
大疆电池密码、维修、解锁、改容量、 教程

大疆电池密码、维修、解锁、改容量、教程
一、背景
二、软件的安装
1.Battery Management Studio 安装
2.bq Evaluation Software 安装
三、开始调试
1、EV2400 与电池连线
2、软件的操作
(1) Battery Management Studio 软件设置
(2) 解封电池
(3) 电池不能充放解锁
(4) 修改电池循环次数
(5) 修改电池生产日期
(6) 修改电池容量
(7) 重启并关闭电池完全访问

(8) 其他机型数据与密码
a.御 Air1 数据
b.御 2 数据
c.晓数据
d.御 mini1 数据
e.悟 1 数据
f.悟 2 数据
g.植保数据
(9) bq Evaluation Software 软件设置
a.精灵 4 数据
b.御 1 数据
c.御 Pro1 数据
四、结语

一、背景

修改无人机电池有风险，此教程仅提供交流学习使用，请勿模仿，本人不承担一切相关责任。

其中很多数据来源于网络，版权归原作者所有。供学习研究交流之用 版权归原作者所有,请下载后 **24** 小时内删除,严禁作商业用途。
教程中如有错误，请多包涵。

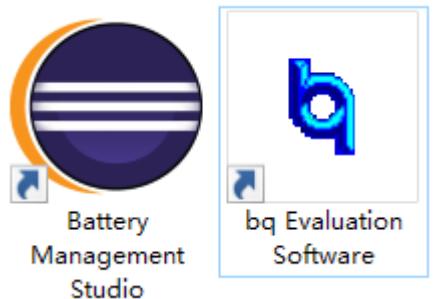
二、软件的安装

现在常见的大疆无人机有精灵 2、精灵 3、精灵 4、植保、悟 1、悟 2、御 1、御 2、御 air、御 air2、御 mini、晓、Air 2s 等。电池维修所需的程序有两种。

其中悟 1、悟 2、晓、御 2、御 air、御 air2、Air 2s、御 mini、植保、使用 Battery Management Studio 简称 bqStudio 是较新版的软件

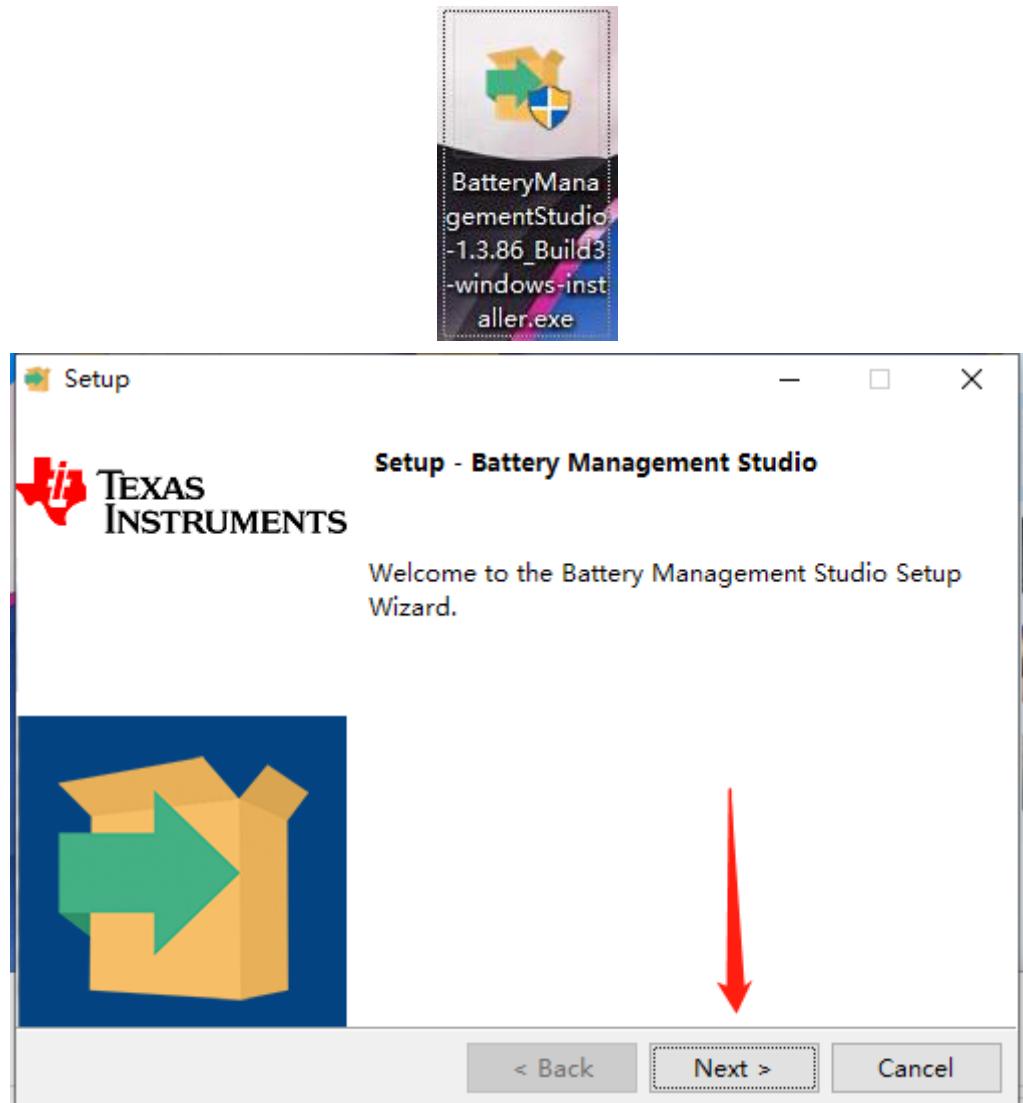
精灵 2、精灵 3、精灵 4、御 1、御 Pro 等使用 bq Evaluation Software 软件相对较老，还需要额外安装驱动程序 Support components to enable specific TI software (bqEVSW) to work with EV2400。

根据自己的机型，**二选一**安装。

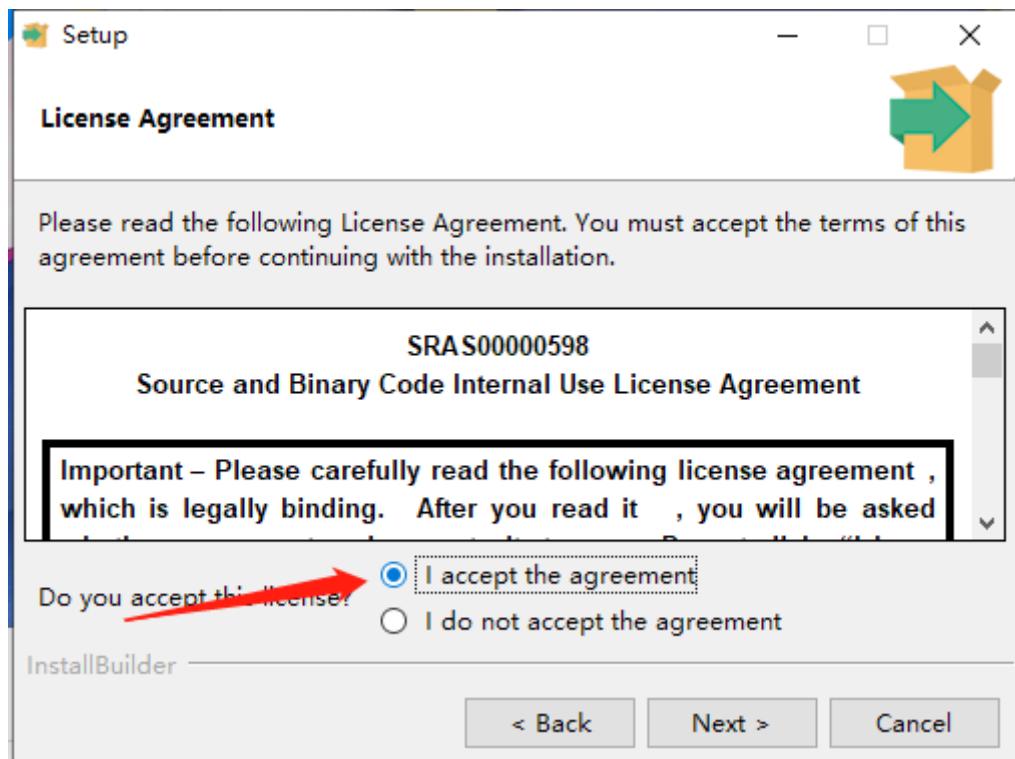


1. Battery Management Studio 安装

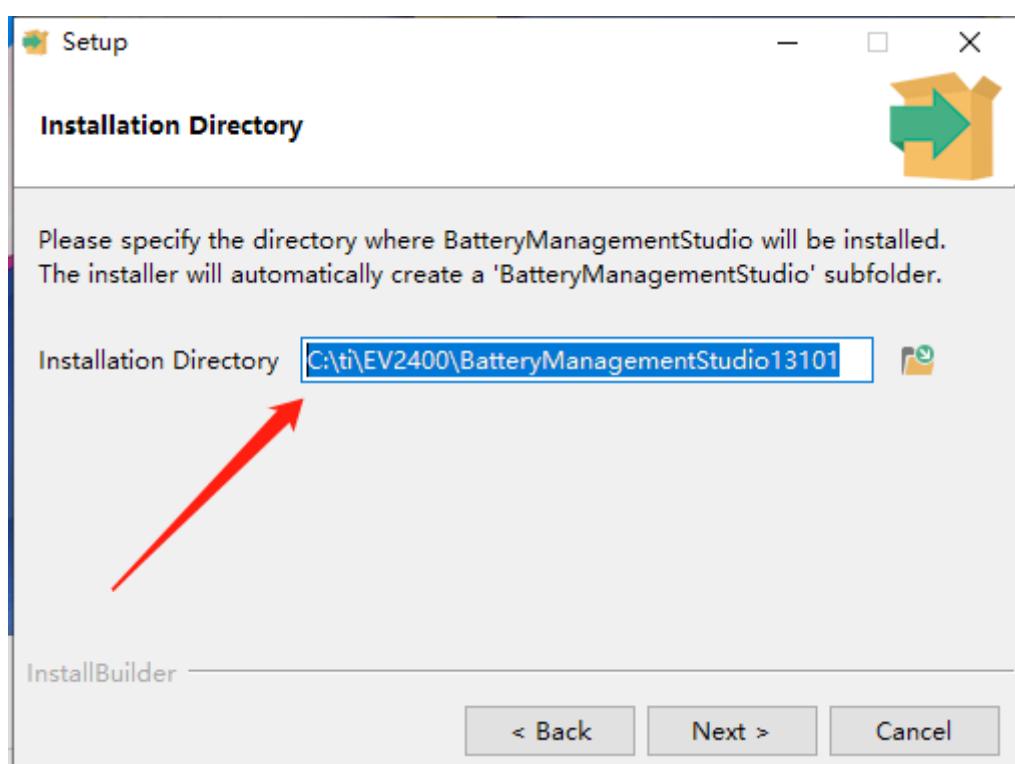
双击安装包



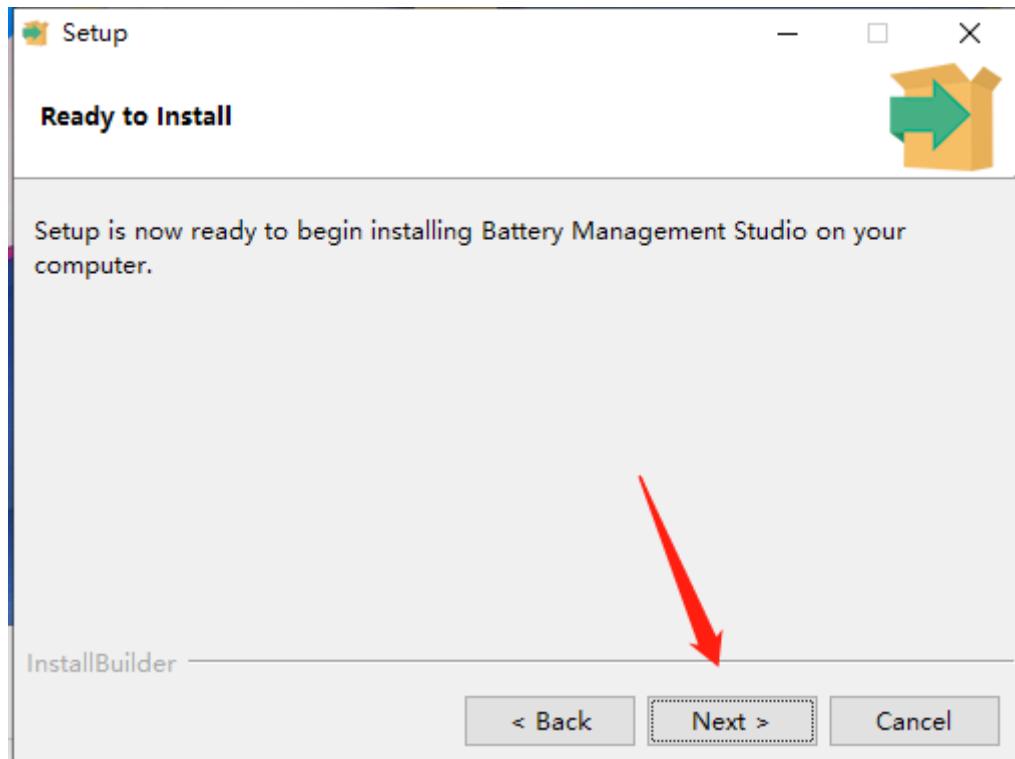
同意协议



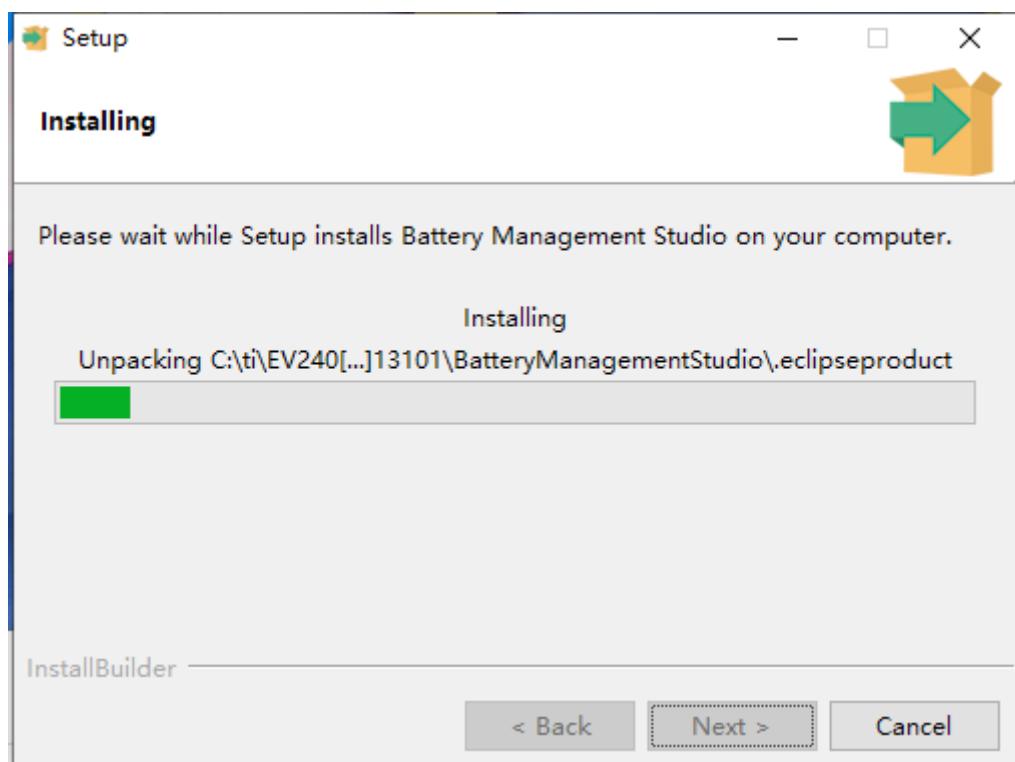
选择安装目录，建议默认，软件不大，其他目录后面会出现各种问题。目录中不要有汉字。



