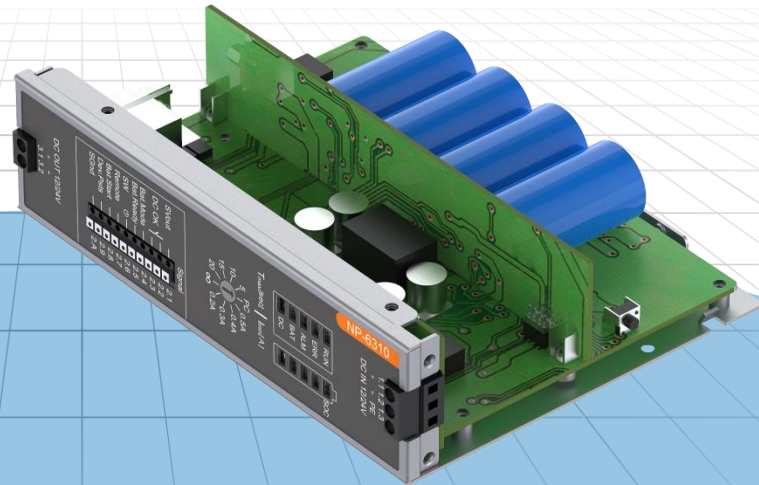


Design For Your System Security

Automation PC系列UPS NP-6310



NEW

非法断电会对PC造成的极大的危害



- 硬盘的损坏(80%是因为电压不稳或经常性突然断电造成的)
- 主板烧坏(瞬时电流冲击)
- 影响主机的寿命
- 资料丢失，系统无法正常启动
- 过程数据丢失



常规保护措施：加装UPS，UPS的电池类型一般常用以下三种：

01

铅酸电池

- 优点：
 - 价格便宜
- 缺点：
 - 转换率低
 - 寿命非常短
 - 污染环境
 - 不方便运输

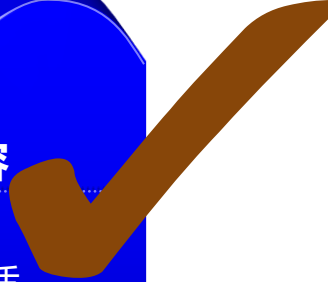
02

锂电池

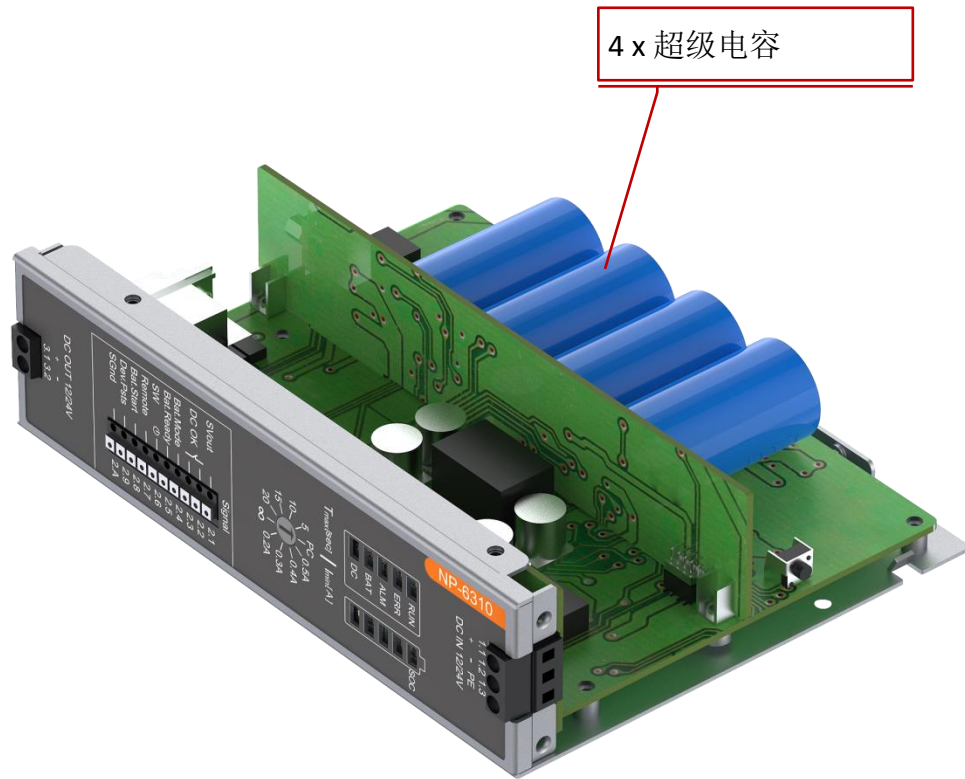
- 优点：
 - 寿命较长
 - 容量大，可大电流充放电
- 缺点：
 - 温度范围窄
 - 功率密度不高，上电慢
 - 成本高，不方便运输

03

超级电容

- 优点：
 - 价格合适
 - 寿命超长
 - 适应宽温
 - 功率密度高
 - 充电速度快
 - 免维护，环保，方便运输
 - 缺点：能量相对较小
- 

NP-6310介绍



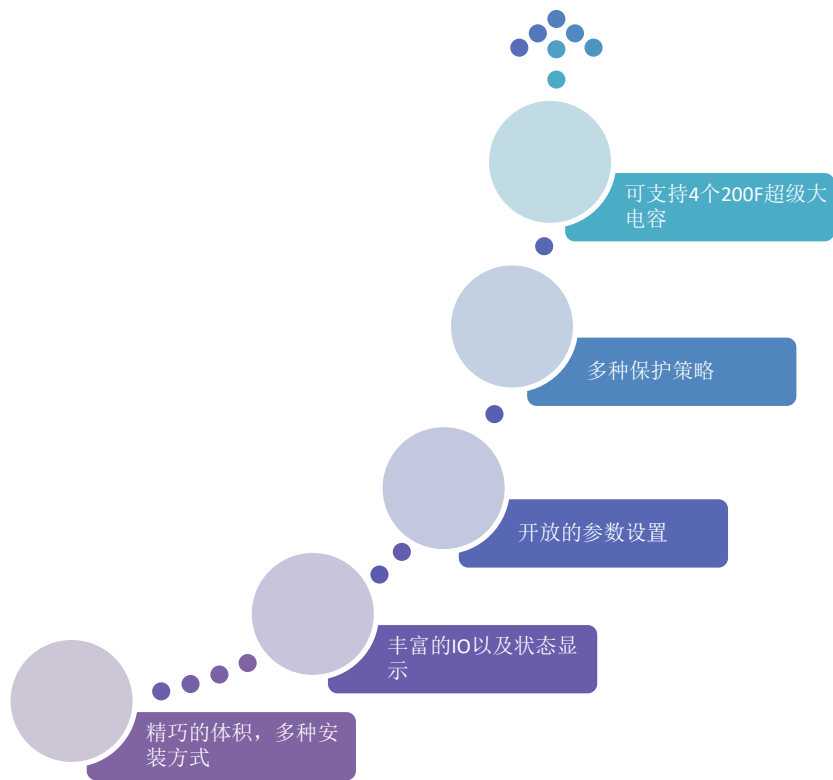
NP-6310介绍



参数项目	NP-6310-A		
电压	DC12V / DC24V		
电流	12A		
防护	防反接, 过压防护, EFT±1500V, 浪涌2000V		
电压	12V / 24V		
电流	9A		
防护	过流、过载防护		
空载功耗	3W		
带载最大功率	60W/12V, 120W/24V		
最大充电电流	3A		
充满时间	工作电压(V)	电容容量	充满时间(秒)
		DC12 ±5%	4 × 100
	DC24 ±5%		4 × 200
		DC24 ±5%	4 × 100
放电时间	负载功率(W)		电容容量
		24	
	60	4 × 100	18
	60	4 × 200	33
	120	4 × 200	12

超级电容	容量	1080 Ws
	使用寿命	充放电 50 万次
IO参数	IO电压	DC24V
	隔离方式	光耦
信号类型	隔离电压	3.75kV
	信号规格	DC24V/3mA
	DC OK	DC供电状态, 继电器常开型输出
	Bat.Mode	电池供电模式, NPN型输出
	Bat.Ready	电池充满状态, NPN型输出
	SW	远程开关机输出, NPN型输出
	Remote	远程断电输出, NPN型输入
	Bat.Start	强制电池输出, NPN型输入
	Dev.Psts	受电设备工作状态, NPN型输入
	通讯参数	通讯接口
通讯方式		RS232 / RS485
通讯协议		Modbus RTU
通讯参数		可通过寄存器40003设置, 默认115200, 8位数据位, 1位停止位, 无校验位
Modbus Slave地址		可通过寄存器40004设置, 默认1
环境参数	工作温度	-20°C ~ 60°C
	存储温度	-40°C ~ 80°C
	工作湿度	5~95%
安装方式	安装方式	壁挂安装 或 DIN-Rail安装
	安装尺寸	180.0(mm) × 43.0(mm) × 125.2(mm)
	重量	850(g)

