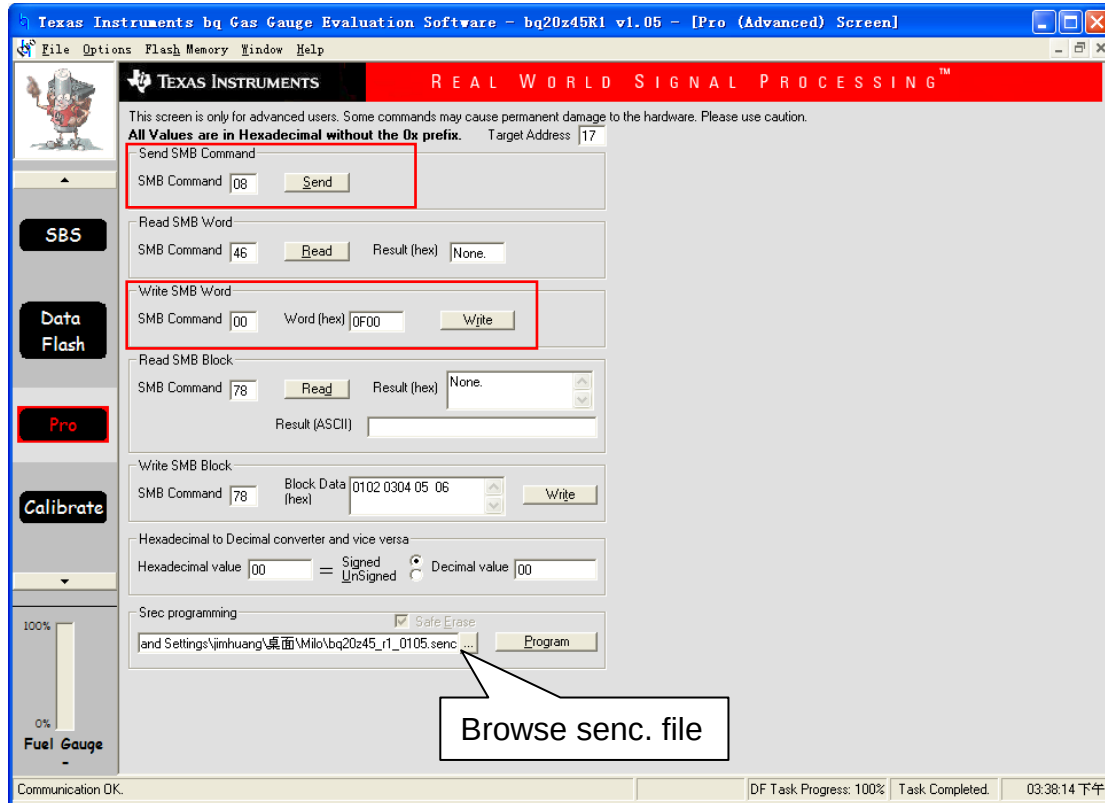
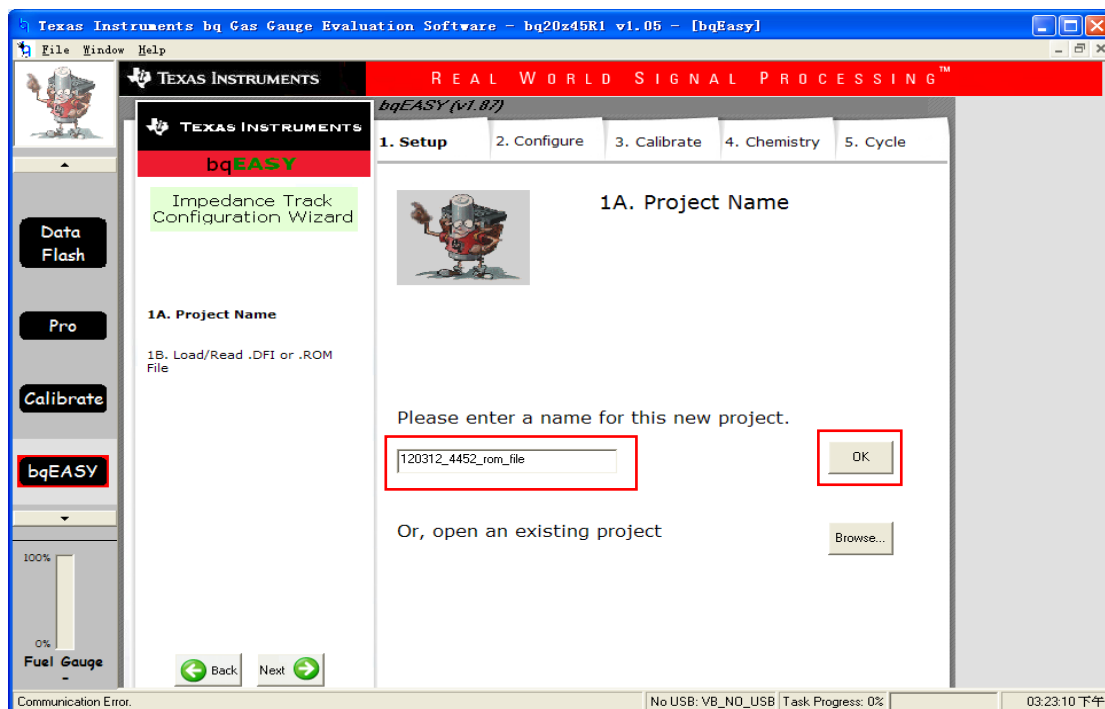


BQ Easy Settings For 4452 Learning Cycle

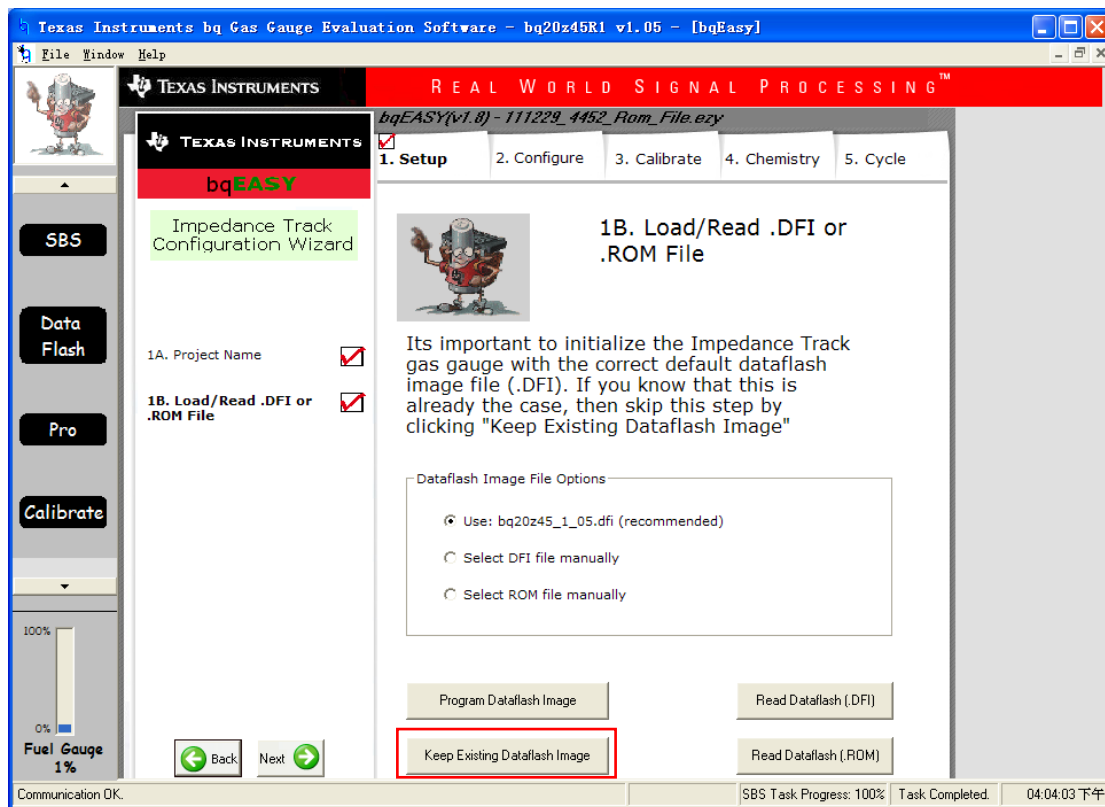
1. Start bq Evaluation Software. Select “Pro” to write “bq20z45_r1_0105.senc” file. About how to program senc. file, please reference “Updating Firmware With The bq20zxx and EVM.pdf”.



