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Title: Janus Fob Battery Work Instruction				

Project Name: Janus

Authored By: Brent Johnson

Version History		
Version	Description of Change	Change Author
2.0	Initial Release	Brent Johnson

Cabinets/Neuromodulation/NPD-Neuro Project Documents/NDHF-Design History Files/NDHF1506 TEL A-N Fob/03. Design Outputs/3.04. Electrical



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1 APPENDIX A – STEPS TO PROGRAM .DFI FILE

1. Connect the Janus battery to the Texas Instruments EV2300 USB to I2C converter as shown in Figure 1.

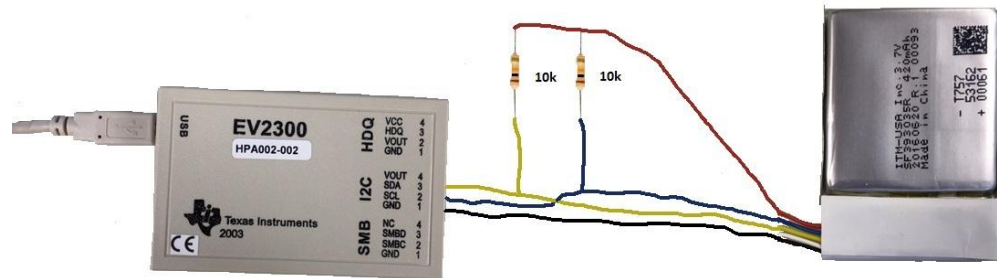


Figure 1: Janus Battery Connected to EV2300

2. Open bq Evaluation Software
3. Click on the bqEASY icon on left side of bq Evaluation Software as shown in Figure 2.



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Refresh Start Logging Stop Logging Keep Scanning Graphs...

Name	Value	Unit	Log	Scan
Control	0019	hex	✓	✓
Control Status	0019	hex	✓	✓
At Rate	0	mA	✓	✓
At Rate Time To Empty	65535	min	✓	✓
Temperature	20.0	degC	✓	✓
Voltage	4131	mV	✓	✓
Flags	0180	hex	✓	✓
NomAvailCap	405	mAh	✓	✓
Full Available Capacity	433	mAh	✓	✓
Remaining Capacity	405	mAh	✓	✓
Full charge Capacity	433	mAh	✓	✓
Average Current	0	mA	✓	✓
Average Time to Empty	65535	min	✓	✓
Average Time to Full	65535	min	✓	✓

Name	Value	Unit	Log	Scan
Standby Current	-1	mA	✓	✓
Standby Time to Empty	24300	min	✓	✓
Maximum Load Current	-45	mA	✓	✓
Max Load Time to Empty	540	min	✓	✓
Available Energy	1534	mWh	✓	✓
Average Power	0	mW	✓	✓
Time to Empty Const Power	65535	min	✓	✓
Internal Temperature	20.7	degC	✓	✓
Cycle Count	0	-	✓	✓
State of Charge	94	%	✓	✓
State of Health	100	-	✓	✓
Passed Charge	0	mAh	✓	✓
bODO	1136	-	✓	✓
Pack Configuration	0131	-	✓	✓

Flags / Status Bits

Control Status - SCANNING

SE	FAS	SS	CSV	CCA	BCA	TSM	SB
SHUTDOWN	HIBERNATE	FULLSLEEP	SLEEP	LDMD	RUP_DIS	VOK	QEN

Flags - SCANNING

OTC	OTD	RSVD	MTL	CHG_INH	XCHG	FC	CHG
OCVTAKEN	RSVD	LS_ST2	LS_ST1	SOH_LSI	SOCI	SOOF	DSB

Pack Configuration - SCANNING


RESCAP	RSVD	RSVD	RSVD	6NDSEL	IWAKE	RSNS1	RSNS0
RSVD	RFACTSTEP	SLEEP	RMFCC	SE_PU	SE_POL	SE_EN	TEMPS

100% Fuel Gauge 94%

Scan Off Device:541,Ver:2.00

Communication OK. SBS Task Progress: 100% Task Completed. 02:36:38 PM

Figure 2: bqEaSY Icon in bq Evaluation Software

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4. Click on Setup icon as shown in Figure 3.