功能再升级(相比于原有的UPS模块)



NEW

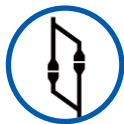


NP-6310 UPS模块为IPC保驾护航



自适应DC12V/24V输入

- DC12V/24V电源输入
- 输入过压以及防反接保护，输出过流、过载保护
- 可配置性备份电源输出模式



状态实时监控

- 多种LED状态灯显示
- 受电设备(PC)可通过Modbus RTU实时监控状态
- 可配置的电源管理策略
- 受电设备可通过DIO实现远程开关机



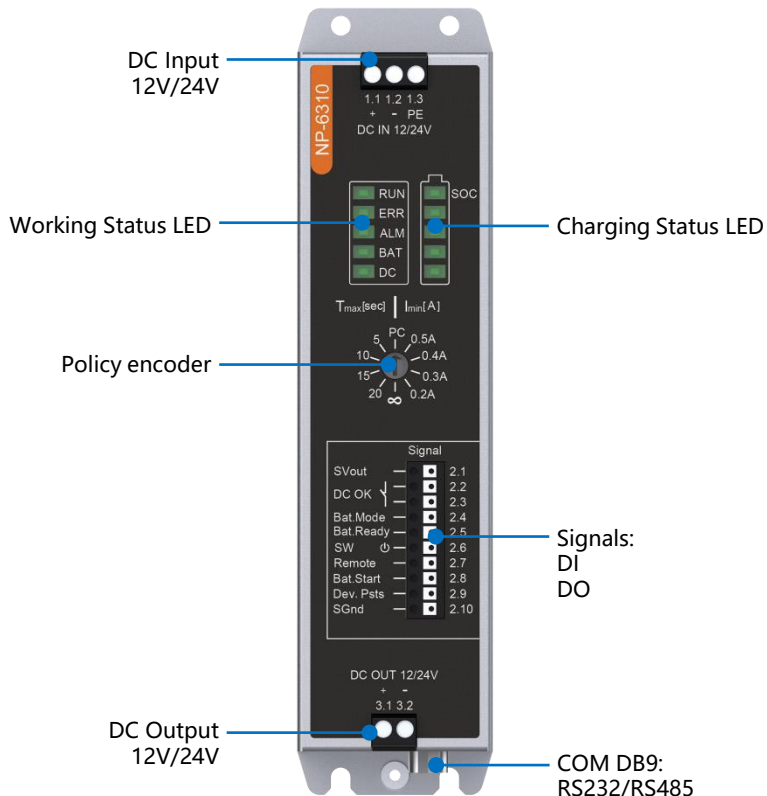
安全、高效、环保的超级电容存储

- 隔离DI、DO
- 超长寿命超级电容存储，可达十年50万次的充电/放电周期
- 转换效率高，环保，安全，备份时间长

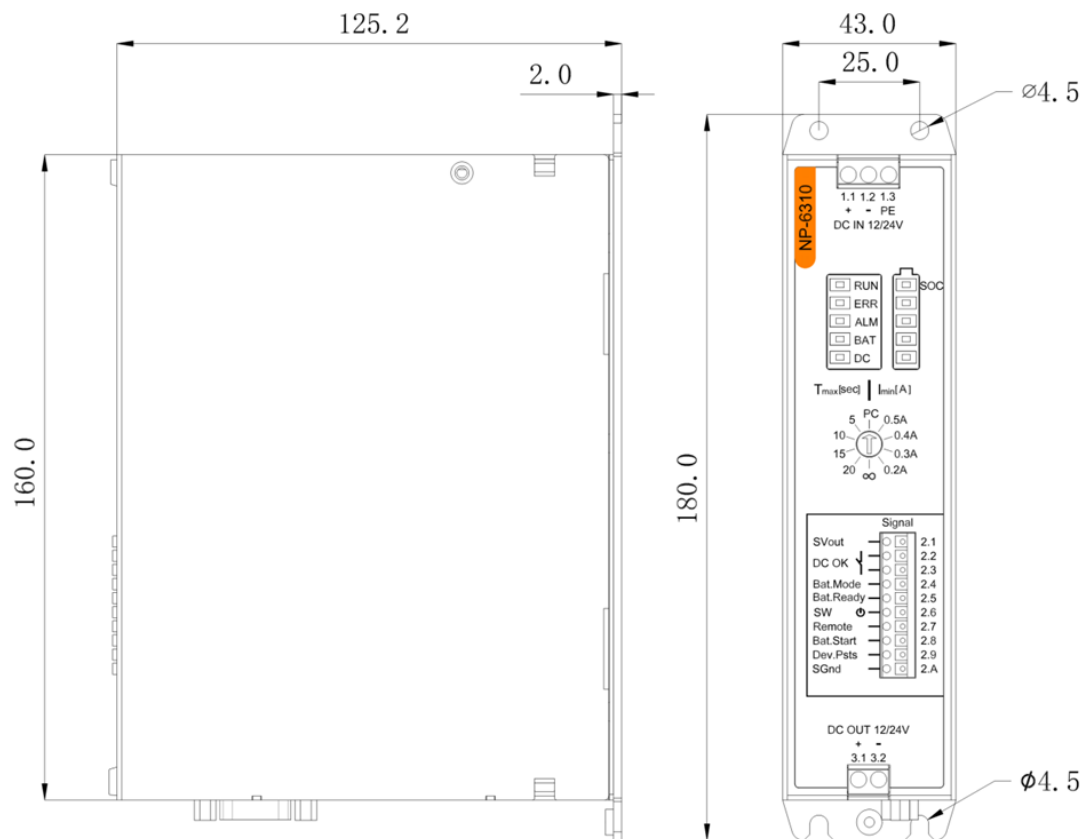


宽温工作

- 宽温工业级的器件
- 可承受-20°C至60°C的工作环境

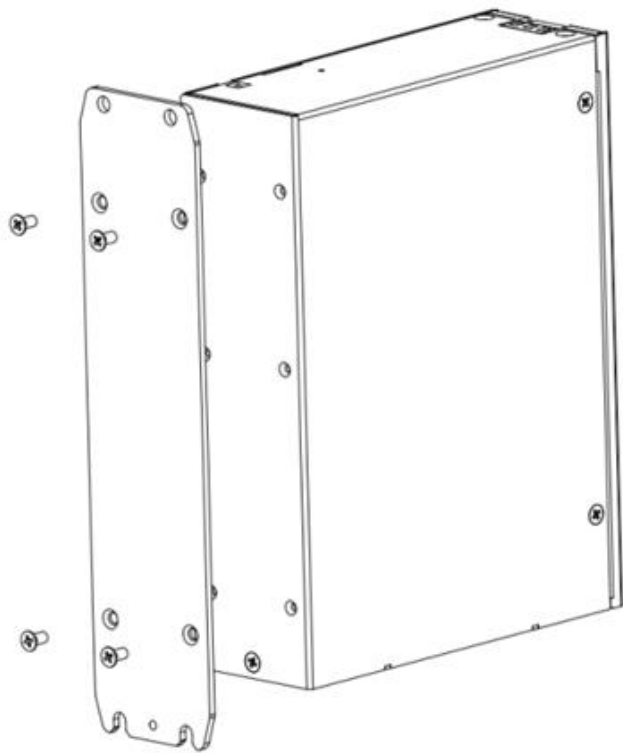


产品尺寸

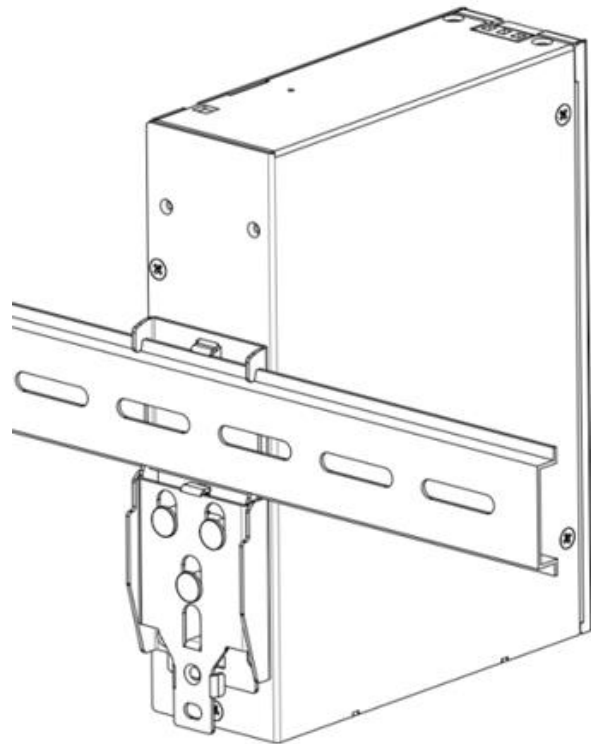


多种安装方式

- 壁挂式安装

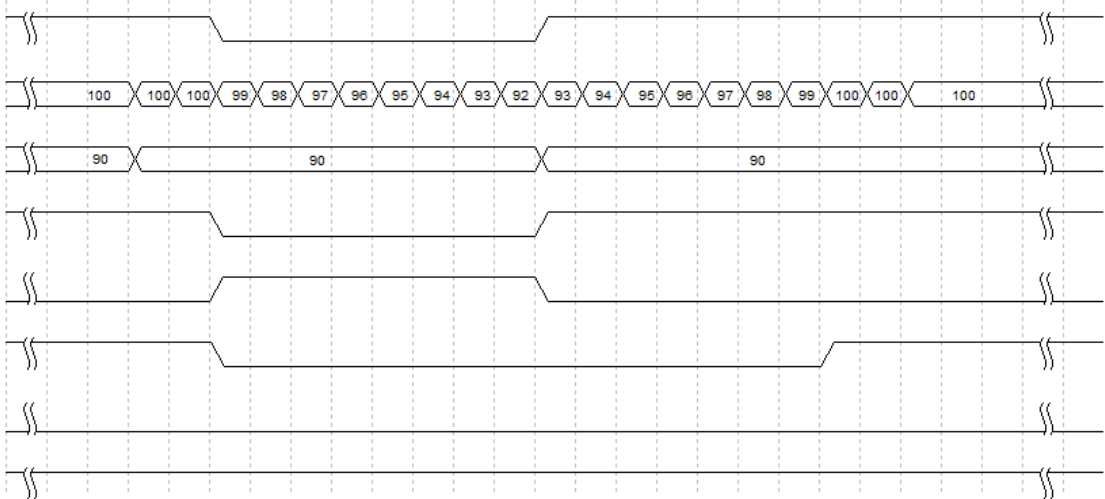


- 导轨式安装



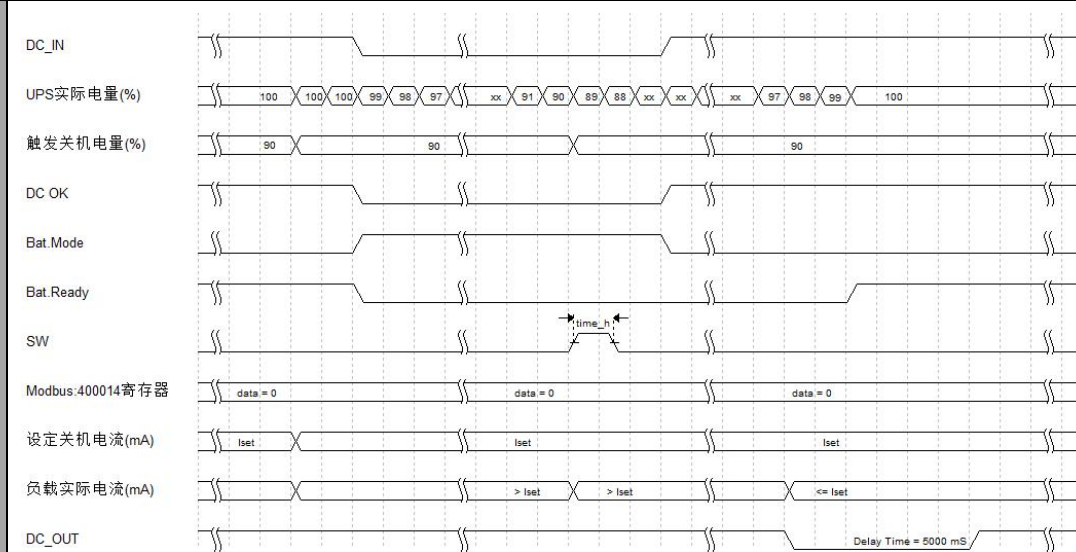
多种断电再来电的处理策略

情景 2: DC_IN 掉电, 在电池剩余电量大于设定阈值之前上电

码盘	电流档
行为	DC_IN 断电后, UPS 启用内部电池对外供电, 当 DC_IN 再次上电, UPS 切换至电池充电模式, 并持续 DC_OUT 对外输出供电, SW 信号无动作。
逻辑时序	

多种断电再来电的处理策略

情景 3: DC_IN 掉电, 在受电设备关机阶段再次来电(策略 0)

码盘	电流档
40014	0
行为	DC_IN 断电后, UPS 启用内部电池对外供电, 当 DC_IN 再次上电, UPS 切换至电池充电模式, 当电池电量低于设定的阈值时, 输出 SW 脉冲, 直到负载电流低于设定的阈值时, 停止供电输出, 然后延时 5 秒再次 DC_OUT 输出
逻辑时序	 <p>The timing diagram illustrates the following sequence of events:</p> <ul style="list-style-type: none"> DC_IN: Starts high, drops to low (power loss), then returns to high (power restoration). UPS实际电量(%): Starts at 100%, drops to 99% during power loss, reaches a threshold of 90% (labeled '触发关机电量'), then recovers to 100% during power restoration. 触发关机电量(%): Shows a pulse at 90% when DC_IN drops. DC OK: Drops to low when DC_IN drops, returns to high when DC_IN returns. Bat. Mode: Transitions from 'Normal' to 'Bat. Mode' when DC_IN drops. Bat. Ready: Drops to low when DC_IN drops, returns to high when DC_IN returns. SW: Generates a pulse (labeled 'time_h') when the battery reaches the 90% threshold. Modbus 400014寄存器: Shows 'data = 0' before and after the SW pulse. 