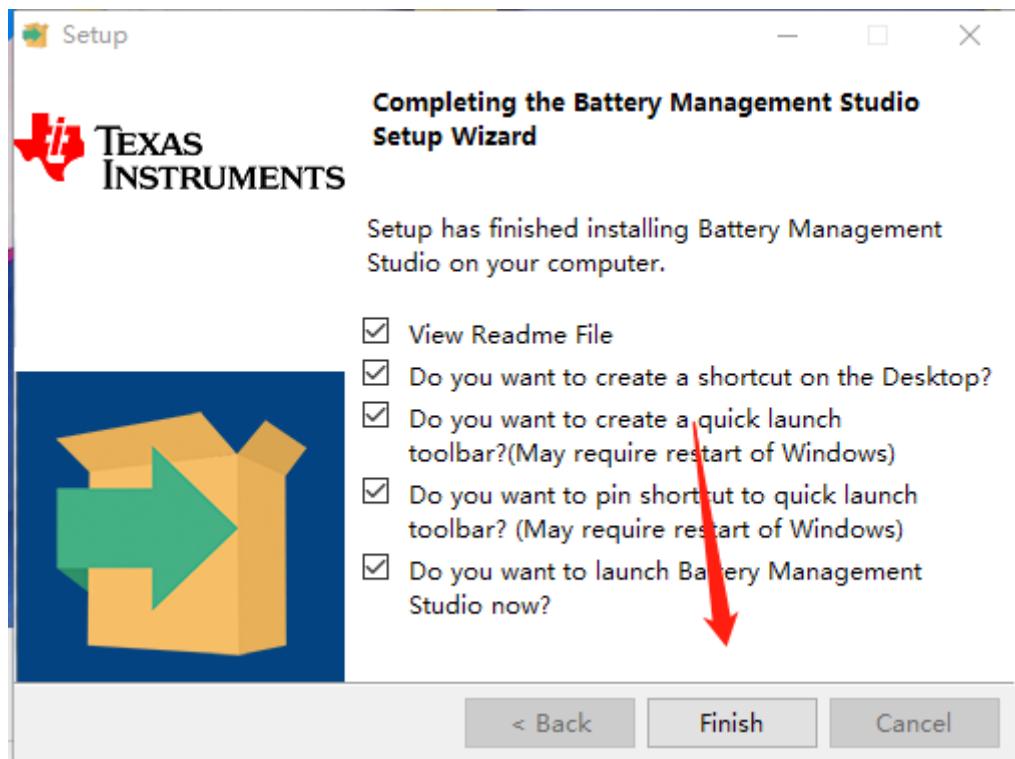
下一步



正在安装

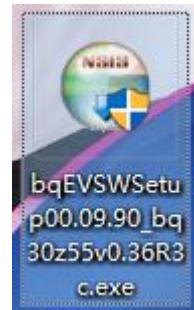


结束安装

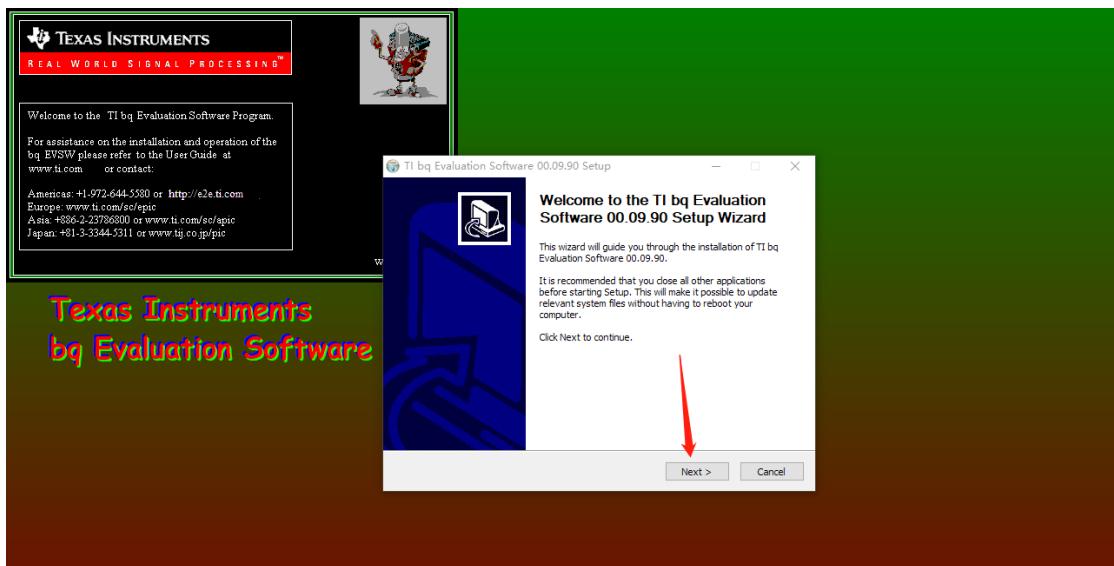


2.bq Evaluation Software 安装

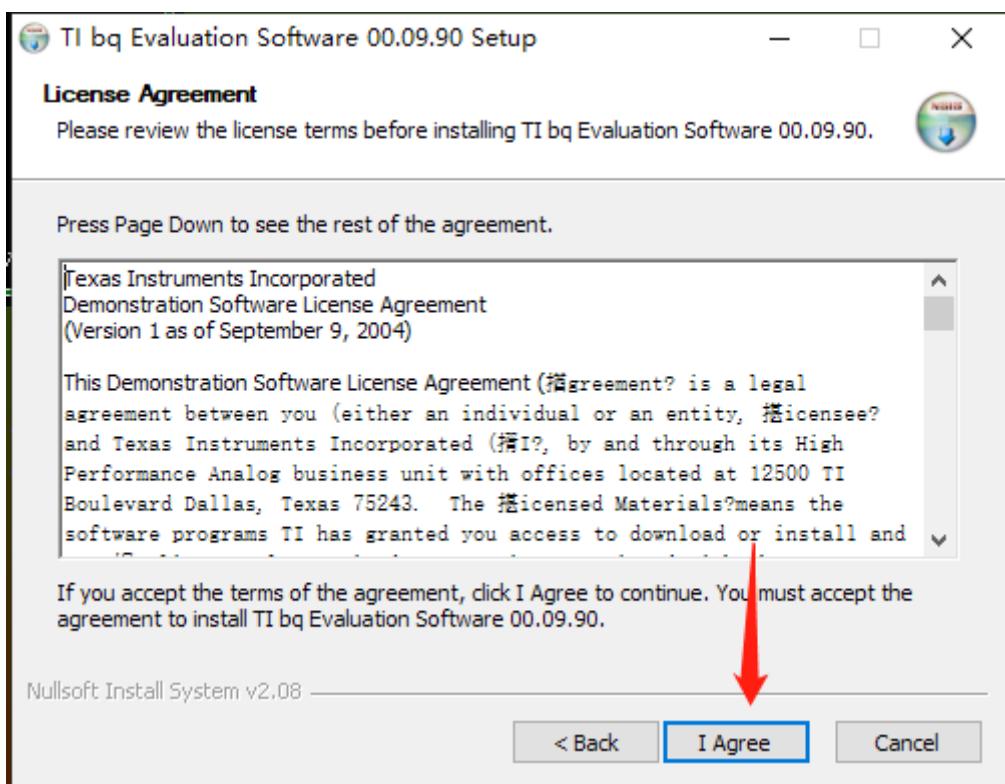
双击安装包



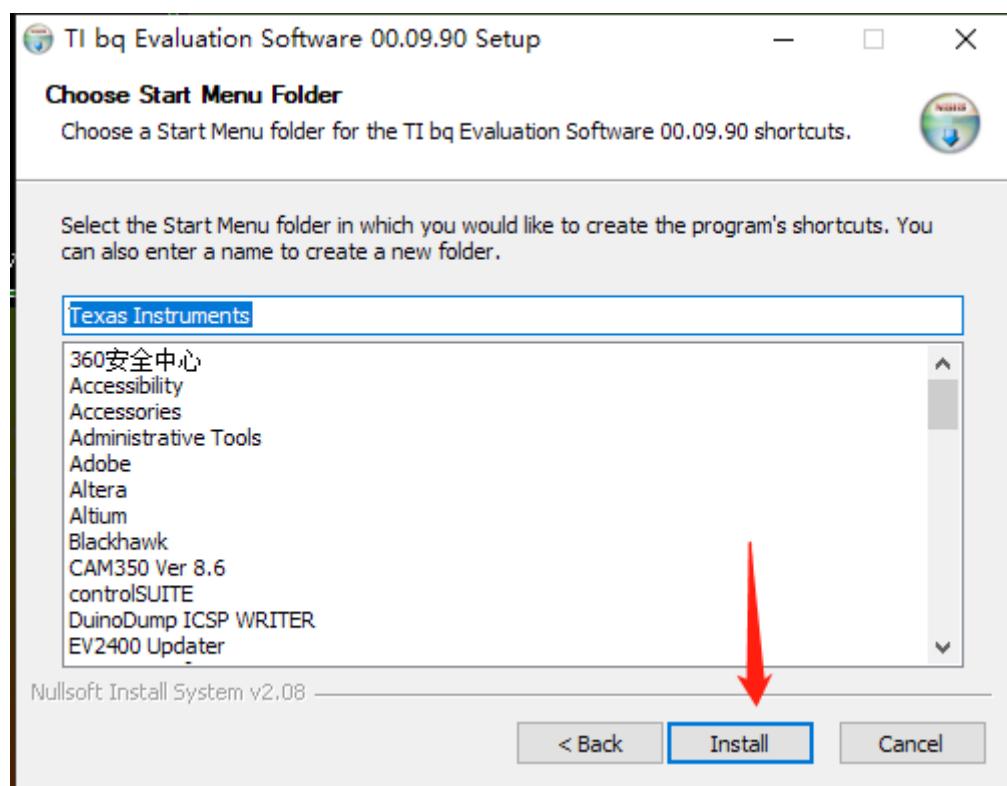
开始安装，看着就很古老。



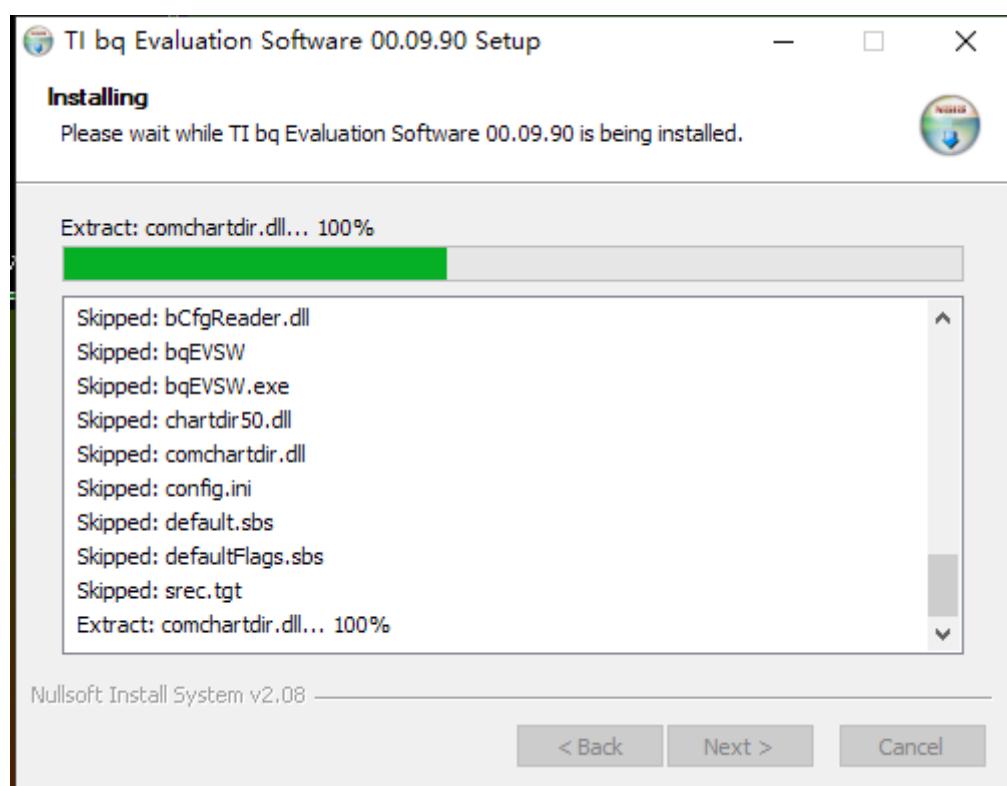
同意协议



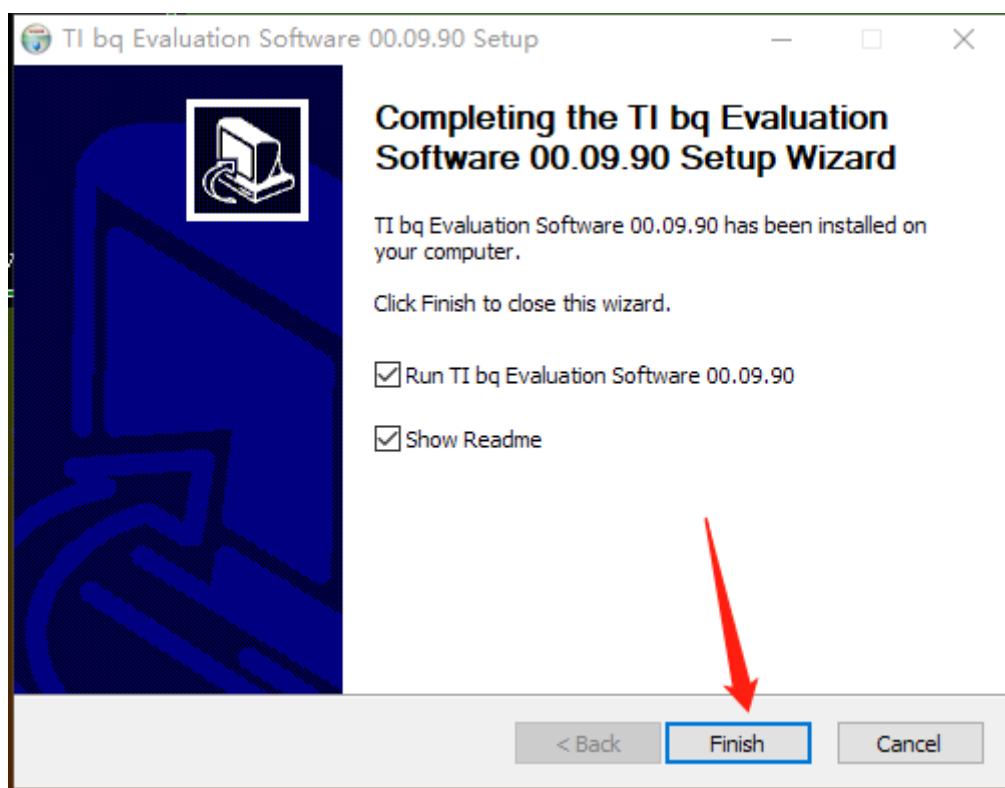
选择开始菜单快捷方式



正在安装



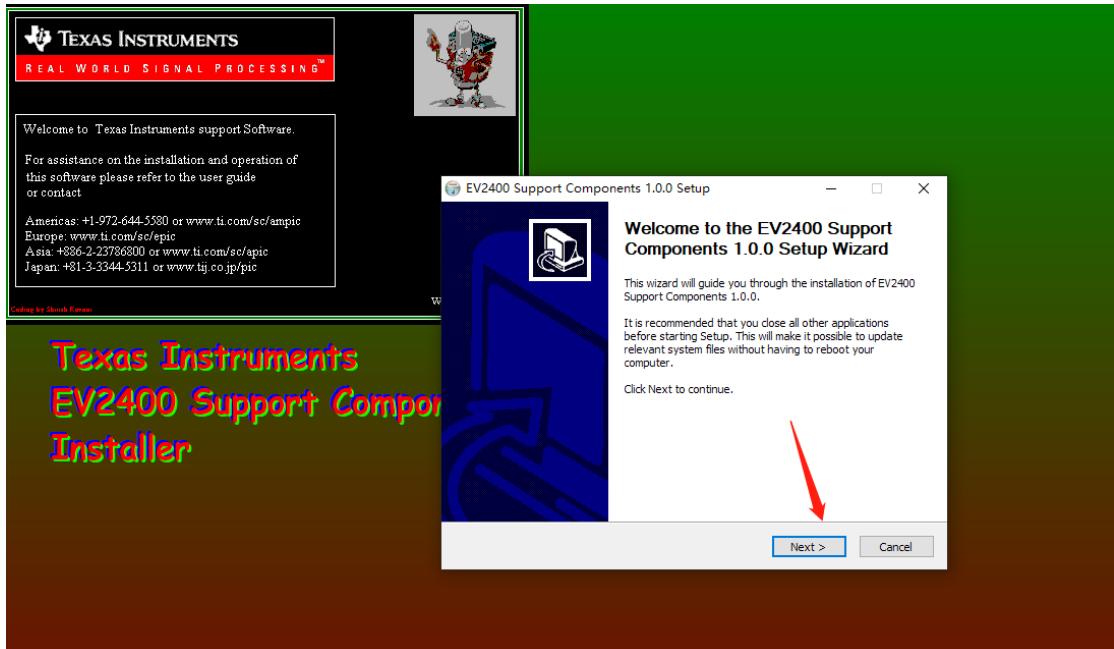
顺利安装完成



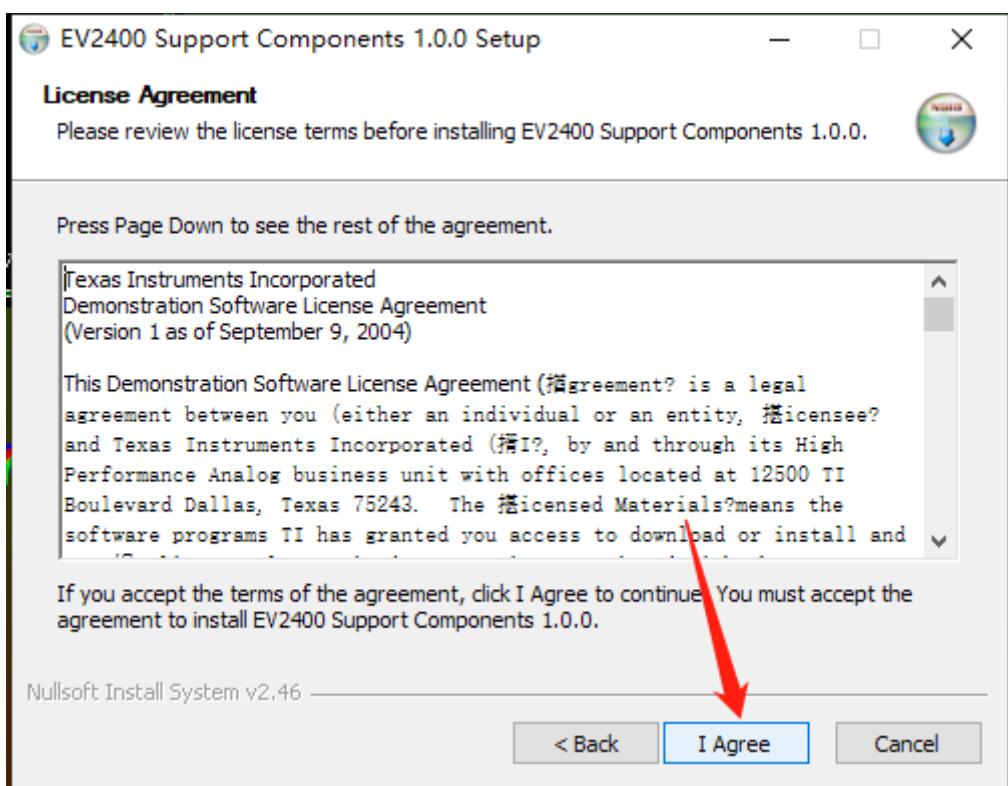
安装驱动程序，双击安装包



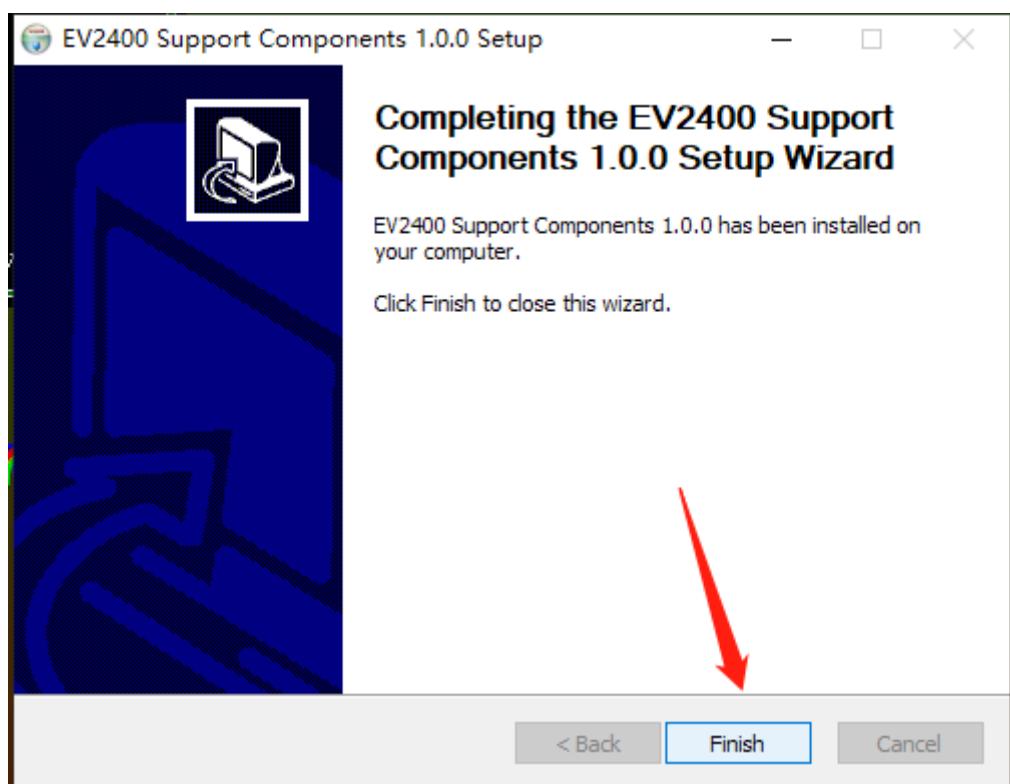
下一步



同意安装协议，点击后直接开始安装



安装完成



好了现在安装好了软件。

三、开始调试

这里以 EV2400 对应御 air2 为例，其他型号会给出相应数据、电池接口定义资料包，对应修改、连接即可。

1、

EV2400 与电池连线概述

我们最常用的接口 SMB。I2C、。HDQ其中 BQ34XXX 等使用 HDQ 口、BQ27XXX 等使用 I2C 口，我们大疆无人机根据机型不同目前仅需链接 SMB 口或 I2C 即可。

