

R-BMS Monitor Tool GUI

Introduction

R-BMS Monitor Tool is a software tool to assist users in evaluating, developing, and optimizing battery management systems based on designed battery characteristics using Renesas battery management products.

This manual applies to the following tool versions:

- R-BMS Monitor Tool Rev.1.2.5.1

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1. Overview

This software is GUI software used for the R-BMS B EVM. It provides the following features:

- SMBus register access.
- Control of BMIC in Data Bypass mode.
- Memory access (parameters programming) in BMIC + MCU mode.

1.1 File contents



1. [DeviceName]: Device name. (For example, RAA489255)

1.2 System Requirements

- Operating System: Windows 10 (32/64-bit) or later

Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.

Note: This tool uses a period for decimal notation; be aware that this may differ in some regions.

1.3 Supported USB SMBus Converter Interface Unit

This software supports the USB SMBus Interface Unit included in the R-BMS B EVM.

1.4 Files

Table 1 and Table 2 show the file and folder for this tool.

Table 1. File information

File Name	Description	Attribute
R-BMS_Monitor_Tool_Revx.x.x.x_Basic.exe	This tool.	Preinstalled
R-BMS_Monitor_Tool.exe.config	Settings file for this tool.	Preinstalled
R-BMS_Monitor_Tool_RBMSB_Basic.cnf	Configuration file for this tool.	Preinstalled
Battcom.dll	Dynamic link library to communicate with Renesas USB SMBus Interface.	Preinstalled
img_[DeviceName]_RBMSB.bin ^[1]	Board image.	Preinstalled
mem_[DeviceName]_RBMSB_Renesas_x.xx_x#x.bin ^[1]	Memory configuration file. RAA489255 Example: mem_RAA489255_RBMSB_Renesas_1.00_0#1.bin	Preinstalled
reg_[DeviceName]_RBMSB_Renesas_x.xx_x#x.bin ^[1]	Register configuration file. RAA489255 Example: reg_RAA489255_RBMSB_Renesas_1.00_0#1.bin	Preinstalled
sbs_[DeviceName]_RBMSB_Renesas_x#x.bin ^[1]	Sbs configuration file. RAA489255 Example: sbs_RAA489255_RBMSB_Renesas_1#1.bin	Preinstalled
ShortCutCommands_[DeviceName]_RBMSB.bin ^[1]	Settings file for Shortcut Commands function.	Preinstalled

1. [DeviceName]: Device name. (for example, RAA489255)

Table 2. Folder Information

Folder Name	Description
RBMSB\[DeviceName]\Images ^[1]	Board image file folder. Do not modify the files in this folder.
RBMSB\[DeviceName]\configuration ^[1]	Configuration file folder.
RBMSB\[DeviceName]\ShortcutCommands ^[1]	File storage location for controlling the SHORTCUT COMMANDS function.
output\regdata	File storage location for REGISTER READ/WRITE window. If it does not exist, the software creates it.
output\log	Log storage location for SYSTEM MONITOR window. If it does not exist, the software creates it.

1. [DeviceName]: Device name. (for example, RAA489255)

2. GUI Overview

Figure 1 and Table 3 show the GUI configuration.