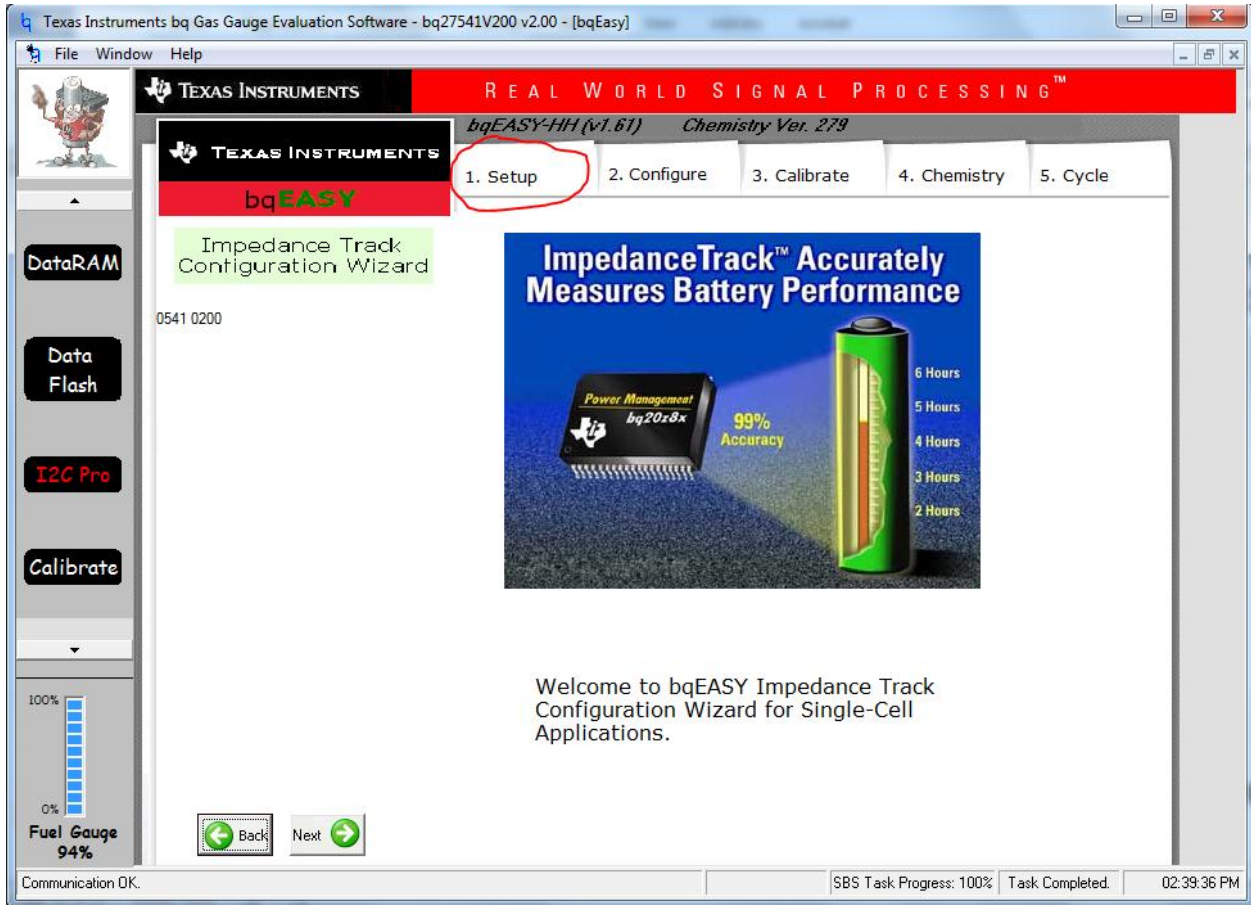


Figure 3: Setup Icon in bq Evaluation Software

5. Click on Load .DFI File as shown in Figure 4.

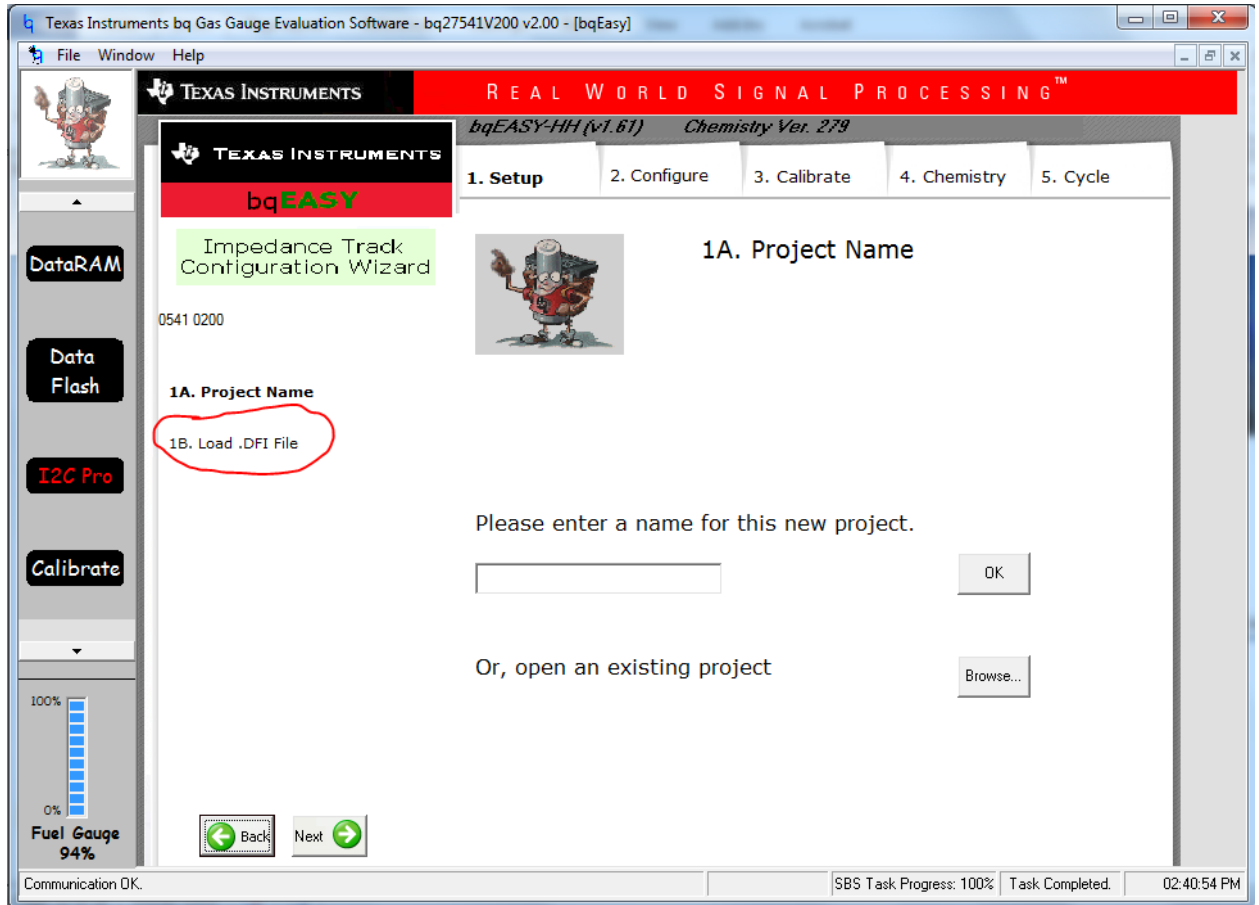


Figure 4: Load .DFI File in bq Evaluation Software

