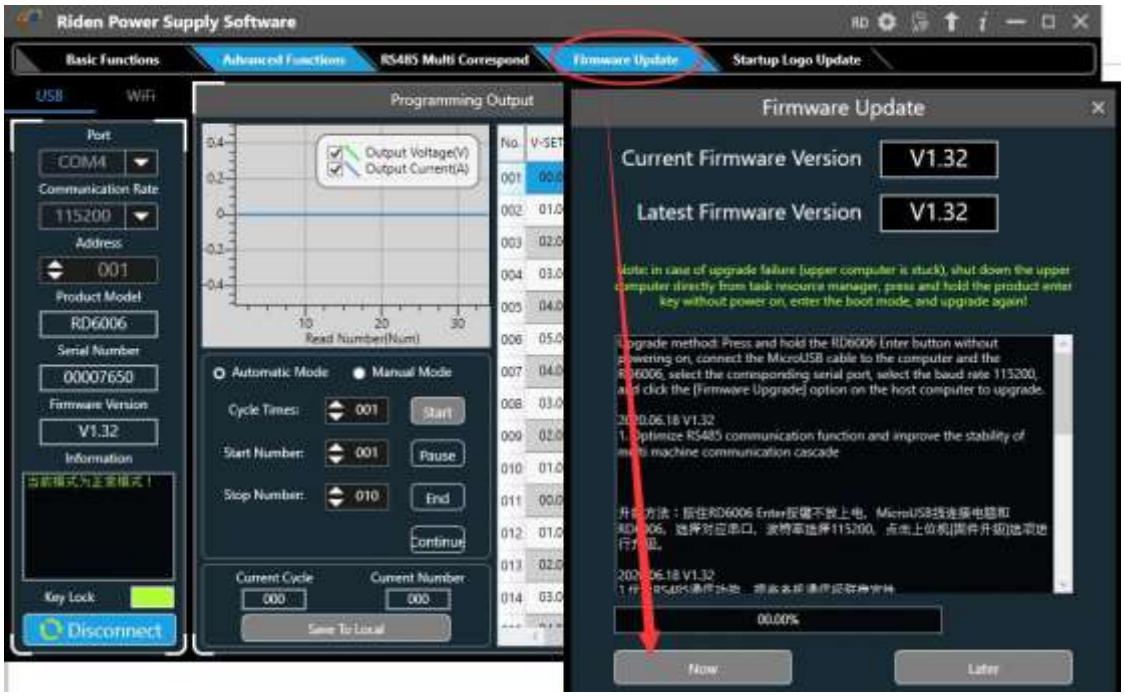


4.3.4 RS485 Multiple Devices Communication

4.3.5 Firmware Update

Firmware update operation video: https://youtu.be/NOoLfDw0DiY

Press and hold “**ENTER**” and power on RD6012, enter the boot mode, then connect it to computer, there will be “boot mode” in the mode information text box, then click **“Firmware Update”**, a firmware update prompt will pop up on the interface, and click “**Now**” to upgrade. (You can update the firmware under the normal mode, if it cannot be started up normally, you should press and hold the **“ENTER”** button and power on, update it under boot mode. It doesn’t support firmware update under WiFi connection mode).

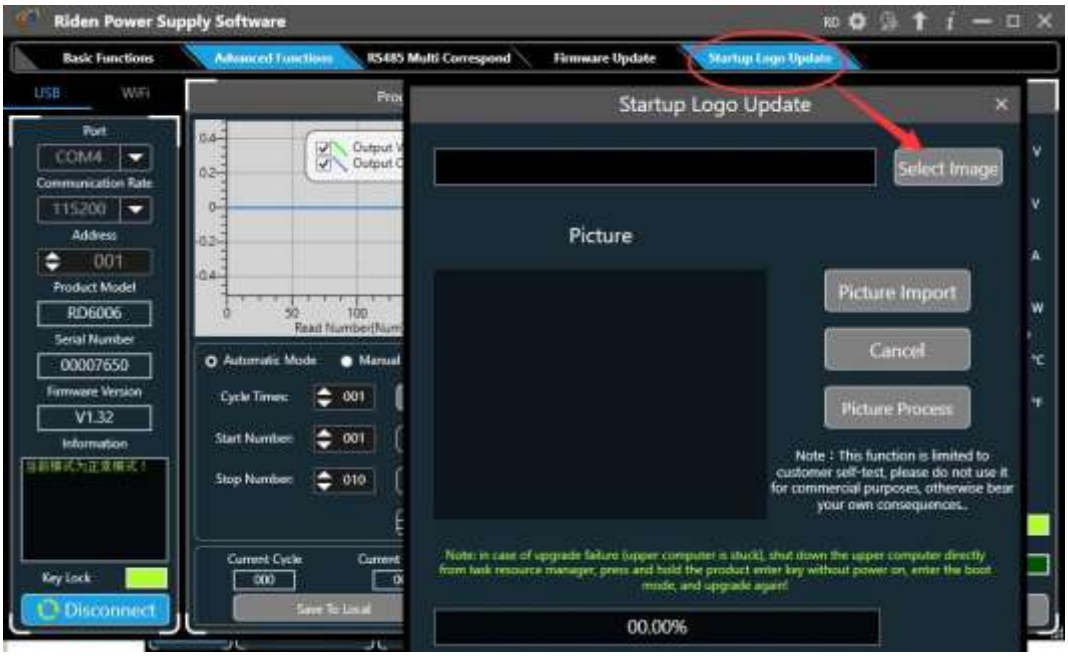


During the firmware upgrade process, the interface is displayed as follows:

