

bqWizard™ Application Software

Texas Instruments bqWizard™ software is the evaluation and development platform for the line of PowerLAN™ Master Gateway Battery Management Controllers. Battery pack design engineers can explore the capability of the Battery Management Controller through its convenient and easy-to-use graphical interface.

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1 Overview and Installation

1.1 Overview

The bqWizard™ application software allows the user to evaluate the PowerLAN™ master gateway battery management controller (bq78PL114, bq78PL114S12, and bq78PL116) and the PowerLAN™ dual-cell monitoring device (bq76PL102). These devices combine to make a high-cell-count battery-management system (BMS). The PowerLAN™ BMS monitors and controls the battery pack and communicates over an SMBus port.

The bqWizard™ software is a comprehensive tool for prototype evaluation and development in a laboratory environment. Together with USB/SMBus adapter hardware, it provides full exposure of the capabilities of the PowerLAN™ devices. Users can conduct battery and system performance tests and then plot and/or log an array of test data to a file.

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The outcome of a successful prototype development project is the .dat file (aka *golden flash file*) used to clone packs in production. The bqWizard™ software saves all of the user's configuration settings in this encrypted file.

Loading of the .dat file into each production unit and other production related tasks are best accomplished with a user-developed software tool that relies on a Windows™ .NET application programming interface (API) developed by Texas Instruments.

1.2 System Requirements

- A Pentium™ III class or better processor at 1.6 GHz
- Microsoft™ Windows 2000, XP or later (32-bit OS)
- 512 MB or more RAM
- 15 MB of free hard-disk space
- CD-ROM drive
- Adobe™ Reader™ 5.0 or later
- A color monitor with 1024 × 768 or better resolution

1.3 Installing bqWizard™ Software

Obtain the latest version of the bqWizard™ software from the tools section of the device product folder, or search from www.ti.com. Extract the files from the archive to a temporary directory.

Locate the **bqWizard Setup.exe**, and double-click to execute. A series of screens follow.

1. Welcome Screen – (Click *Next*.)
2. License Agreement – (Read agreement and click *I Agree*.)
3. Installation Location – (Choose a location, or leave default selection and click *Install*.)
4. Completed Screen – (Click *Finish* to run application or uncheck *Run* to exit.)

1.4 USB-to-SMBus Adapter

The bqWizard™ version 3.0.16+ only supports the TI USB-TO-GPIO interface adapter. Although it may still be possible to use the MCC iPort/USB, support is no longer available for this device.

1.4.1 Texas Instruments USB-TO-GPIO Adapter

The USB-TO-GPIO adapter is an EVM that is available through the TI Web site or other distribution channels. The orderable part number is USB-TO-GPIO.

The default firmware must be changed to operate with the bqWizard™ software. Use the USB-TO-GPIO Firmware Uploader tool located on the TI Web site <http://focus.ti.com/docs/toolsw/folders/print/usb2gpio-loader-sw.html> to change firmware.

1. Connect the USB-TO-GPIO EVM to the USB port of the PC with USB-TO-GPIO Firmware Loader.exe installed.
2. The green LED on the side of the EVM illuminates.
3. Open USB-TO-GPIO Firmware Loader.exe.
4. Click the Find Device button to have the utility connect to the EVM. The default version is 1.0.10, and the Group Owner is DigitalPower.
5. Click the Backup button to back up the copy of the firmware resident on the EVM.
6. Click the Load Image button to load the image file to memory for downloading to the EVM.
7. Click the Update button to load the file to the EVM.
8. **Important:** Do not disconnect power to the EVM during the download process. If the process fails, go back to step 7 until successful.
9. Cycle power to the EVM by removing the USB cable for three seconds and then re-inserting. With the EVM unplugged, the previous program information will be removed from the GUI. Plugging it back in causes the new EVM programming information to appear: version 2.0.19 and BMS.
10. The USB-TO-GPIO EVM is now ready for use with BMS-HCE PowerLAN™ devices.

NOTE: When using the TI USB-TO-GPIO interface, it must have compatible firmware installed. See the bqWizard™ installation directory for information. Once the interface firmware is updated, the interface no longer responds to the API for the original interface firmware.

1.4.2 USB Dongle Configuration Utility Software

The previous bqWizard™ version can operate using two distinct USB adapters; however, the latest version only fully supports the USB-TO-GPIO interface adapter. The software defaults to using this adapter. If you are using the MCC iPort/USB, it is recommended that you use the USB-TO-GPIO. To continue using the MCC iPort/USB without support, you must configure the software to use this device. A simple utility program is located in the root directory of the bqWizard™ installation called USBDongleConfiguration.exe. Connect the USB adapter to the PC and run this program. When the dialog box appears, select the USB adapter being used and then click the SET button. The adapter configuration is then programmed correctly.

1.5 Startup

The bqWizard™ software is intended to operate with a USB/SMBus adapter connected to the PC and a separately powered PowerLAN™ master gateway controller connected to the USB/SMBus adapter. Therefore, be sure to have a PowerLAN™ master gateway controller (bq78PL11X) powered ON and connected to the PC through the USB-TO-GPIO adapter before starting the bqWizard™ program. Allow approximately ten seconds to elapse between the power up of the PowerLAN™ master gateway controller and the start of the bqWizard™ program.

Recent versions of the bqWizard™ software (2.5.18 and above) include a demonstration mode. This mode allows operation of the bqWizard™ software without a PowerLAN™ master gateway controller connected. Because this is for demonstration purposes only, it has reduced functionality. For instance, polling of a static set of measurements is possible, but changing parameters cannot be updated. Accessing the bqWizard™ demonstration mode can be done by using the Run command in the Windows Start menu. Type bqWizard/demo, and press the Enter key.

Depending on the firmware version installed in the PowerLAN™ master gateway controller, either three-series eight-series cells show. Packs that are not configured in firmware for either of these quantities cause the bqWizard™ software to display *Zero Cells Found*.

The bqWizard™ software must be connected to the pack and download information from the pack. Some data, like cell voltage and temperature, may not appear correctly initially. In the case of the temperature, calibration is required for the first time connection. In the case of cell voltage, the calibration information from cell voltages above cell four may need to be transferred via a Relearn/Initialize command. See the calibration section for more details.

If a communication error occurs, use the Connect to Pack Command (F2) to retry the communication link.

If zero cells are found, try loading the correct .tmap configuration file to correctly set the number of series cells.