设定关机电流(mA): Shows a constant 'Iset' value. 负载实际电流(mA): Shows a pulse that is greater than 'Iset' during the SW pulse, then drops to less than or equal to 'Iset'. DC_OUT: Drops to low when DC_IN drops, then has a 5000ms delay (labeled 'Delay Time = 5000 mS') before returning to high.

多种断电再来电的处理策略

情景 4: DC_IN 掉电, 在受电设备关机阶段再次来电(策略 1)

码盘	电流档
40014	1
行为	DC_IN 断电后, UPS 启用内部电池对外供电, 当 DC_IN 再次上电, UPS 切换至电池充电模式, 当电池电量低于设定的阈值时, 输出 SW 脉冲, 直到负载电流低于设定的阈值时, 停止供电输出, 然后直至 DC_IN 再次上电时, DC_OUT 重新输出
逻辑时序	<p>The timing diagram illustrates the following sequence of events:</p> <ul style="list-style-type: none"> DC_IN: Starts high, drops to low (power outage), then returns high (power restoration). UPS实际电量(%): Starts at 100%, drops to a range between 97% and 99% during the outage, and returns to 100% after restoration. 触发关机电量(%): Shows a threshold of 90% that triggers the shutdown pulse. DC OK: High during normal operation, drops to low during the outage, and returns high after restoration. Bat.Mode: Transitions from 'Normal' to 'Battery' mode during the outage. Bat.Ready: High when the battery is ready for discharge. SW: A pulse is generated when the battery level reaches the 90% threshold. A 'time_h' interval is indicated for this pulse. Modbus.400014寄存器: The register value is set to 'data = 1' during the shutdown period. 设定关机电流(mA): A constant threshold value 'Iset' is shown. 负载实际电流(mA): Shows the load current dropping below the 'Iset' threshold during the outage. DC_OUT: High during normal operation, drops to low during the outage, and returns high after restoration.