6. Select DFI manually as shown in Figure 5.

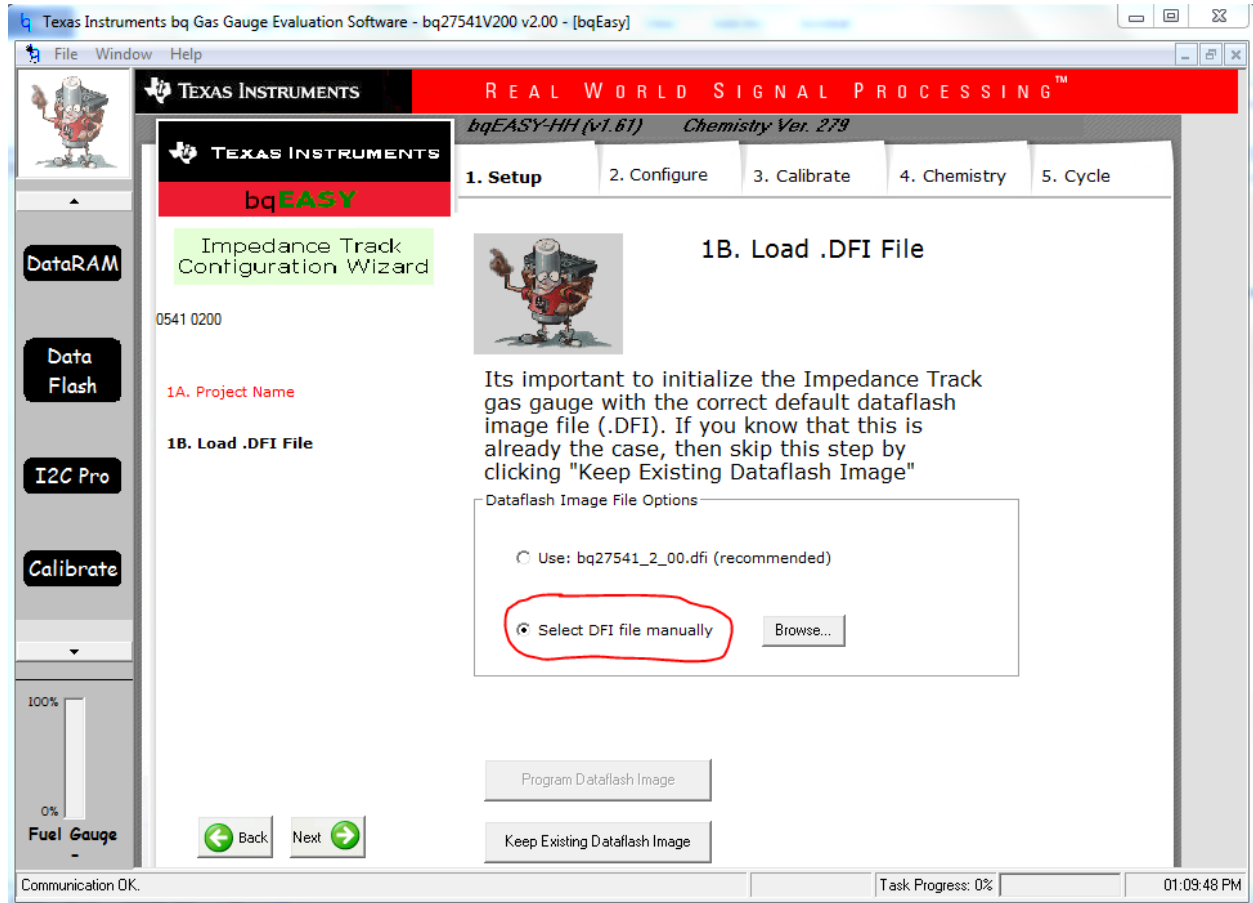


Figure 5: Select DFI file manually in bq Evaluation Software

7. Browse to the M960158A003.dfi file that was saved in the M960158A003.zip.

8. Click the Program Dataflash Image button as shown in Figure 6.