1.6 Uninstalling bqWizard™ Software

To uninstall the bqWizard™ software and all of its components, simply click Start >> (All) Programs >> Texas Instruments >> bqWizard 3 >> Uninstall.

1.7 Operation Based on Firmware Load

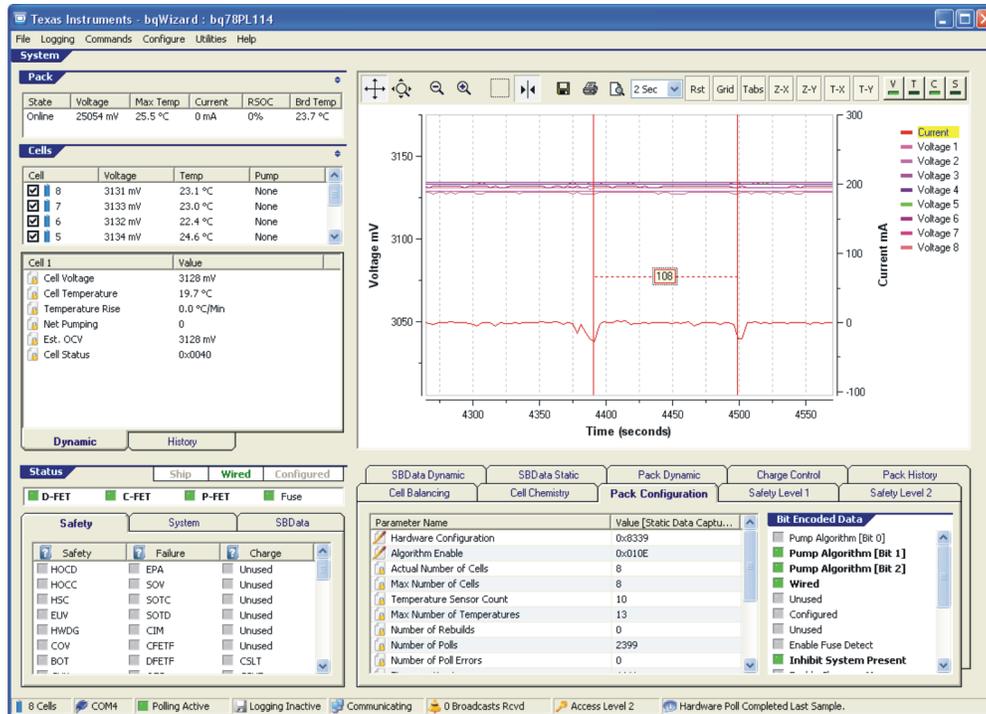
The bqWizard™ software operates differently based on the firmware loaded in the PowerLAN™ master gateway controller with which it is communicating. These differences are noted throughout the user's guide.

2 Application Layout

2.1 Main View

The main view of the bqWizard™ screen (following illustration) is sectioned in four views with a status bar on the bottom.

1. Dynamic View
2. System Status View
3. Plot View
4. Parameters (Tabs) View



2.2 Dynamic View

The dynamic view located in the upper left quadrant displays dynamic data (when polling) for the **Pack** as a whole as well as each **Cell** in the system. See the following Pack and Cells sections for detailed information.

2.2.1 Pack

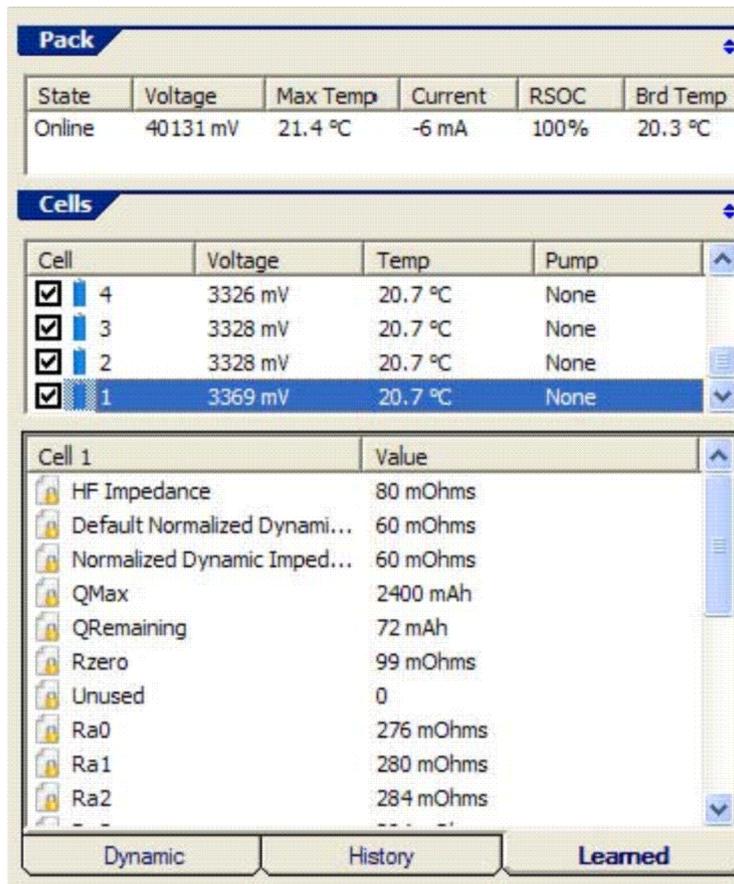
The Pack panel displays the most common properties of the pack in this section.

State	Voltage	Max Temp	Current	RSOC	Brd Temp
Online	27985 mV	304.2 K	-3 mA	100%	301.6 K

2.2.2 Cells

The Cells panel displays the most common properties of each cell in the list view and detailed information: dynamic, historical, and learned, as shown in the following illustration. The Learned tab is only shown with firmware 5000 and 6000.

The panel can be expanded to see all cells at once by toggling the TABS button in the Plot view.