EV2400 与电池AIR2连线

使用EV2400 的 SMB 端口，我们需要的是 SMB 端口的SmBD、SmBC和GND，接线时切记任何线都不能连接到电池的正端（电池正端电压往往较高且电流较大，任何 USB 电子设备都扛不住）

AIR2需要接EV2400上面第一排中间三根针, SmBD, SmBC, GND。

不同型号电池连线不同，根据教程内文件夹图接线



AIR2电池上通信定义如上图，接电池端口的GND, SmBD, SmBC。

2、软件的操作

(1) Battery Management Studio 软件设置

御 AIR2 的电池密码和芯片型号如下。

解封密码 ccdf7ee0

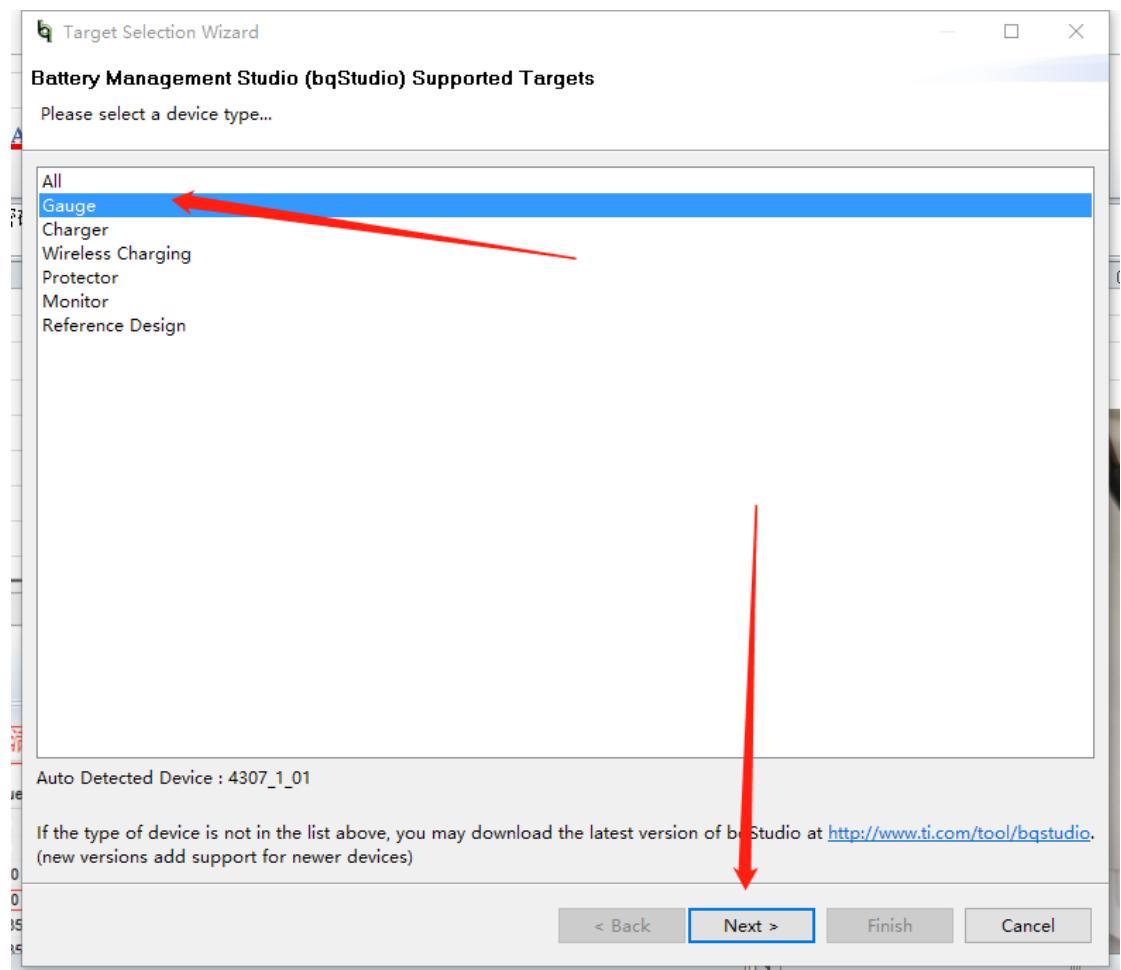
完全访问密码 E0BCBF17

芯片型号数据包 4500_2_06-bq40z50R2

双击打开

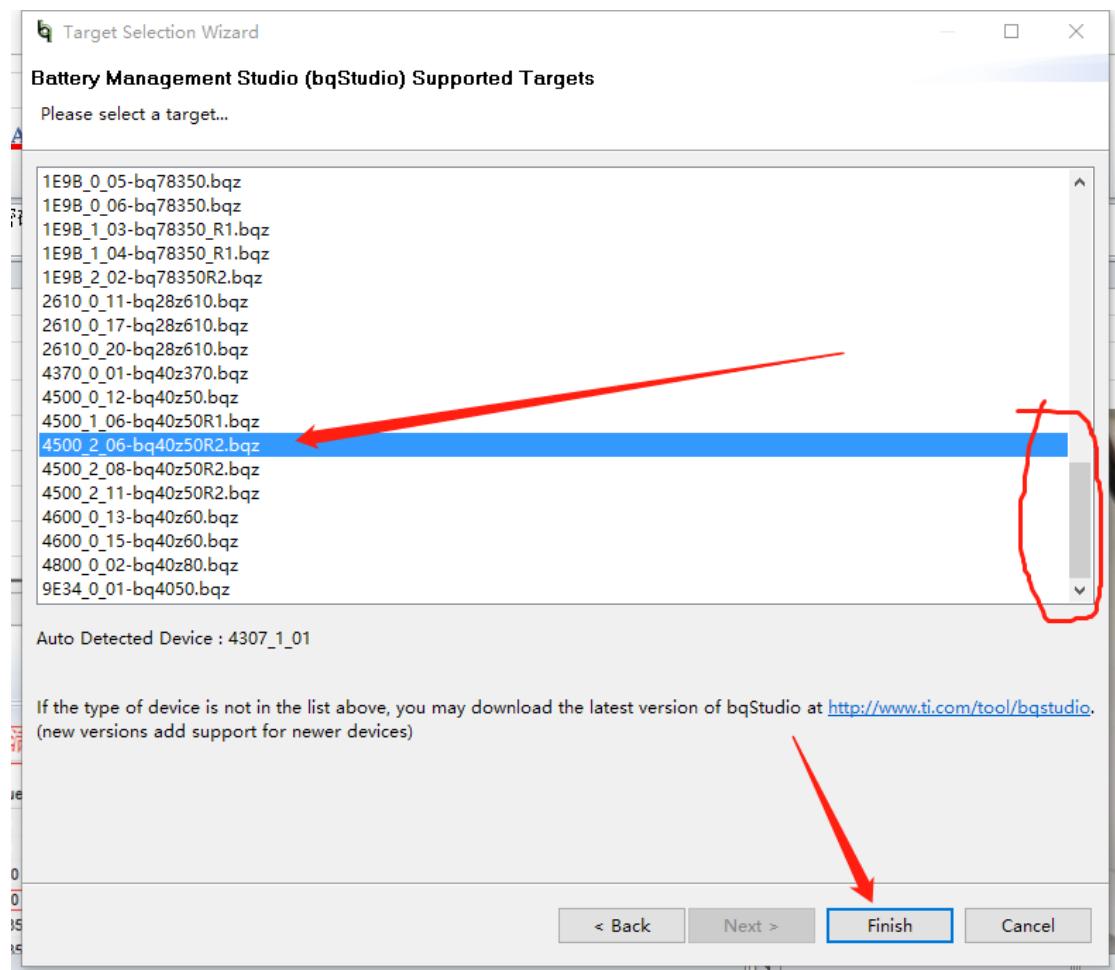


点击 Gauge，然后点 NEXT

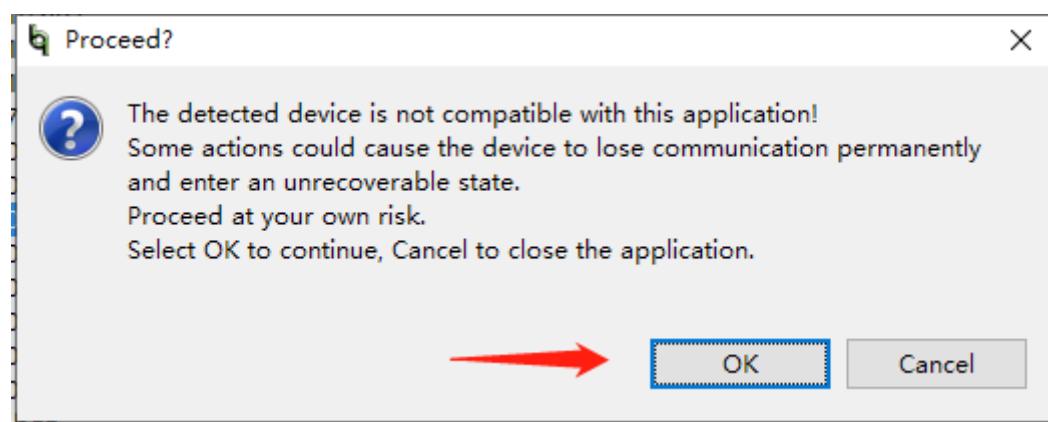


向下拖，选择上面给出的芯片型号数据包

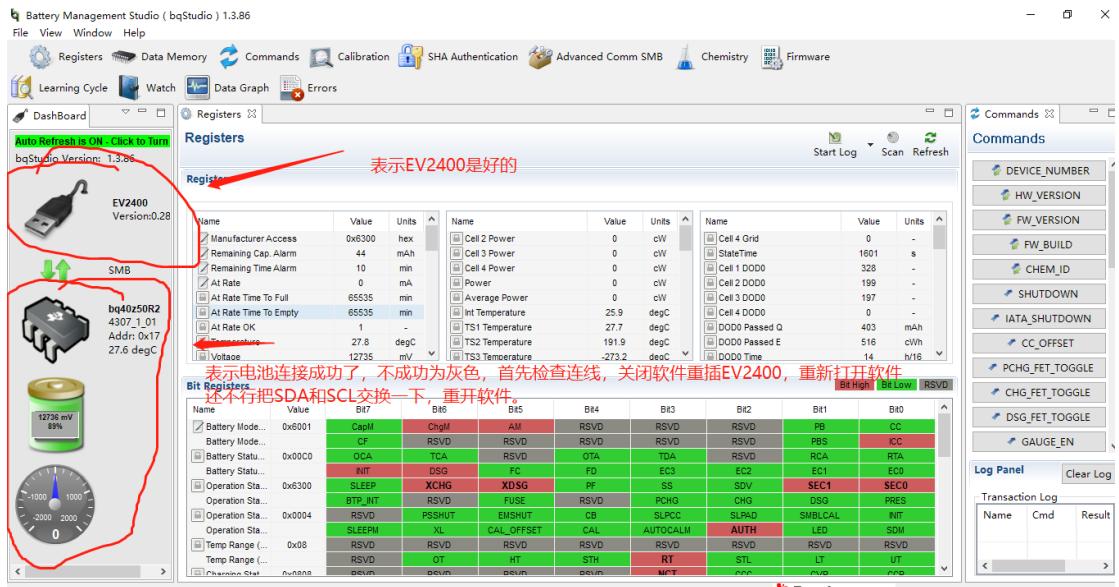
4500_2_06-bq40z50R2，点击 Finish。



不用管，点 OK



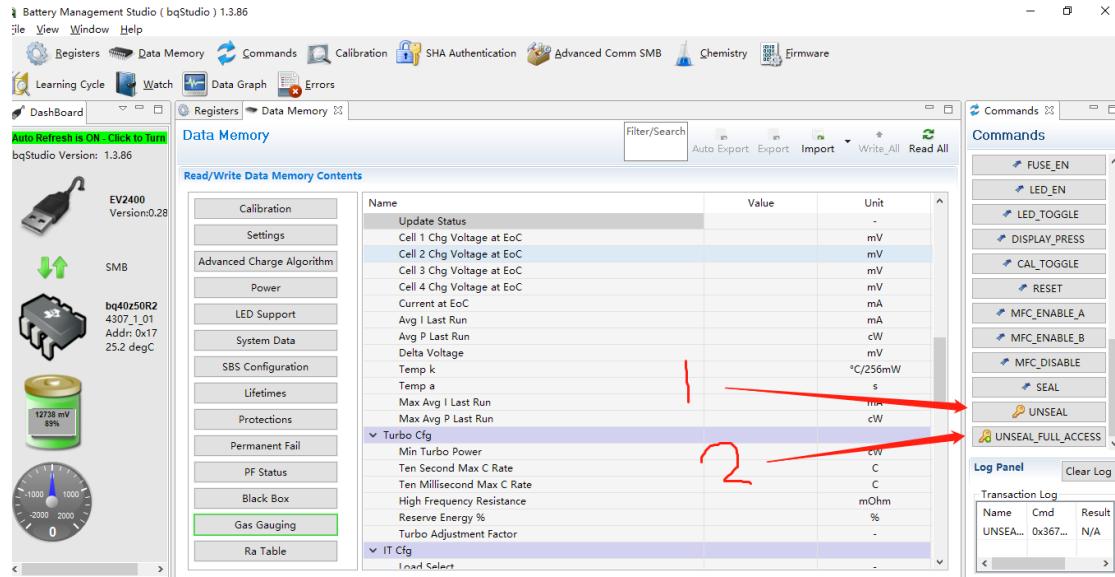
软件打开界面如下



上图中左边USB端口为黑色表面2400正常，下面的芯片为黑色，表面已经通信上电池主板，可以进行下一步操作。

(2) 解封电池

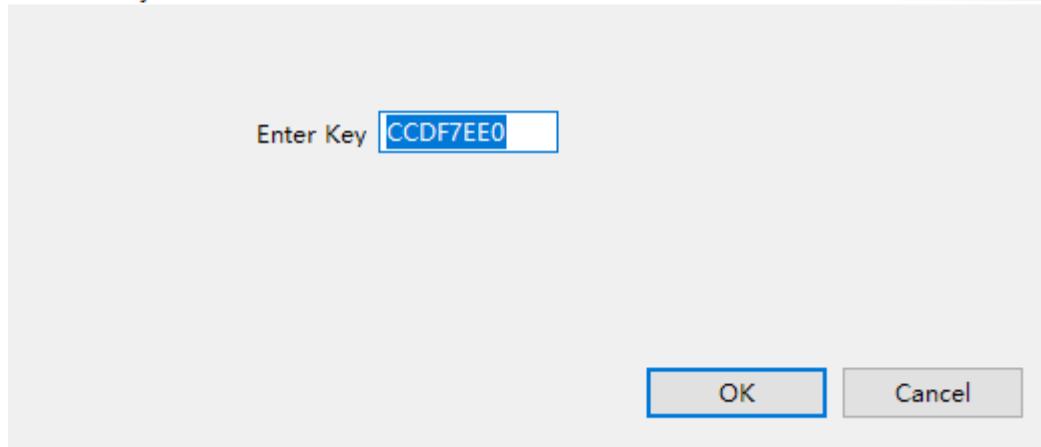
分两步，第一步按照箭头 1 所示点击软件右边 UNSERAL 按钮解封电池。



输入前文提供的解封密码。点击 ok。

UNSEAL Device

Enter the appropriate UNSEAL key and click OK.
Then retry to unseal the device.