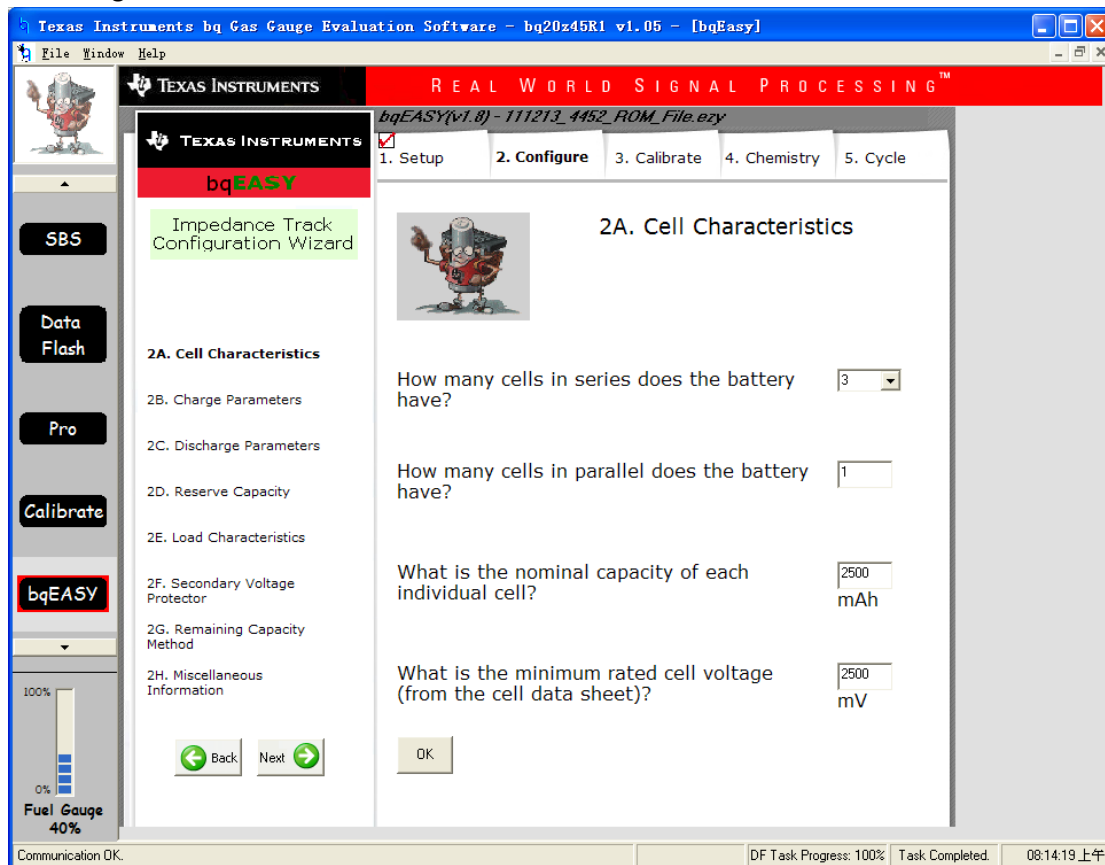
2. Restart EVSW and Select “bqEasy” item. Input a new project name or open an existing project.



3. Click “Keep Existing Dataflash Image” button.



4. Configure 2A as shown below, then OK.



5. Configure 2B as shown below, then OK.

The screenshot shows the Texas Instruments bqEASY software interface. The title bar reads "Texas Instruments bq Gas Gauge Evaluation Software - bq20z45R1 v1.05 - [bqEasy]". The menu bar includes "File", "Window", and "Help". The main window has a sidebar on the left with buttons for "SBS", "Data Flash", "Pro", "Calibrate", and "bqEASY" (which is highlighted). Below these buttons is a "Fuel Gauge" indicator showing 40% charge. The main area is titled "2B. Charge Parameters" and contains the following configuration options:

- 2A. Cell Characteristics ☒
- 2B. Charge Parameters ☒
- 2C. Discharge Parameters
- 2D. Reserve Capacity
- 2E. Load Characteristics
- 2F. Secondary Voltage Protector
- 2G. Remaining Capacity Method
- 2H. Miscellaneous Information

The configuration questions and their values are:

- What is the maximum CELL voltage allowed during charging? 3500 mV
- What is the minimum temperature allowed during charging? 0 癬
- What is the maximum temperature allowed during charging? 62 癬
- At what current would you like to have short circuit protection in the charge direction? 100 Ampere
- If a pre-charge FET is used, which AFE pin is its gate connected to? ZVCHG

Navigation buttons include "Back", "Next", and "OK". The status bar at the bottom shows "Communication OK.", "DF Task Progress: 100%", "Task Completed.", and the time "08:15:39 上午".

6. Configure 2C as shown below, then OK.

The screenshot shows the Texas Instruments bqEASY software interface. The title bar reads "Texas Instruments bq Gas Gauge Evaluation Software - bq20z45R1 v1.05 - [bqEasy]". The menu bar includes "File", "Window", and "Help". The main window has a sidebar on the left with buttons for "SBS", "Data Flash", "Pro", "Calibrate", and "bqEASY" (which is highlighted). Below these buttons is a "Fuel Gauge" indicator showing 40% charge. The main area is titled "2C. Discharge Parameters" and contains the following configuration options:

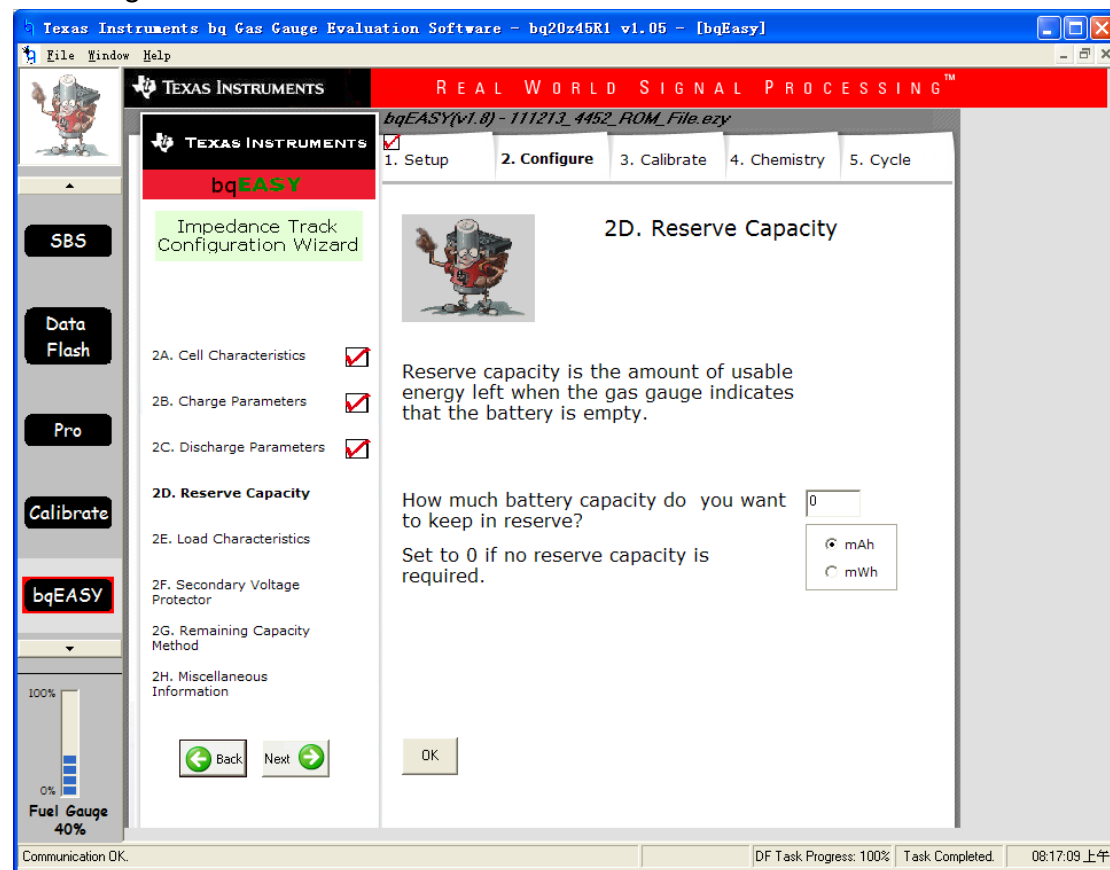
- 2A. Cell Characteristics ☒
- 2B. Charge Parameters ☒
- 2C. Discharge Parameters ☒
- 2D. Reserve Capacity
- 2E. Load Characteristics
- 2F. Secondary Voltage Protector
- 2G. Remaining Capacity Method
- 2H. Miscellaneous Information

The configuration questions and their values are:

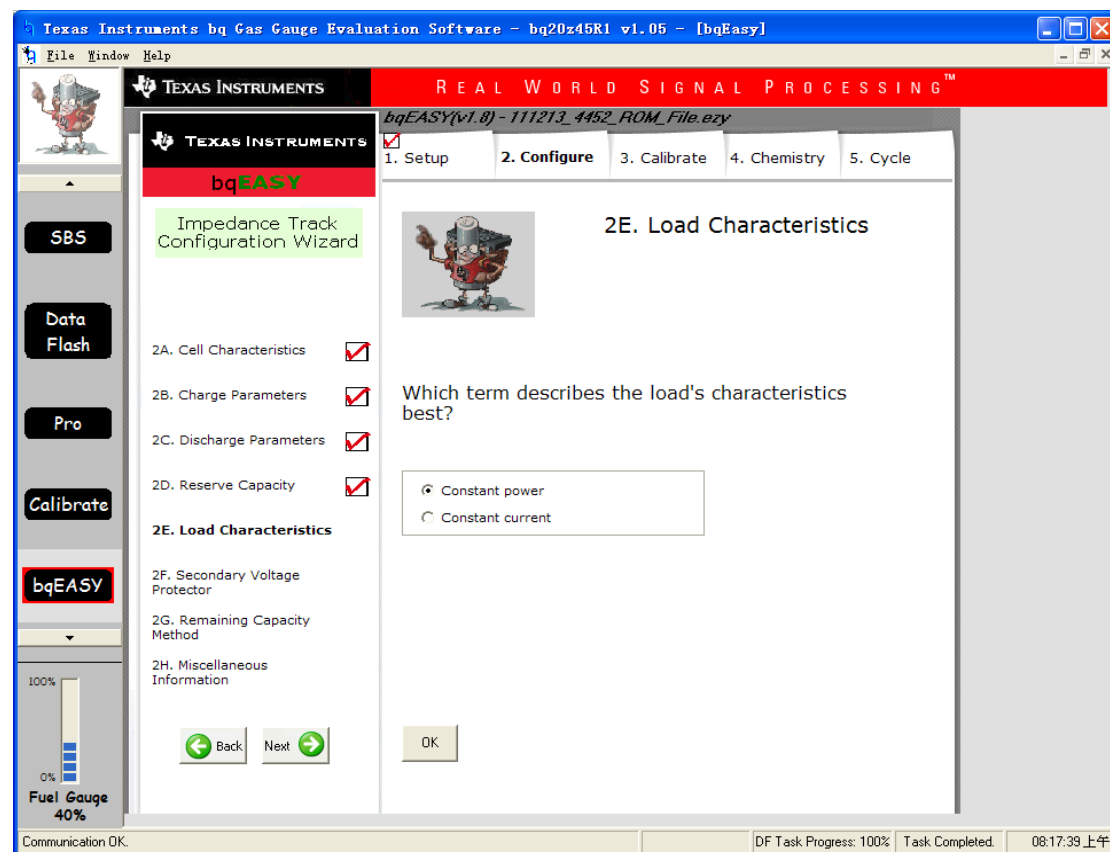
- What is the minimum CELL voltage allowed during discharge? (Typically, this is when your system will no longer function) 2500 mV
- What is the maximum temperature allowed during discharge? 65 癬
- What is the maximum (steady-state) discharge current drawn by the system during normal operation? 16000 mA
- What is the peak (short-term) discharge current drawn by the system during normal operation? 80000 mA
- At what current would you like to have short circuit protection in the discharge direction? 125 Ampere

Navigation buttons include "Back", "Next", and "OK". The status bar at the bottom shows "Communication OK.", "DF Task Progress: 100%", "Task Completed.", and the time "08:16:29 上午".

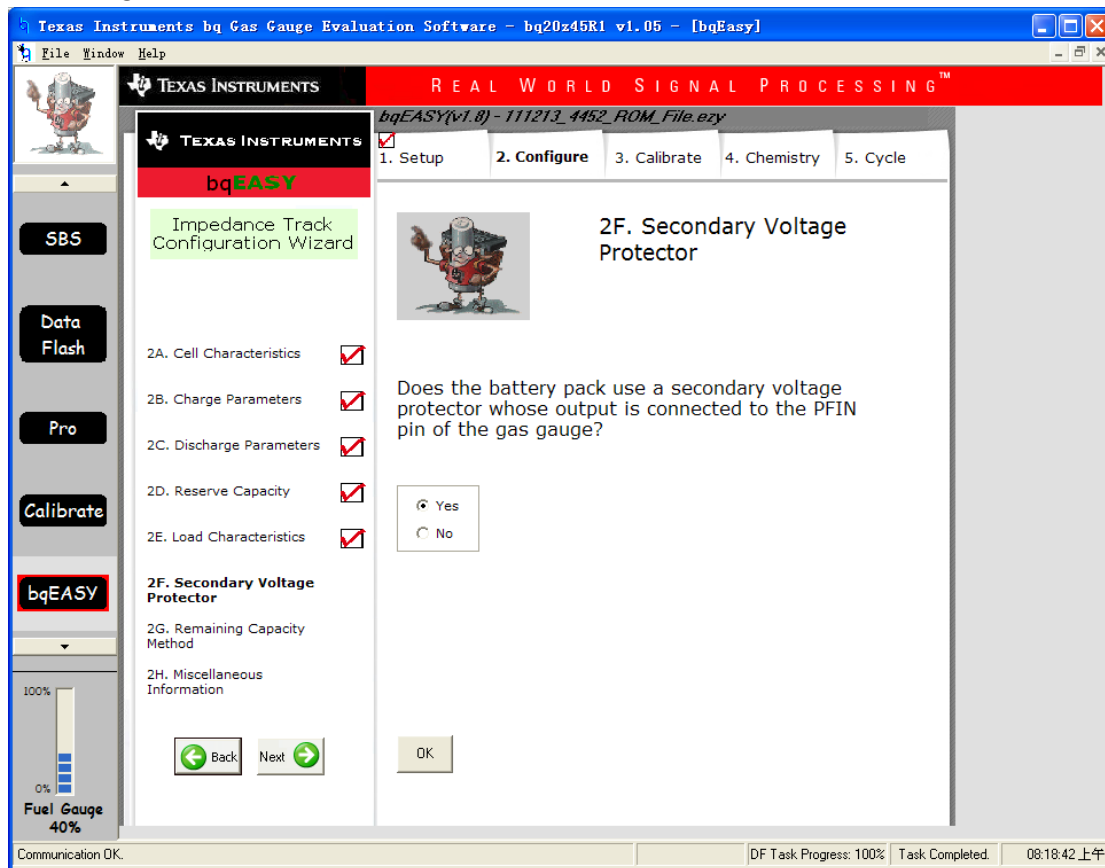
7. Configure 2D as shown below, then OK.



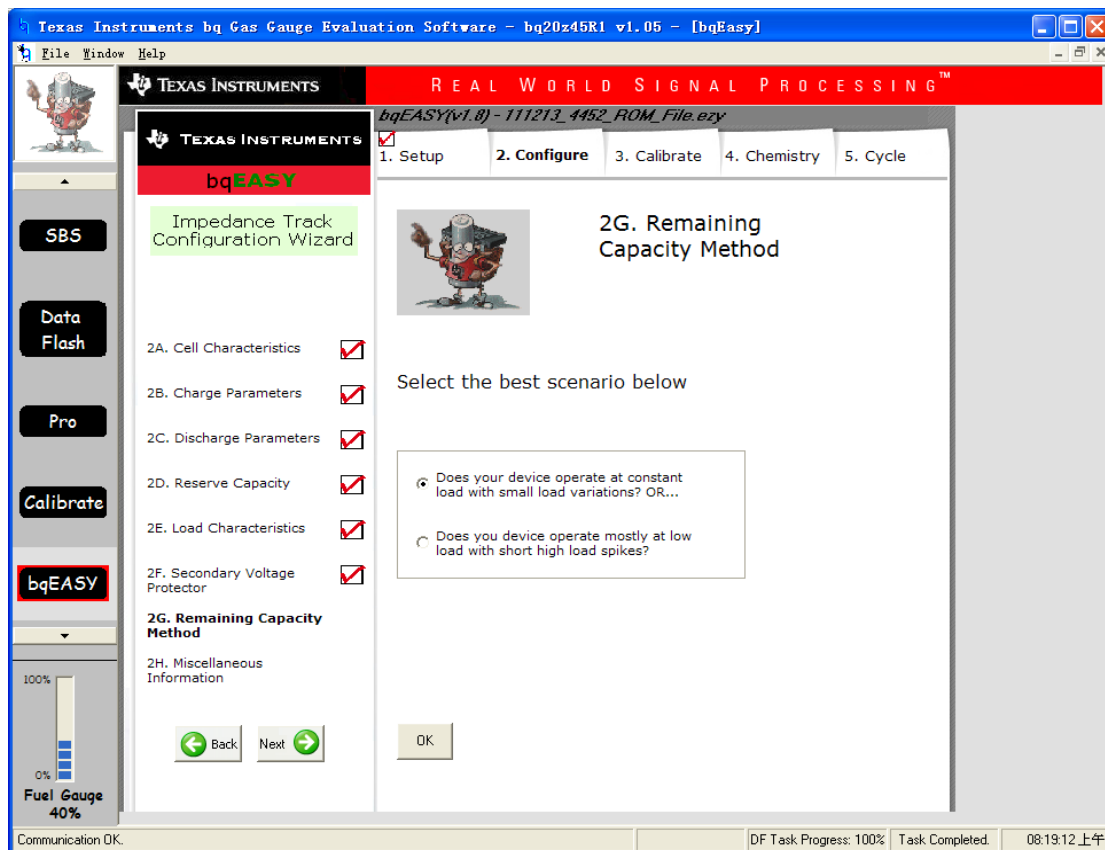
8. Configure 2E as shown below, then OK.



9. Configure 2F as shown below, then OK.



10. Configure 2G as shown below, then OK.



11. Configure 2H as shown below, then OK.

The screenshot displays the 'Texas Instruments bq Gas Gauge Evaluation Software' window. The title bar indicates the file path 'bq20z45R1 v1.05 - [bqEasy]'. The interface includes a menu bar (File, Window, Help), a toolbar with icons for a character, Texas Instruments logo, and various functions (SBS, Data Flash, Pro, Calibrate, bqEASY). A sidebar on the left shows a 'Fuel Gauge' level at 40%. The main window has a red header with 'REAL WORLD SIGNAL PROCESSING™' and a breadcrumb trail: '1. Setup' > '2. Configure' > '3. Calibrate' > '4. Chemistry' > '5. Cycle'. The '2. Configure' tab is active, showing a list of configuration items on the left, each with a checked checkbox: 2A. Cell Characteristics, 2B. Charge Parameters, 2C. Discharge Parameters, 2D. Reserve Capacity, 2E. Load Characteristics, 2F. Secondary Voltage Protector, and 2G. Remaining Capacity Method. Below this list is the '2H. Miscellaneous Information' section. The right pane contains the '2H. Miscellaneous Information' configuration area, which includes a character icon, a question about the 'SYSTEM_PRESENT' input, a text input for the current sense resistor value (3 milliohms), a dropdown for thermistor configuration (Ext TS1 Only), a dropdown for the number of LEDs (0), and text inputs for the Manufacturer Name (ICC) and Manufacturer Information (4452). At the bottom of the configuration area are 'Back', 'Next', and 'OK' buttons. The status bar at the bottom shows 'Communication OK.', 'DF Task Progress: 100%', 'Task Completed.', and the time '08:19:44 上午'.