2.3 Status View

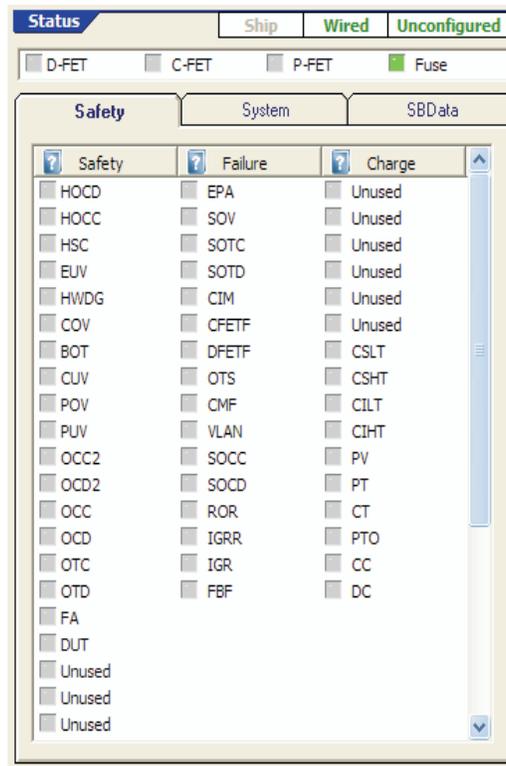
The Status view located on the lower left quadrant displays all of the systems status flags and events. The top portion displays three MOSFET indicators (Discharge FET, Charge FET, Precharge FET) and a FUSE indicator. The MOSFET indicators are either green for ON or gray for OFF. The FUSE indicator is green for OK or red for activated.

The following is a tabbed view of the status bits in the system.

Device	Tab1	Tab2	Tab3
BQ78PL114	Safety Flags	System Flags	SBDData Flags
BQ78PL114S12	Safety Flags	SBDData Flags	
BQ78PL116	Safety Status	SBDData Flags	

The column headers that display a help icon can be clicked to display the full name of the acronym displayed in the list view. The indicators in this section show gray for inactive condition and red for active condition. Because most status bits have a dwell-time criterion, a third indicator color, yellow, shows that the condition is present but not past the dwell time.

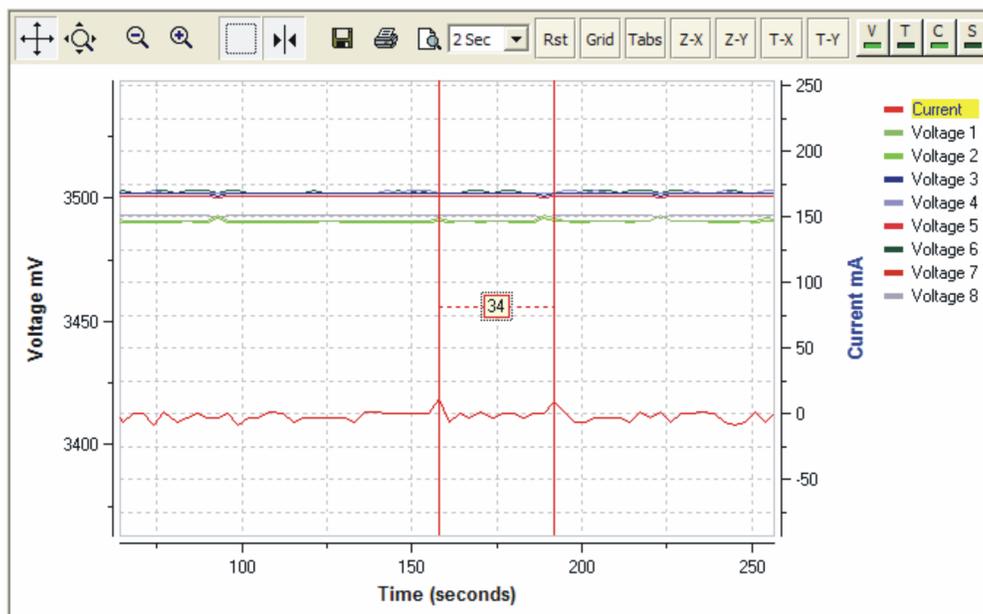
The Configured tab is shown only for the PowerLAN™ master gateway controller bq78PL114 with firmware 4452.



2.4 Plot View

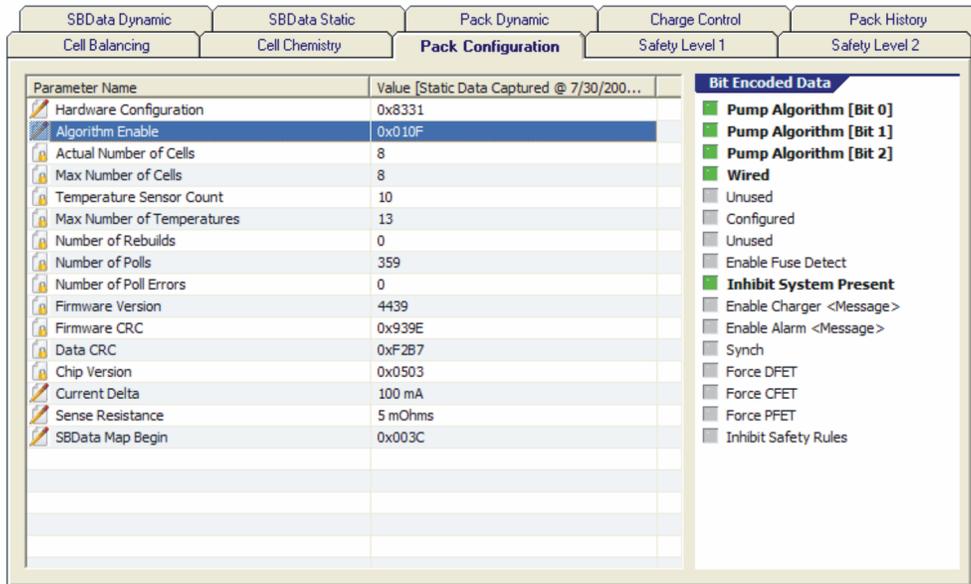
The Plot view located on the upper right quadrant displays graphical trend data. This highly configurable feature allows for plotting Pack and Cell data on multiple axes simultaneously with the ability to Save, Print, Zoom, and much more.

Most Plot window features are intuitive to the user familiar with similar type displays. Positioning a mouse over some icons and right-clicking on certain plot features reveal added functionality and configurability of the display.



2.5 Parameters View

The Parameters view located on the lower right quadrant displays a categorized view (via tabs) of all the parameters associated with the hardware.