解封电池后点击 Refresh 刷新数据，我们可以看到 SEC0 为绿色代表成功。

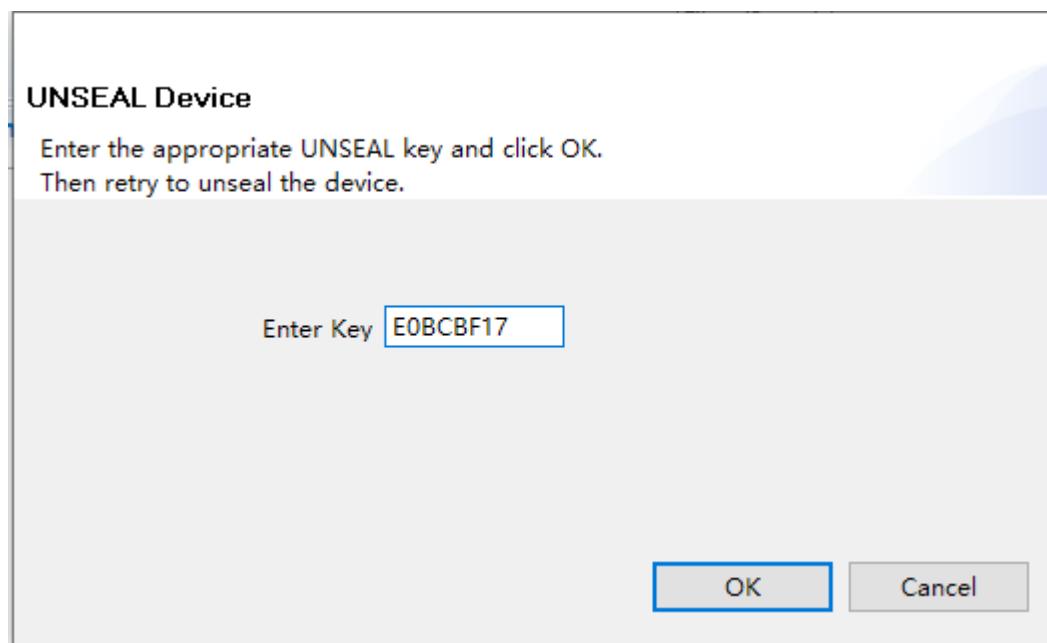
Registers

Registers

Name	Value	Units	Name	Value	Units	Name	Value	Units
Manufacturer Access	0x0206	hex	Cell 2 Power	0	cW	DOD0 Passed E	0	cWh
Remaining Cap. Alarm	44	mAh	Cell 3 Power	0	cW	DOD0 Time	0	h/16
Remaining Time Alarm	10	min	Cell 4 Power	0	cW	Cell 1 DODEOC	288	-
At Rate	0	mA	Power	0	cW	Cell 2 DODEOC	192	-
At Rate Time To Full	65535	min	Average Power	0	cW	Cell 3 DODEOC	200	-
At Rate Time To Empty	65535	min	Int Temperature	28.4	degC	Cell 4 DODEOC	0	-
At Rate OK	1	-	TS1 Temperature	25.4	degC	Cell 1 QMx	3639	mAh
Temperature	25.4	degC	TS2 Temperature	191.6	degC	Cell 2 QMx	3661	mAh
Voltage	12739	mV	TS3 Temperature	-273.2	degC	Cell 3 QMx	3652	mAh

Name	Value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Battery Mode...	0x6001	CapM	ChgM	AM	RSVD	RSVD	RSVD	PB	CC
Battery Mode...		CF	RSVD	RSVD	RSVD	RSVD	RSVD	PBS	ICC
Battery Status...	0x00C0	OCA	TCA	RSVD	OTA	TDA	RSVD	RCA	RTA
Operation Status...	0x0206	INT	DSG	FC	FD	EC3	EC2	EC1	EC0
Operation Status...		SLEEP	XCHG	XDSG	PF	SS	SDV	SEC1	SEC0
Operation Status...	0x0002	BTB_INT	RSVD	FUSE	RSVD	PCHG	CHG	DSG	PRES
Operation Status...		RSVD	PSSHUT	EMSHUT	CB	SLPCC	SLPAD	SMBLCAL	INIT
Temp Range (...)	0x08	SLEEPM	XL	CAL_OFFSET	CAL	AUTOCALM	AUTH	LED	SDM
Temp Range (...)		RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD
Charging Status	0x0008	RSVD	OT	HT	STH	RT	STL	LT	UT
		RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD

第二步按照箭头2所示点击软件右边 UNSERAL_FULL_ACCESS 按钮
 解锁电池完全访问功能。输入前文提供的完全访问密码。点击 ok。
 此处速度要快，在第一步完成后 4s 内完成。



解除电池完全访问锁后点击 Refresh 刷新数据，我们可以看到 SEC1 变为绿色代表成功。

Name	Value	Units	Name	Value	Units	Name	Value	Units
Manufacturer Access	0x0106	hex	Cell 2 Power	0	cW	Cell 4 Grid	0	-
Remaining Cap. Alarm	44	mAh	Cell 3 Power	0	cW	StateTime	10582	s
Remaining Time Alarm	10	min	Cell 4 Power	0	cW	Cell 1 DODO	326	-
At Rate	0	mA	Power	0	cW	Cell 2 DODO	199	-
At Rate Time To Full	65535	min	Average Power	0	cW	Cell 3 DODO	197	-
At Rate Time To Empty	65535	min	Int Temperature	24.4	degC	Cell 4 DODO	0	-
At Rate OK	1	-	TS1 Temperature	25.4	degC	DODO Passed Q	403	mAh
Temperature	25.4	degC	TS2 Temperature	191.6	degC	DODO Passed E	516	cVh
Voltage	12737	mV	TS3 Temperature	-273.2	degC	IDODO Time	54	h/16

Name	Value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Battery Mode...	0x6001	CapM	ChgM	AM	RSVD	RSVD	RSVD	PB	CC
Battery Mode...		CF	RSVD	RSVD	RSVD	RSVD	RSVD	PBS	ICC
Battery Status...	0x00C0	OCA	TCA	RSVD	OTA	TDA	RSVD	RCA	RTA
Operation Sta...	0x0106	INIT	DSG	FC	FD	EC3	EC2	C1	EC0
Operation Sta...		SLEEP	XCHG	XDSG	PF	SS	SDV	SEC1	SECO
Operation Sta...	0x0004	BT_P_INT	RSVD	FUSE	RSVD	PCHG	CHG	CCC	PRES
Operation Sta...		RSVD	PSSHUT	EMSHUT	CB	SLPCC	SLPAD	SMBLCAL	INIT
Operation Sta...	0x08	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	LED	SDM
Temp Range (...)		RSVD	OT	HT	STH	RT	STL	LT	UT
Temp Range (...)	0x08	RSVD	RSVD	RSVD	RSVD	NCT	CCC	CVP	CCP
Charging Stat...	0x0008	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD

如不成功请从头开始。

(3) 电池不能充放解锁

如果没有此情况忽略此节。

点击 Advanced Comm SMB , 输入地址 00 和命令 0029, 点击 Write

Word。

这个命令是用来重置保护的。

Word Read/Write				Type
Send Cmd	00	00	(Hex Dec)	Hex
Read Word	00	00	(Hex Dec)	0x
Write Word	00	00	(Hex Dec)	0x 0029

Block Read/Write				Type
Read Block	00	00	(Hex Dec)	0x
Write Block	00	00	(Hex Dec)	0x

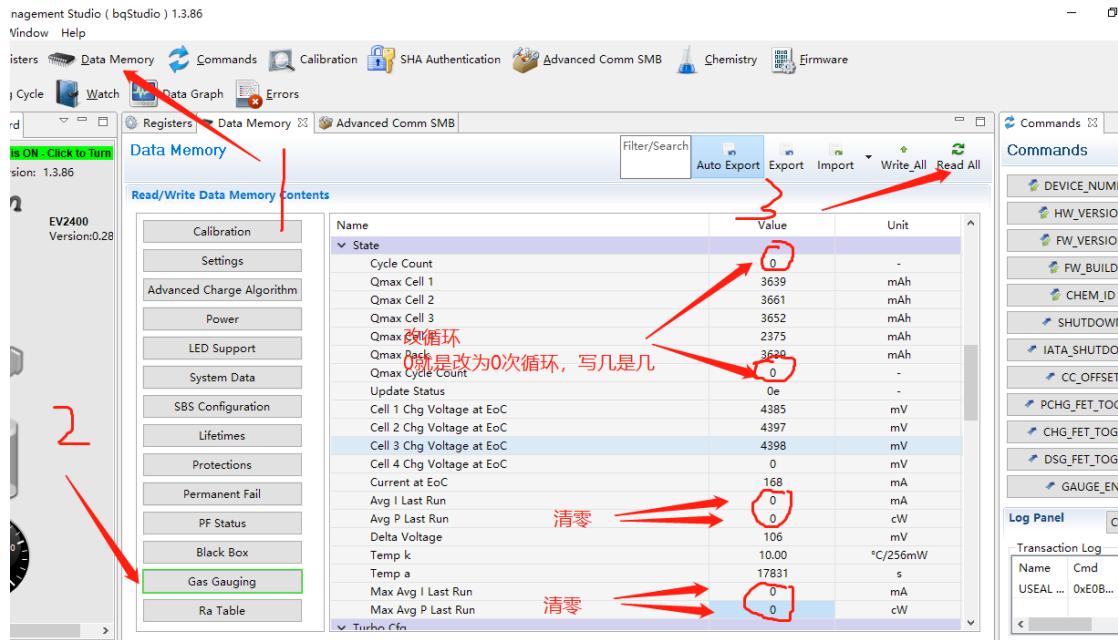
电池不亮灯处理方法：如下图修改数据为：01.23.45.67

Name	Value	Unit
Manufacturer Info Block A20	74	Hex
Manufacturer Info Block A21	75	Hex
Manufacturer Info Block A22	76	Hex
Manufacturer Info Block A23	77	Hex
Manufacturer Info Block A24	7a	Hex
Manufacturer Info Block A25	78	Hex
Manufacturer Info Block A26	79	Hex
Manufacturer Info Block A27	30	Hex
Manufacturer Info Block A28	31	Hex
Manufacturer Info Block A29	32	Hex
Manufacturer Info Block A30	33	Hex
Manufacturer Info Block A31	34	Hex
Manufacturer Info Block A32	02	Hex
Manufacturer Info B		
Manufacturer Info Block B01	01	Hex
Manufacturer Info Block B02	23	Hex
Manufacturer Info Block B03	45	Hex
Manufacturer Info Block B04	67	Hex
Integrity		
Static DS15 Signature	亮灯	Hex

(4) 修改电池循环次数

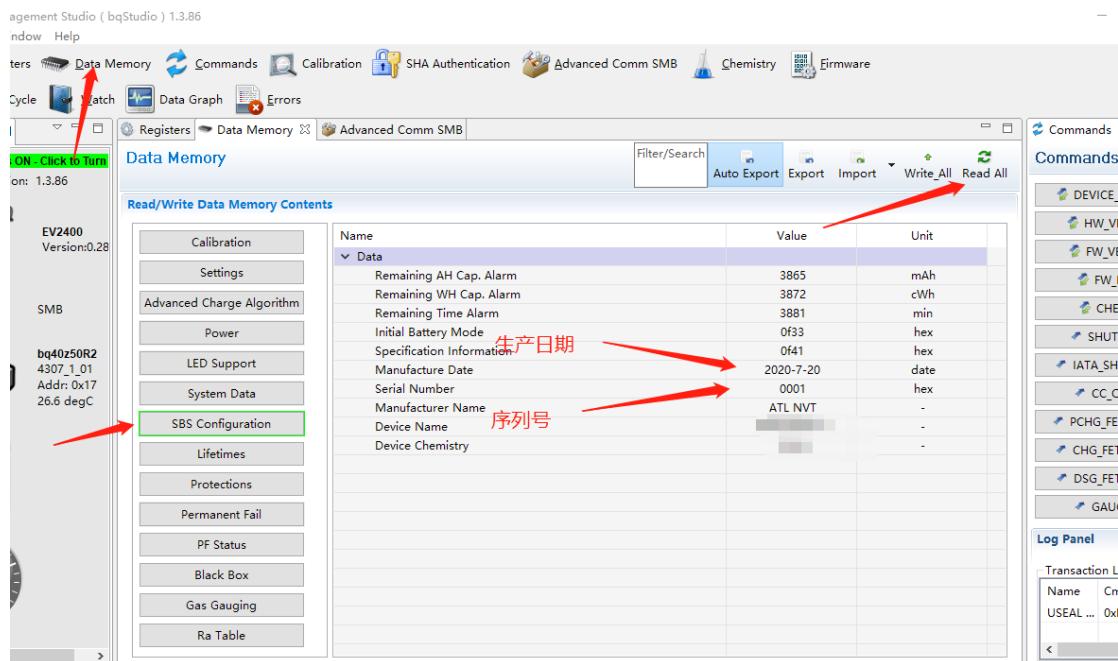
点击 Data Memory，点击 Gas Gauging，点击 Read All。在 Cycle 和 Qmax Cycle Count 中直接修改，点击回车确认，此处 12 表示将电池循环次数改为 12 次。

如果此处没有数据，点击 Read All 可以刷新，如还没有检查是否完全访问。



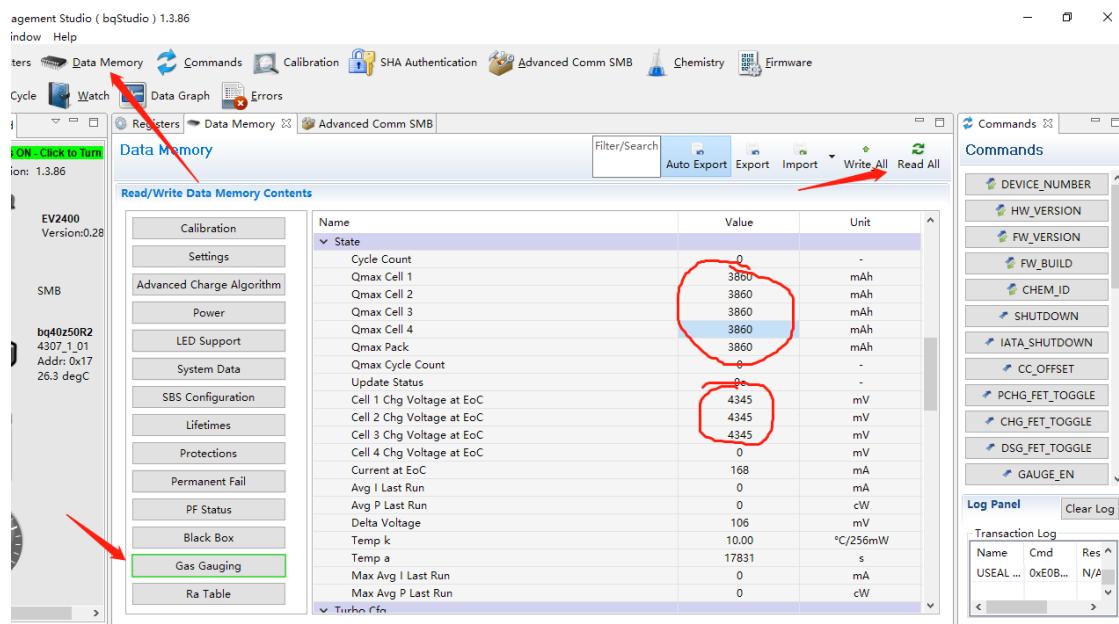
(5) 修改电池生产日期

点击 Data Memory，点击 Gas Gauging，点击 Read All。



(6) 修改电池容量

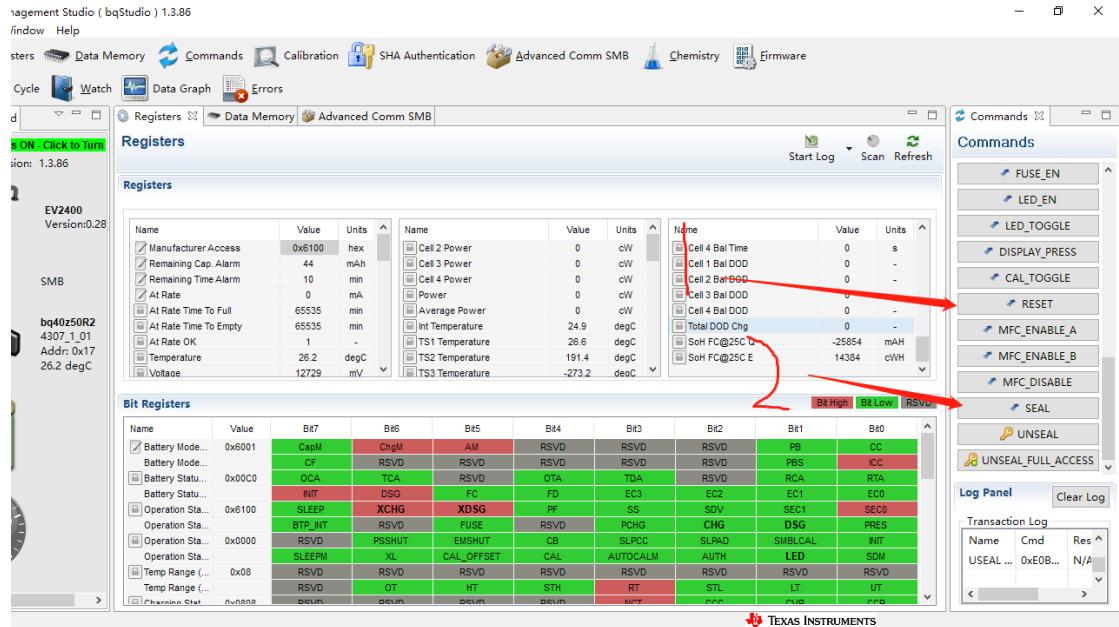
扩容之后 Qmax 根据实际情况修改为新的容量。Cell * Chg Voltage at EoC 修改为如图所示。



(7) 重启并关闭电池完全访问

这一步不能忘，不然有可能飞机无法识别电池。

点击 RESET，等几秒。点击 SEAL，在等几秒。完成。



(8) 其他机型数据与密码

以下数据来源于网络，网络中的接线图不清晰已重新整理。

a. 御 Air1 数据

解封密码 ccdf7ee0
完全访问密码 E0BCBF17
芯片型号数据包 4500_2_06-bq40z50R2

Registers

Registers
修改好数据后重启，充满容量在2375左右

Name	Value	Units	Name	Value	Units
Max Error	1	%	Initial Q	771	mAh
Relative State of Charge	67	%	Initial E	960	cWh
Absolute State of Charge	64	%	True Full Chg Q	2289	mAh
Remaining Capacity	1518	mAh	True Full Chg E	2681	cWh
Full charge Capacity	2289	mAh	T_sim	32.8	degC
Run time To Empty	65535	min	T_ambient	31.9	degC
Average Time to Empty	65535	min	Cell 1 RaScale	1000	-
Average Time to Full	65535	min	Cell 2 RaScale	1000	-
Charging Current	4750	mA	Cell 3 RaScale	1000	-

Bit Registers

解密后变绿色

Name	Value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Battery ...	0x60...	CapM	ChgM	AM	RSVD	RSVD	RSVD	PB	CC
Battery ...		CF	RSVD	RSVD	RSVD	RSVD	RSVD	PBS	ICC
Battery ...	0x00...	OCA	TCA	RSVD	OTA	TDA	RSVD	RCA	RTA
Battery ...	INIT	DSG	FC	FD	EC3	EC2	EC1	FC0	SEC0
Operati...	SLEEP	XCHG	XDSC	PF	SS	SDV	SEC1	DSG	PRES
Operati...	BTP_INT	HSVD	FUSE	RUN	PCH	HG	DG	EMSHUT	SLPCC
Operati...	RSVD	PSSHUT	EMSHUT	CB	SLPCC	SLPAD	SMBLCAL	INIT	