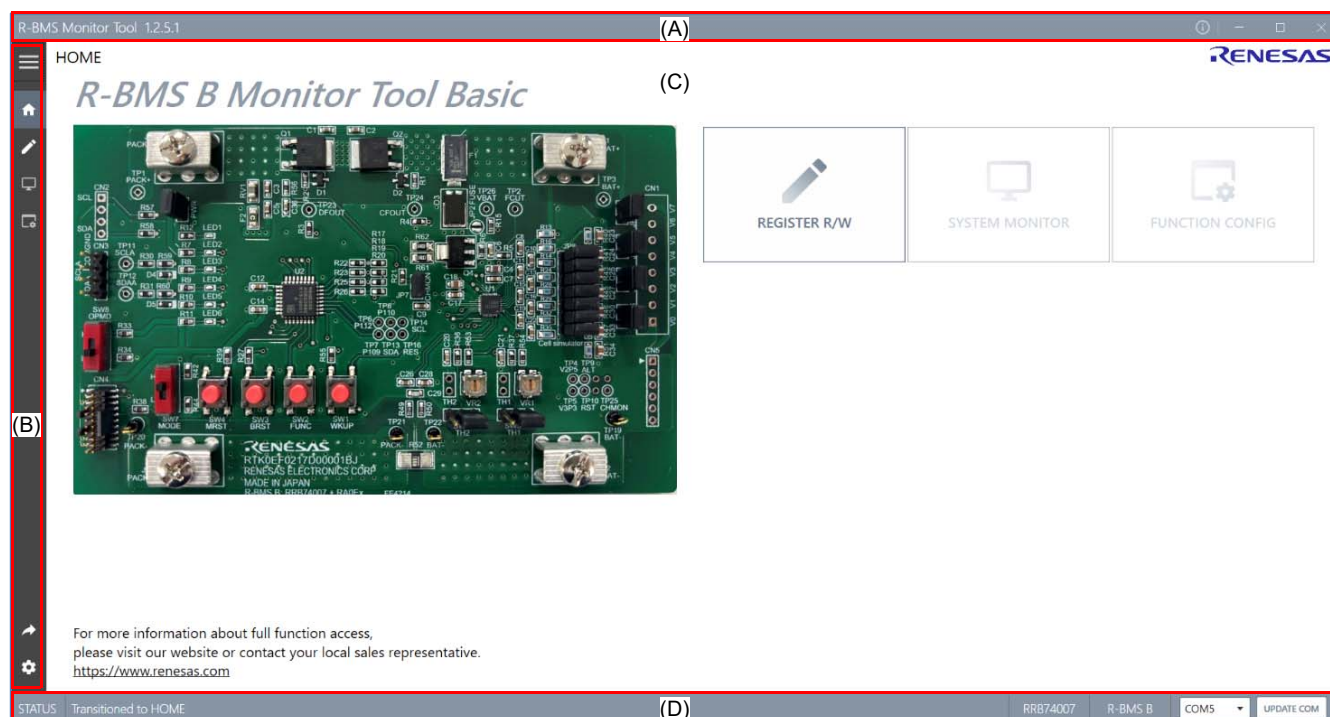


Figure 1. GUI Overview Example

Note: Figure 1 uses the R-BMS Monitor Tool Rev1.2.5.1 as an example.

Table 3. GUI Structure

Field	Description
(A) Title bar	- Tool name and tool version display - Tool Manual button - Tool information button
(B) Menu bar	Menu button to switch to each function ^[1]
(C) Function display field	GUI display of each function
(D) Status bar	- Tool status display - Tool mode display - COM port information display, update button^[2]

1. Use this button to switch between displaying only icons or displaying icons and function names.

2. Connect the communication board and click the **Update COM** button. If it is connected when the tool starts, it is automatically recognized.

2.1 Function List

Table 4 shows the Function list. For more details, refer to each section.

Table 4. Function List

Function Name	Function	Target mode	Section
HOME	Tool introduction and shortcuts to each window	All	2.2
REGISTER R/W	Read/Write BMIC registers.	Data Bypass	3.1.1
SYSTEM MONITOR	Data logging function using SMBus communication. All read commands are predefined.	BMIC + MCU	3.2.1
FUNCTION CONFIG	Configure the BMIC Parameters.	BMIC + MCU	3.2.2
CELL CONFIG	Configure the number of cells in series. <i>Note:</i> This function is not available on some devices, such as RRB74007.	All	3.2.3
SHORTCUT COMMANDS	Execute shortcut commands.	All	3.3.1
TOOL SETTINGS	Change tool settings.	All	2.3

2.2 HOME

The Home window is the initial screen displayed when the software starts. It provides users with quick-access shortcuts to the various application windows.