Parameter Name	Value [Static Data Captured @ 7/30/200...]	Bit Encoded Data
Hardware Configuration	0x8331	<input checked="" type="checkbox"/> Pump Algorithm [Bit 0]
Algorithm Enable	0x010F	<input checked="" type="checkbox"/> Pump Algorithm [Bit 1]
Actual Number of Cells	8	<input checked="" type="checkbox"/> Pump Algorithm [Bit 2]
Max Number of Cells	8	<input checked="" type="checkbox"/> Wired
Temperature Sensor Count	10	<input type="checkbox"/> Unused
Max Number of Temperatures	13	<input type="checkbox"/> Configured
Number of Rebuilds	0	<input type="checkbox"/> Unused
Number of Polls	359	<input type="checkbox"/> Enable Fuse Detect
Number of Poll Errors	0	<input checked="" type="checkbox"/> Inhibit System Present
Firmware Version	4439	<input type="checkbox"/> Enable Charger <Message>
Firmware CRC	0x939E	<input type="checkbox"/> Enable Alarm <Message>
Data CRC	0xF2B7	<input type="checkbox"/> Synch
Chip Version	0x0503	<input type="checkbox"/> Force DFET
Current Delta	100 mA	<input type="checkbox"/> Force CFET
Sense Resistance	5 mOhms	<input type="checkbox"/> Force PFET
SBDData Map Begin	0x003C	<input type="checkbox"/> Inhibit Safety Rules

2.5.1 Reading Parameters

To read and display hardware parameter values in the Parameters view, simply use any of the following methods.

1. Click the Commands menu, and then click *Read all Parameters*
2. Right click on a parameter name, and select *Read this Parameter* or *Read all Parameters*

2.5.2 Editing a Parameter

Editable parameters are identified by this  icon. Non-editable parameters are identified by this  icon.

The user can edit a parameter in two ways.

1. Double-click the parameter.
2. Right-click the parameter name, and select *Edit this Parameter* from the pop-up menu.

A dialog box then opens, allowing the user to edit the selected parameter value.

WARNING

Use extreme caution when editing parameter values. The bqWizard™ software has range-checking on values that the user enters; however, the range is purposefully selected to be not too restrictive. It is up to the user to ensure that the value entered is appropriate and safe.

2.5.3 Writing a Parameter

Once a parameter has been edited, the parameter text is in bold font and is ready to be written. To write the parameter to the target device, simply use any of the following methods. When editing multiple parameters, the Write command can be done at the end after all updates have been made, thus saving time.

1. Click the Commands menu, and then click *Write Pending Changes to RAM*
2. Right-click on a parameter name, and select *Write Pending Changes to RAM*

2.5.4 Committing a Parameter

Most parameters are automatically committed to flash memory after writing the parameter (ctrl-w). However, some parameters are not automatically committed. These are as follows:

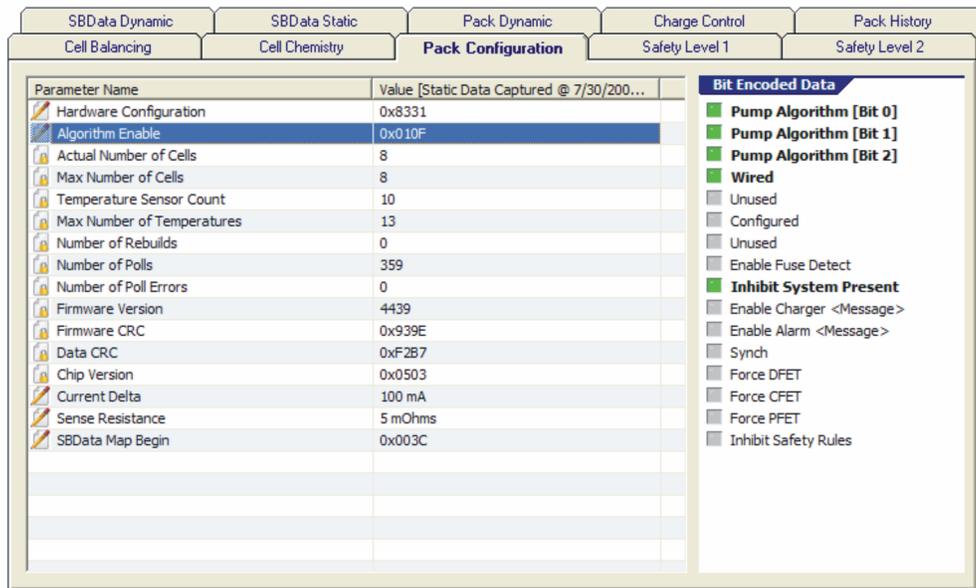
- **Manually Committed Params**
 - Manufacturer Access
 - Serial Number
 - Manufacture Date
 - Specification Info
 - Design Voltage
 - Design Capacity
 - Charging Voltage
 - Charging Current
 - At Rate
 - Battery Mode
 - Remaining Time Alarm
 - Remaining Capacity Alarm

Follow the instructions for writing a parameter from [Section 2.5.3](#), then perform one of the following:

1. Click the Commands menu, and then click *Commit Changes to Flash*
2. Right-click on a parameter name, and select *Commit Changes to Flash*

2.6 Bit Encoded View

The Bit Encoded Data is actually part of the Parameters view. This section shown on the right side of the Parameters View expands parameters that display their value as a hexadecimal number to a more meaningful display of the bit names. This view also displays whether the bit is set (green) or cleared (gray) by changing the box color next to the bit.



2.7 Status Bar View

The Status Bar view displays various information about the system.



Panels from left to right: the number of cells found, USB-TO-GPIO firmware version, polling indicator, logging indicator, communications state, SMBus address, current user access level, general information.

3 Working With the bqWizard™ Software

3.1 Pack Connection/Disconnection

Before any significant work can begin with the bqWizard™ software, beyond polling device data, the device must be *Wired*. Each PowerLAN™ master gateway controller is at a default state referred to as *Unwired* when it is first powered. *Unwired* refers to a device that is in a state where it does not allow full operation so that it cannot update the flash memory. *Wired* refers to a device that is fully powered and allows full device operation.

CAUTION

The wired/unwired status of a device must be changed anytime power to the device is intentionally removed. When removing power, toggle the Wired bit to Unwired using the F7 key. Then issue the Safe Disconnect command by pressing Shift + F2 key. When power is fully restored, toggle the Wired bit back to Wired by again pressing the F7 key. A command in the Commands menu called Toggle the Wired Bit also can be used.

3.2 File Menu

3.2.1 Application Settings

Application Settings are any of the UI controls that are set to a user's preference.