11. Configure 2H as shown below, then OK.

The screenshot shows the 'Texas Instruments bq Gas Gauge Evaluation Software' interface. The main window displays the '2H. Miscellaneous Information' configuration screen. The interface includes a sidebar with buttons for 'SBS', 'Data Flash', 'Pro', 'Calibrate', and 'bqEASY'. The main area shows a list of configuration items on the left, each with a checked checkbox:

- 2A. Cell Characteristics
- 2B. Charge Parameters
- 2C. Discharge Parameters
- 2D. Reserve Capacity
- 2E. Load Characteristics
- 2F. Secondary Voltage Protector
- 2G. Remaining Capacity Method

The right pane shows the '2H. Miscellaneous Information' configuration area, which includes a character icon and the following fields:

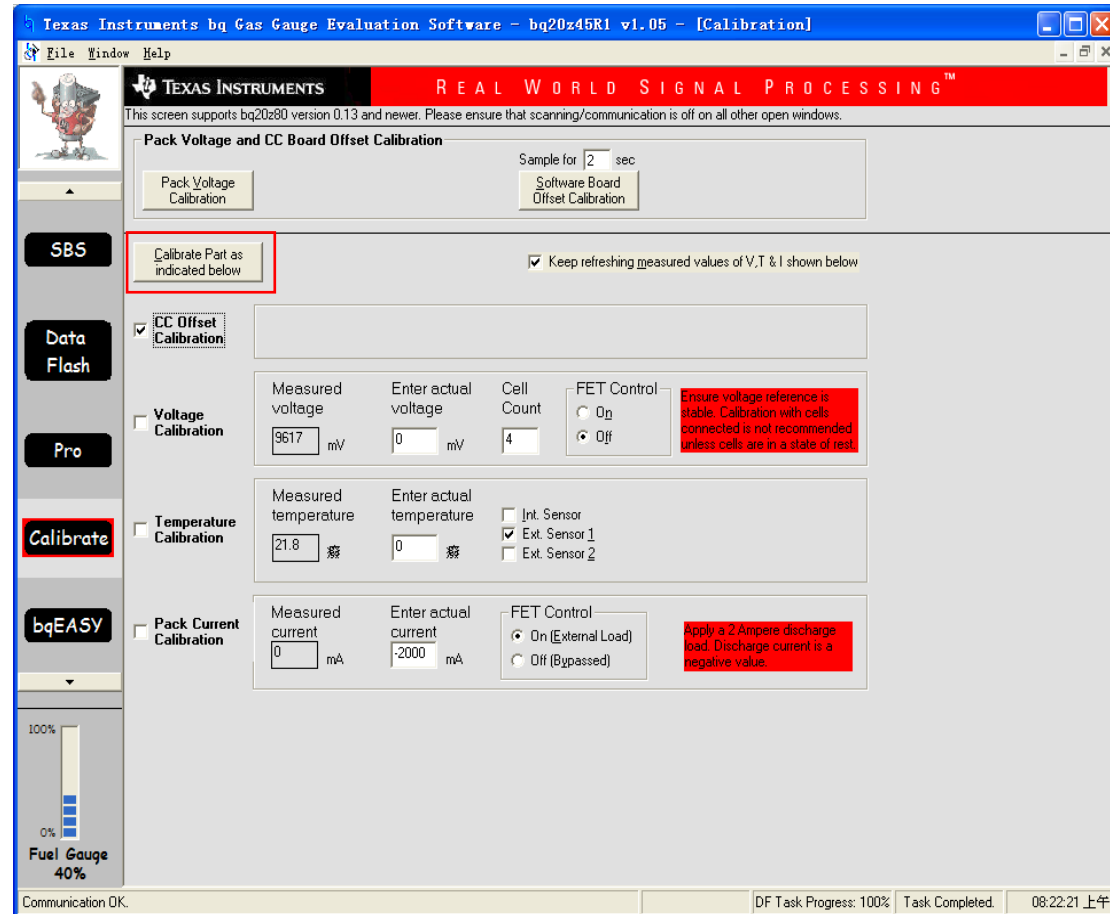
- Will this battery pack be using the SYSTEM_PRESENT input to notify the gas gauge when it is inserted into the sytem? (Yes/No radio buttons)
- What is the value of the current sense resistor? (3 milliohms)
- Select thermistor configuration: (Ext TS1 Only)
- How many LEDs, if any? (0)
- Manufacturer Name (ICC)
- Manufacturer Information (4452)

At the bottom of the configuration area are 'Back', 'Next', and 'OK' buttons. The status bar at the bottom shows 'Communication OK.', 'DF Task Progress: 100%', 'Task Completed.', and the time '08:19:44 上午'.

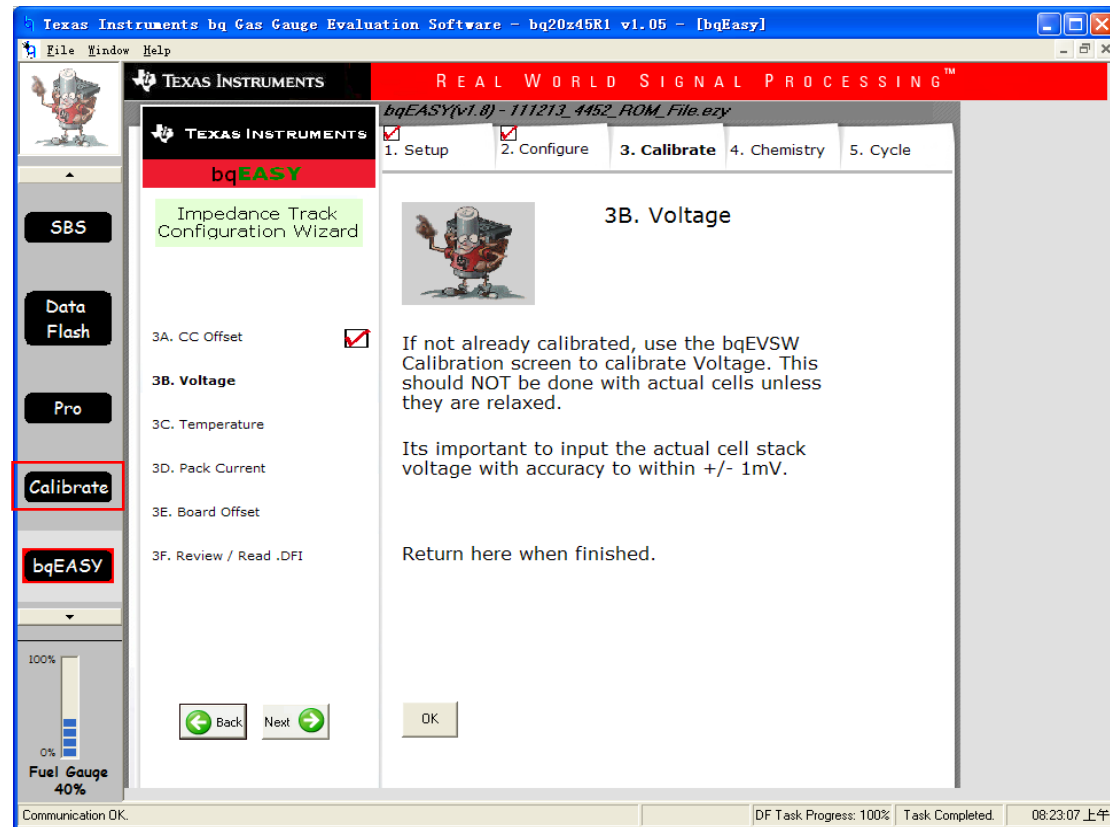
12. 3A Calibrate CC Offset. Select “Calibrate” item .After calibrate, return here then OK.