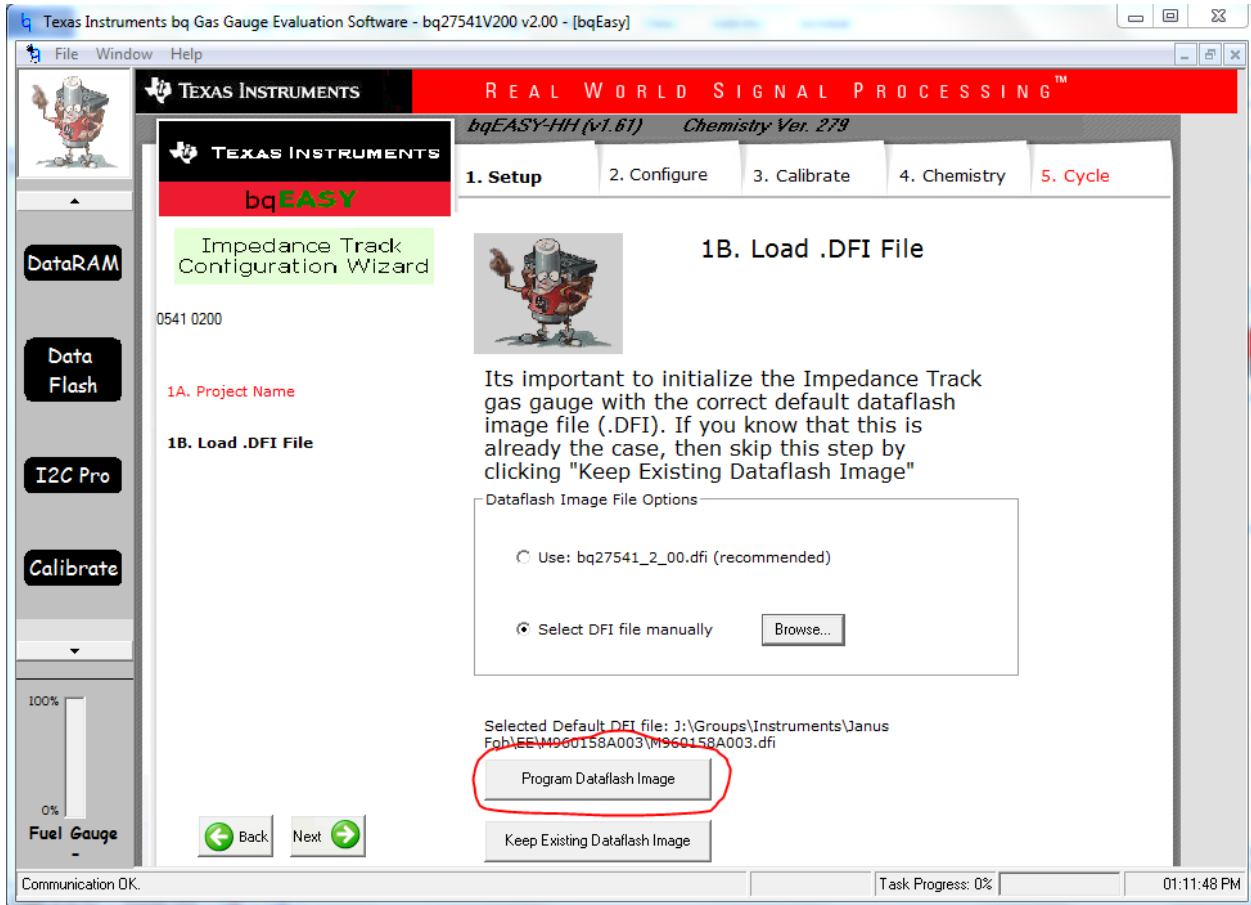


Figure 6: Program Dataflash Image in bq Evaluation Software

- Once the gauge is programmed, click the DataRAM icon on the left side of the bq Evaluation Software as shown in Figure 7.