多种断电再来电的处理策略

情景 5: DC_IN 掉电, 在设备完成关机之前未上电

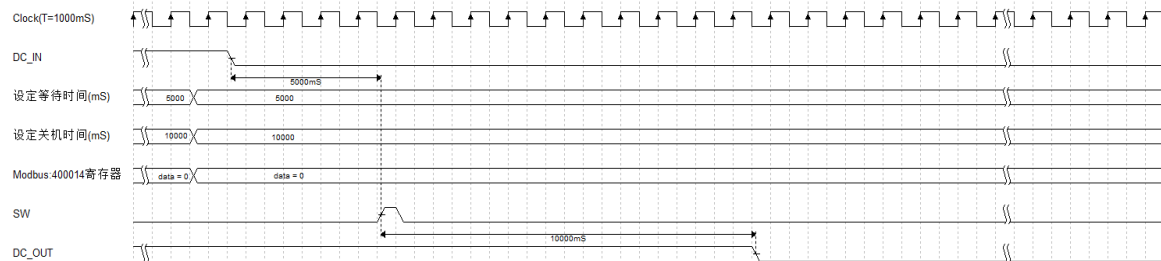
码盘

时间档

行为

DC_IN 断电后, UPS 启用内部电池对外供电, 当续航时间超出设定的时间时, 输出 SW 脉冲信号, 停止 DC_OUT 供电输出。

逻辑时序



多种断电再来电的处理策略

情景 6: DC_IN 断电后, UPS 启用内部电池对外供电, 当续航时间未超出设定的时间时

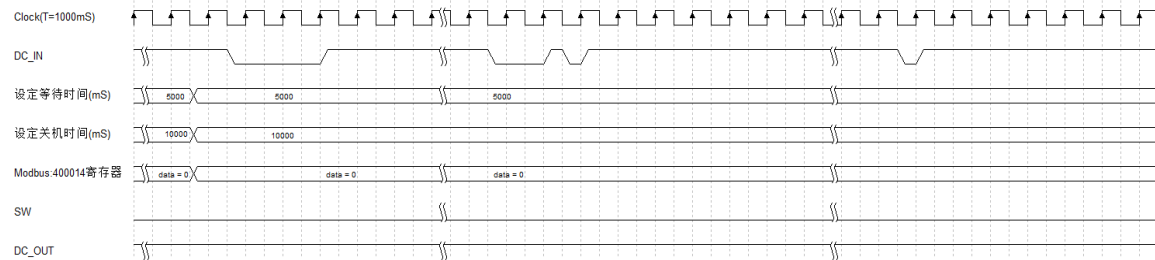
码盘

时间档

行为

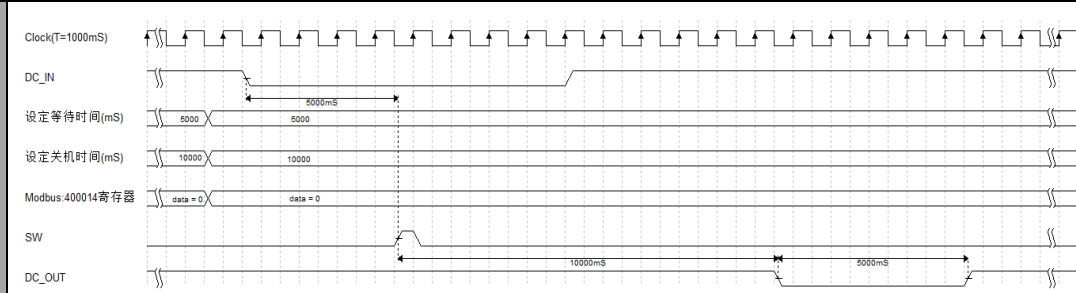
DC_IN 断电后, UPS 启用内部电池对外供电, 当续航时间未超出设定的时间时, SW 信号无动作, DC_OUT 持续供电输出。

逻辑时序



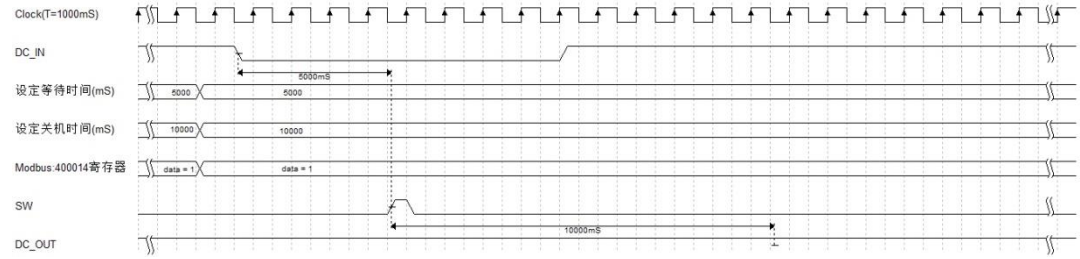
多种断电再来电的处理策略

情景 7: DC_IN 掉电, 在受电设备关机阶段再次来电(策略 0)

码盘	时间档
40014	0
行为	DC_IN 断电后, UPS 启用内部电池对外供电, 当 DC_IN 再次上电, UPS 切换至电池充电模式, 当续航时间未超出设定的时间时, 输出 SW 脉冲, DC_OUT 在停止输出时间 T 满足之后即停止输出, 并延时 5S 后重新 DC_OUT 输出。
逻辑时序	 <p>The timing diagram illustrates the sequence of events for Scenario 7. It shows the following signals and their durations:</p> <ul style="list-style-type: none"> Clock (T=1000ms): A regular square wave signal. DC_IN: A signal that drops from high to low (power loss) and then returns to high (power restoration). A 5000ms interval is marked from the start of the power loss to the start of the power restoration. 设定等待时间 (ms): A 5000ms interval starting from the power loss event. 设定关机时间 (ms): A 10000ms interval starting from the power loss event. Modbus:400014寄存器: The data value is 0 during the power loss period. SW: A pulse signal that occurs after the 5000ms delay following power restoration. DC_OUT: A signal that drops to zero after the SW pulse. A 10000ms interval is marked from the start of the power restoration to the end of the DC_OUT drop. A 5000ms interval is marked from the end of the DC_OUT drop to the start of the next DC_OUT pulse.

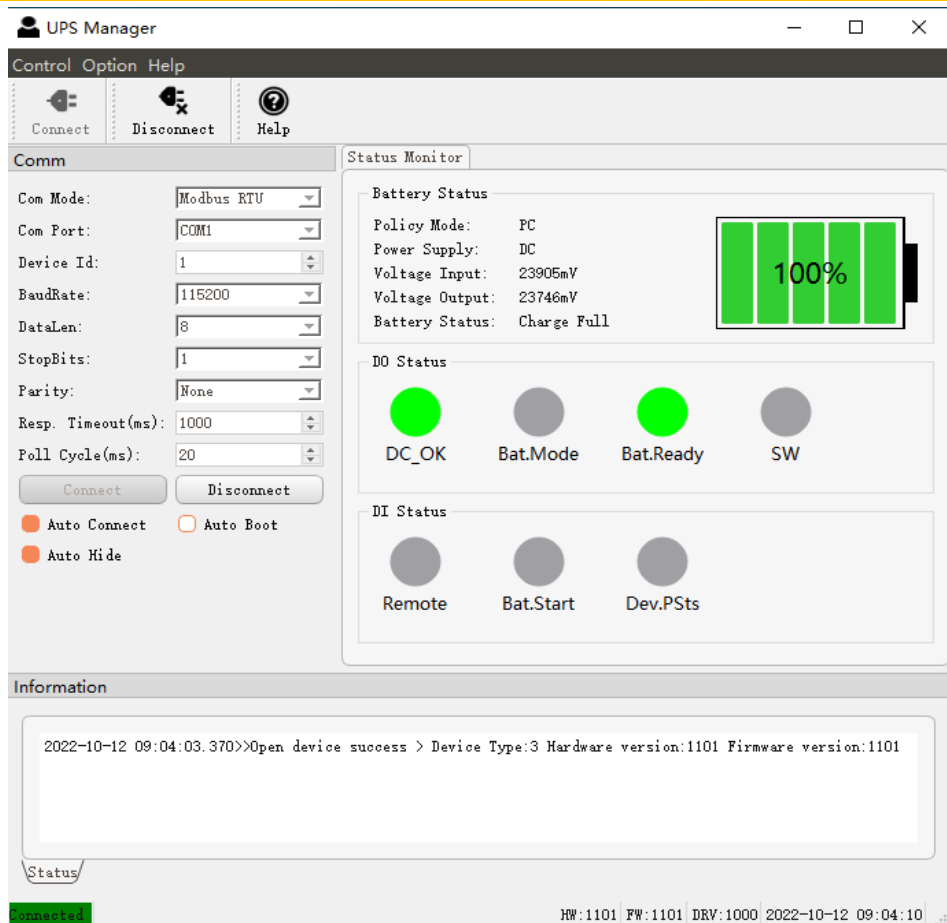
多种断电再来电的处理策略

情景 8: DC_IN 掉电, 在受电设备关机阶段再次来电(策略 1)

码盘	时间档
40014	1
行为	DC_IN 断电后, UPS 启用内部电池对外供电, 当 DC_IN 再次上电, UPS 切换至电池充电模式, DC_OUT 持续输出
逻辑时序	 <p>The timing diagram illustrates the sequence of events for Scenario 8. It shows the following signals and their behavior:</p> <ul style="list-style-type: none"> Clock (T=1000ms): A regular square wave pulse train. DC_IN: A signal that drops from high to low, indicating a power outage, and then returns to high. 设定等待时间 (mS): A pulse that occurs immediately after DC_IN drops, with a duration of 5000ms. 设定关机时间 (mS): A pulse that occurs after the 5000ms wait time, with a duration of 10000ms. Modbus 400014 寄存器: A signal that changes from 'data = 1' to 'data = 1' (likely representing a state change) during the shutdown period. SW: A signal that transitions from low to high during the shutdown period. DC_OUT: A signal that remains high throughout the entire sequence, indicating continuous output.