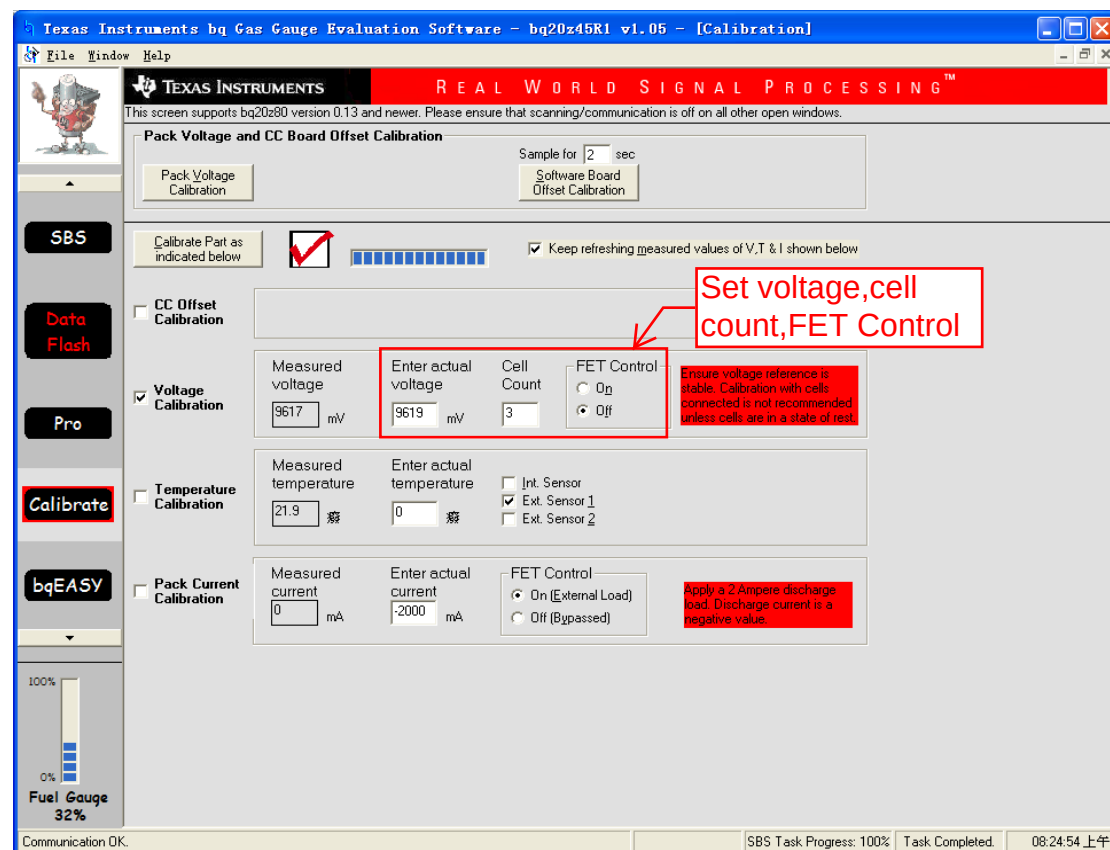
Select “CC Offset Calibration”, then click “Calibrate Part as indicated below”. After calibrate, close the calibrate window.



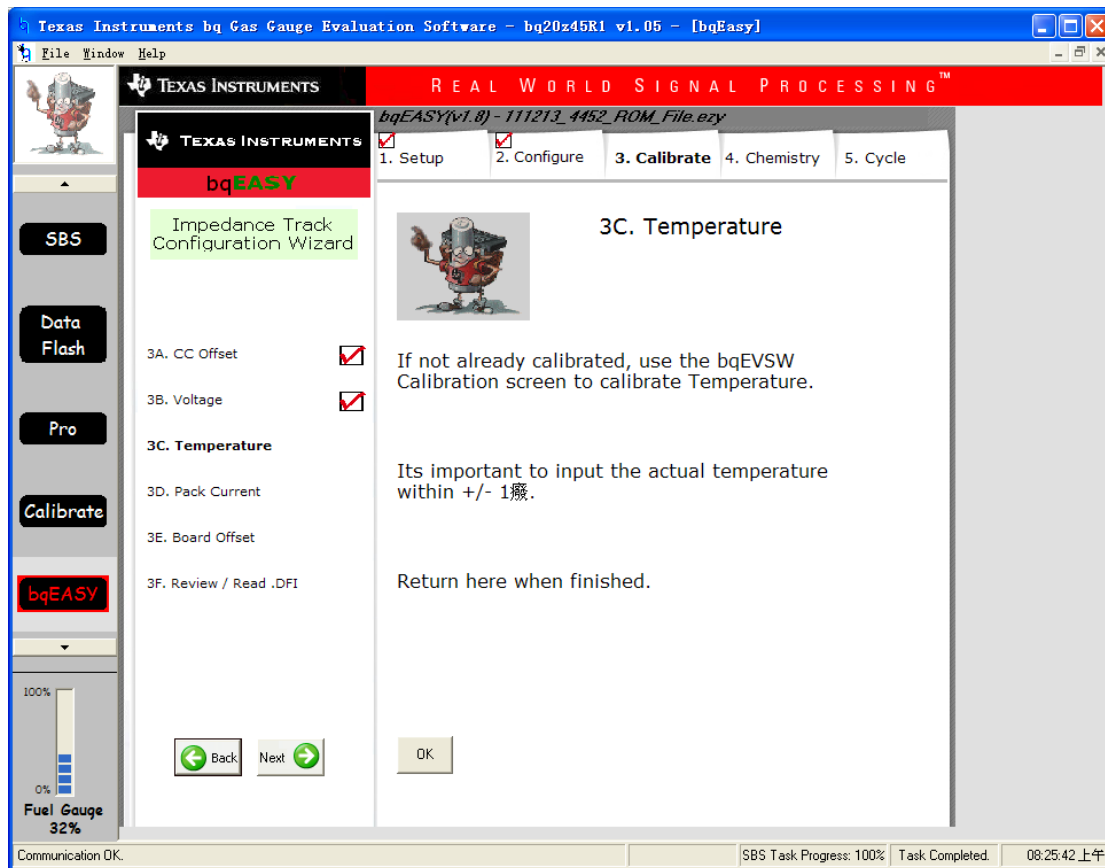
13. 3B Calibrate Voltage. Select “Calibrate” item .After calibrate, return here then OK.



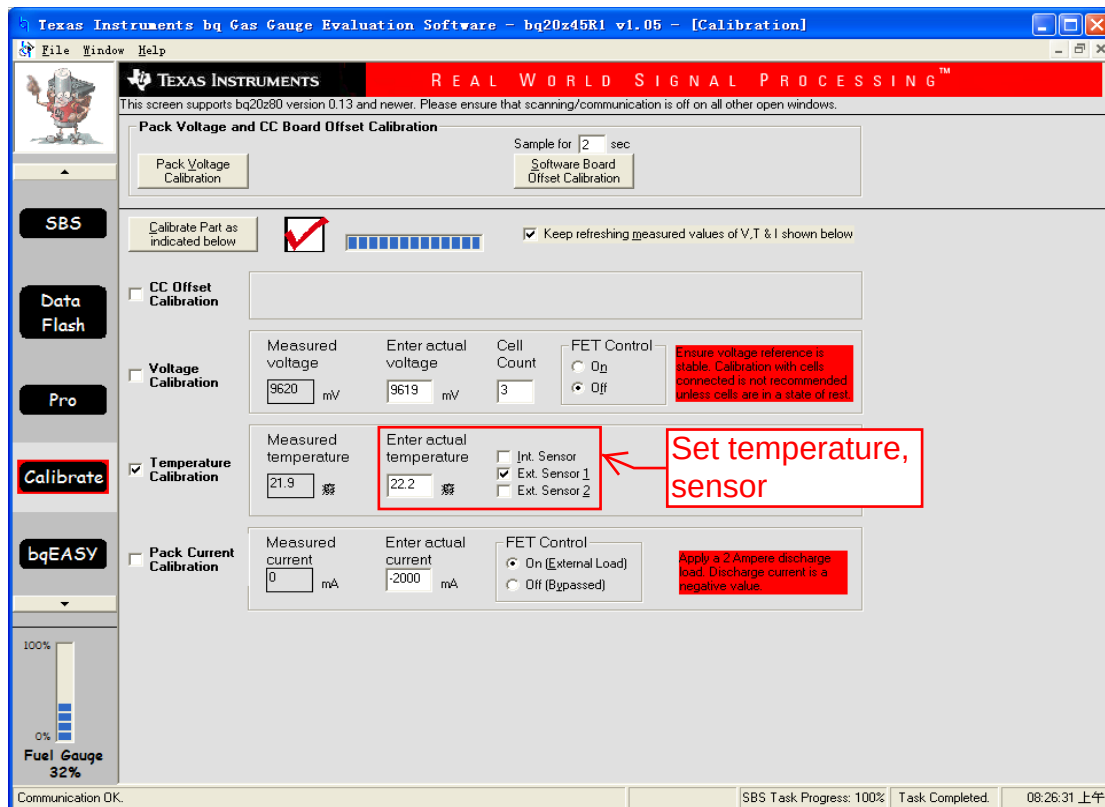
Select “Voltage Calibration”, then click “Calibrate Part as indicated below”. After calibrate, close the calibrate window.



14. 3C Calibrate Temperature. Select “Calibrate” item .After calibrate, return here then OK.



Select “Temperature Calibration”, then click “Calibrate Part as indicated below”. After calibrate, close the calibrate window.



15. 3D Calibrate Pack Current.