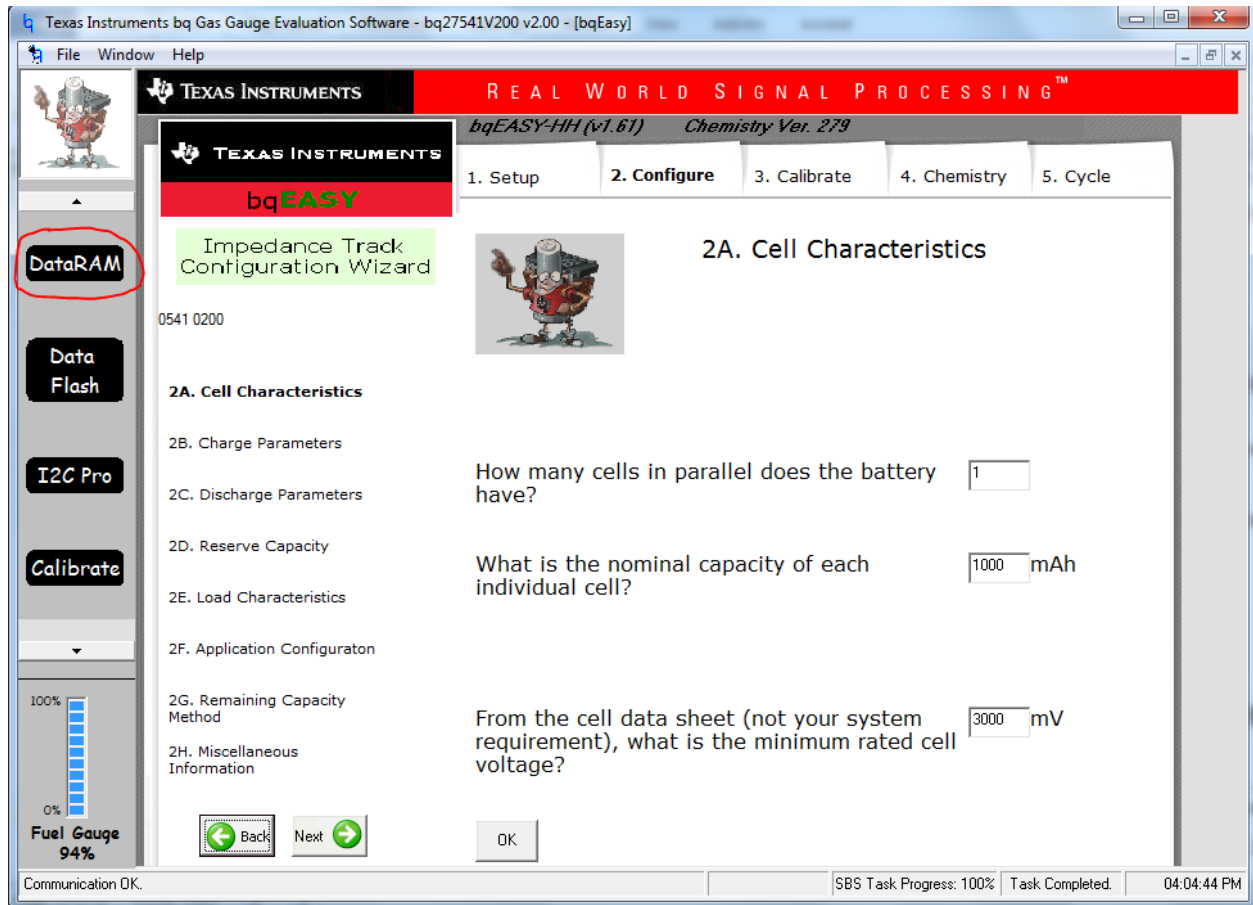


Figure 7: DataRAM Icon in bq Evaluation Software



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- 10. Enable the Impedance Track Algorithm. Click in the Control field, as shown Figure 8. It will let you type in to it. Type 0021. Press the Enter key on keyboard.

The screenshot shows the Texas Instruments bq Gas Gauge Evaluation Software interface. The 'Control' field in the main data table is highlighted with a red circle and contains the value '0021'. The interface includes a sidebar with 'DataRAM', 'Data Flash', 'I2C Pro', and 'Calibrate' buttons. A 'Fuel Gauge' indicator shows 31% charge. The 'Flags / Status Bits' section is expanded, showing various status bits like SE, FAS, SS, CSV, CCA, BCA, TSM, @B, SHUTDWN, HIBERNATE, FULLSLEEP, SLEEP, LDMD, RUP_DIS, VOK, QEN, etc.

Name	Value	Unit	Log	Scan
Control	0021	hex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Control Status	001C	hex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At Rate	0	mA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At Rate Time To Empty	65535	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Temperature	19.7	degC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage	3760	mV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Flags	0100	hex	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
NomAvailCap	134	mAh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Full Available Capacity	433	mAh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Remaining Capacity	134	mAh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Full charge Capacity	433	mAh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Average Current	0	mA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Average Time to Empty	65535	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Average Time to Full	65535	min	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Figure 8: Impedance Track Control Register Write in bq Evaluation Software



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- 11. Transition to SEALED state. Click in the Control field, as shown Figure 8. It will let you type in to it. Type 0020. Press the Enter key on keyboard.