NP-6310Utility状态监视界面

- 配置通讯参数
- 设置自动启动，自动连接
- 设置开机首次自动连接后隐藏至托盘
- 显示供电模式以及电池电量状态
- 显示DI和DO的状态数据
- 根据配置执行掉电之后的批处理脚本文件



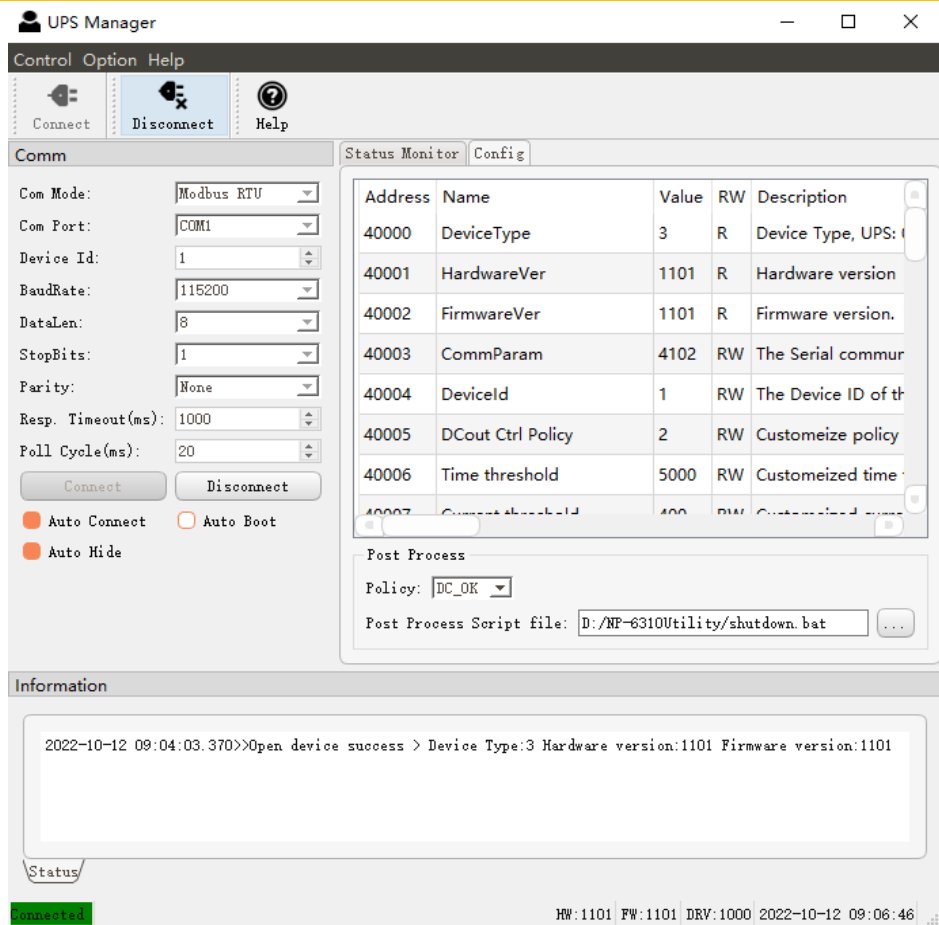
The screenshot displays the 'UPS Manager' application window. It is divided into several sections:

- Control:** Includes 'Connect', 'Disconnect', and 'Help' buttons.
- Comm (Communication Settings):**
 - Com Mode: Modbus RTU
 - Com Port: COM1
 - Device Id: 1
 - BaudRate: 115200
 - DataLen: 8
 - StopBits: 1
 - Parity: None
 - Resp. Timeout(ms): 1000
 - Poll Cycle(ms): 20
- Status Monitor:**
 - Battery Status:** Policy Mode: PC, Power Supply: DC, Voltage Input: 23905mV, Voltage Output: 23746mV, Battery Status: Charge Full. A battery level indicator shows 100%.
 - DO Status:** DC_OK (Green), Bat.Mode (Grey), Bat.Ready (Green), SW (Grey).
 - DI Status:** Remote (Grey), Bat.Start (Grey), Dev.PSts (Grey).
- Information:** A log window showing the message: '2022-10-12 09:04:03.370>>Open device success > Device Type:3 Hardware version:1101 Firmware version:1101'.
- Footer:** Shows 'connected' and system information: 'HW:1101 | FW:1101 | DRV:1000 | 2022-10-12 09:04:10'.

NP-6310Utility参数配置界面

- 读取UPS寄存器参数
- 双击设置寄存器参数
- 设置触发批处理文件的条件
- 设置批处理文件的路径

1. 设置的参数立即生效，并保存至控制器
2. Post Process设置项只有切换到Status Monitor下才有效
3. 断开设备连接将自动关闭Config窗口



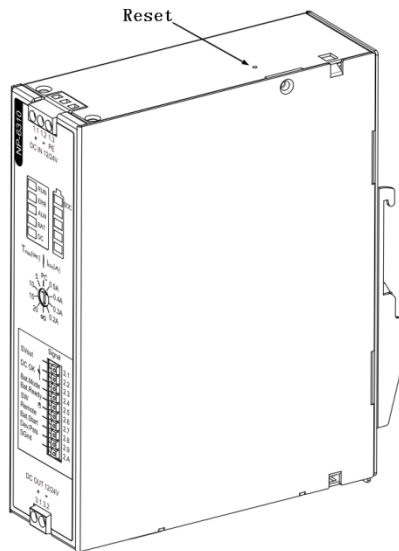
The screenshot displays the NP-6310Utility software interface. The main window is titled "UPS Manager" and has a menu bar with "Control", "Option", and "Help". Below the menu bar are three buttons: "Connect", "Disconnect", and "Help". The interface is divided into several sections:

- Comm:** This section contains configuration parameters for the Modbus RTU protocol. The parameters are: Com Mode (Modbus RTU), Com Port (COM1), Device Id (1), BaudRate (115200), DataLen (8), StopBits (1), Parity (None), Resp. Timeout(ms) (1000), and Poll Cycle(ms) (20). There are "Connect" and "Disconnect" buttons, and radio buttons for "Auto Connect", "Auto Boot", and "Auto Hide".
- Status Monitor / Config:** This section contains a table of registers and a "Post Process" section. The table has columns for Address, Name, Value, RW, and Description. The "Post Process" section includes a "Policy" dropdown set to "DC_OK" and a "Post Process Script file" field set to "D:/NP-6310Utility/shutdown.bat".
- Information:** This section displays a log message: "2022-10-12 09:04:03.370>>Open device success > Device Type:3 Hardware version:1101 Firmware version:1101".

At the bottom of the window, there is a "Status" tab and a "Connect" button. The status bar at the very bottom shows: "HW:1101 FW:1101 DRV:1000 2022-10-12 09:06:46".

恢复出厂设置

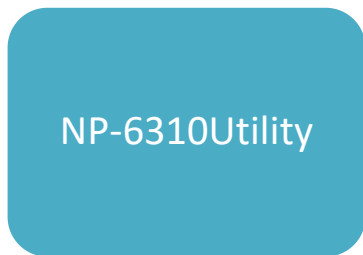
- 可通过长按Reset按钮5秒以上直到所有状态灯点亮进入出厂设置恢复过程，出厂设置恢复过程中RUN状态灯将一直闪烁，直到设置恢复完毕。



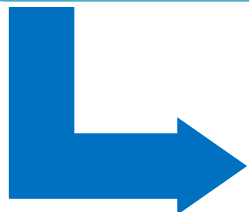
出厂默认参数

寄存器地址	默认值	说明
40003	0x1006	Modbus 通讯波特率: 115200, 数据位: 8, 停止位: 1, 校验方式: 无校验
40004	1	Modbus 通讯地址: 1
40005	2	电流控制模式
40006	5000	通过通讯设定的时间控制模式, Tsw_delay 时间 5000ms
40007	400	通过通讯或编码开关设定的电流控制模式, 最小关机电流 400mA
40008	1	Dev.Psts 有效信号电平策略: 由高电平变为低电平
40009	0	SW 控制依据剩余电量百分比
40010	90	电流控制模式, 输出 SW 信号的电量阈值 90%
40011	5000	时间控制模式, Toff 时间 5000ms
40012	0	SW 信号输出电平类型: OD 门模式
40013	500	SW 信号输出保持时间 Tsw_hold 为 500ms
40014	0	UPS 掉电过程中 DC_IN 恢复策略: 关机完成后 5S 再次输出 DC_OUT
40015	95	DC_OUT 输出电量阈值 95%