Read/Write Data Memory Contents

修改循环和容量

Name	Value	Unit
Cycle Count	0	-
Qmax Cell 1	2530	mAh
Qmax Cell 2	2530	mAh
Qmax Cell 3	2530	mAh
Qmax Cell 4	2530	mAh
Qmax Pack	2530	mAh
Qmax Cycle Count	0	-
Update Status	0e	-
Cell 1 Chg Voltage at EoC	4345	mV
Cell 2 Chg Voltage at EoC	4345	mV
Cell 3 Chg Voltage at EoC	4345	mV
Cell 4 Chg Voltage at EoC	0	mV
Current at EoC	219	mA
Avg I Last Run	0	mA
Avg P Last Run	0	cW
Delta Voltage	98	mV
Temp k	2.71	°C/256mW
Temp a	495	s
Max Avg I Last Run	0	mA
Max Avg P Last Run	0	cW
Turbo Cfg		
Min Turbo Power	120	cW

Commands

- FUSE_EN
- LED_EN
- LED_TOGG
- DISPLAY_PFT
- CAL_TOGG
- RESET
- MFC_ENAB
- MFC_ENAB
- MFC_DISA
- SEAL
- UNSEA
- UNSEA_FULL

Log Panel

Clear Log

Transaction Log

按键没反应，灯不亮就修改了下面四个数据 01 23 45 67

Calibration	
Settings	
Advanced Charge Algorithm	
Power	
LED Support	
System Data	
SBS Configuration	
Lifetimes	
Protections	
Permanent Fail	
PF Status	
Black Box	
Gas Gauging	
Ra Table	

Name	Value	Unit
Manufacturer Info Block A20	74	Hex
Manufacturer Info Block A21	75	Hex
Manufacturer Info Block A22	76	Hex
Manufacturer Info Block A23	77	Hex
Manufacturer Info Block A24	7a	Hex
Manufacturer Info Block A25	78	Hex
Manufacturer Info Block A26	79	Hex
Manufacturer Info Block A27	30	Hex
Manufacturer Info Block A28	31	Hex
Manufacturer Info Block A29	32	Hex
Manufacturer Info Block A30	33	Hex
Manufacturer Info Block A31	34	Hex
Manufacturer Info Block A32	02	Hex
Manufacturer Info B		
Manufacturer Info Block B01	01	Hex
Manufacturer Info Block B02	23	Hex
Manufacturer Info Block B03	45	Hex
Manufacturer Info Block B04	67	Hex
Integrity		
Static DF Signature	0000	hex
Static Chem DF Signature	7630	hex
All DF Signature	0000	hex

Read/Write Data Memory Contents

Calibration	
Settings	
Advanced Charge Algorithm	
Power	
LED Support	
System Data	
SBS Configuration	
Lifetimes	
Protections	
Permanent Fail	
PF Status	
Black Box	
Gas Gauging	
Ra Table	

Name	Value	Unit
Configuration		
Charging Configuration	12	hex
FET Options	35	hex
Sbs Gauging Configuration	00	hex
Sbs Configuration	22	hex
Auth Config	00	hex
Power Config	29	hex
IO Config	00	hex
LED Configuration	001f	hex
Temperature Enable	7a	hex
Temperature Mode	47	hex
DA Configuration	477c	hex
SOC Flag Config A	3300	hex
SOC Flag Config B	00	hex
Balancing Configuration	1b	hex
IT Gauging Configuration	0000	hex
IT Gauging Ext	0000	hex
Fuse		
PF Fuse A	00	hex
PF Fuse B	21	hex
PF Fuse C	00	hex
PF Fuse D	22	hex
Min Block Fuse Voltage	15104	mV

Name	Value	Unit
▪ BTP		
Init Discharge Set	29	mAh
Init Charge Set	28	mAh
▪ SMBus		
Address	22	-
Address Check	00	-
▪ Protection		
Protection Configuration	ea	hex
Enabled Protections A	0b	hex
Enabled Protections B	b8	hex
Enabled Protections C	0b	hex
Enabled Protections D	04	hex
▪ Permanent Failure		
Enabled PF A	d4	hex
Enabled PF B	47	hex
Enabled PF C	4f	hex
Enabled PF D	03	hex
▪ AFE		
AFE Protection Control	03	hex
ZVCHG Exit Threshold	32583	mV
▪ Manufacturing		
Mfg Status init	ff6d	hex

b.御 2 数据

解封密码 ccdf7ee0
完全访问密码 E0BCBF17
芯片型号数据包 4500_2_06-bq40z50R2

Registers X Data Memory

Registers

Registers 改完数据，重启后满充容量在3850左右 刷新按钮

Name	Value	Units	Name	Value	Units
Relative State of Charge	99	%	Initial Q	60	mAh
Absolute State of Charge	99	%	Initial E	103	cWh
Remaining Capacity	3800	mAh	True Full Chg Q	3860	mAh
Full charge Capacity	3860	mAh	True Full Chg E	6017	cWh
Run time To Empty	65535	min	T_sim	29.3	degC
Average Time to Empty	65535	min	T_ambient	29.2	degC
Average Time to Full	65535	min	Cell 1 RaScale	1000	-
Charging Current	2200	mA	Cell 2 RaScale	1000	-
Charging Voltage	17600	mV	Cell 3 RaScale	1000	-
Cycle Count	0	-	Cell 4 RaScale	1000	-
Maximum Turbo Power	0W	-	Cell 1 CommData	0	mOhm

Bit Registers

解密后会变成绿色 Bit High Bit Low RSVD

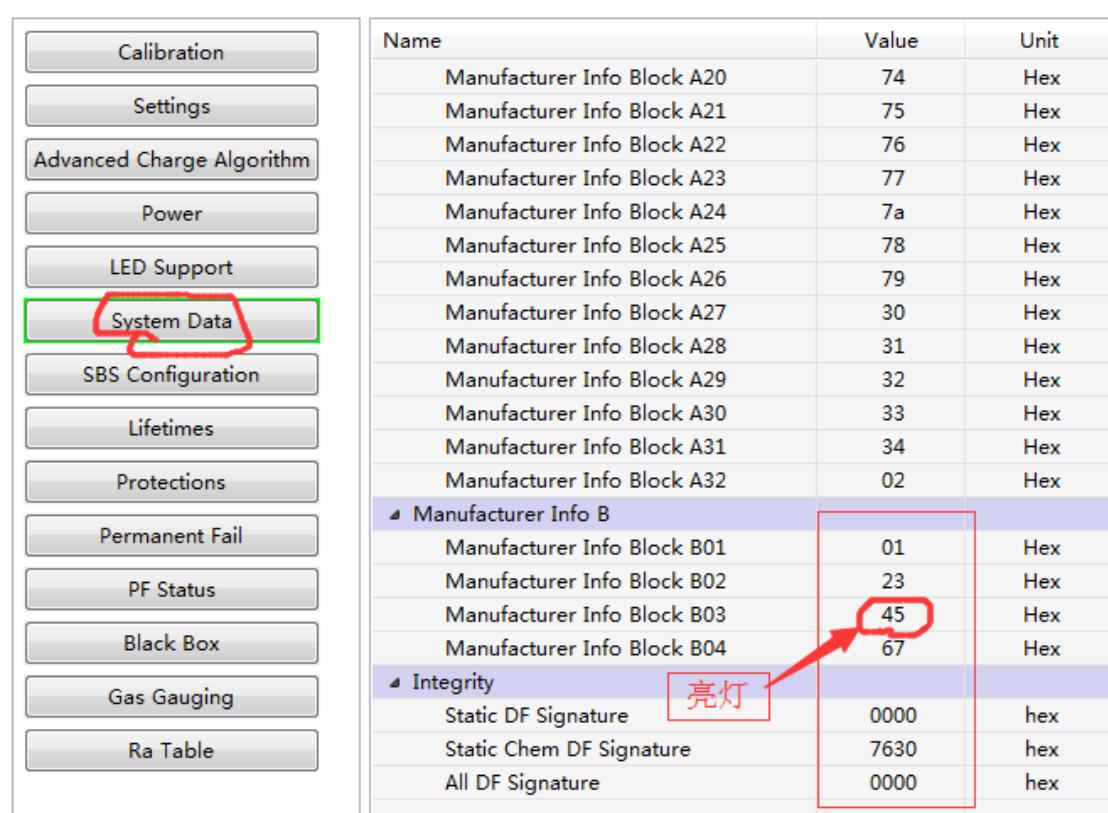
Name	Value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Battery ...	0x60	ContM	ChgM	AM	RSVD	RSVD	RSVD	PB	CC
B	Battery Mode - Read/Write	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	PBS	ICC
B		TCA	RSVD	OTA	TDA	RSVD	RSVD	RTA	RTA
Battery ...	INIT	DSG	FC	FD	EC3	EC2	EC1	EC0	EC0
Operati...	0x03...	XCHG	XDSG	PF	SS	SDV	SEC1	SEC0	SEC0

Read/Write Data Memory Contents

Calibration Settings Advanced Charge Algorithm Power LED Support System Data SBS Configuration Lifetimes Protections Permanent Fail PF Status Black Box Gas Gauging Ra Table

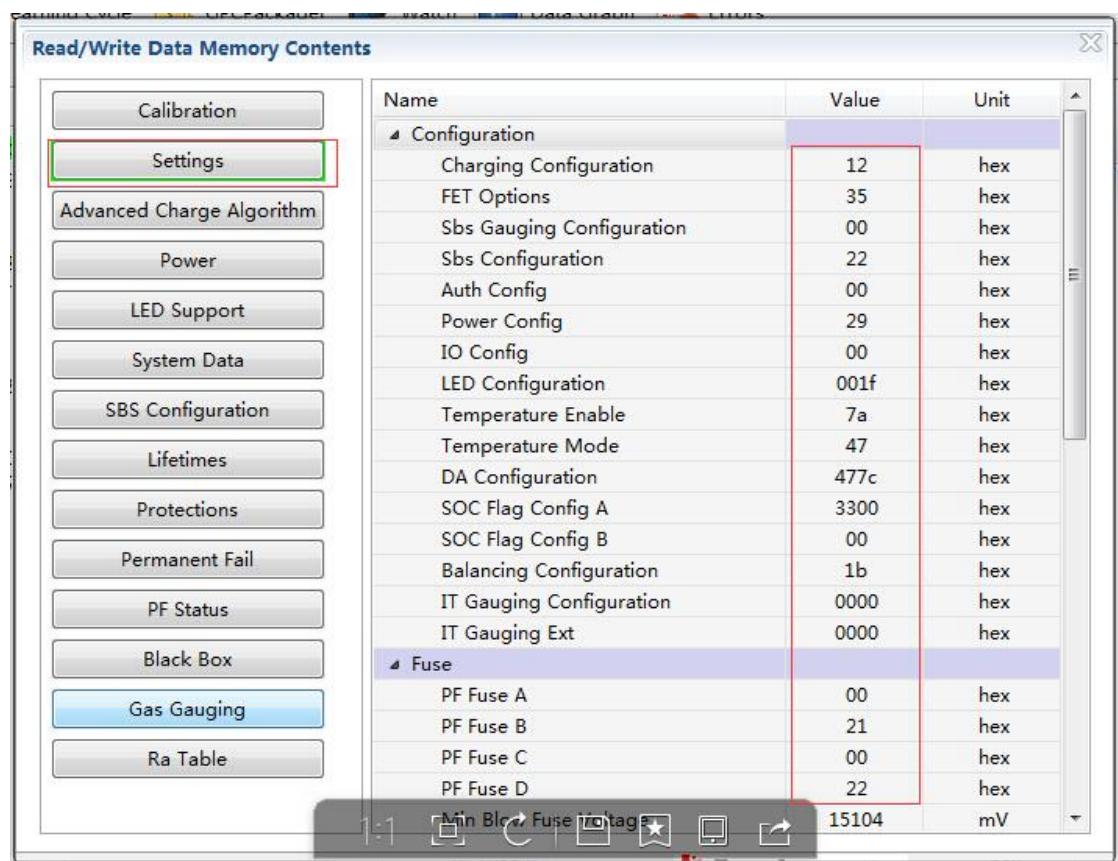
Name	Value	Unit
Cycle Count	0	-
Qmax Cell 1	4260	mAh
Qmax Cell 2	4260	mAh
Qmax Cell 3	4260	mAh
Qmax Cell 4	4260	mAh
Qmax Pack	4260	mAh
Qmax Cycle Count	0	-
Update Status	0e	-
Cell 1 Chg Voltage at EoC	4345	mV
Cell 2 Chg Voltage at EoC	4345	mV
Cell 3 Chg Voltage at EoC	4345	mV
Cell 4 Chg Voltage at EoC	4345	mV
Current at EoC	181	mA
Avg I Last Run	0	mA
Avg P Last Run	0	cW
Delta Voltage	140	mV
Temp k	3.14	°C/256mW
Temp a	2048	s
Max Avg I Last Run	0	mA
Max Avg P Last Run	0	cW
Turbo Cfg		
Min Turbo Power	56	cW

按键没反应，灯不亮就修改了下面四个数据 01 23 45 67



The screenshot shows a software interface with a sidebar on the left containing various configuration options. The 'System Data' option is highlighted with a red box. To the right is a table displaying detailed settings. A red arrow points from the '45' value in the 'Manufacturer Info B' section to a red box labeled '亮灯' (lit) in Chinese, indicating that the fourth fuse is active.

Name	Value	Unit
Manufacturer Info Block A20	74	Hex
Manufacturer Info Block A21	75	Hex
Manufacturer Info Block A22	76	Hex
Manufacturer Info Block A23	77	Hex
Manufacturer Info Block A24	7a	Hex
Manufacturer Info Block A25	78	Hex
Manufacturer Info Block A26	79	Hex
Manufacturer Info Block A27	30	Hex
Manufacturer Info Block A28	31	Hex
Manufacturer Info Block A29	32	Hex
Manufacturer Info Block A30	33	Hex
Manufacturer Info Block A31	34	Hex
Manufacturer Info Block A32	02	Hex
▲ Manufacturer Info B		
Manufacturer Info Block B01	01	Hex
Manufacturer Info Block B02	23	Hex
Manufacturer Info Block B03	45	Hex
Manufacturer Info Block B04	67	Hex
▲ Integrity		
Static DF Signature	0000	hex
Static Chem DF Signature	7630	hex
All DF Signature	0000	hex



The screenshot shows a software interface titled 'Read/Write Data Memory Contents'. On the left is a sidebar with various configuration options. The 'Settings' option is highlighted with a green box, and the 'Gas Gauging' option is highlighted with a blue box. To the right is a table displaying memory contents. A red box labeled '亮灯' (lit) is placed over the '45' value in the 'Fuse' section, which corresponds to the fourth fuse being active.

Name	Value	Unit
▲ Configuration		
Charging Configuration	12	hex
FET Options	35	hex
Sbs Gauging Configuration	00	hex
Sbs Configuration	22	hex
Auth Config	00	hex
Power Config	29	hex
IO Config	00	hex
LED Configuration	001f	hex
Temperature Enable	7a	hex
Temperature Mode	47	hex
DA Configuration	477c	hex
SOC Flag Config A	3300	hex
SOC Flag Config B	00	hex
Balancing Configuration	1b	hex
IT Gauging Configuration	0000	hex
IT Gauging Ext	0000	hex
▲ Fuse		
PF Fuse A	00	hex
PF Fuse B	21	hex
PF Fuse C	00	hex
PF Fuse D	22	hex
Min Blow Fuse Voltage		15104 mV

c. 晓数据

晓数据 电池是 1480mah

解封密码 ccdf7ee0
完全访问密码 E0BCBF17
芯片型号数据包 4500_2_06-bq40z50R2

Read/Write Data Memory Contents

Name	Value	Unit
State		
Cycle Count	0	-
Qmax Cell 1	1560	mAh
Qmax Cell 2	1560	mAh
Qmax Cell 3	1560	mAh
Qmax Cell 4	1560	mAh
Qmax Pack	1560	mAh
Qmax Cycle Count	0	-
Update Status	0e	-
Cell 1 Chg Voltage at EoC	4345	mV
Cell 2 Chg Voltage at EoC	4345	mV
Cell 3 Chg Voltage at EoC	4345	mV
Cell 4 Chg Voltage at EoC	0	mV
Current at EoC	130	mA
Avg I Last Run	0	mA
Avg P Last Run	0	cW
Delta Voltage	37	mV
Temp k	10.00	°C/256mW
Temp a	4853	s
Max Avg I Last Run	0	mA
Max Avg P Last Run	0	cW
Turbo Cfg		
Min Turbo Power	120	cW
Ten Second Max C Rate	-0.1	C
Ten Millisecond Max C Rate	-0.1	C