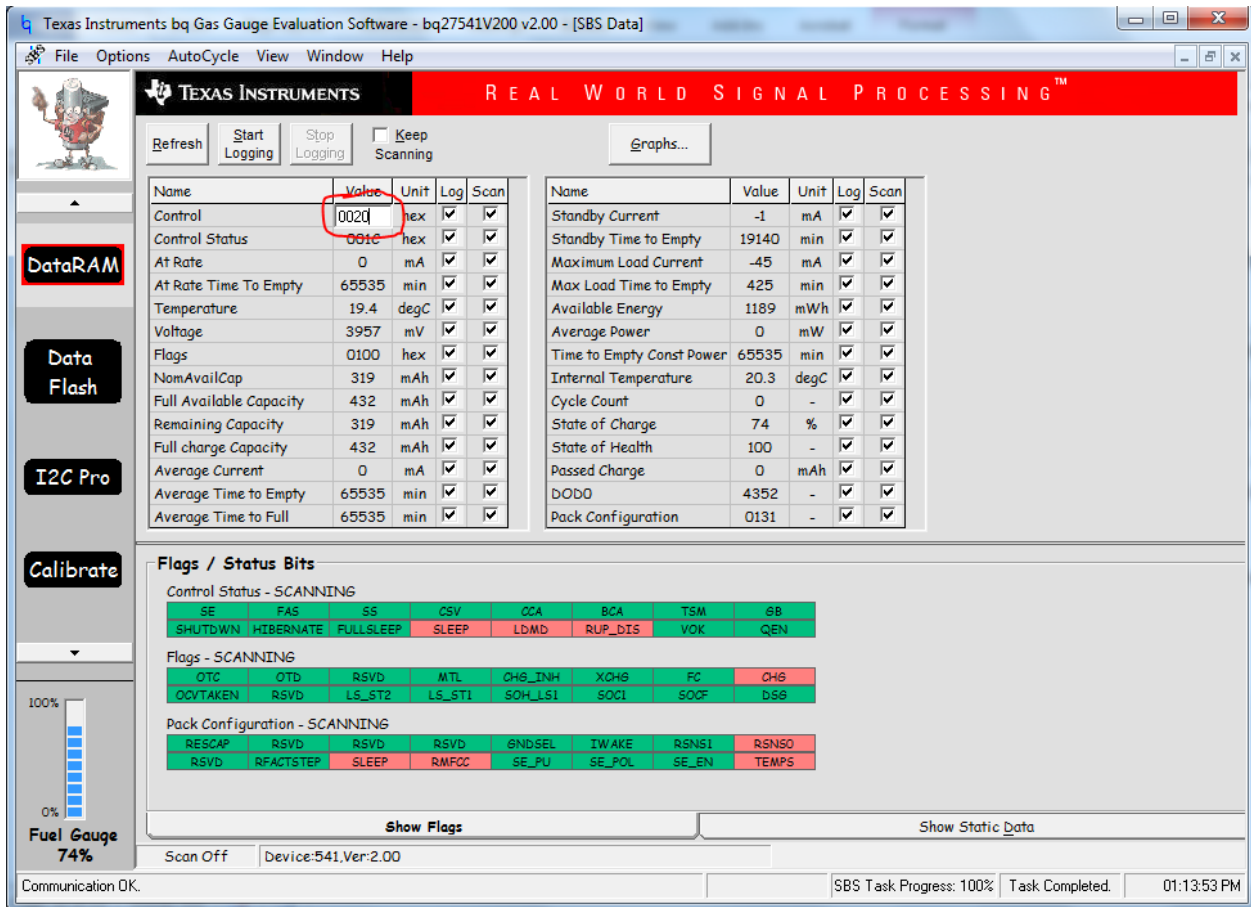


Figure 9: Transition to SEALED state Control Register Write in bq Evaluation Software