二次开发接口



- 用户可自定义批处理文件，在DC_OK或者SW信号触发之后，要执行的动作行为



- 用户可以在自己的应用程序中链接动态库，间接访问UPS的寄存器。



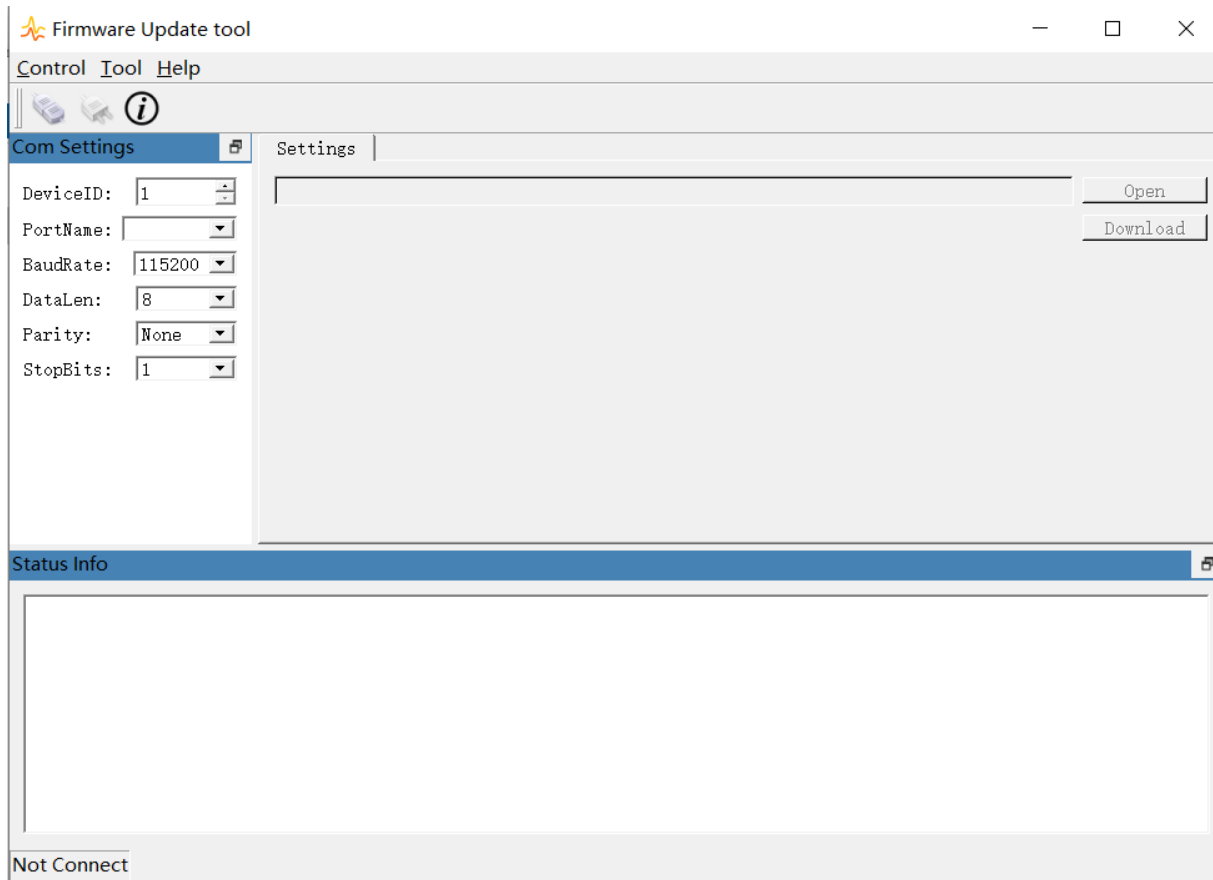
- 用户可自行开发应用程序，并且通过Modbus标准协议直接访问UPS的寄存器，通过监视寄存器的状态，定义IPC掉电之后的处理方式。

- Bin
- Include
- Lib
- Manual
- Sample
- vc_redist
- unins000.dat
- unins000.exe

- Bin: 测试工具文件夹。
- Include: SDK 函数头文件。
- Lib: 二次开发动态链接库。
- Manual: 用户手册。
- Sample: 开发示例程序。
- vc_redist: VC++运行时库。