3.2.1.1 Load Settings From File

Loads a previously saved Application Settings file and configures the display to the saved preferences.

3.2.1.2 Save Settings to File

Saves a user's display preference to a file that can be reloaded at runtime. Note: the last display settings are reloaded each time the bqWizard™ software is started, eliminating the need to reload an Application Settings file each time the same user starts the application.

3.2.2 Calibration Data

3.2.2.1 Restore Data From File

Loads a previously saved calibration file. Calibration data is device specific. The .cal file from one device cannot be used on a different device.

3.2.2.2 Save Data to File

Saves a copy of the target calibration data to a file.

NOTE: During the development phase, it is strongly recommended that the factory calibration of each new device being used be saved to a file. It is possible for the user to wipe away the factory calibration of cell voltages.

3.2.3 Pack Configuration

The configuration file types are .aux, .tmap, .sbd, and .dat. The .aux file is described in the *Chemistry Selection for bq78PL114* application report ([SLUA505](#)). The .tmap file is described in the *What is a .tmap File?* application report ([SLUA542](#)). This file is created using the Pack Configuration Utility that is bundled with this software. The .sbd file is used to map extended SBData commands to parameters proprietary to the device. This file is created using the Pack Configuration Utility that is bundled with this software. The .dat file is the production file that is used to clone packs. This file is encrypted and pulls all the information contained in the .tmap file, .aux file, .chem file, and all the other programmable registers within the device, commonly referred to as the data set. This file is then loaded into production packs by either a customer-developed software tool or by the bqWizard™ software. Customer-developed software tools rely on the Windows .NET application programming interface (API) created by Texas Instruments. <http://focus.ti.com/docs/toolsw/folders/print/bq78pl114api-sw.html>

3.2.3.1 Load Configuration From File

Loads a previously saved pack configuration file.

3.2.3.2 Load Configuration From File and Relearn

Loads a previously saved pack configuration file and sends a Relearn command. (See Relearn.)

3.2.3.3 Save Configuration to File

Saves a copy of the target pack configuration. This is the method used to save .dat files.

3.2.4 Data Set

3.2.4.1 Load Data-Set to Device

Loads a previously saved Data-Set and writes to the device.

3.2.4.2 Save Data-Set

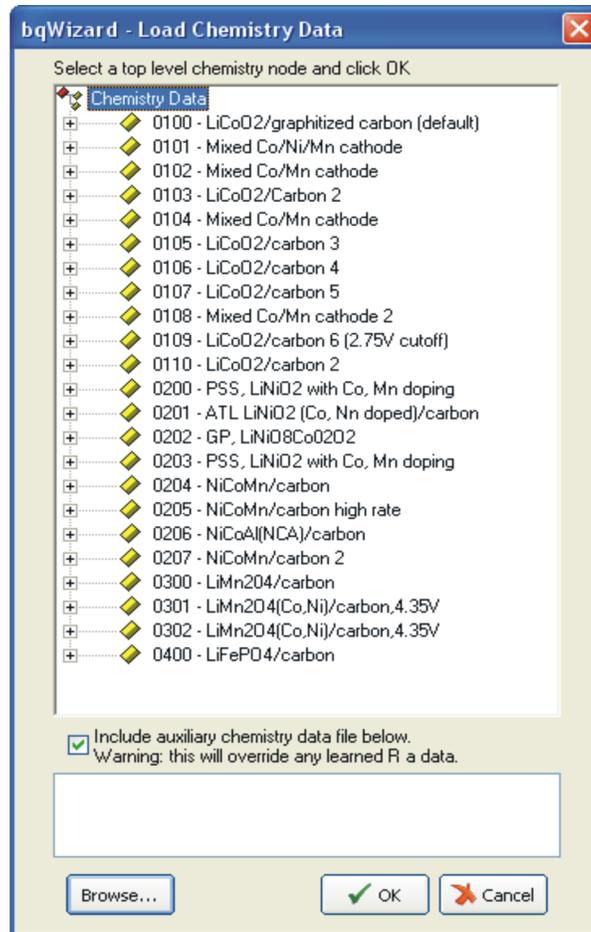
Saves an (offline) editable copy of the configurable device parameters. The file format is Comma Separated Values with a .ppcsv file extension. This file can be edited with a text editor or with spreadsheet software. Make sure that the file maintains its Comma Separated Value format and the .ppcsv file extension when saving.

3.2.4.3 Import Data-Set to bqWizard

Imports a previously saved Data-Set to the bqWizard™ software and displays the changes in the parameters view. This operation can be manually written or discarded. Discarding the data is done by executing a Read All Parameters command. This is a good method for determining a difference between the present Data-Set assignment and the saved Data-Set.

3.2.5 Load Chemistry Data

Opens a dialog box displaying all of the available chemistry data that can be loaded into the device.



3.2.6 Verify Chemistry Data

Verifies that the loaded chemistry data matches the Chemistry ID parameter. If the comparison is successful, a list of known cells with this chemistry is displayed.

3.2.7 Configure User Access Level

This is where a password is associated with an access level. Available only to access Level 2.



The bqWizard™ software can only be operated at Level 2 access. Without a Level 2 password, the GUI starts as normal. If a Level 2 password is programmed, then the GUI always prompts the user to enter the password on startup to unseal the device.



Warning: TI cannot retrieve passwords. If you forget or lose the password, you must reload the firmware to remove the password from the device.

3.2.8 Save Pack Parameters

3.2.8.1 Dynamic Parameters

Saves a copy of the target dynamic parameters (name, value, and units) to a file.

3.2.8.2 Static Parameters

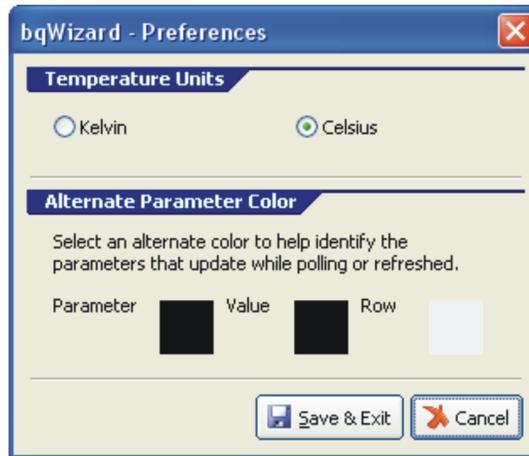
Saves a copy of the target static parameters (name, value, and units) to a file.