d. 御 mini1 数据

解封密码 ccdf7ee0
完全访问密码 E0BCBF17

芯片型号数据包 4500_2_06-bq40z50R2

接口和晓排列一致，参考晓。

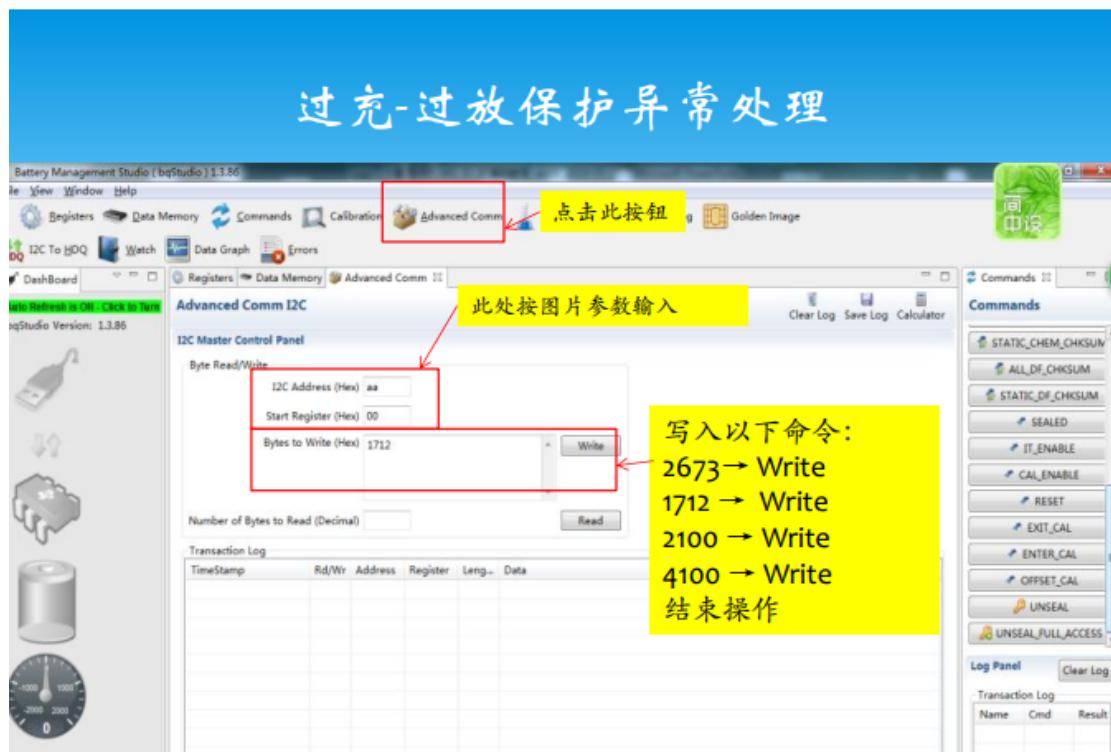
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr><th>Name</th><th>Value</th><th>Units</th></tr> </thead> <tbody> <tr><td>Average Current</td><td>0</td><td>mA</td></tr> <tr><td>Max Error</td><td>1</td><td>%</td></tr> <tr><td>Relative State of Charge</td><td>13</td><td>%</td></tr> <tr><td>Absolute State of Charge</td><td>12</td><td>%</td></tr> <tr><td>Remaining Capacity</td><td>279</td><td>mAh</td></tr> <tr><td>Full charge Capacity</td><td>2321</td><td>mAh</td></tr> <tr><td>Run time To Empty</td><td>65535</td><td>min</td></tr> <tr><td>Average Time to Empty</td><td>65535</td><td>min</td></tr> <tr><td>Average Time to Full</td><td>65535</td><td>min</td></tr> <tr><td>Charging Current</td><td>4750</td><td>mA</td></tr> <tr><td>Charging Voltage</td><td>8400</td><td>mV</td></tr> <tr><td>Cycle Count</td><td>3</td><td>-</td></tr> </tbody> </table>	Name	Value	Units	Average Current	0	mA	Max Error	1	%	Relative State of Charge	13	%	Absolute State of Charge	12	%	Remaining Capacity	279	mAh	Full charge Capacity	2321	mAh	Run time To Empty	65535	min	Average Time to Empty	65535	min	Average Time to Full	65535	min	Charging Current	4750	mA	Charging Voltage	8400	mV	Cycle Count	3	-	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr><th>Name</th><th>Value</th><th>Units</th></tr> </thead> <tbody> <tr><td>Cell 2 Power</td><td>0</td><td>cW</td></tr> <tr><td>Cell 3 Power</td><td>0</td><td>cW</td></tr> <tr><td>Cell 4 Power</td><td>0</td><td>cW</td></tr> <tr><td>Power</td><td>0</td><td>cW</td></tr> <tr><td>Average Power</td><td>0</td><td>cW</td></tr> <tr><td>Int Temperature</td><td>24.0</td><td>degC</td></tr> <tr><td>TS1 Temperature</td><td>23.9</td><td>degC</td></tr> <tr><td>TS2 Temperature</td><td>-53.5</td><td>degC</td></tr> <tr><td>TS3 Temperature</td><td>-273.2</td><td>degC</td></tr> <tr><td>TS4 Temperature</td><td>-273.2</td><td>degC</td></tr> <tr><td>Cell Temperature</td><td>23.9</td><td>degC</td></tr> <tr><td>FET Temperature</td><td>-273.2</td><td>degC</td></tr> </tbody> </table>	Name	Value	Units	Cell 2 Power	0	cW	Cell 3 Power	0	cW	Cell 4 Power	0	cW	Power	0	cW	Average Power	0	cW	Int Temperature	24.0	degC	TS1 Temperature	23.9	degC	TS2 Temperature	-53.5	degC	TS3 Temperature	-273.2	degC	TS4 Temperature	-273.2	degC	Cell Temperature	23.9	degC	FET Temperature	-273.2	degC	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr><th>Name</th><th>Value</th><th>Units</th></tr> </thead> <tbody> <tr><td>Cell 4 Grid</td><td>0</td><td>-</td></tr> <tr><td>StateTime</td><td>433463</td><td>s</td></tr> <tr><td>Cell 1 DODO</td><td>12811</td><td>-</td></tr> <tr><td>Cell 2 DODO</td><td>12830</td><td>-</td></tr> <tr><td>Cell 3 DODO</td><td>0</td><td>-</td></tr> <tr><td>Cell 4 DODO</td><td>0</td><td>-</td></tr> <tr><td>DODO Passed Q</td><td>0</td><td>mAh</td></tr> <tr><td>DODO Passed E</td><td>0</td><td>cWh</td></tr> <tr><td>DODO Time</td><td>6</td><td>h/16</td></tr> <tr><td>Cell 1 DODEOC</td><td>0</td><td>-</td></tr> <tr><td>Cell 2 DODEOC</td><td>0</td><td>-</td></tr> <tr><td>Cell 3 DODEOC</td><td>0</td><td>-</td></tr> <tr><td>Cell 4 DODEOC</td><td>0</td><td>-</td></tr> </tbody> </table>	Name	Value	Units	Cell 4 Grid	0	-	StateTime	433463	s	Cell 1 DODO	12811	-	Cell 2 DODO	12830	-	Cell 3 DODO	0	-	Cell 4 DODO	0	-	DODO Passed Q	0	mAh	DODO Passed E	0	cWh	DODO Time	6	h/16	Cell 1 DODEOC	0	-	Cell 2 DODEOC	0	-	Cell 3 DODEOC	0	-	Cell 4 DODEOC	0	-
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Bit Registers <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th><th>Value</th><th>Bit7</th><th>Bit6</th><th>Bit5</th><th>Bit4</th><th>Bit3</th><th>Bit2</th><th>Bit1</th><th>Bit0</th> <th>Bit High</th><th>Bit Low</th><th>RSVD</th> </tr> </thead> <tbody> <tr><td>Battery Mode (...)</td><td>0x6001</td><td>CapM</td><td>ChgM</td><td>AM</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>PB</td><td>CC</td><td></td><td></td><td></td></tr> <tr><td>Battery Mode (...)</td><td></td><td>CF</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>PBS</td><td>ICC</td><td></td><td></td><td></td></tr> <tr><td>Battery Status ...</td><td>0x02C0</td><td>OCA</td><td>TCA</td><td>RSVD</td><td>OTA</td><td>TDA</td><td>RSVD</td><td>RCA</td><td>RTA</td><td></td><td></td><td></td></tr> <tr><td>Battery Status ...</td><td></td><td>INIT</td><td>DSG</td><td>FC</td><td>FD</td><td>EC3</td><td>EC2</td><td>EC1</td><td>EC0</td><td></td><td></td><td></td></tr> <tr><td>Operation Stat...</td><td>0x0206</td><td>SLEEP</td><td>XCHG</td><td>XDSG</td><td>PF</td><td>SS</td><td>SDV</td><td>SEC1</td><td>SEC0</td><td></td><td></td><td></td></tr> <tr><td>Operation Stat...</td><td></td><td>BTP_INT</td><td>RSVD</td><td>FUSE</td><td>RSVD</td><td>PCHG</td><td>CHG</td><td>DSG</td><td>PRES</td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td></td><td></td><td></td></tr> </tbody> </table>			Name	Value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Bit High	Bit Low	RSVD	Battery Mode (...)	0x6001	CapM	ChgM	AM	RSVD	RSVD	RSVD	PB	CC				Battery Mode (...)		CF	RSVD	RSVD	RSVD	RSVD	RSVD	PBS	ICC				Battery Status ...	0x02C0	OCA	TCA	RSVD	OTA	TDA	RSVD	RCA	RTA				Battery Status ...		INIT	DSG	FC	FD	EC3	EC2	EC1	EC0				Operation Stat...	0x0206	SLEEP	XCHG	XDSG	PF	SS	SDV	SEC1	SEC0				Operation Stat...		BTP_INT	RSVD	FUSE	RSVD	PCHG	CHG	DSG	PRES						RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD																			
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System Data	Manufacturer Info Block A27	30	Hex
SBS Configuration	Manufacturer Info Block A28	31	Hex
Lifetimes	Manufacturer Info Block A29	32	Hex
Protections	Manufacturer Info Block A30	33	Hex
Permanent Fail	Manufacturer Info Block A31	34	Hex
PF Status	Manufacturer Info Block A32	02	Hex
Black Box	Manufacturer Info B		
Gas Gauging	Manufacturer Info Block B01	01	Hex
	Manufacturer Info Block B02	23	Hex
	Manufacturer Info Block B03	45	Hex
	Manufacturer Info Block B04	67	Hex
	Integrity		
	Static DF Signature	亮灯	hex
		0000	hex

e. 悟 1 数据

此数据作者 Harold _ wang 2019-05-28 ver01, 感谢。

解封密码 351B6c15
完全访问密码
芯片型号数据包 4500_2_06-bq40z50R2
如果密码不对尝试用御 air2 密码或者悟 2 密码



电量百分比不准，检查 Fuel Gauging 里的 Design Capacity mAh 是

5450, Design

Capacity cWh 是 12996,
Qmax Pack 和 Learned Full Charge Capacity 都是 5450, 下一项是
14870, 下一项 3732, 电芯重新插拔就正常

Name	Value	Unit
Current Thresholds		
Dsg Current Threshold	50	mA
Chg Current Threshold	50	mA
Quit Current	20	mA
Dsg Relax Time	1	s
Chg Relax Time	60	s
Design		
Design Capacity mAh	5450	mAh
Design Capacity cWh	12996	cWh
Design Voltage	3800	mV
Cycle		
Cycle Count Percentage	75	%
FD		
Set % RSOC Threshold	0	%
Clear % RSOC Threshold	5	%
FC		
Set % RSOC Threshold	100	%
Clear % RSOC Threshold	95	%
TD		
Set % RSOC Threshold	6	%
Clear % RSOC Threshold	8	%
TC		
Set % RSOC Threshold	100	%

Name	Value	Unit
TC		
Set % RSOC Threshold	100	%
Clear % RSOC Threshold	95	%
State		
Cycle Count	2	-
Qmax Pack	4250	mAh
Learned Full Charge Capacity	4250	mAh
Dod at EDV2	14870	-
CEDV cfg		
EMF	3732	-
C0	98	-
R0	171	-
T0	4336	-
R1	416	-
TC	9	-
C1	0	-
Age Factor	0	-
Fixed EDV 0	3215	-
EDV 0 Hold Time	3	s
Fixed EDV 1	3414	-
EDV 1 Hold Time	3	s
Fixed EDV 2	3484	-
EDV 2 Hold Time	50	s
Default Delta V	7.00	mV
Fixed EDV 1	3414	-
EDV 1 Hold Time	3	s
Fixed EDV 2	3484	-
EDV 2 Hold Time	50	s
Battery Low %	7.00	%
Min Delta V Filter	10	mV
FCC Learn Up	512	mAh
FCC Learn Down	256	mAh
Learning Low Temp	119	0.1degC
Requested Learning cycle count	20	num
OverLoad Current	25000	mA
Self Discharge Rate	45	0.01%/day
Electronics Load	0	3uA
Near Full	200	mAh
Reserve Capacity	0	mAh

电压校准 下面列出了电压校准的相关信息： • 测量电芯 1 与 1N 之间的电压并将该值输入 “应用的电芯 1 电压” (Applied Cell 1 Voltage) 字段，然后选 中校准电压 (Calibrate Voltage) 框。 • 测量 BAT+ 与 BAT - 之间的电压并将该值输入 “应用的电池电压” (Applied Cell 1 Voltage) 字段，然后选 中校准电池电压 (Calibrate Battery Voltage) 框。 • 测量 PACK+ 与 PACK - 之间的电压并将该值输入 “应用的电芯 1 电压” (Applied Cell 1 Voltage) 字段，然后

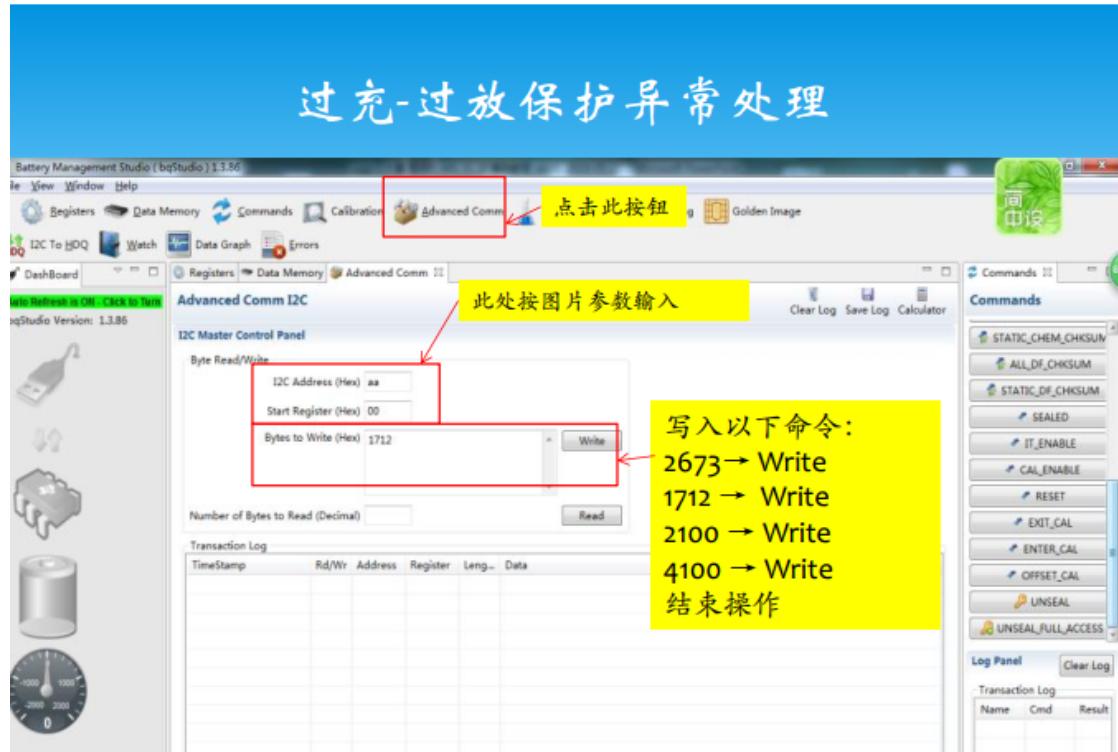
选中校准电池组电压 (Calibrate Pack Voltage) 框。如果不存在电压，则按下 FET_EN 按钮（命令 (Commands) 面板上）以接通充电和放电场效应晶体管 (FET)。 • 按下校准电量监测计 (Calibrate Gas Gauge) 按钮以校准电压测量系统。 • 完成电压校准后，取消选中校准电压 (Calibrate Voltage) 框。

f.悟 2 数据

此数据作者 Harold_wang 2019-05-28 ver01，感谢。连接 EV2400 的 I2C 口。有两版电池，根据自身实际情况来。

解封密码 92be89d6
完全访问密码 d9b96a36
芯片型号数据包 0100-0-16-bq34z100g1

过充-过放保护异常处理



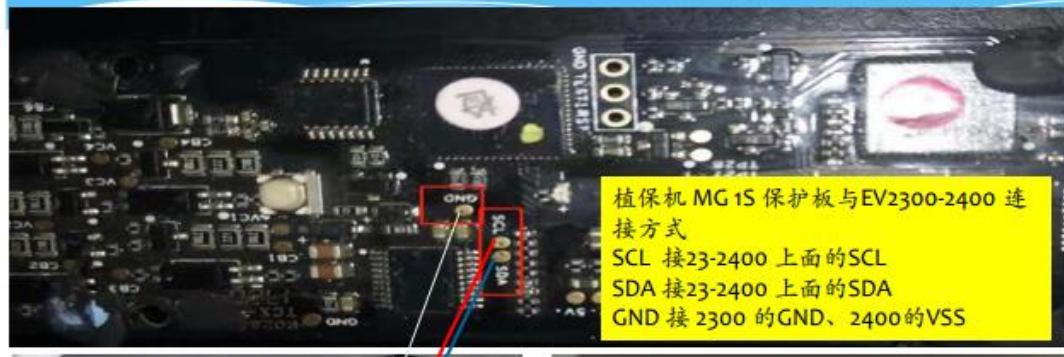


g. 植保数据

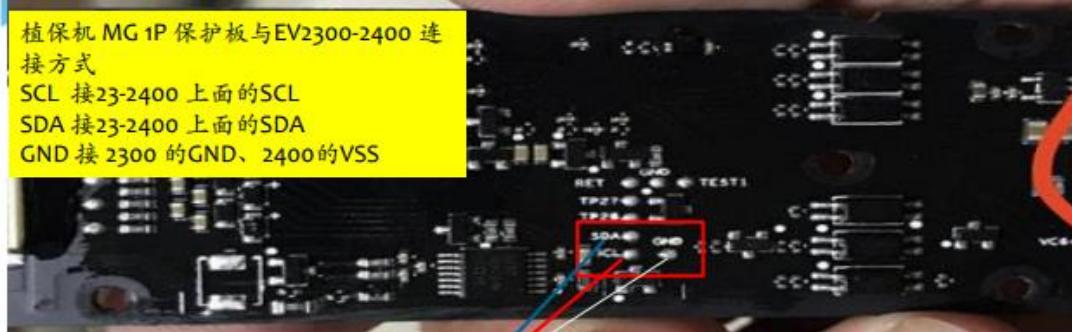
此数据作者 Harold _ wang 2019-05-28 ver01, 感谢。连接 EV2400 的 I2C 口。EV2400 连线方法一端将接口插入 EV2400 的 i2c 口即 P O R T 2 口。V O U T 如果有连线建议打结，以防乱搭短路。

解封密码 92be89d6
完全访问密码 d9b96a36
芯片型号数据包 0100-0-16-bq34z100g1

EV2300-2400 与 MG1S 保护板连接

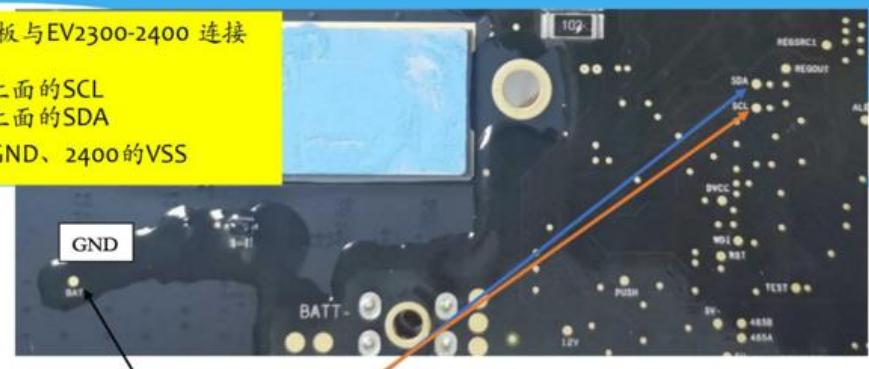


EV2300-2400 与 MG1P 保护板连接



EV2300-2400 与 T16 保护板连接

植保机 T16 保护板与 EV2300-2400 连接方式
SCL 接 23-2400 上面的 SCL
SDA 接 23-2400 上面的 SDA
GND 接 2300 的 GND、2400 的 VSS