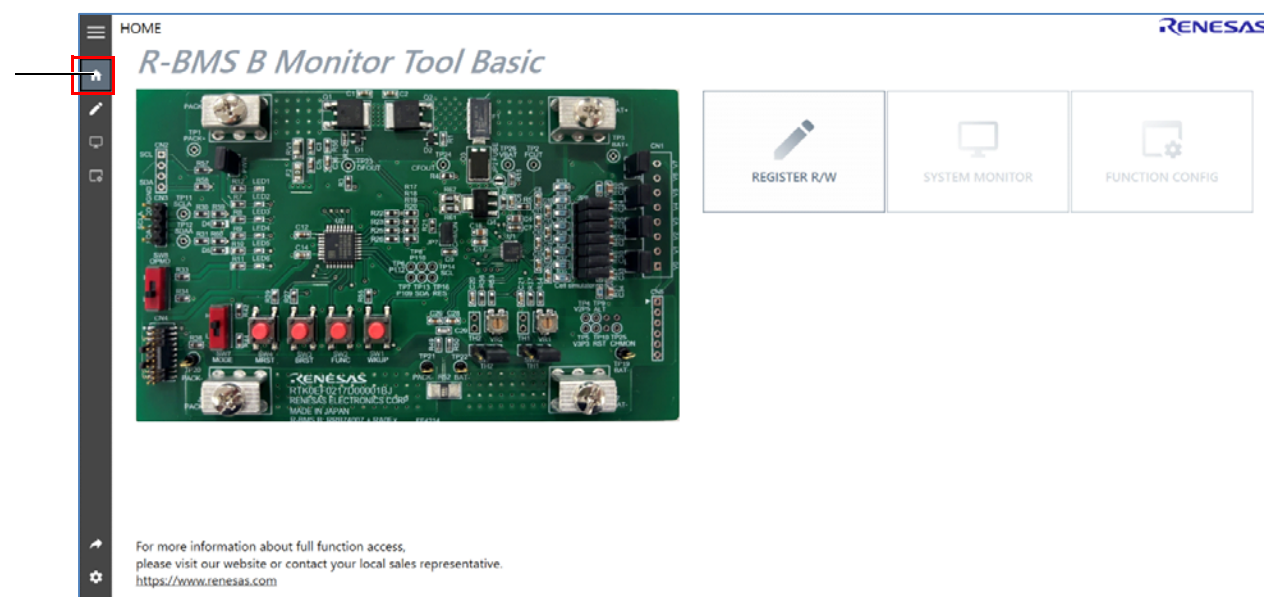


Figure 2. HOME Window View

2.3 TOOL SETTINGS

The **TOOL SETTINGS** window allows users to change the settings of this software. These settings are maintained even when the software is restarted.