12. Click the Refresh button as shown in Figure 10.

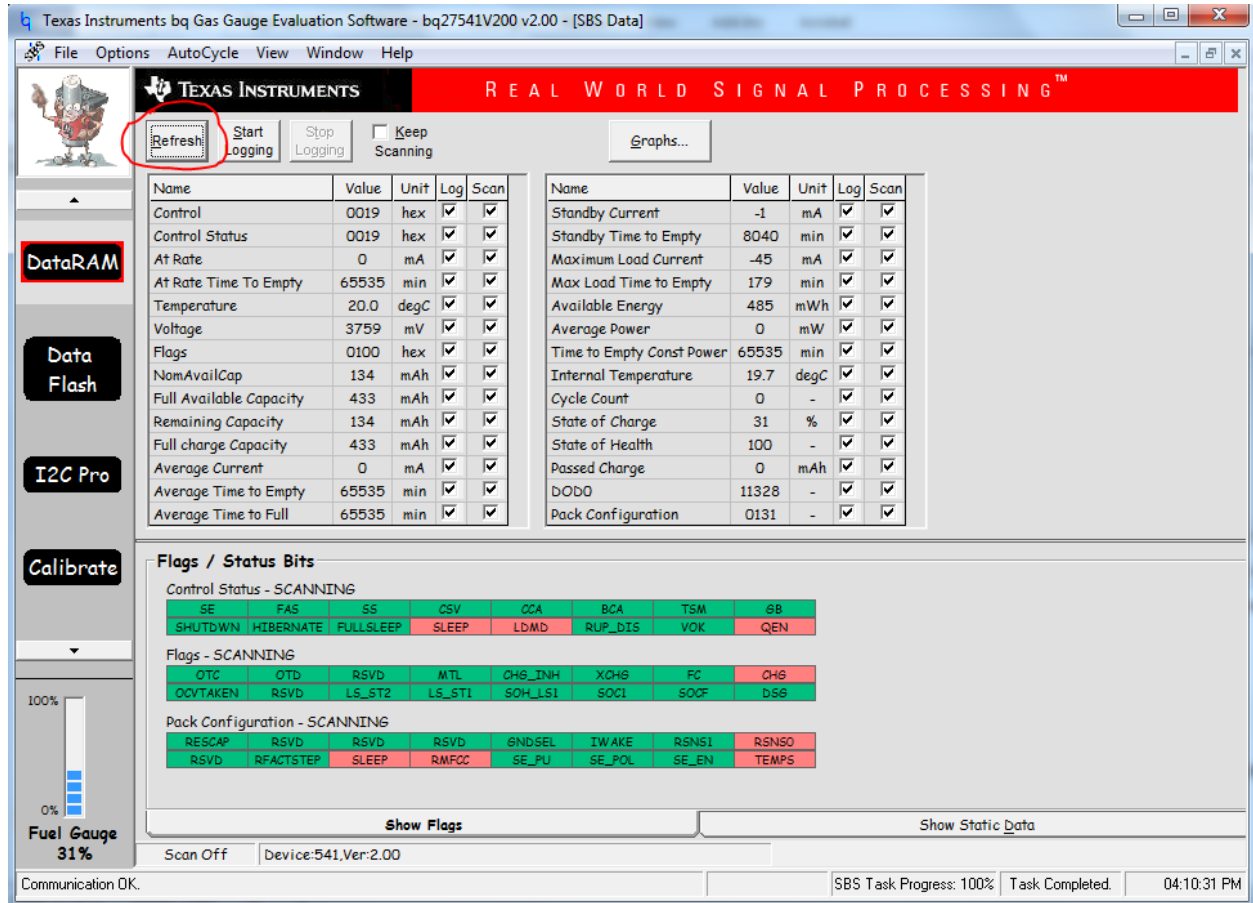


Figure 10: Refresh in bq Evaluation Software

13. Verify that the QEN bit, FAS bit and SS bit in the Control Status register is set (red) as shown in Figure 11.

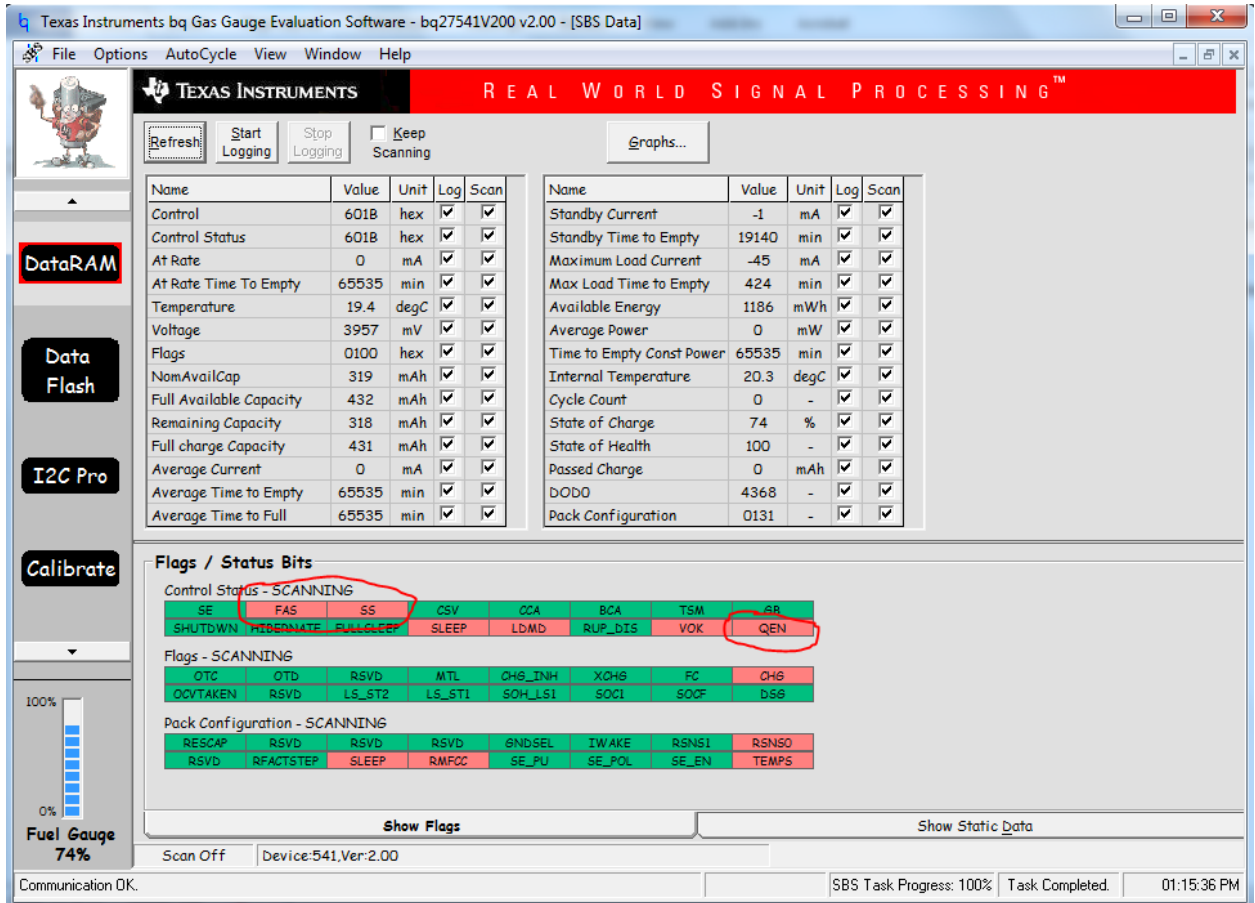


Figure 11: QEN, FAS and SS Bits Set in bq Evaluation Software



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- 14. Enable Hibernate Mode. Click in the