固件升级

- 若有需要，可通过诺达佳提供的升级工具 Firmware Update tool 通过串口在线升级UPS 控制器固件

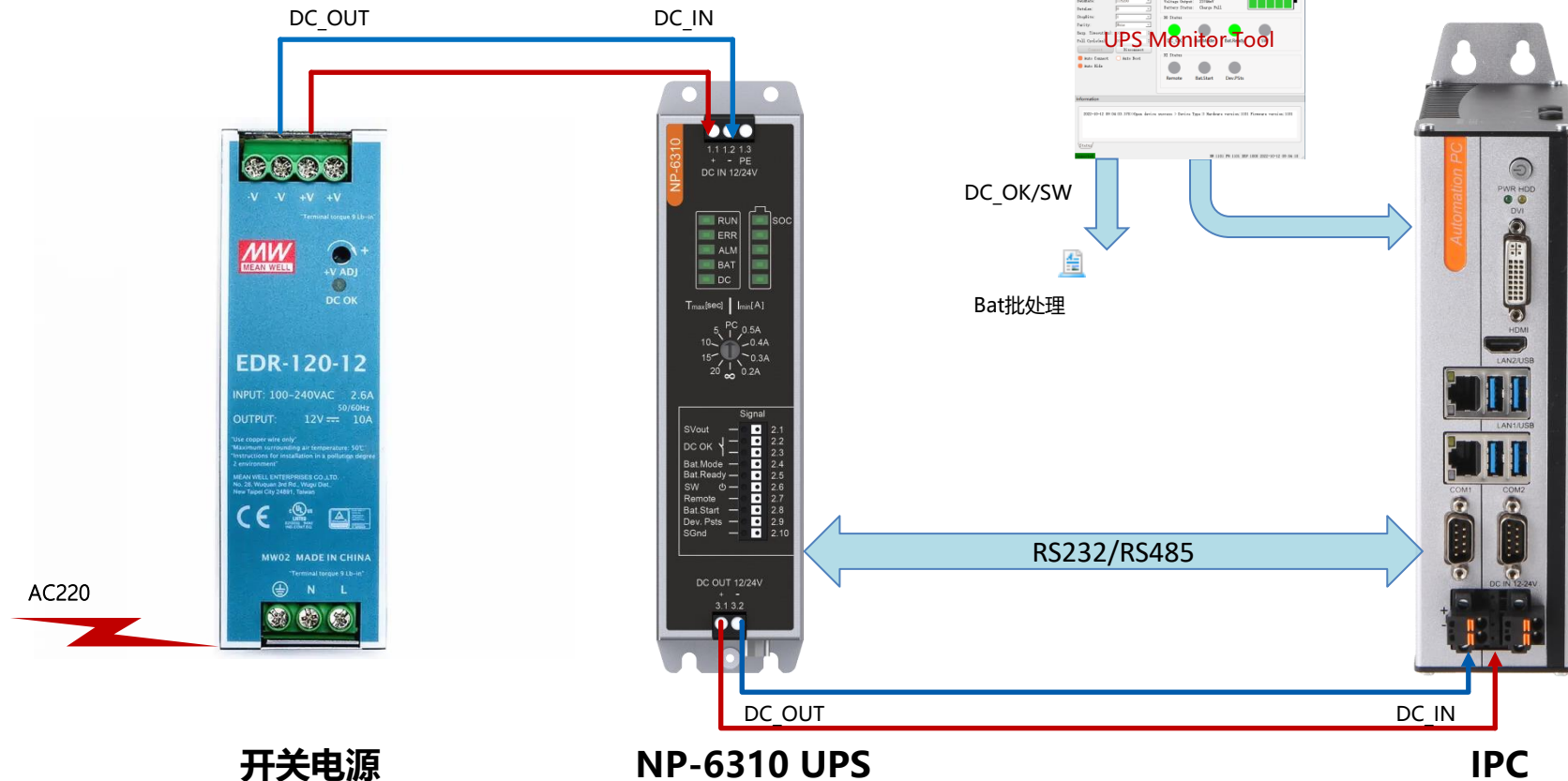


NP-6310

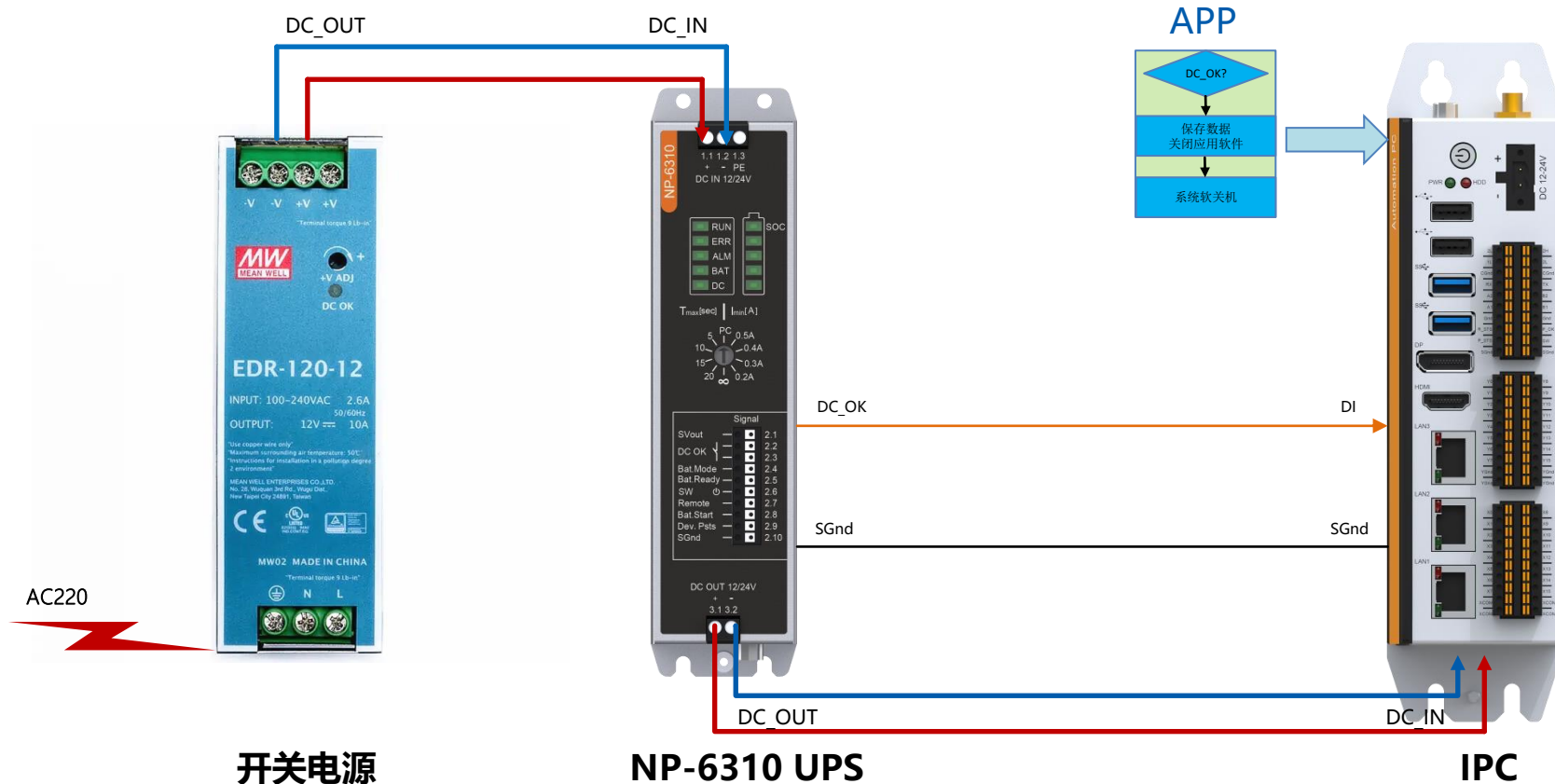
多种行业应用



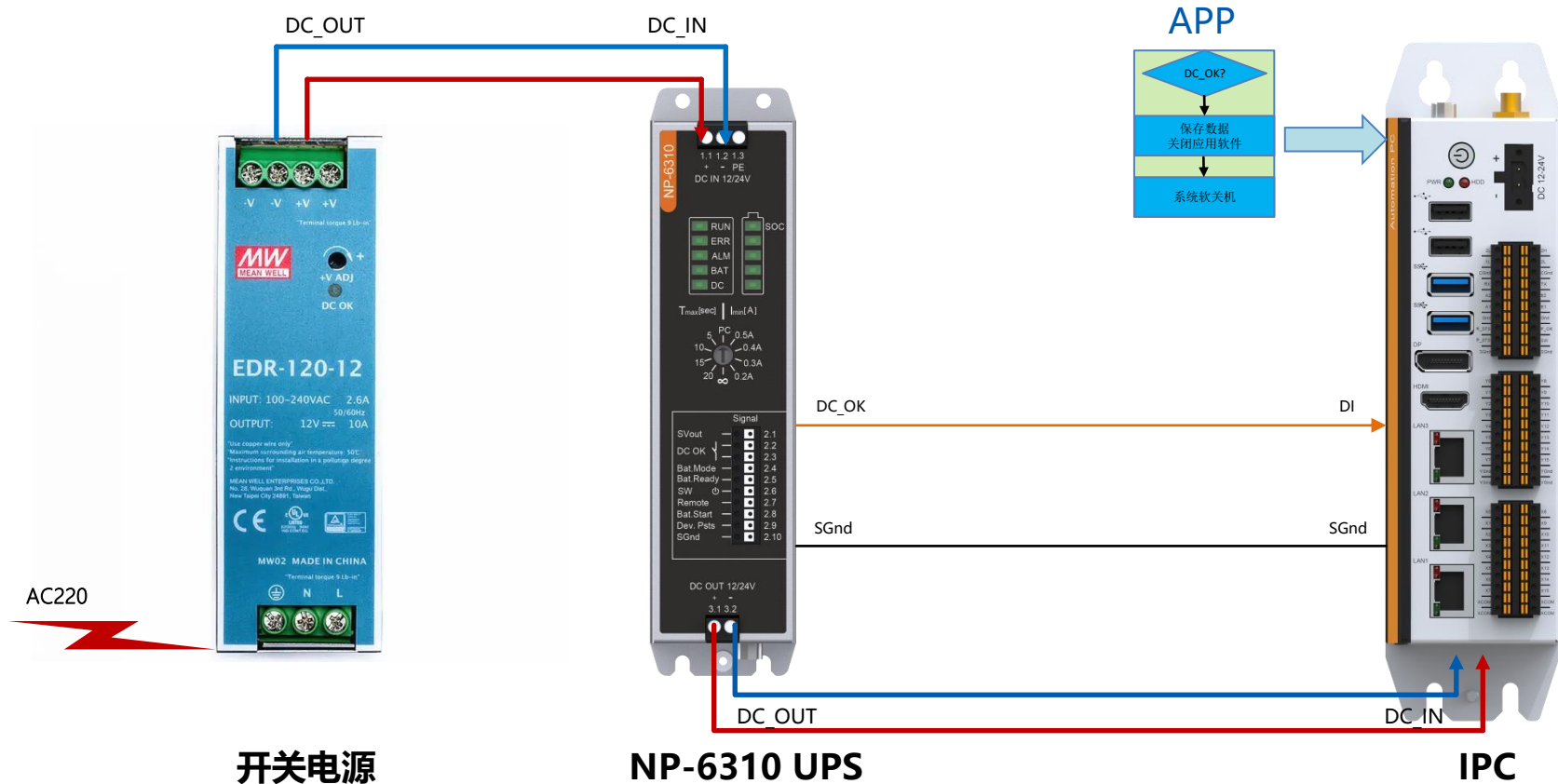
通过串口通讯



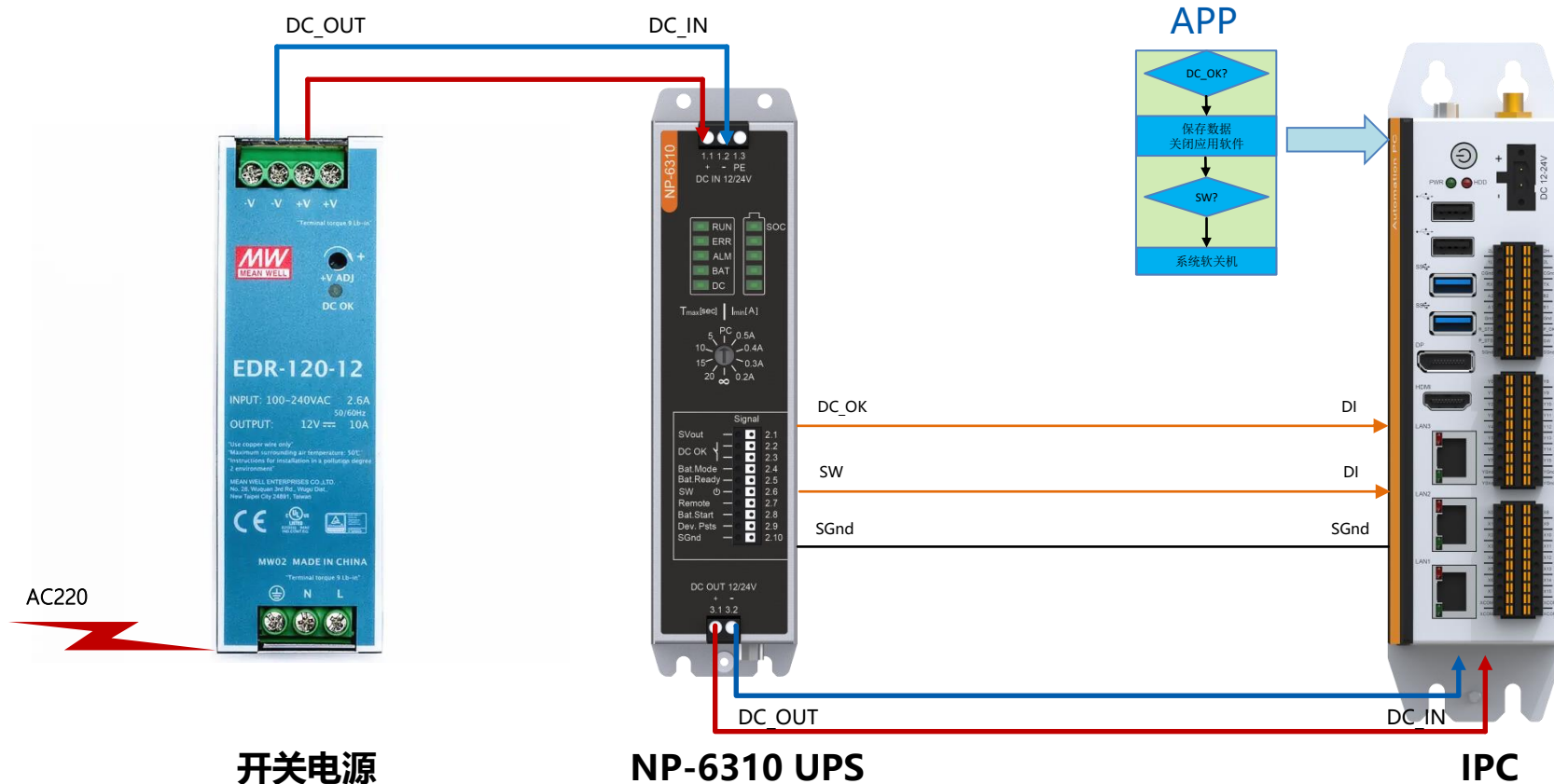
监视DC_OK信号，系统软关机，通过负载电流判断IPC是否关机