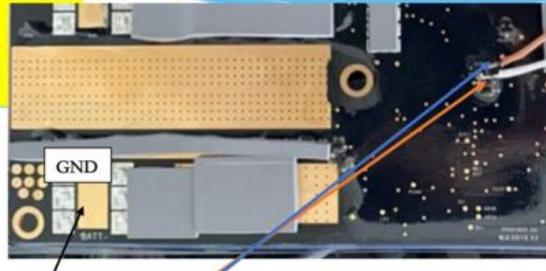


EV2300-2400 与 T20 保护板连接

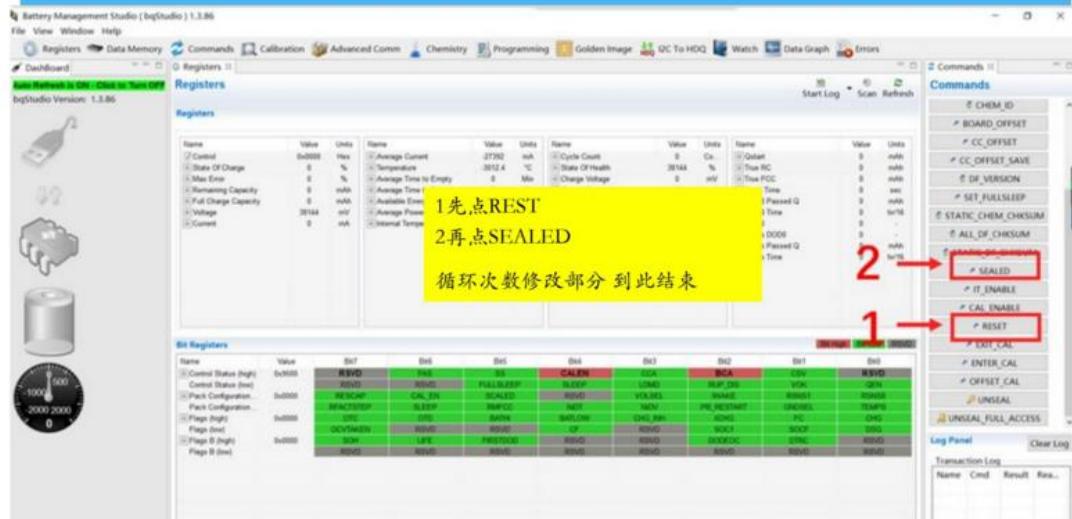
植保机 T20 保护板与 EV2300-2400 连接方式

SCL 接 23-2400 上面的 SCL
SDA 接 23-2400 上面的 SDA

GND 接 2300 的 GND、2400 的 VSS



结束后数据复位及确认



充放电异常硬件复位操作 电流没有输出

GND 与 RST 进行短接
时间：2-3秒





对于植保机电池维修还有一个不确定因素，高端机型，电池主板上搭载一片微处理器（MSP430），如果此片微处理器因掉电，过压，欠压出现程序损坏，此程序无法替换，上面的操作将无济于事，如果上述操作无法解锁电池，基本上是 msp430 损坏，无法修复（换芯片也没程序），只能宣布电池主板报废。

(9) bq Evaluation Software 软件设置

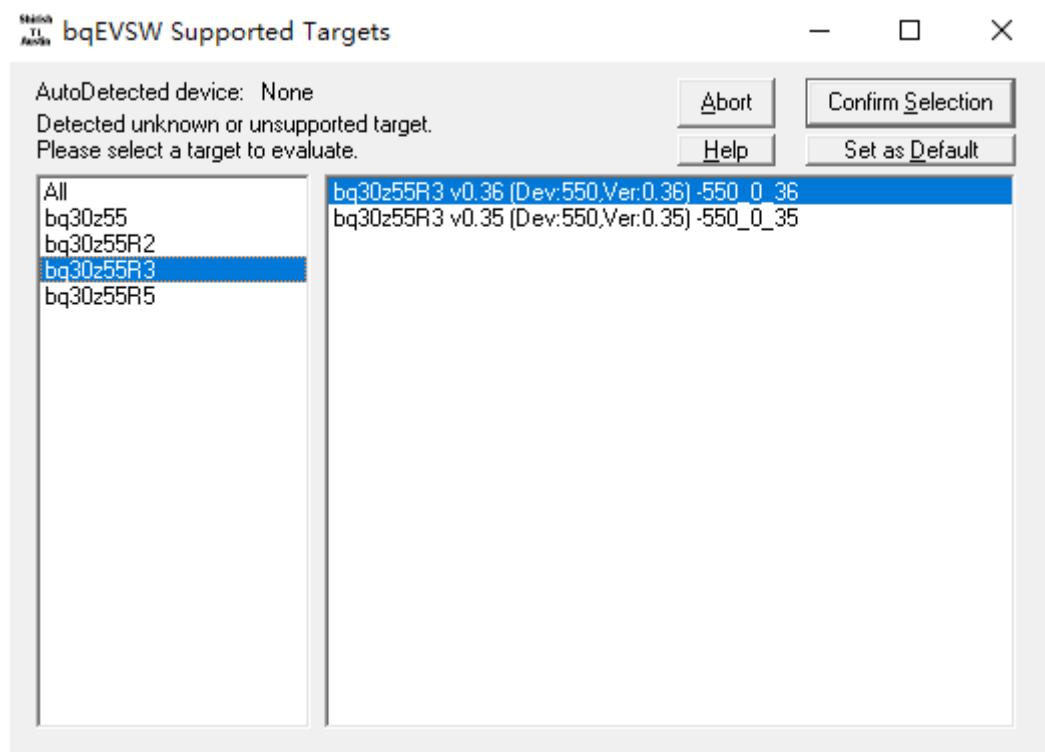
精灵 3 的电池密码和芯片型号如下。

解封密码 0310E6546051541D31584841B05C41A5
芯片型号数据包 bq30z55r3 0.36

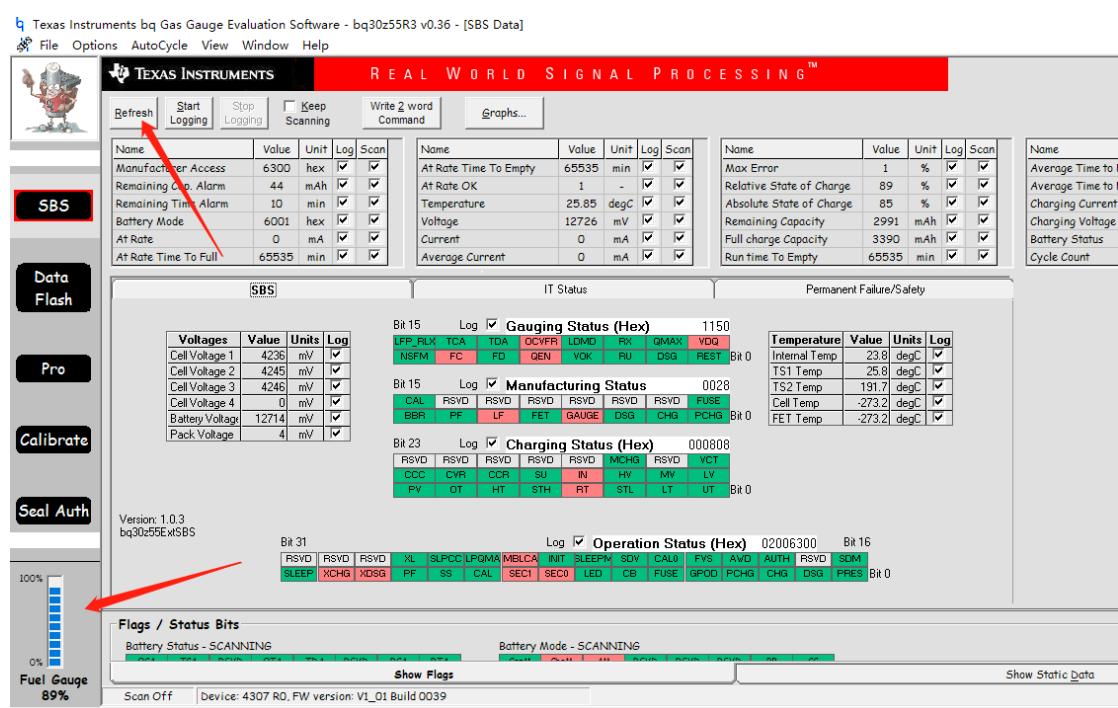
双击打开



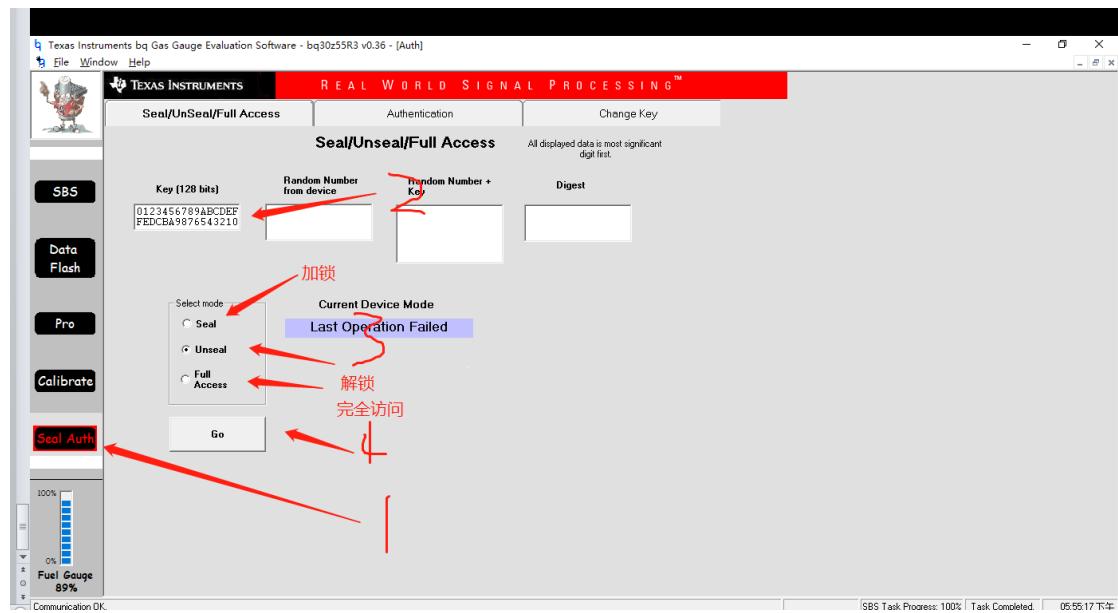
选择电池数据包，大多数情况可以自动识别
解封电池



点击 Refresh，下图代表电池连接成功



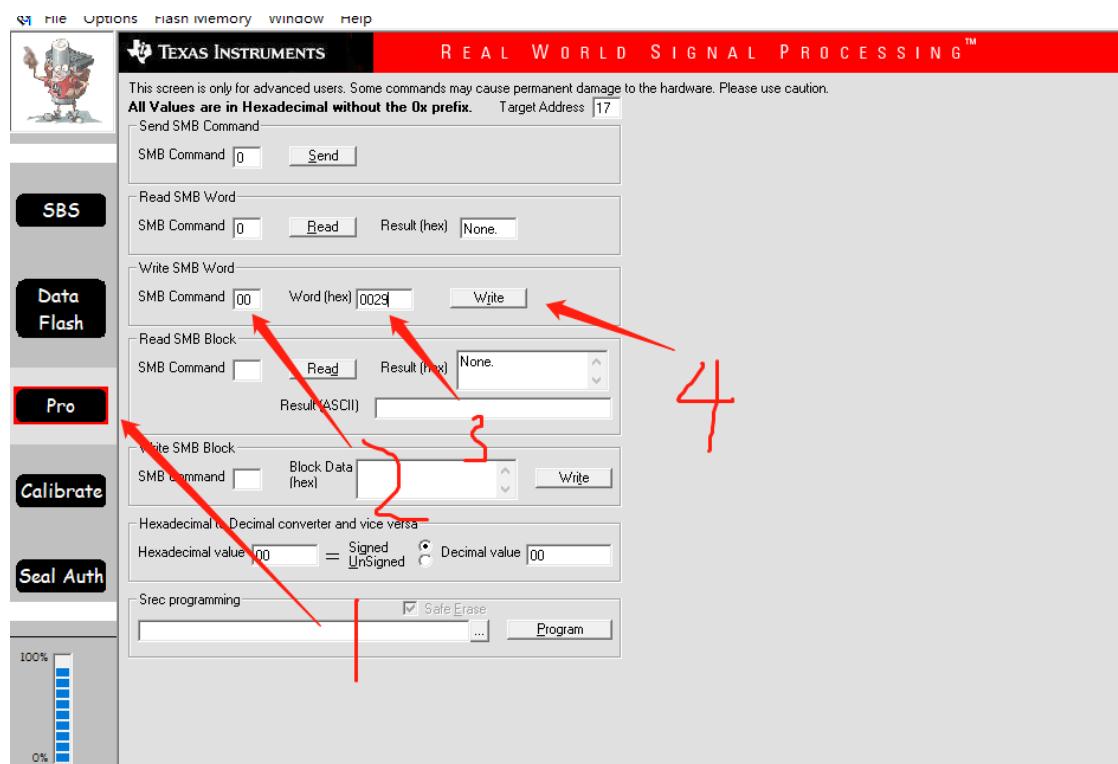
进入软件先接触访问限制



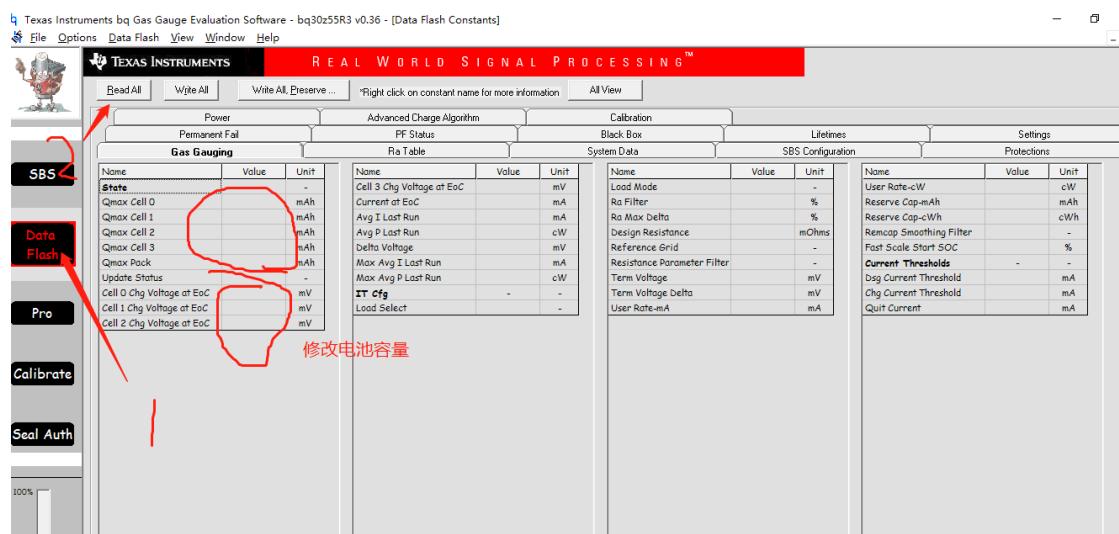
电池不能充放解锁

如果没有此情况忽略此节。

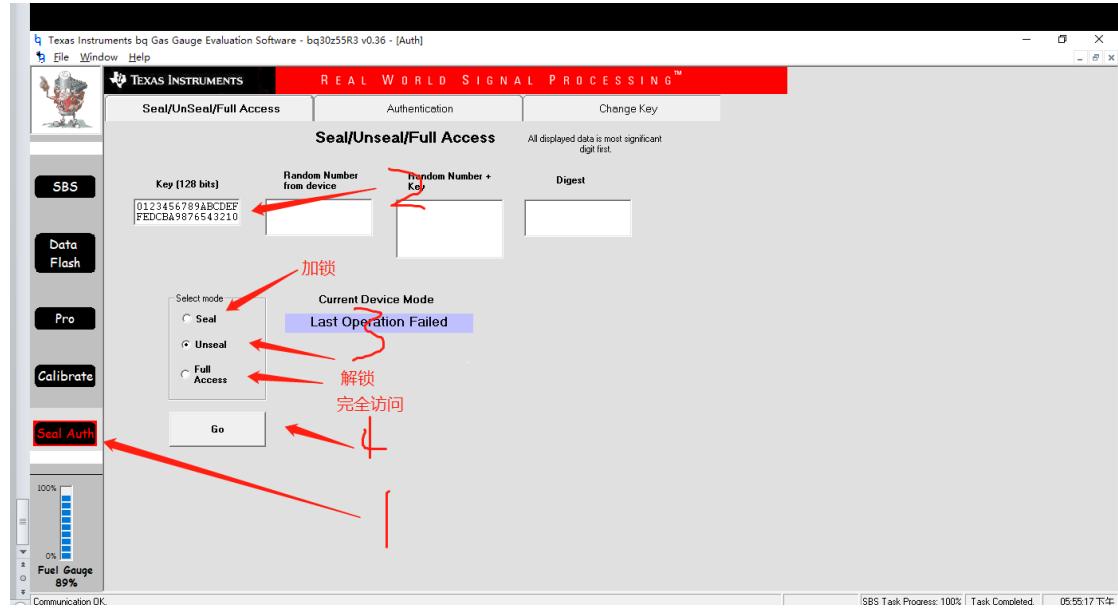
点击 PRO，输入地址 00 和命令 0029，点击 Write



修改容量



最后一定不要忘记关闭电池完全访问，否则会不识别电池



Power			Advanced Charge		
Permanent Fail*			PF Status		
Gas Gauging			Rate Table		
Name	Value	Unit	No	Mo	De
Data	-	-	De	De	FD
Remaining AH Cap. Alarm	440	mAh	Se	Cle	Se
Remaining WH Cap. Alarm	680	cWh	Cle	Se	Cle
Remaining Time Alarm	10	min	Se	Cle	FC
Initial Battery Mode	0081	-	Cle	Se	Se
Design Voltage	15200	mV	Se	Cle	Cle
Specification Information	0031	-	Cle	Se	Se
Manufacture Date	26-Sep-2015	date	Se	Cle	Cle
Serial Number	027F	-	Cle	Se	Se
Cycle Count	1	-	Se	Cle	Cle
Cycle Count Percentage	75	%	Cle	Se	Se
Max Error Limit	100	%	Se	Cle	Cle
Design Capacity mAh	4480	mAh	Se	Cle	Se
Design Capacity cWh	6809	cWh	Cle	Se	Cle