3.2.8.3 All Parameters

Saves a copy of the target parameters (name, value, and units) to a file.

3.2.9 Preferences

Temperature Units can be viewed in Kelvin or Celsius, which is selectable here. Also, several parameters in the Parameters View are dynamic; if desired, these can be viewed in an alternate color to help identify them. The list can also have an alternate-row color scheme to help separate parameters.



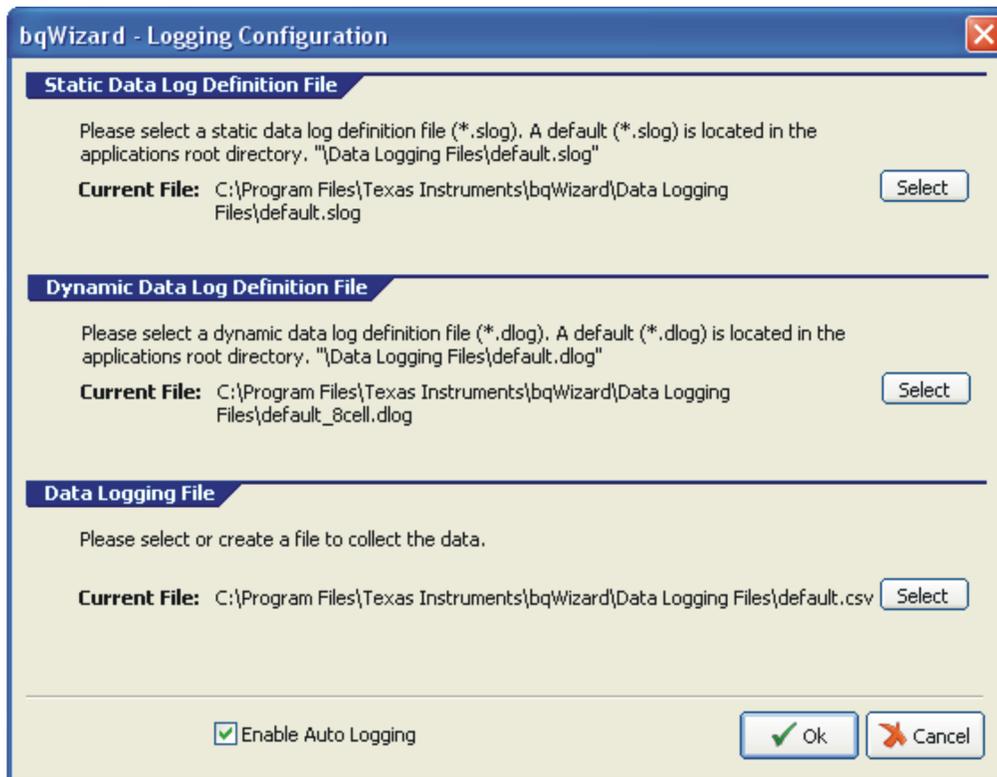
3.2.10 Exit

Exits the bqWizard™ software.

3.3 Logging Menu

3.3.1 Configure

The bqWizard™ software is capable of logging data during polling. This data is configured using two files, a dynamic log definition *.dlog and a static log definition *.slog. The application installs with a default file for both. The user can create the Dynamic log file (.dlog) by using the Generate Log Definition File menu command. The Static Log file type (.slog) is fixed for all data logging. Select or create a new output file, and the configuration is complete.



3.3.2 Generate Log Definition File

Opens a dialog box displaying a list of all the available parameters that can be selected and saved to a log definition file. Up to 29 variables can be logged.

3.3.3 Export File

Exports the selected output file to an external application to view CSV files.

3.3.4 Enable Logging

Enables logging. Note: Polling must be active in order to log data.

3.3.5 Disable Logging

Disables logging.

3.3.6 Add Comment

Adds a comment to the output file.

3.3.7 Capture Learned Data

The learned data from each cell can be inserted into a running log file using this command. The learned data is what is listed in the Learned Tab within the Cells view of the main screen (HF Impedance, Default NDI, NDI, Qmax, Qrem, Ra0 - Ra14). This information is useful for diagnosing issues with gas gauging. The user can issue this command before and after certain events.

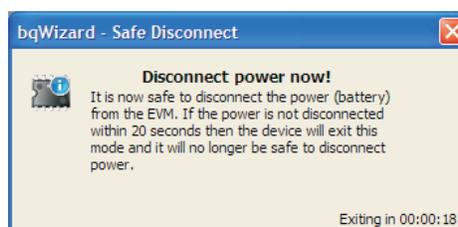
3.4 Command Menu

3.4.1 Connect to Pack

Connects to a pack if the bqWizard™ software has been separated or if a pack has been swapped.

3.4.2 Safe Disconnect

To prevent damage to the pack while disconnecting power, be sure to click Safe Disconnect, which informs the hardware it is about to be disconnected. If power is not removed within 20 seconds after executing the Safe Disconnect command, open the bqWizard™ software, and re-issue the Safe Disconnect command.



3.4.3 Initialize

The Initialize command is used to reload parameters that are not updated during normal firmware system flow and reset the major subsystems. For example, the Initialize command is issued after a .tmap file is loaded to change the series cell count and when used after loading new parameters, the impacted subsystems – such as the safety rule processing – are restarted with the new values.

3.4.4 Rebuild

Rebuilds the pack to a different cell configuration. Requires setting parameter *Expected Number Of Nodes*.

This feature is only available when used with the bq78PL114 with firmware 4452.

3.4.5 Relearn/Initialize

This command does all the functions of the Initialize command, and also clears long-term counters, transfers bq76PL102 voltage calibration data, and updates RSOC based on present cell voltages.

3.4.6 Toggle Ship Mode Bit

Toggles a bit telling the target device to enter a low-power mode.

3.4.7 Toggle Configure Bit

Toggles a bit telling the target device and the user that it is configured or not. This is only used in the bq78PL114 firmware (4452).

3.4.8 Toggle Wired Bit

Toggles a bit telling the target device that its cells are connected.

3.4.9 Reset Fuse

Resets the firmware fuse.

3.4.10 View Safety History

Displays a form with recorded safety events.

3.4.11 View Temperature History

Displays a form with recorded temperature events.

This feature is only available when used with the bq78PL114 with firmware 4452.