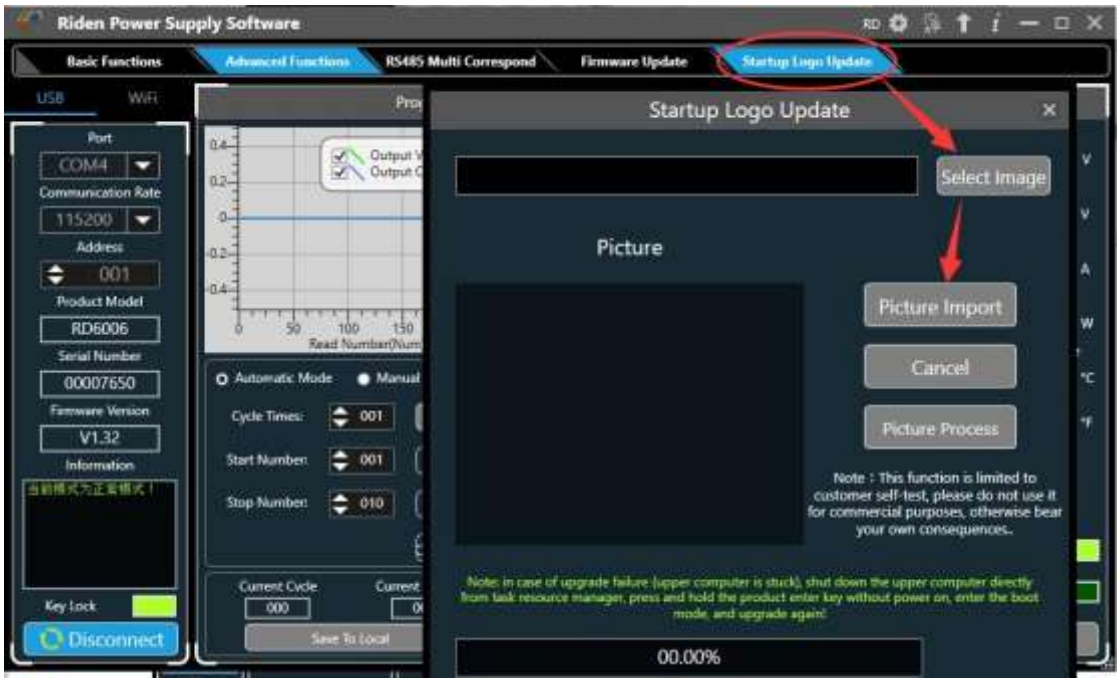
4.3.6 Boot Logo Update

Boot logo setting video:https://youtu.be/vuVhBsohWts

Click **“Start Logo Update”**, a Logo upgrade prompt will pop up on the page, please select a picture with a size of 320x240 and a resolution of 96dpi. Some logo samples can be used in the installation package.



Click “Picture Import” and RD6006 will reboot automatically.



4.3.7 Version Update Detection

Click **“Software Update”,** the software will automatically detect if there is a new version, if so, an update prompt will pop up on the interface.

4.3.8 Language Setting

Click **“Language”**, a language setting prompt will pop up on the interface, you can choose Simplified Chinese, English, France and German.

4.3.9 About

Click **“About”**, you can check the version number, publish time and copyright Information.

Appendix

Appendix 1: Common Battery Voltage Comparison Table

Battery Type	Nominal Voltage (V)	Max Voltage (V)	Min Voltage (V)	Application	Characteristics
LiCoMnNiO2	3.7	4.2	3	Digital Device	High capacity, rechargeable
Lithium Phosphate Battery	3.2	3.65	2.5	Electric bike / electric tool	Large discharge current, rechargeable
Lead Storage Battery	2	2.4	1.75	Car / electric bike	Inexpensive rechargeable
Dry Battery	1.5	--	0.9	Widely used	Inexpensive widely used not rechargeable
NICD Battery	1.25	1.5	1.1	Toy	Rechargeable Inexpensive Memory effect
Ni-MH Battery	1.2	1.4	0.9	Toy/Shaver	Rechargeable No memory effect

Appendix 2: Common Battery Voltage Comparison Table

Nominal Voltage	Battery Type	Number of batteries connected in series	Discharge termination voltage(V)	Charging limit voltage(V)
72V	LiCoMnNiO2	20	60	87
	Lithium Phosphate Battery	24	60	87.6
	Lead Storage Battery	6	63	86.4
64V	Lithium Phosphate Battery	21	52.5	76.6
60V	LiCoMnNiO2	17	51	71.4
	Lithium Phosphate Battery	20	50	73
	Lead Storage Battery	5	52.5	72
48V	LiCoMnNiO2	14	42	58.8
	Lithium Phosphate Battery	16	40	58.4
	Lead Storage Battery	4	42	57.6
36V	LiCoMnNiO2	10	30	37
	Lithium Phosphate Battery	12	30	43.8
	Lead Storage Battery	3	31.5	43.2
24V	LiCoMnNiO2	7	21	29.4
	Lithium Phosphate Battery	8	20	29.2
	Lead Storage Battery	2	21	28.8