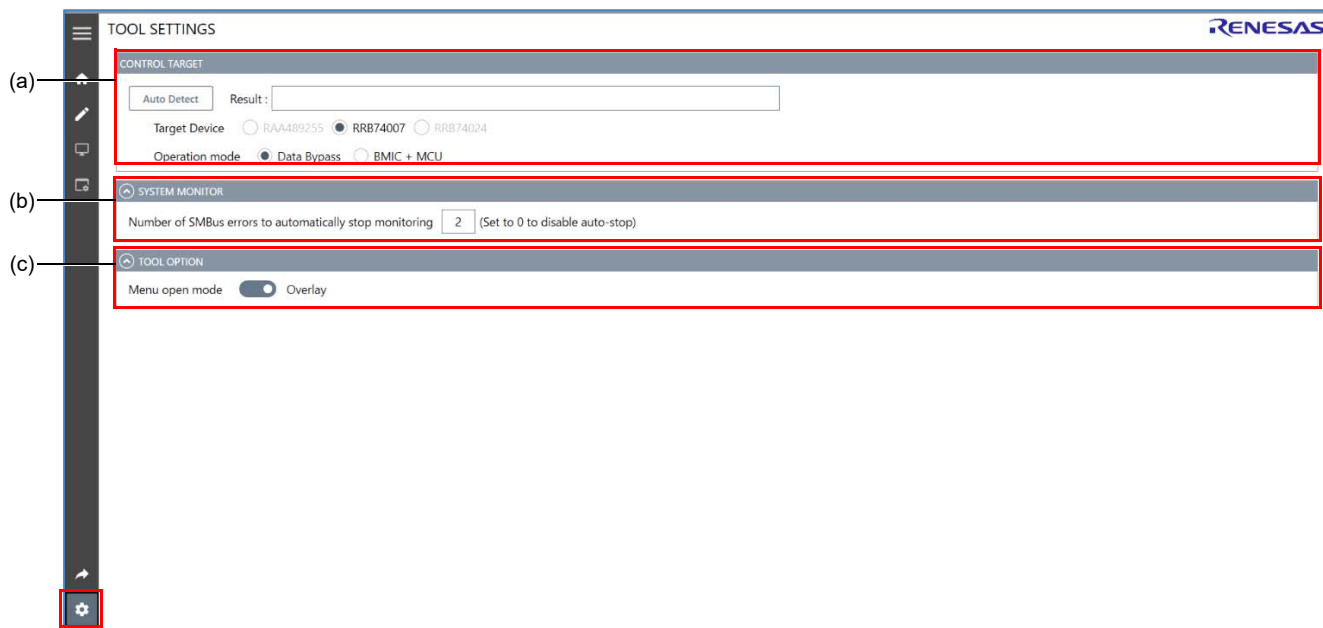


Figure 3. TOOL SETTINGS Window View

- (a) CONTROL TARGET – Sets the control target. It can be automatically detected or set manually.
 - **Auto Detect** button – When the R-BMS B board is connected and powered on, selecting the **Auto Detect** detects the device and board operation mode and sets them as the target device and mode.
 - Target Device – Specifies the target device.
 - Operation Mode – Specifies the operation mode according to the R-BMS B board mode.
- (b) SYSTEM MONITOR – Settings for the **SYSTEM MONITOR** window.
 - Number of SMBus errors to automatically stop monitoring – Specifies the number of SMBus communication failures that will cause monitoring to automatically stop.
- (c) TOOL OPTION – Settings for this software tool.
 - Menu open mode – Specifies whether the left side menu opens in overlay or inline mode.

3. Functions

3.1 Data Bypass mode functions

3.1.1 REGISTER READ/WRITE

This window has the following functions:

- Read BMIC registers.
- Write BMIC registers.