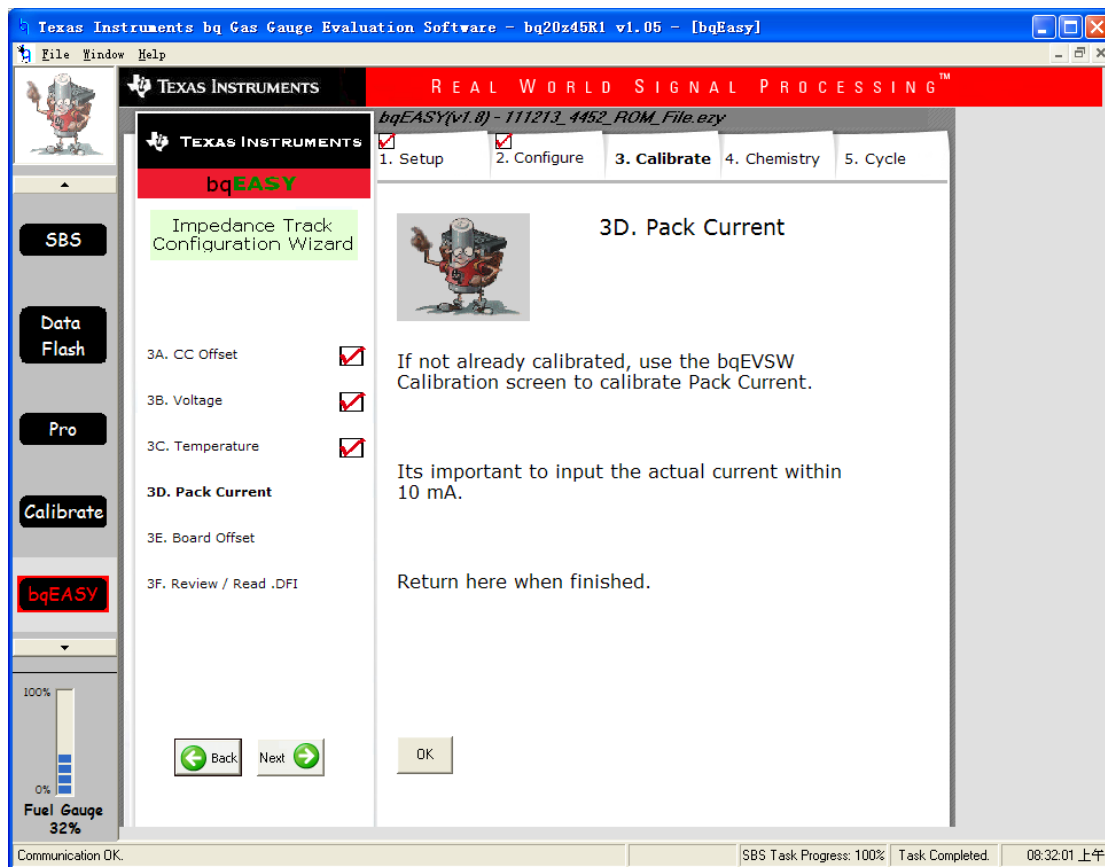
Before calibrate current, write "IT Enable" command. As shown below.

Write SMB Word		
SMB Command	00	Word (hex) 0021
		Write

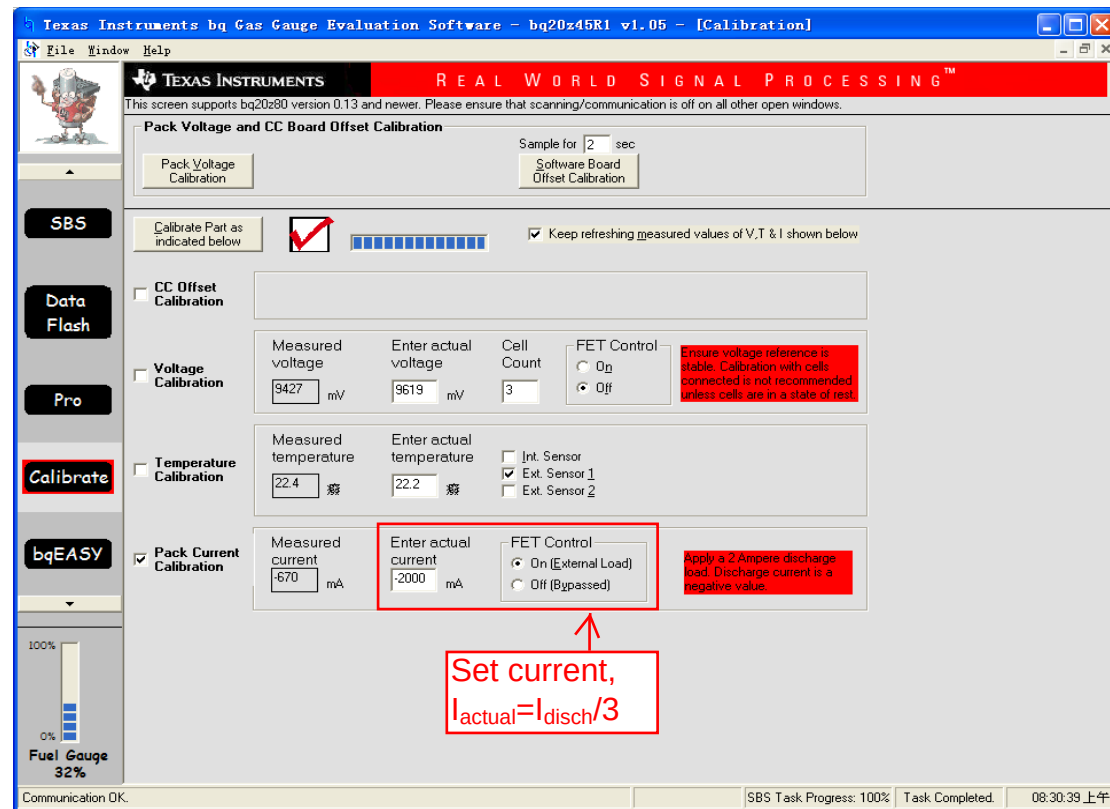
Then set "Operation Cfg B = 2C58" to open MOSFET. As shown below.

Configuration		Power
Name	Value	Unit
Registers		
Operation Cfg A	0228	-
Operation Cfg B	2C58	-

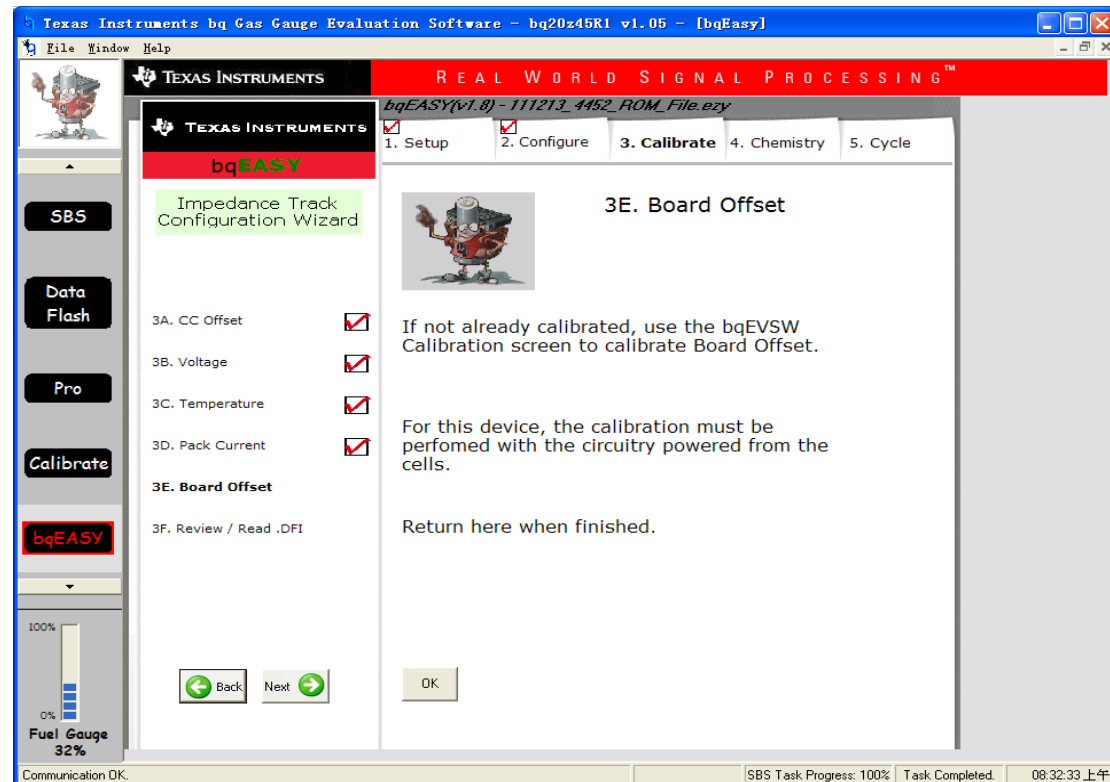
Select "Calibrate" item. After calibrate, return here then OK.