Gas Gauging		
Name	Value	Unit
State	-	-
Qmax Cell 0	4700	mAh
Qmax Cell 1	4700	mAh
Qmax Cell 2	4700	mAh
Qmax Cell 3	4700	mAh
Qmax Pack	4700	mAh
Update Status	0E	-
Cell 0 Chg Voltage at EoC	4340	mV
Cell 1 Chg Voltage at EoC	4340	mV
Cell 2 Chg Voltage at EoC	4340	mV
Cell 3 Chg Voltage at EoC	4340	mV
Current at EoC	248	mA
Avg I Last Run	-4199	mA

Lifetimes			
SBS Configuration			
it	Name	Value	Unit
	TDA	-	-
	Set Voltage Threshold	3200	mV
V	Clear Voltage Threshold	3300	mV
V	Set % RSOC Threshold	10	%
V	Clear % RSOC Treshold	15	%
V	TCA	-	-
V	Set Voltage Threshold	4350	mV
V	Clear Voltage Threshold	4100	mV
V	Set % RSOC Threshold	100	%
V	Clear % RSOC Threshold	95	%
V	Max Error	-	-
V	Time Cycle Equivalent	24	h
V	Cycle Delta	0.05	%

SBS Configuration		
Name	Value	Unit
Term Voltage	11200	mV
Term Voltage Delta	400	mV
User Rate-mA	0	mA
User Rate-cW	0	cW
Reserve Cap-mAh	0	mAh
Reserve Cap-cWh	0	cWh
Remcap Smoothing Filter	250	-
Fast Scale Start SOC	10	%
Current Thresholds	-	-
Dsg Current Threshold	50	mA
Chg Current Threshold	50	mA
Quit Current	20	mA

Gas Gauging		
Power	Advanced	
Name	Value	Unit
Voltage	-	-
Cell Scale 0	20602	-
Cell Scale 1	20666	-
Cell Scale 2	20651	-
Cell Scale 3	20664	-
Pack Gain	51992	-
BAT Gain	49426	-
Current	-	-
CC Gain	6.245	-
Capacity Gain	1862545.5	-
Current Offset	-	-
CC Offset	-7232	-
Coulomb Counter Offset San	64	-
Board Offset	0	-
Temperature	-	-
Internal Temp Offset	0.0	degC
External1 Temp Offset	0.0	degC
External2 Temp Offset	-3.0	degC
Internal Temp Model	-	-
Int Coeff 1	0	-
Int Coeff 2	0	-
Int Coeff 3	-11136	-

a.精灵 4 数据

解封密码
0123456789ABCDEFDCBA9876543210
芯片型号数据包 bq30z55r3 0.36

b. 御 1 数据

改完参数要加密才能退出，否则无法验证电池

命令 29 是清除 pf 解锁

12 是设备重启

28 是寿命数据重置

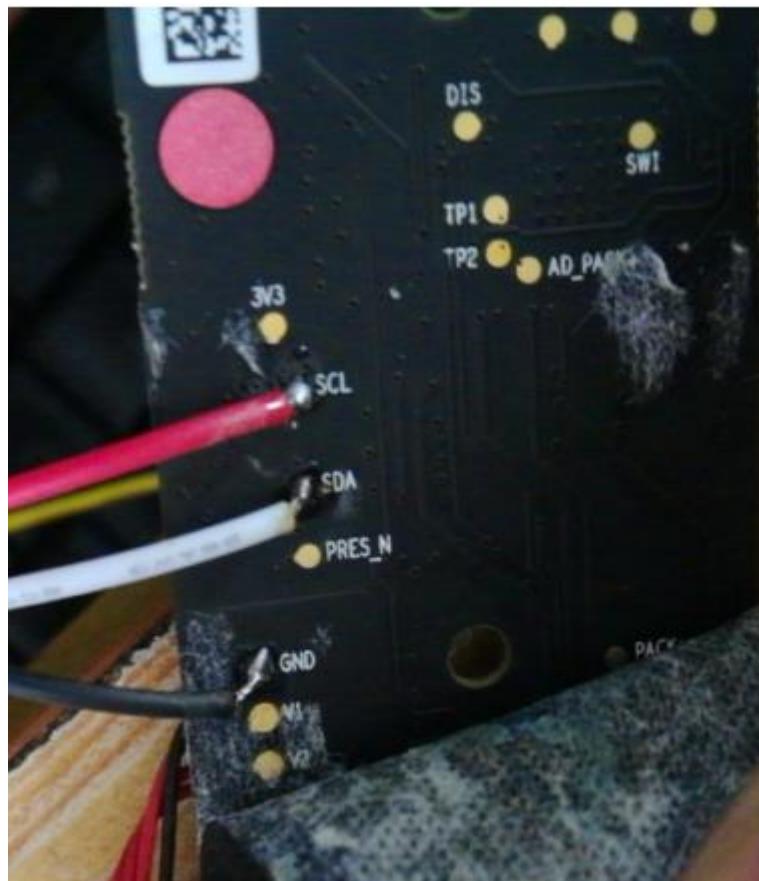
2A 黑夹子重置

改好参数要输入 12 重启设备

Name	Value	Unit	Log	Scan	Name	Value	Unit	Log	Scan	Name	Value	Unit	Log	Scan
Manufacturer Access	0000	hex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Temperature	27.85	degC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Full charge Capacity	2640	mAh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Remaining Cap. Alarm	150	mAh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Voltage	15314	mV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Run time To Empty	2162	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Remaining Time Alarm	10	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Current	-32	mA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Average Time to Empty	2162	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Battery Mode	6001	hex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Average Current	-32	mA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Average Time to Full	65535	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At Rate	0	mA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Max Error	1	%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Charging Current	0	mA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At Rate Time To Full	65535	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Relative State of Charge	44	%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Charging Voltage	0	mV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At Rate Time To Empty	65535	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Absolute State of Charge	40	%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Battery Status	48C0	hex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At Rate OK	1	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Remaining Capacity	1153	mAh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cycle Count	0	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

SBS				IT Status				Permanent Failure/Safety																																																																																																																																																									
<table border="1"> <thead> <tr> <th>Voltages</th> <th>Value</th> <th>Units</th> <th>Log</th> </tr> </thead> <tbody> <tr> <td>Cell Voltage 1</td> <td>3827</td> <td>mV</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Cell Voltage 2</td> <td>3835</td> <td>mV</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Cell Voltage 3</td> <td>3853</td> <td>mV</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Cell Voltage 4</td> <td>3798</td> <td>mV</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Battery Voltage</td> <td>15306</td> <td>mV</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Pack Voltage</td> <td>118</td> <td>mV</td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>				Voltages	Value	Units	Log	Cell Voltage 1	3827	mV	<input checked="" type="checkbox"/>	Cell Voltage 2	3835	mV	<input checked="" type="checkbox"/>	Cell Voltage 3	3853	mV	<input checked="" type="checkbox"/>	Cell Voltage 4	3798	mV	<input checked="" type="checkbox"/>	Battery Voltage	15306	mV	<input checked="" type="checkbox"/>	Pack Voltage	118	mV	<input checked="" type="checkbox"/>	<table border="1"> <thead> <tr> <th colspan="8">Gauging Status (Hex) 0812</th> </tr> <tr> <td>LFP_RLX</td><td>TCA</td><td>TDA</td><td>ODVER</td><td>LDMD</td><td>RX</td><td>QMAX</td><td>VDD</td> </tr> <tr> <td>NSPM</td><td>FC</td><td>FD</td><td>QEN</td><td>VOK</td><td>HU</td><td>DSG</td><td>REST</td> </tr> </thead> <tbody> <tr> <td>Bit 15</td><td>Log</td><td><input checked="" type="checkbox"/></td><td>Manufacturing Status 0058</td><td>Bit 0</td><td>Temperature</td><td>Value</td><td>Units</td><td>Log</td> </tr> <tr> <td>CAL</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>FUSE</td> </tr> <tr> <td>BER</td><td>PF</td><td>LF</td><td>FET</td><td>GAUGE</td><td>DSG</td><td>CHG</td><td>PCHG</td> </tr> <tr> <td>PV</td><td>OT</td><td>HT</td><td>STH</td><td>RT</td><td>STL</td><td>LT</td><td>UT</td> </tr> </tbody> </table>				Gauging Status (Hex) 0812								LFP_RLX	TCA	TDA	ODVER	LDMD	RX	QMAX	VDD	NSPM	FC	FD	QEN	VOK	HU	DSG	REST	Bit 15	Log	<input checked="" type="checkbox"/>	Manufacturing Status 0058	Bit 0	Temperature	Value	Units	Log	CAL	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	FUSE	BER	PF	LF	FET	GAUGE	DSG	CHG	PCHG	PV	OT	HT	STH	RT	STL	LT	UT	<table border="1"> <thead> <tr> <th colspan="8">Manufacturing Status 0058 Bit 0</th> </tr> <tr> <td>Temperature</td><td>Value</td><td>Units</td><td>Log</td> </tr> <tr> <td>Internal Temp</td><td>20.0</td><td>degC</td><td><input checked="" type="checkbox"/></td> </tr> <tr> <td>TS1 Temp</td><td>-58.2</td><td>degC</td><td><input checked="" type="checkbox"/></td> </tr> <tr> <td>TS2 Temp</td><td>27.8</td><td>degC</td><td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Cell Temp</td><td>27.8</td><td>degC</td><td><input checked="" type="checkbox"/></td> </tr> <tr> <td>FET Temp</td><td>-273.2</td><td>degC</td><td><input checked="" type="checkbox"/></td> </tr> </thead> <tbody> <tr> <td>Bit 23</td><td>Log</td><td><input checked="" type="checkbox"/></td><td>Charging Status (Hex) 000208</td><td>Bit 0</td><td>Temperature</td><td>Value</td><td>Units</td><td>Log</td> </tr> <tr> <td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>RSVD</td><td>MCHE</td><td>RSVD</td><td>VCT</td> </tr> <tr> <td>CCC</td><td>CVR</td><td>CCR</td><td>SU</td><td>IN</td><td>HV</td><td>MV</td><td>LV</td> </tr> <tr> <td>PV</td><td>OT</td><td>HT</td><td>STH</td><td>RT</td><td>STL</td><td>LT</td><td>UT</td> </tr> </tbody> </table>				Manufacturing Status 0058 Bit 0								Temperature	Value	Units	Log	Internal Temp	20.0	degC	<input checked="" type="checkbox"/>	TS1 Temp	-58.2	degC	<input checked="" type="checkbox"/>	TS2 Temp	27.8	degC	<input checked="" type="checkbox"/>	Cell Temp	27.8	degC	<input checked="" type="checkbox"/>	FET Temp	-273.2	degC	<input checked="" type="checkbox"/>	Bit 23	Log	<input checked="" type="checkbox"/>	Charging Status (Hex) 000208	Bit 0	Temperature	Value	Units	Log	RSVD	RSVD	RSVD	RSVD	RSVD	MCHE	RSVD	VCT	CCC	CVR	CCR	SU	IN	HV	MV	LV	PV	OT	HT	STH	RT	STL	LT	UT
Voltages	Value	Units	Log																																																																																																																																																														
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Cell Voltage 3	3853	mV	<input checked="" type="checkbox"/>																																																																																																																																																														
Cell Voltage 4	3798	mV	<input checked="" type="checkbox"/>																																																																																																																																																														
Battery Voltage	15306	mV	<input checked="" type="checkbox"/>																																																																																																																																																														
Pack Voltage	118	mV	<input checked="" type="checkbox"/>																																																																																																																																																														
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NSPM	FC	FD	QEN	VOK	HU	DSG	REST																																																																																																																																																										
Bit 15	Log	<input checked="" type="checkbox"/>	Manufacturing Status 0058	Bit 0	Temperature	Value	Units	Log																																																																																																																																																									
CAL	RSVD	RSVD	RSVD	RSVD	RSVD	RSVD	FUSE																																																																																																																																																										
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TS2 Temp	27.8	degC	<input checked="" type="checkbox"/>																																																																																																																																																														
Cell Temp	27.8	degC	<input checked="" type="checkbox"/>																																																																																																																																																														
FET Temp	-273.2	degC	<input checked="" type="checkbox"/>																																																																																																																																																														
Bit 23	Log	<input checked="" type="checkbox"/>	Charging Status (Hex) 000208	Bit 0	Temperature	Value	Units	Log																																																																																																																																																									
RSVD	RSVD	RSVD	RSVD	RSVD	MCHE	RSVD	VCT																																																																																																																																																										
CCC	CVR	CCR	SU	IN	HV	MV	LV																																																																																																																																																										
PV	OT	HT	STH	RT	STL	LT	UT																																																																																																																																																										
<table border="1"> <thead> <tr> <th colspan="16">Operation Status (Hex) 00106200 Bit 16</th> </tr> <tr> <td>RSVD</td><td>RSVD</td><td>RSVD</td><td>Y</td><td>SLPCC</td><td>LPOMA</td><td>MBLCAL</td><td>INIT</td><td>SLEEPY</td><td>SDV</td><td>CAL0</td><td>FVS</td><td>AWD</td><td>AUTH</td><td>RSVD</td><td>SOM</td> </tr> <tr> <td>SLEEP</td><td>XCHG</td><td>XDSG</td><td>PF</td><td>SS</td><td>CAL</td><td>SEC1</td><td>SEC0</td><td>LED</td><td>CB</td><td>FUSE</td><td>GPDD</td><td>PCHG</td><td>CHG</td><td>DSG</td><td>PRES</td> </tr> </thead> <tbody> <tr> <td>Bit 31</td><td>Log</td><td><input checked="" type="checkbox"/></td><td>Operation Status (Hex) 00106200 Bit 16</td><td>Bit 0</td><td>SLEEP</td><td>XCHG</td><td>XDSG</td><td>PF</td><td>SS</td><td>CAL</td><td>SEC1</td><td>SEC0</td><td>LED</td><td>CB</td><td>FUSE</td><td>GPDD</td><td>PCHG</td><td>CHG</td><td>DSG</td><td>PRES</td> </tr> </tbody> </table>				Operation Status (Hex) 00106200 Bit 16																RSVD	RSVD	RSVD	Y	SLPCC	LPOMA	MBLCAL	INIT	SLEEPY	SDV	CAL0	FVS	AWD	AUTH	RSVD	SOM	SLEEP	XCHG	XDSG	PF	SS	CAL	SEC1	SEC0	LED	CB	FUSE	GPDD	PCHG	CHG	DSG	PRES	Bit 31	Log	<input checked="" type="checkbox"/>	Operation Status (Hex) 00106200 Bit 16	Bit 0	SLEEP	XCHG	XDSG	PF	SS	CAL	SEC1	SEC0	LED	CB	FUSE	GPDD	PCHG	CHG	DSG	PRES																																																																																									
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Version: 1.0.3
bq30z55ExtSBS



Gas Gauging			Ra Table			System Data		
Name	Value	Unit	Name	Value	Unit	Name	Value	Unit
Data	-	-	Manufacturer Name	ATL NVT	-			
Remaining AH Cap. Alarm	150	mAh	Device Name	DJ009+	-			
Remaining WH Cap. Alarm	228	cWh	Device Chemistry	LION	-			
Remaining Time Alarm	10	min	FD	-	-			
Initial Battery Mode	0081	-	Set Voltage Threshold	3000	mV			
Design Voltage	15200	mV	Clear Voltage Threshold	3100	mV			
Specification Information	0031	-	Set % RSOC Threshold	0	%			
Manufacture Date	11-Dec-2018	date	Clear % RSOC Threshold	5	%			
Serial Number	006A	-	FC	-	-			
Cycle Count	1	-	Set Voltage Threshold	4350	mV			
Cycle Count Percentage	75	%	Clear Voltage Threshold	4100	mV			
Max Error Limit	100	%	Set % RSOC Threshold	100	%			
Design Capacity mAh	2935	mAh	Clear % RSOC Threshold	98	%			
Design Capacity cWh	4461	cWh						

Name	Value	Unit
State	-	-
Qmax Cell 0	2935	mAh
Qmax Cell 1	2935	mAh
Qmax Cell 2	2935	mAh
Qmax Cell 3	2935	mAh
Qmax Pack	2935	mAh
Update Status	OE	-
Cell 0 Chg Voltage at EoC	4330	mV
Cell 1 Chg Voltage at EoC	4330	mV
Cell 2 Chg Voltage at EoC	4330	mV
Cell 3 Chg Voltage at EoC	4330	mV
Current at EoC	181	mA
Avg I Last Run	-880	mA

c. 御 Pro1 数据

御 pro 电池要充电或者开电池才能激活通讯，用 v0.36 就可以

Name	Value	Unit
State	-	-
Qmax Cell 0	1931	mAh
Qmax Cell 1	1931	mAh
Qmax Cell 2	1931	mAh
Qmax Cell 3	1915	mAh
Qmax Pack	1931	mAh
Update Status	OE	-
Cell 0 Chg Voltage at EoC	4330	mV
Cell 1 Chg Voltage at EoC	4330	mV
Cell 2 Chg Voltage at EoC	4330	mV
Cell 3 Chg Voltage at EoC	0	mV
Current at EoC	137	mA
Avg I Last Run	-628	mA

Name	Value	Unit
Data		
Remaining AH Cap. Alarm	150	mAh
Remaining WH Cap. Alarm	228	cWh
Remaining Time Alarm	10	min
Initial Battery Mode	0081	-
Design Voltage	11400	mV
Specification Information	0031	-
Manufacture Date	30-Apr-2017	date
Serial Number	014F	-
Cycle Count	1	-
Cycle Count Percentage	75	%
Max Error Limit	100	%
Design Capacity mAh	1915	mAh
Design Capacity cWh	2183	cWh

Name	Value	Unit
FD		
Manufacturer Name	ATL NVT	-
Device Name	DJ008	-
Device Chemistry	LION	-
FC		
Set Voltage Threshold	3000	mV
Clear Voltage Threshold	3100	mV
Set % RSOC Threshold	0	%
Clear % RSOC Threshold	5	%
FC		
Set Voltage Threshold	4350	mV
Clear Voltage Threshold	4100	mV
Set % RSOC Threshold	100	%
Clear % RSOC Threshold	98	%

四、结语

修改无人机电池有风险，此教程仅提供交流学习使用，请勿模仿，本人不承担一切相关责任。

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