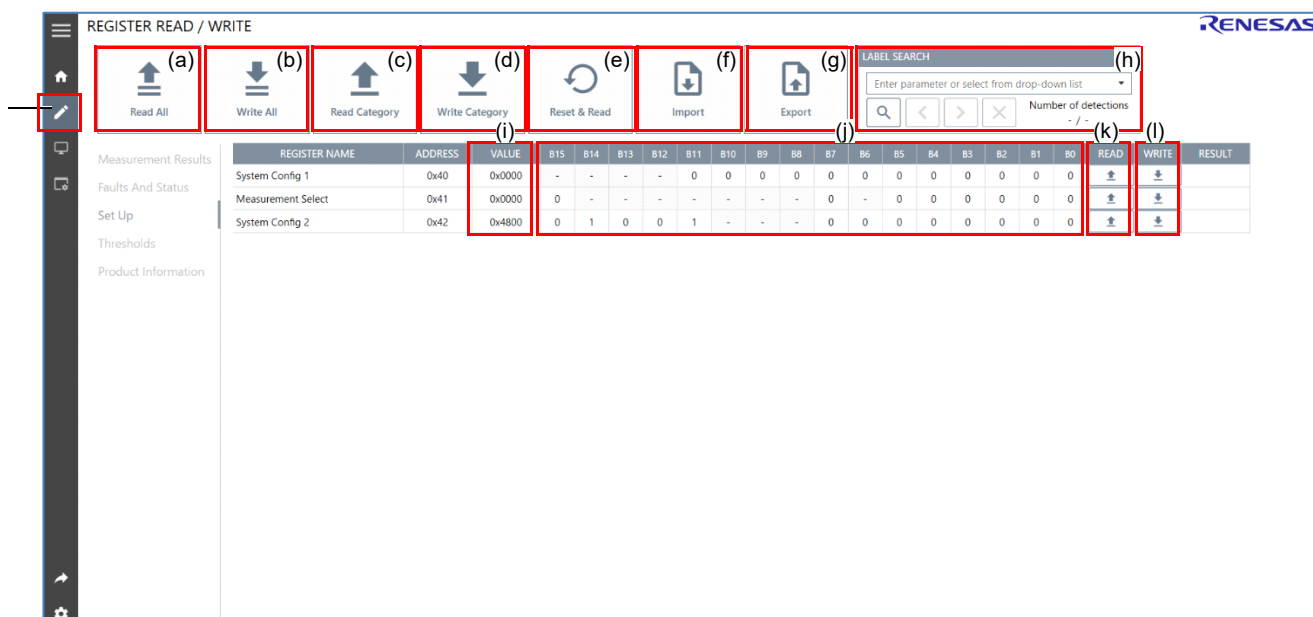


Figure 4. REGISTER READ/WRITE Window View

- (a) Read All – Reads all readable registers and displays the results on the screen.
- (b) Write All – Writes data to all writable registers.
- (c) Read Category – Reads all readable registers in a category and displays the results on the screen.
- (d) Write Category – Writes data to all writable registers in a category.
- (e) Reset & Read – After sending a software reset command to the BMIC, reads all readable registers and displays the results on the screen.
- (f) Import – Reads the .csv file exported by this tool and restores the register settings to the screen.
- (g) Export – Saves the register settings displayed on the screen to a .csv file.
- (h) LABEL SEARCH
 - Complete the following steps to search for parameters.
 - 1. Enter part of the parameter name in the search field.
 - 2. Press the search button.
 - 3. If there are matching parameters, the number of matches are displayed. Additionally, the arrow buttons and cancel button are enabled.
 - 4. Confirm the match parameters using the arrow keys.
 - 5. Clear the search results using the cancel button.
- (i) VALUE field
 - When reading, the read value is displayed in 16-bit hexadecimal.

- When writing, set the value to be written in 16-bit hexadecimal.
Note: The value set here is also reflected in the Bit field.
- (j) Bit field
 - When reading, the read value is displayed in the bit field.
 - When writing, double-click the bit field to change. The value toggles between 0 and 1. Set the intended value before executing the write operation.
Note: The value set here is also reflected in the VALUE field.
- (k) Individual register read button – Reads each register individually.
Note: Only displayed for readable registers.
- (l) Individual register write button – Write to each register individually.
Note: Only displayed for writable registers.

3.2 BMIC + MCU mode functions

3.2.1 SYSTEM MONITOR

This window has the following functions:

- Continuously reads predefined SMBus registers at a specified interval.
- Logs read data.

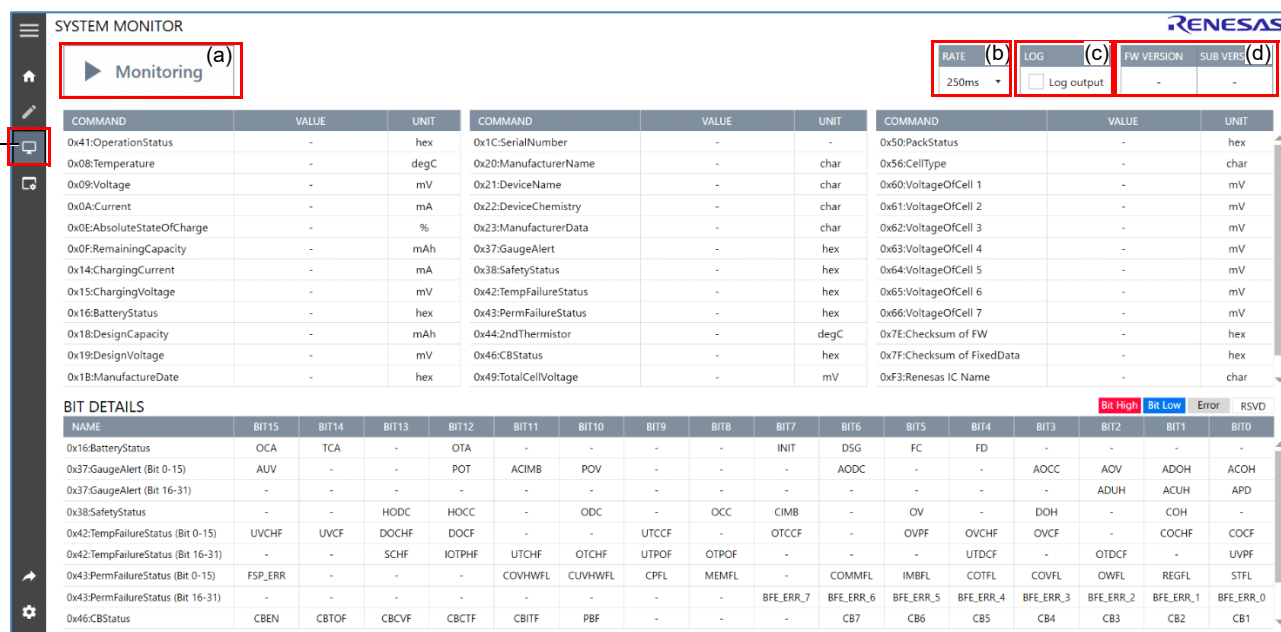


Figure 5. SYSTEM MONITOR Window View

- (a) **Monitoring** button
 - When stopped, selecting this button starts periodic data logging at the interval specified by RATE.
 - When data logging is in progress, selecting this button stops data logging.
- (b) **RATE** – Data logging cycle rate.
 - The rates that can be specified are 250ms, 500ms, and 1000ms. However, depending on the SMBus communication status, operation at the specified rate is not guaranteed.
- (c) **LOG** – Enable/Disable data logging.
 - When log output is enabled, a .csv file is saved to the output\log\ folder in the following format.
LOG_SM_[DeviceName]_RBMSB_[YYYY][MM][DD][hh][mm][ss].csv