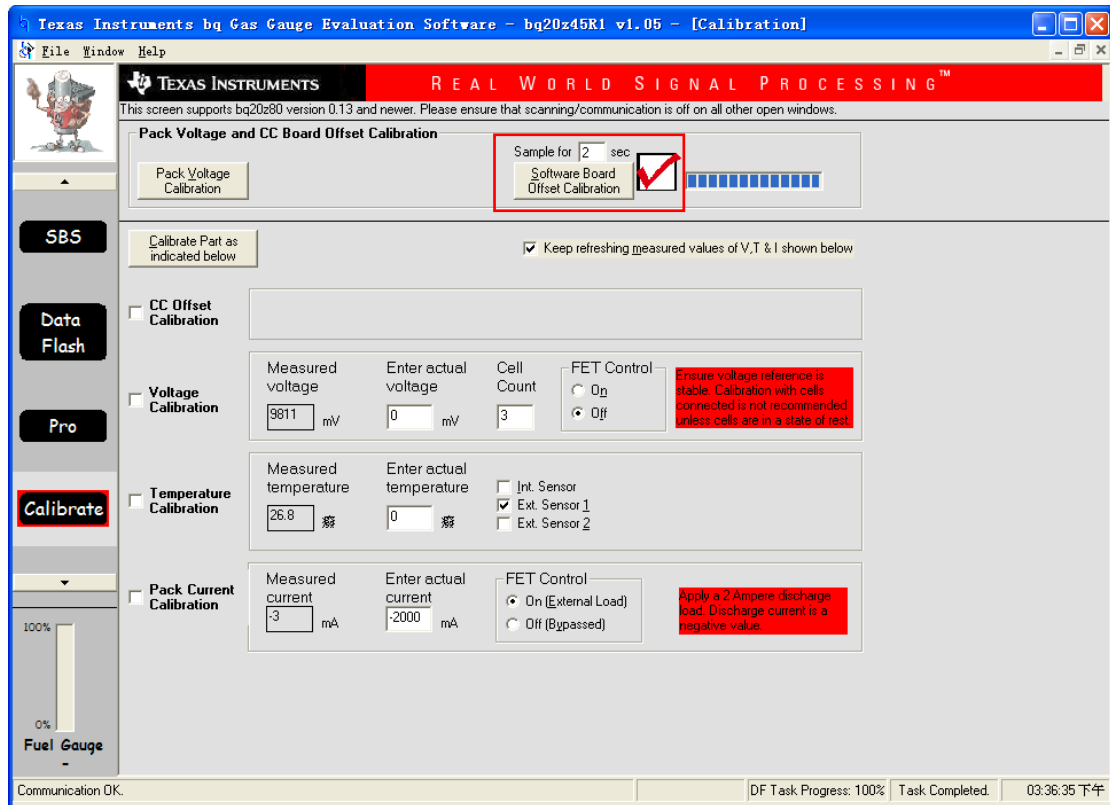
Select “Pack Current Calibration”, then click “Calibrate Part as indicated below”. After calibrate, close the calibrate window.



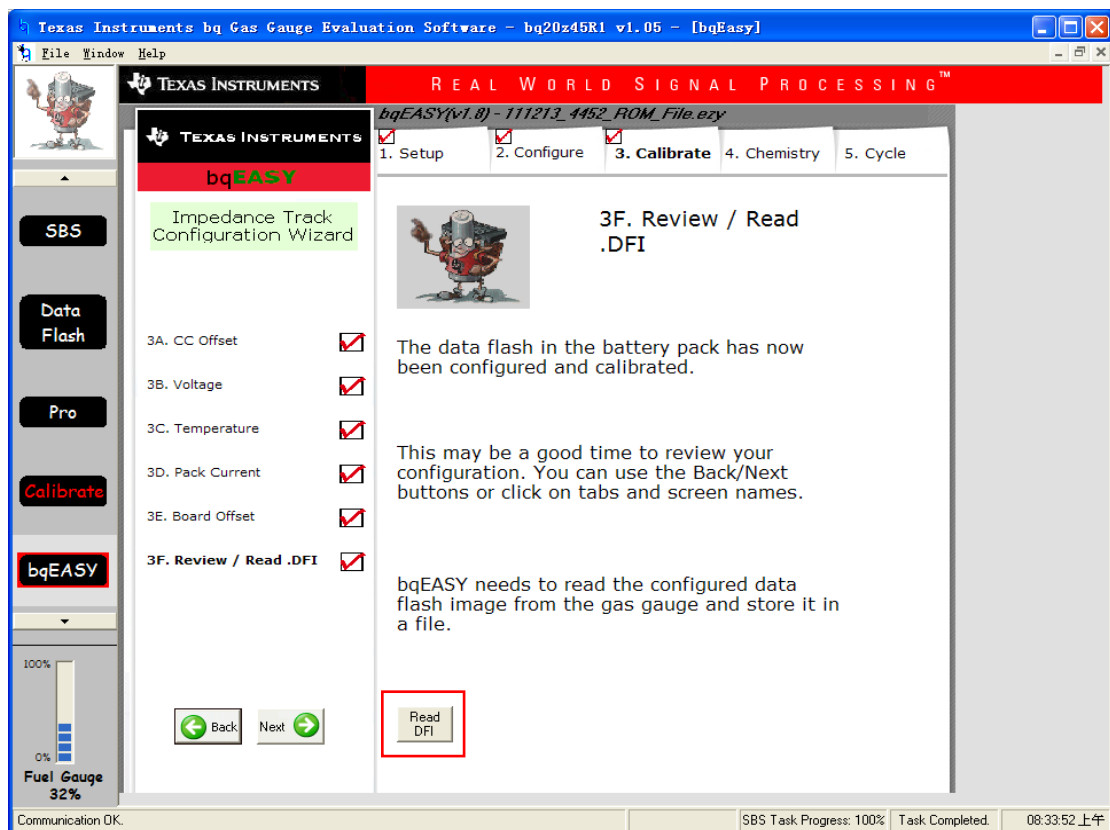
16. 3E Calibrate Board Offset. Select “Calibrate” item .After calibrate, return here then OK.



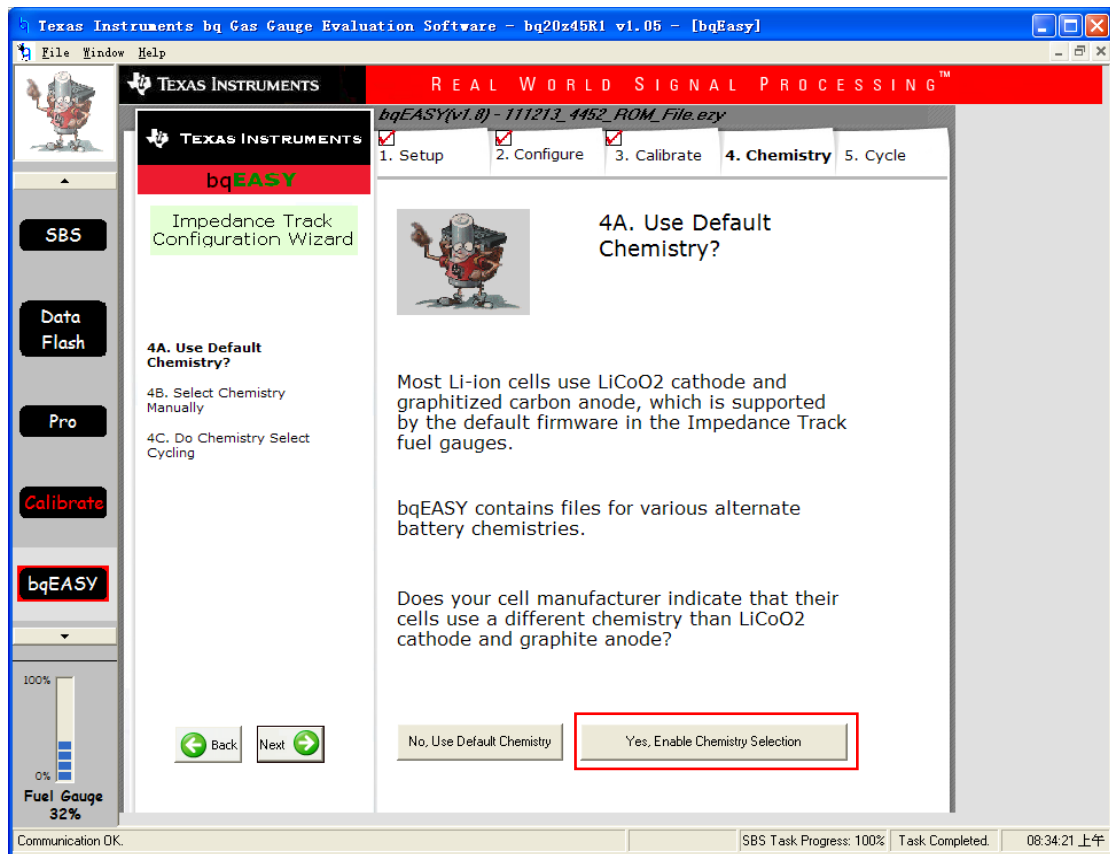
Click “Software Board Offset Calibration” button. After calibrate, close the calibrate window.