3.4.12 View Voltage History

Displays a form with recorded voltage events. This feature is only available when used with the bq78PL114 with firmware 4452.

3.4.13 Poll Data

Starts data polling. Data is polled at the rate shown in the Plot view. The default is every two seconds.

3.4.14 Stop Polling

Stops the application from polling data.

3.4.15 Reset Plot

Resets the plot control back to the default settings.

3.4.16 Update Dynamic Data

Reads and displays only dynamic parameters.

3.4.17 Read All Parameters

Reads and displays all parameter values.

3.4.18 Write Pending Changes

Writes all pending changes to the target device.

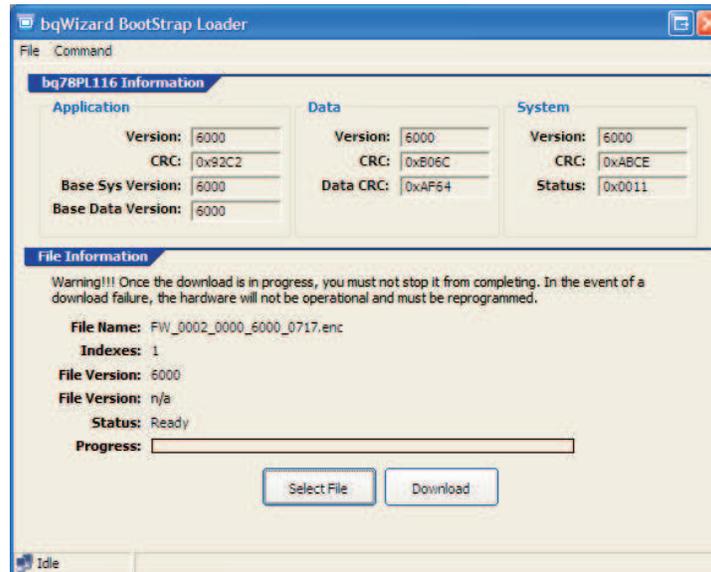
3.4.19 Commit Changes to Memory

Commits all changes in the target device to memory.

3.5 Utilities Menu

3.5.1 Bootstrap Loader

This utility downloads firmware to the target device.



Note: When reloading firmware, the target device must have the default SMBus address (0x16).

Note: Firmware 6000 cannot be loaded on devices programmed with 4452 or 5000.

3.5.2 Calibration

This utility is used to calibrate voltage, temperature, and current on the target device. The bq78PL116 firmware (6000) does not allow cell voltage calibration to be performed.

bqWizard - Calibration

Calibration

Attention: The calibration process MUST be performed in the following sequence to ensure proper calibration.
 Step 1: Calibrate Voltage
 Step 2: Calibrate Temperature
 Step 3: Calibrate Current

Calibrate Voltage

Select a cell to calibrate:

Supply an external mV reference between [2700 to 3000], then enter value:

Supply an external mV reference between [4000 to 4500], then enter value:

Calibrate Temperature

Enter the ambient temperature in °C:
 [18 to 30]

Calibrate Current & Coulomb Count

Step 1 Zero Offset
 Ensure there is no current flowing in or out of the pack.

Step 2 Gain
 Enter the applied current in mA:
 [-32000 to 32000]
 Negative = Discharging
 Positive = Charging

Cells			Sensors		
Cell	Voltage	Temperature	Sensor	Temperature	Offset
1	3123 mV	20.0 °C	Board	20.0 °C	-363.8
2	3124 mV	26.0 °C	T1	23.8 °C	-360.6
3	3136 mV	24.1 °C	T2	24.8 °C	-359.6
4	3135 mV	23.6 °C	T3	23.3 °C	-358.3
5	3135 mV	24.8 °C	T4	26.0 °C	-359.7
6	3133 mV	22.5 °C	T5	23.8 °C	-360.6
7	3135 mV	23.3 °C	T6	22.5 °C	-359.6
8	3132 mV	23.3 °C	T7	23.3 °C	-358.4
			T8	24.1 °C	-359.4
			T9	23.5 °C	-359.5

Current			Coulomb		
Current	Offset	Gain	Coulomb	Offset	Gain
0 mA	-64	0.937	0	-35	0.932

Information

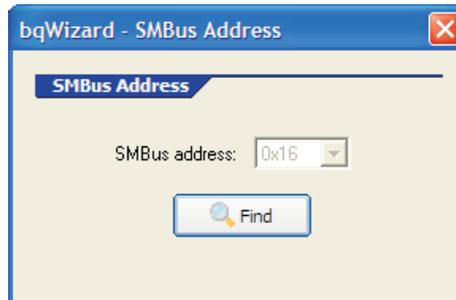
Calibration order is important. Cell voltages must be calibrated first, then temperature, and finally current. The PowerLAN™ master gateway controller and dual-cell monitor devices have their cell voltages calibrated at the factory. With external dual-cell monitors (bq76PL102), the calibration information stored in those devices must be transferred to the PowerLAN™ master gateway controller. This is accomplished by performing a relearn/initialize command (F4) for the bq78PL114 with firmware 5000 or later. The bq78PL114 with firmware 4452 requires a separate procedure, which follows:

1. Set the Calibration Transfer Enable bit: This is bit 7 in the Hardware Configuration register; it may be labeled reserved. Check the box next to it, ignore any warnings. Write the register change to memory using the Write Changes command.
2. Update the flash and relearn: Execute the Relearn/Initialize command followed by the Reset Fuse command.
3. Clear the Calibration Transfer Enable bit (use the same method as in Step 1).
4. Clear the Wired bit using the Toggle Wired Bit command, and then perform a Safe Disconnect command.
5. Reset the device by closing the bqWizard™ software and cycling power to the device; wait 10 seconds, and then open the bqWizard™ software.

NOTE: Cell voltage calibration is performed at the factory. It is unnecessary to calibrate cell voltages. Consult the device data sheet for cell voltage accuracy ratings. The fact that this functionality is in the calibration window is due to a legacy requirement. It may be completely removed in future versions of the bqWizard™ software.