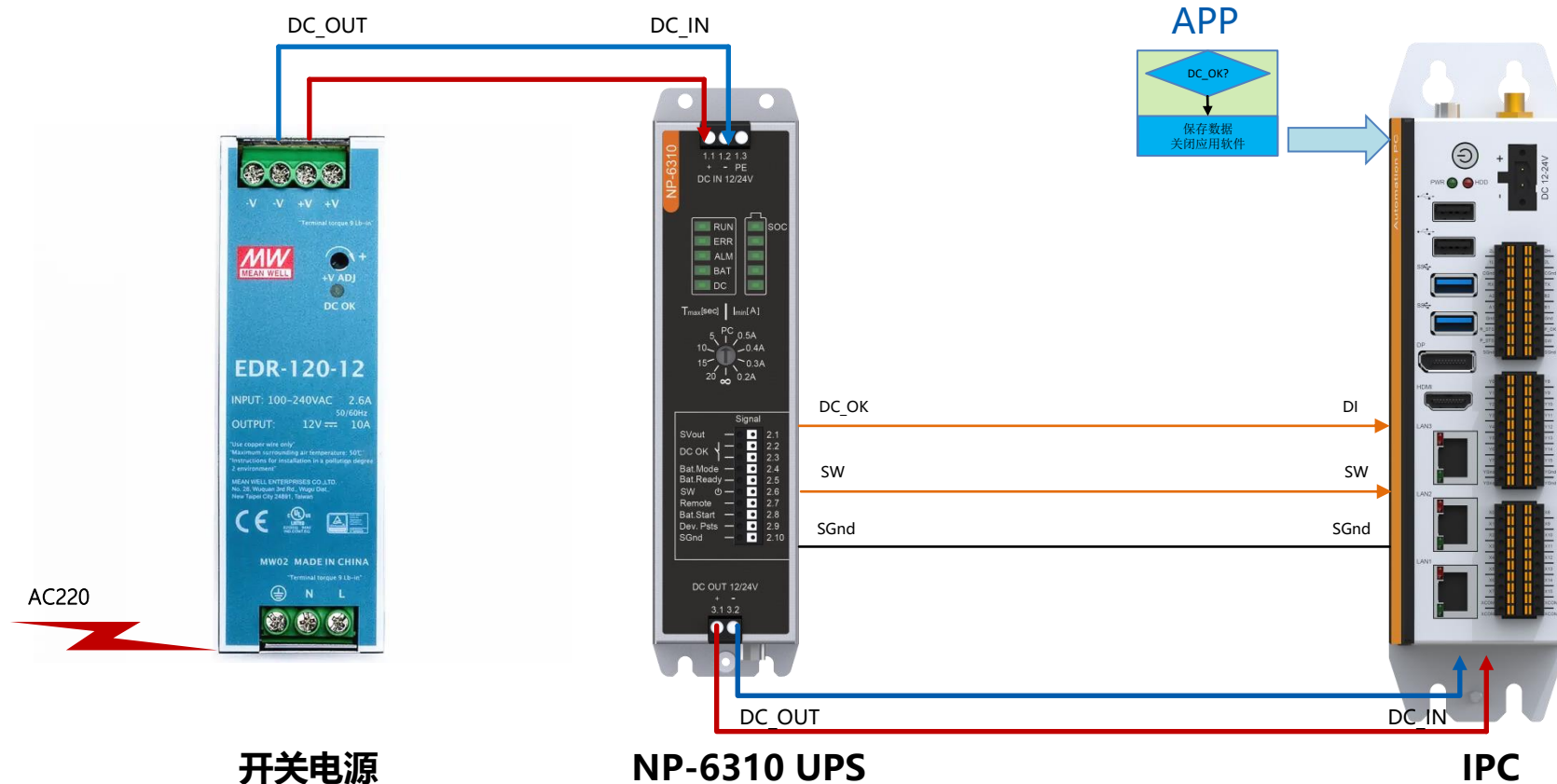
监视DC_OK信号，系统软关机，通过负载电流判断IPC是否关机



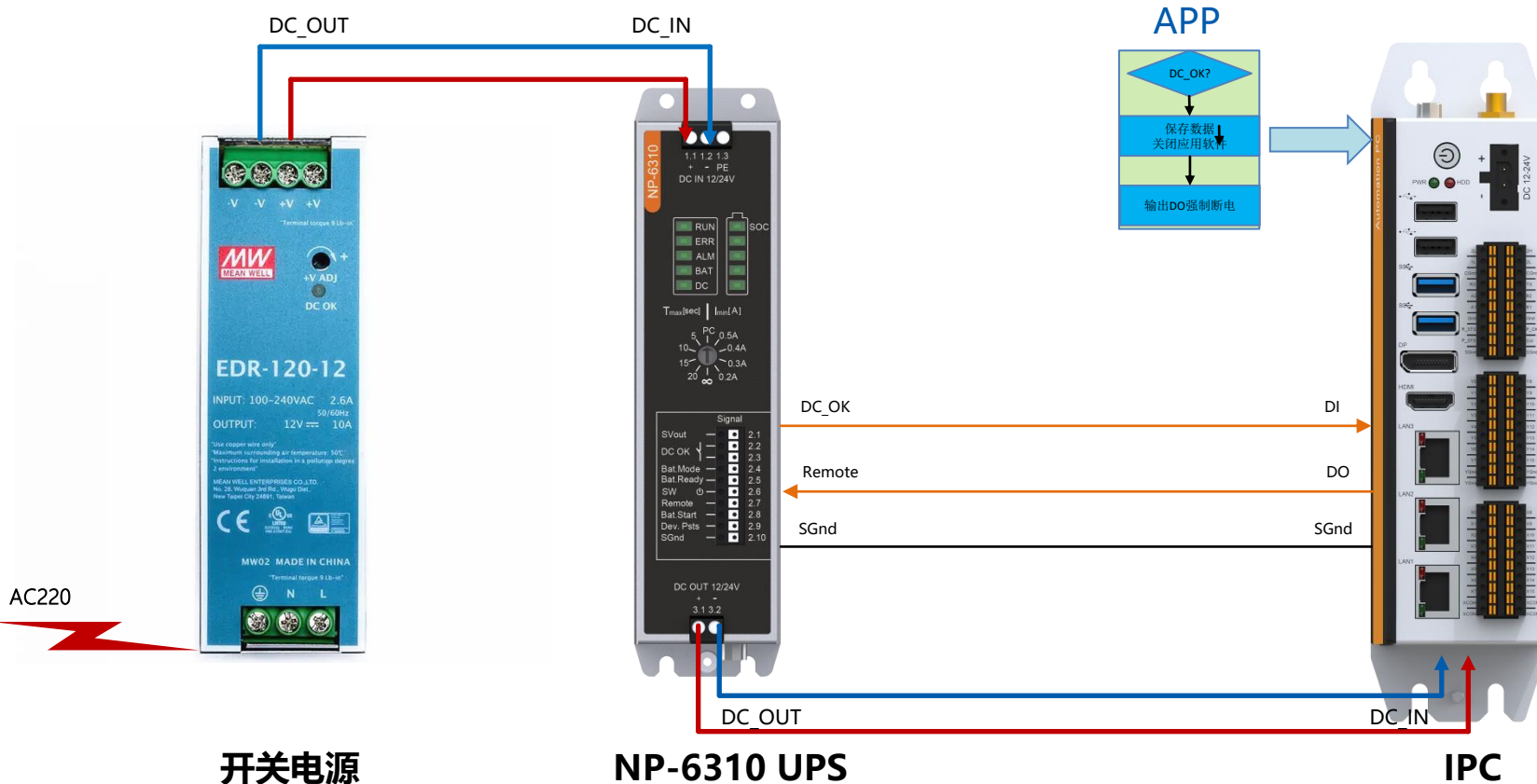
监视SW信号，系统软关机，通过负载电流判断IPC是否关机



通过SW信号远程关机



IPC通过DO实现强制断电



NP-6310

产品发布

预售时间

2022年10月18号，发布之日开启样机预定！

发布资料

- 文档
 - ◆ 规格书
 - ◆ 产品介绍PPT
 - ◆ 用户手册
- 软件
 - ◆ 驱动以及二次开发库文件
 - ◆ 配置工具NP-6310Utility以及SDK安装包

Thank You