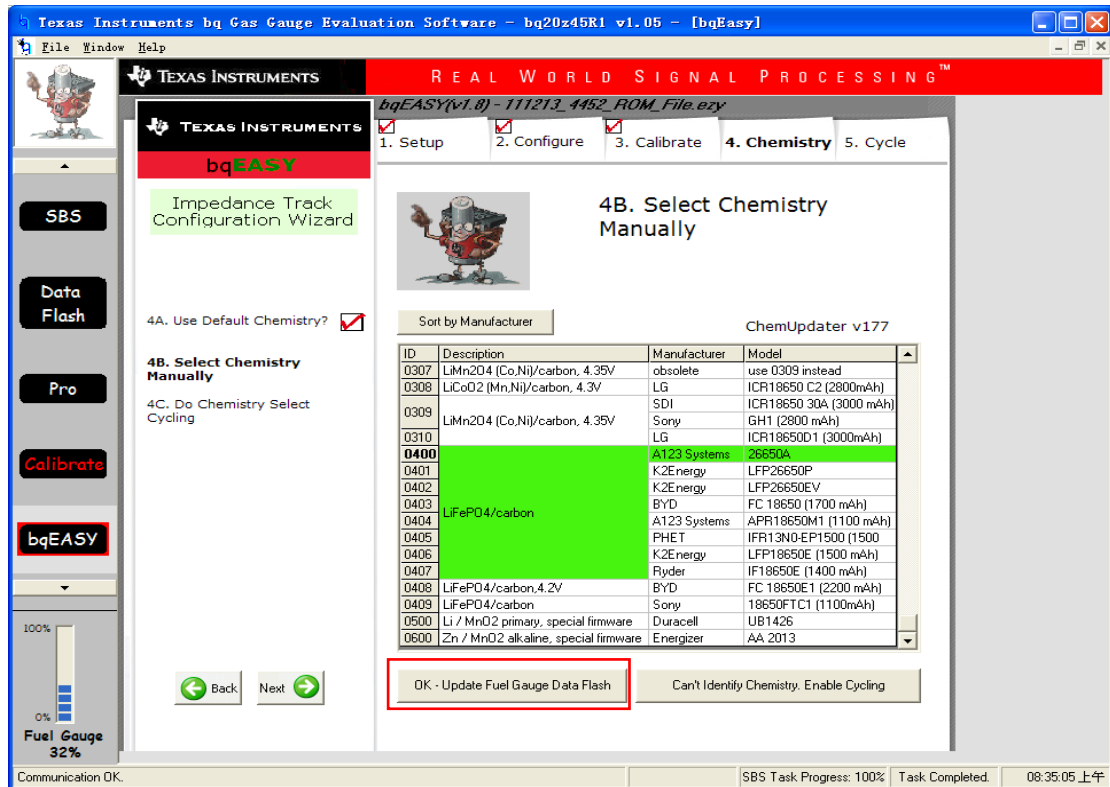
17. 3F Read DFI. Click “Read DFI” button.



18. 4A Click “Yes, Enable Chemistry Selection” button.



19. 4B Select chemistry as shown below, click “OK-Update Fuel Gauge Data Flash” button.



20. Before starting the learning cycle, please select “Data Flash” item and click “Read All” button.

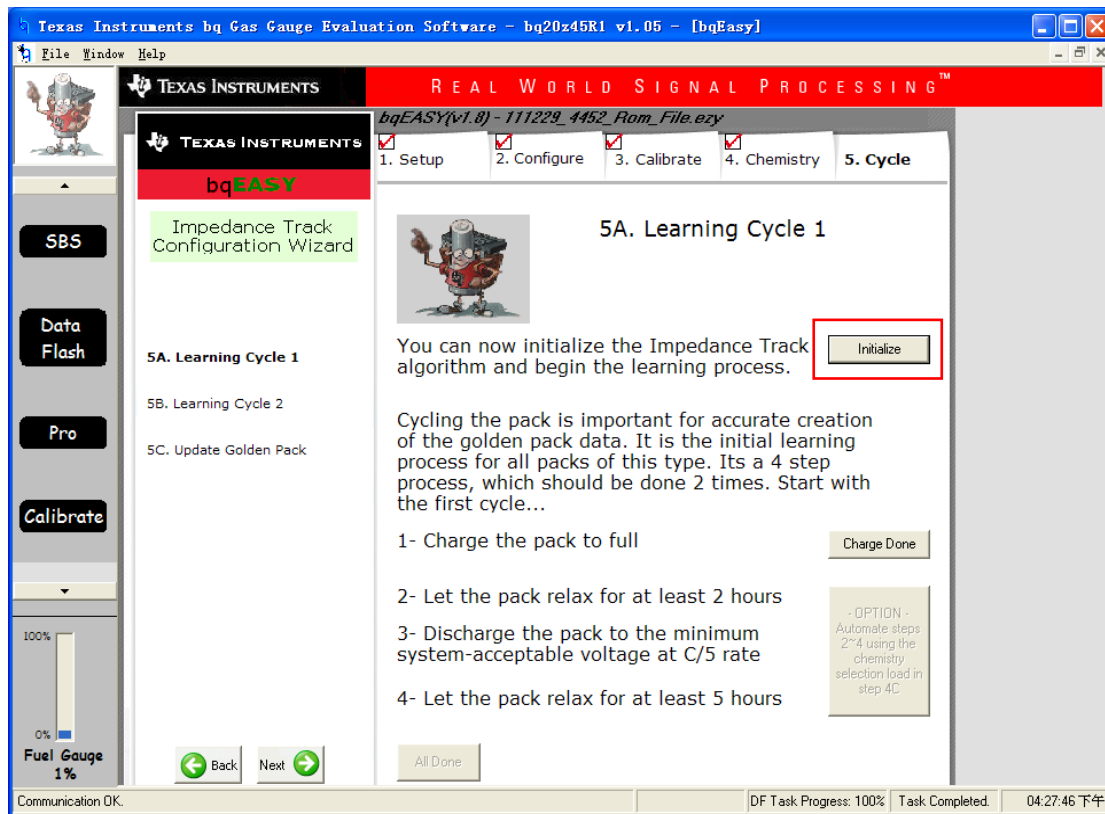
- 1). Don't set “Update Status” in “Gas Gauging” item.
- 2). “1st Level Safety”, “2nd Level Safety”, “Charge Control”, “SBS Configuration”, “Configuration”, “Power”, “Gas Gauging”, should be the same with gg file, except “Operation Cfg B = 2C58”, “Cycle Count = 0”. Input them manually.
- 3). Don't change “System Data”, “Ra Table”, “PF Status”, “Calibration”.

The screenshot shows the Texas Instruments bq Gas Gauge Evaluation Software interface. The 'Data Flash' tab is selected, and the 'Read All' button is highlighted. The interface displays a table of parameters for the bq20z45R1 device, organized into sections: Voltage, Current, Temperature, and Charge Control. The 'Fuel Gauge' section shows a 32% charge level.

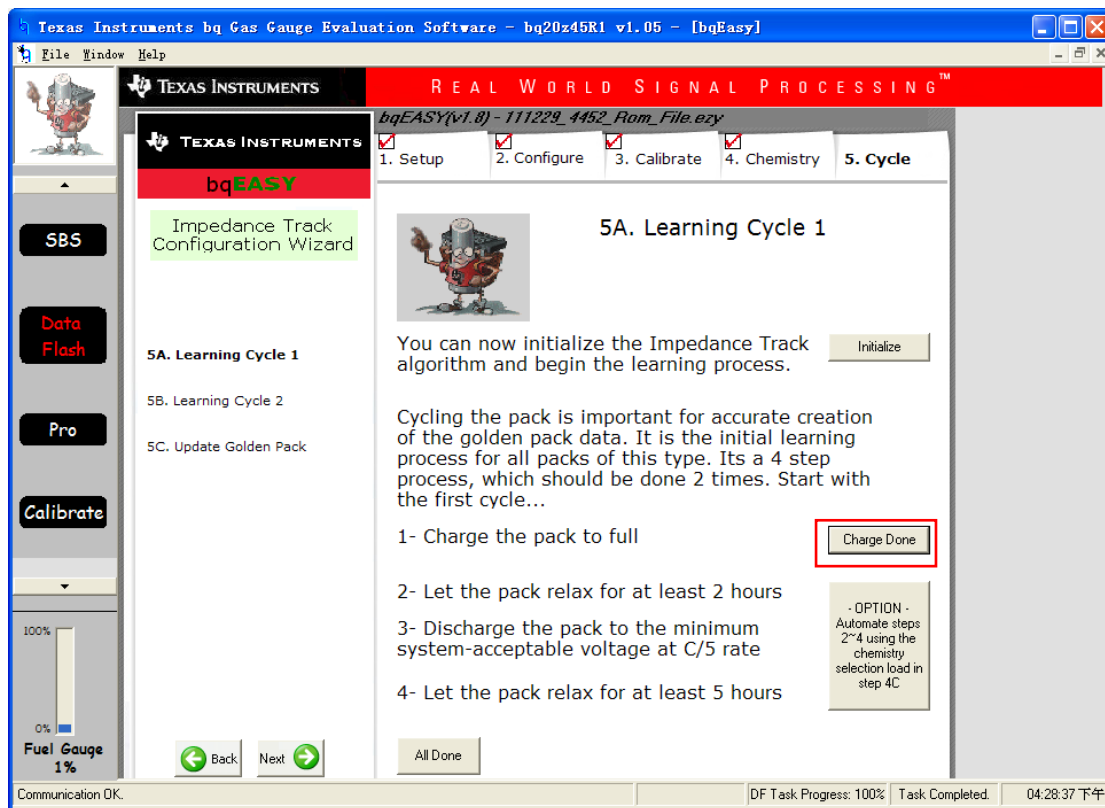
Name	Value	Unit
Voltage		
LT COV Threshold	3900	mV
LT COV Recovery	3700	mV
ST COV Threshold	3900	mV
ST COV Recovery	3700	mV
HT COV Threshold	3900	mV
HT COV Recovery	3700	mV
CUV Threshold	2250	mV
CUV Time	2	s
CUV Recovery	3000	mV
Current		
OC (1st Tier) Chg	1600	mA
OC (1st Tier) Dsg	16000	mA
OC (1st Tier) Dsg Time	2	s
Current Recovery Time	5	s
AFE OC Dsg	06	-
AFE OC Dsg Time	0A	-

Communication OK.

21. Before starting learning cycle, click “Initialize” button, then start learning cycle.



22. After charging the pack to full, click “Charge Done” button.



23. When finish learning cycle 1, click “All Done” button. Then start learning cycle 2.