[DeviceName]: Device name (e.g. RAA489255)

[YYYY]: Year, [MM]: Month, [DD]: Day, [hh]: hour, [mm]: minute, [ss]: second

- (d) Monitoring enables FW VERSION and SUB VERSION

3.2.2 FUNCTION CONFIG

This window allows configuration of the following BMIC parameter types:

- Information
- System
- Charging
- Temperature

Parameter	Value	Maximum
PQ1 Manufacture Name (0x20)	Renesas	Maximum 32 characters
PQ2 Device Name (0x21)	R-BMS B RRB74007	Maximum 32 characters
PQ3 Device Chemistry (0x22)	LION	Maximum 4 characters
PQ4 Manufacture Data (0x23)	REE	Maximum 32 characters

Figure 6. FUNCTION CONFIG Window View

- (a) Flash these parameters into the target device.
- (b) Reset Parameters – Returns each parameter to its last stored value.
Note: This function is not available on some devices, such as RAA489255.

3.2.3 CELL CONFIG

This window allows configuration of the number of series cells.

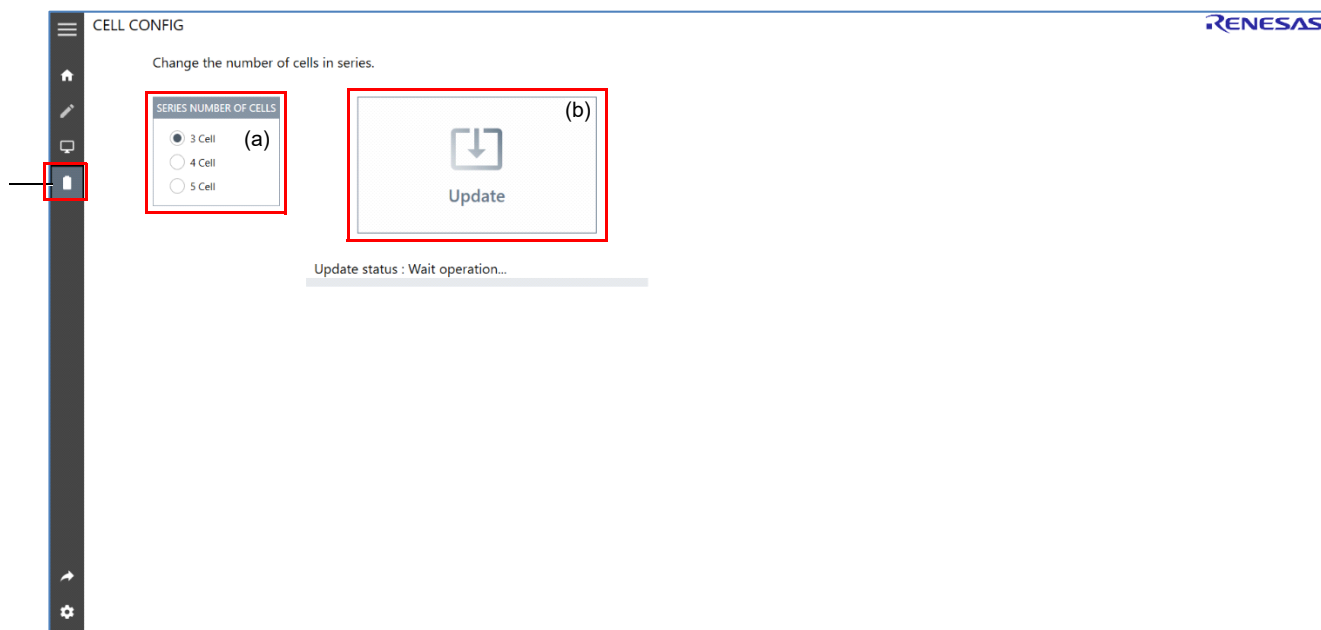


Figure 7. CELL CONFIG Window View

- (a) Series Number of Cells -- Selects the number of cells in the system.
- (b) Update – Pressing the update button sets the specified number of cells in the BMIC.