Control field, as shown Figure 8. It will let you type in to it. Type 0011. Press the Enter key on keyboard.



Figure 12: Hibernate Mode Control Register Write in bq Evaluation Software

15. Verify that the HIBERNATE in the Control Status register is set (red) as shown in Figure 11.

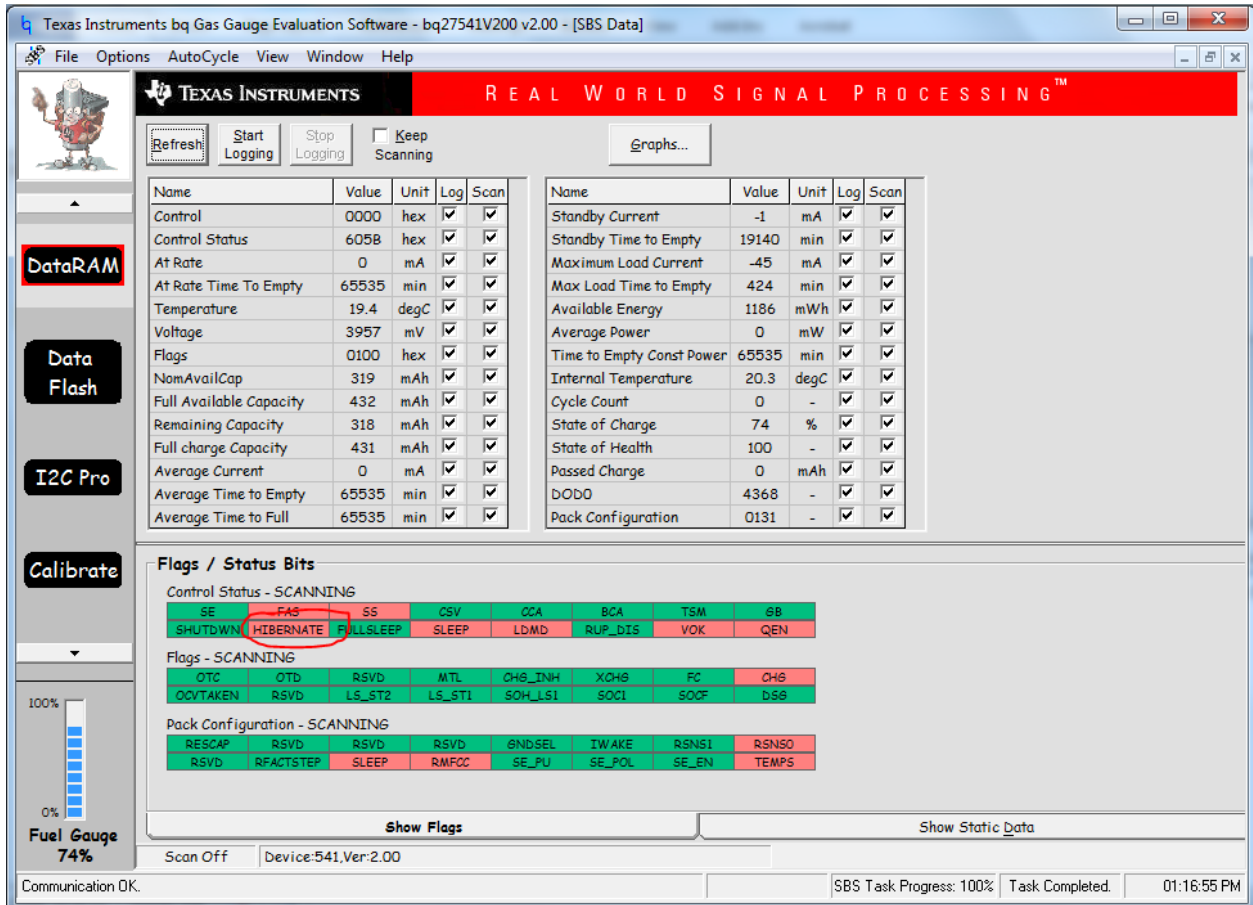


Figure 13: QEN Bit Set in bq Evaluation Software

16. Remove the Janus battery from the Texas Instruments EV2300 USB to I2C converter.