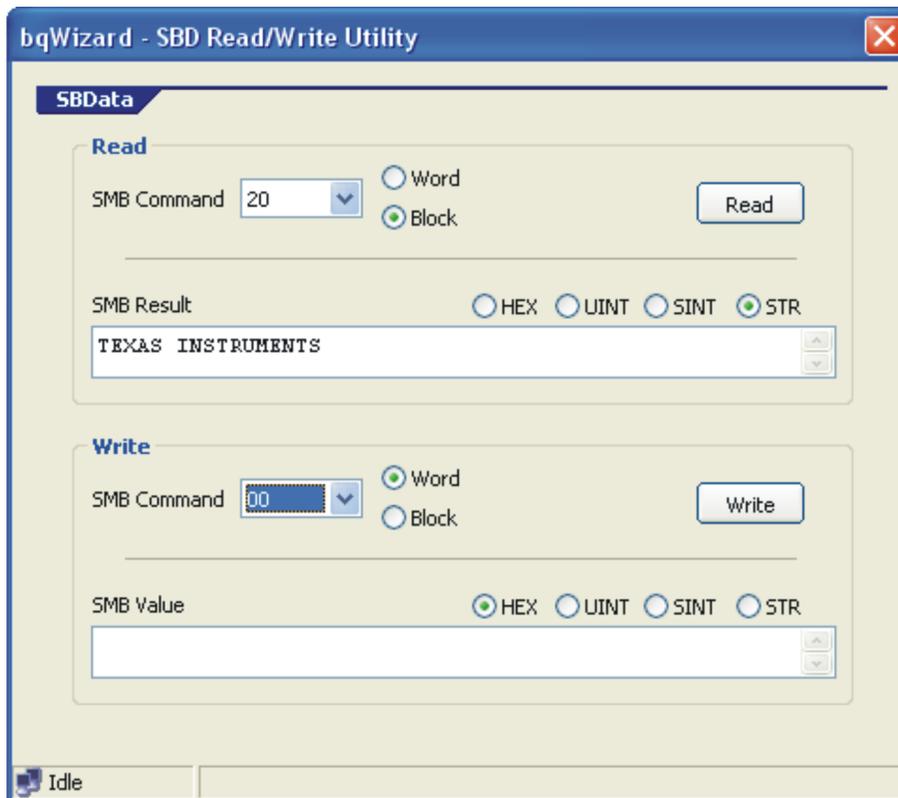
3.5.3 SMBus Address

This utility is used to determine the SMBus address if it changes after loading a new .tmap configuration.



3.5.4 SBD Read / Write

This utility is used to read and write SBDData registers.

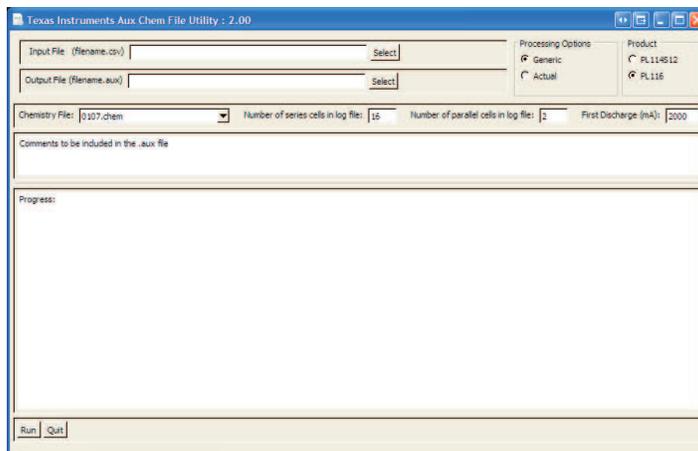


3.5.5 Add Ons

The Add Ons menu contains file utility programs that allow the user to configure the device for application-specific operation. Utilities developed in the future by TI can be added here by placing them in the root directory of the bqWizard™ installation.

3.5.5.1 AuxChemFileUtility

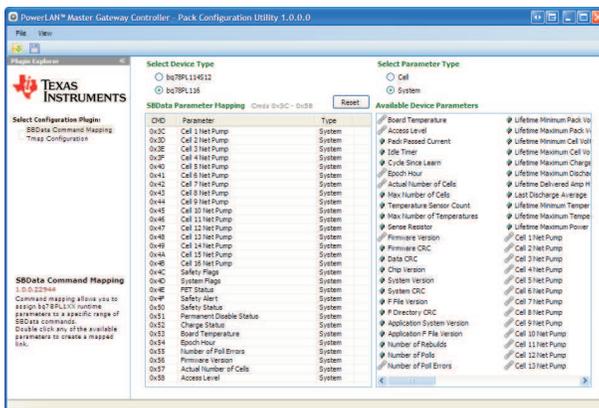
The AuxChemFileUtility is a utility that processes data collected during an Auxiliary File run as described in the *Chemistry Selection for bq78PL114* application report ([SLUA505](#)).



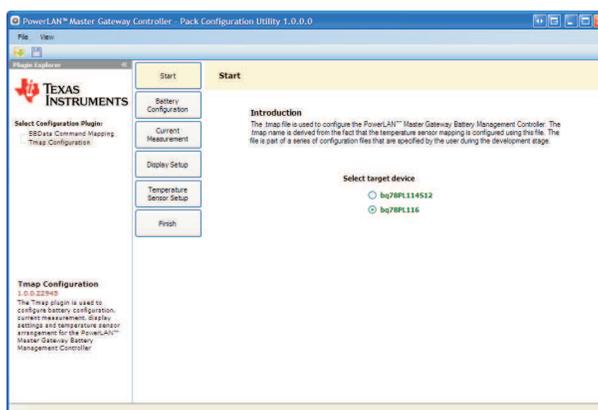
3.5.5.2 PackConfigurationUtility

The PackConfigurationUtility is a utility used to create SBData Command Mapping files .sbd which are used to map proprietary internal parameters to the user-defined extended SBData command range readable over SMBus. It also hosts the creation of Tmap Configuration files .tmap. which are used to define the packs configuration such as Series and Parallel count, SMBus address, Current Measurement, Display Settings/RSOC, and Temperature Sensor mapping.

SBData Command Mapping Interface



Tmap Configuration Interface



3.5.5.3 Chemistry Updater

Each release of the bqWizard™ software comes with set of Chemistry Files (.chem). Quite often, new chemistry files are made. At minimum, these new files need to be added to the Chemistry Directory of the bqWizard™ installation in order to be used. If the user wishes to formally add the new Chemistry file to the configuration of the bqWizard™ software, the ChemistryUpdate Utility is used to do so. Once the new .chem files are added, they appear when the user accesses the Load Chemistry Data command under the File Menu.

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