Note: This function is not available on some devices, such as RRB74007.

3.3 Common Functions

3.3.1 SHORTCUT COMMANDS

Select **SHORTCUT COMMANDS** to display the screen for executing shortcut commands.

This chapter uses RAA489255 as the target device. If a different device is used, the buttons displayed in Shortcut Commands may differ. Replace RAA489255 in the file names with the name of the target device.

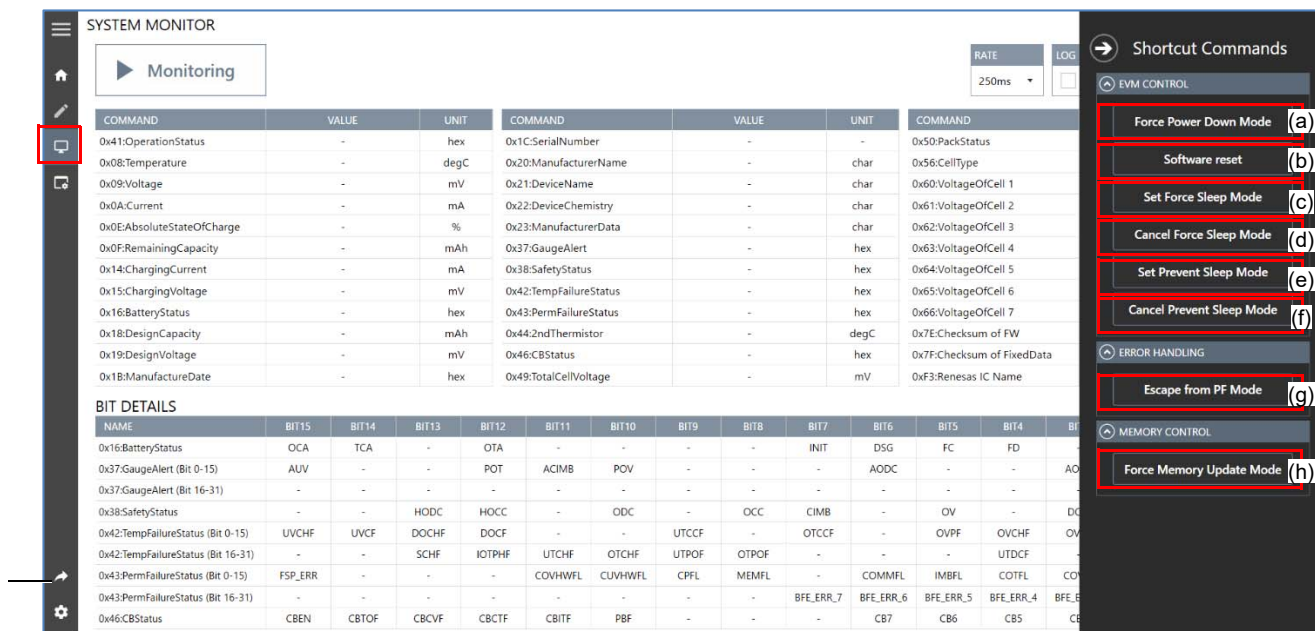


Figure 8. Shortcut Commands Screen View

- (a) **Force Power-Down Mode** button – Outputs the Force Power-Down Mode control command.
- (b) **Software Reset** button – Outputs the Force Software Reset control command.
- (c) **Set Force Sleep Mode** button – Outputs the Force Sleep Mode set control command.
- (d) **Cancel Force Sleep Mode** button – Outputs the Force Sleep Mode cancel control command.
- (e) **Set Prevent Sleep Mode** button – Outputs the Prevent Sleep Mode set control command.
- (f) **Cancel Prevent Sleep Mode** button – Outputs the Prevent Sleep Mode cancel control command.
- (g) **Escape from PF Mode** button – Outputs the Escape from Permanent Failure Mode control command.
- (h) **Force Memory Update Mode** button – Outputs the Force Memory Update Mode control command.

4. Revision History

Revision	Date	Description
1.00	Jun 29, 2026	Initial release.

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