



# Nuvation Energy Multi-Stack Controller Software

## Release Notes

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## Revision History

Version	Details	Date
1.0	Initial release for Multi-Stack Controller	2023-06-02
2.0	Support for G5 High-Voltage BMS BMS	2023-12-05
3.0	Added Multi-Stack Controller updates 21.2.1	2024-04-12
4.0	Added Multi-Stack Controller updates 21.3.0 and nPlatform 2.3.0	2024-06-04
5.0	Added Multi-Stack Controller updates 21.4.0 and nPlatform 2.3.1	2024-07-24
6.0	Added Multi-Stack Controller updates 21.5.0 and nPlatform 2.3.2	2024-08-24
7.0	Added Multi-Stack Controller updates 21.8.0 and nPlatform 2.3.5	2025-01-13

## 1. Introduction

This document provides a summary of software changes for the Multi-Stack Controller Software releases. The Multi-Stack Controller has two upgradable systems outlined below:

- Multi-Stack Controller Bundle: contains all upgradable application software which changes high level behaviour of the Multi-Stack Controller. These have file extension .fns or .fnz. These upgrades do not always require a reboot.
- Platform: contains all platform software at the low level which changes core system features and functionality. These upgrades have file extension .nup or .nosp. These upgrades always require a reboot.



### Finding the currently installed version

To find the current version of software installed on your product:

- Platform versions can be found on the pages at /platform/settings
- Function versions can be found at the pages at /platform/functions (Requires [Platform 2.2.0](#) or later)

This document lists the changes of each Multi-Stack Controller Release in separate sections. Functionality defined in prior releases will apply to the subsequent releases unless explicitly mentioned otherwise. It is suggested to read all the release notes to capture the full capabilities of a specific release.

## 2. Multi-Stack Controller Bundles

### 2.1. Bundle 21.8.0



Availability of this package is 2025-01

#### 2.1.1. What's New

- Added support for G5 High-Voltage BMS with firmware versions 5.9.0 and 5.9.1

#### 2.1.2. Resolved Issues

- #12485: Temperature values are incorrectly displayed for battery cells that don't have thermistors connected (SunSpec Model 805, group name: lithium-ion-module-cell, point name: CellTmp)
- #12543: Multi-Stack Controller incorrectly calculates the count of operational cell voltage channels

#### 2.1.3. Known Issues

- #12846: MSC upgrade from 21.4.0 to 21.8.0 causes the MSC application to crash
- #13102: MSC watchdog fault and warning should be configured to disabled (enable: false) since the MSC watchdog fault/warning is not working and will cause a fault/warning unexpectedly

## 2.2. Bundle 21.5.0



Availability of this package is 2024-08

### 2.2.1. What's New

- Implemented SunSpec string.StrDisRsn in model 803 lithium\_ion\_bank for stack disable reason
- Implemented SunSpec string.StrConFail in model 803 lithium\_ion\_bank for stack connection failure reason
- Added retry configurations for communication failures to stacks
- Added optional synchronized data sampling with sync\_key configurations

### 2.2.2. Resolved Issues

- #12049: Multi-Stack Controller SOE does not follow 0% and 100% logic of SOC
- #12046: Cell Interface statistics have incorrect indeces
- #11652: Stack communication timeouts can cause momentary invalid data

### 2.2.3. Known Issues

- #12485: Temperature values are incorrectly displayed for battery cells that don't have thermistors connected (SunSpec Model 805, group name: lithium-ion-module-cell, point name: CellTmp)

## 2.3. Bundle 21.4.0



Availability of this package is 2024-07

This release adds support for the latest version of firmware for the G5 High-Voltage BMS with Faraday version 5.8.1.

### 2.3.1. What's New

- Added support to the stack connection configurations introduced in G5 High-Voltage BMS with Faraday version 5.8.1
- Updated the estimation of the State of Energy to use the BMS reported charge capacity
- Added charge level full/empty flags to the pack and stacks statistics and updated pack State of Charge limits

- Updated SunSpec EvtVnd1 and EvtVnd1 in model 802 battery for alarms and warnings respectively:
- bit 6 logger\_persistence\_fault

## 2.3.2. Resolved Issues

- #11414: Multi-Stack Controller Stack Status page does not load when missing a stack from configuration file
- #11736: Display fails to start when controller is not connected to the internet
- #11150: Expose Multi-Stack Controller Fault and Warning in SunSpec 800 model vendor bitfields

## 2.4. Bundle 21.3.0



Availability of this package is 2024-05

This package is part of the [Platform 2.3.0](#) public release. Significant configuration changes have been made as part of this bundle.



This Bundle is required to have the [Platform 2.3.0](#) or later installed.

## 2.4.1. What's New

- Added configurability to BMS register logging
- Added read-only SunSpec Map as part of implementing point LocRemCtl in SunSpec 802 model
- Implemented SunSpec EvtVnd1 and EvtVnd2 vendor specific event bitfields in model 802 battery for alarms and warnings respectively:
  - bit 0 control\_watchdog
  - bit 1 config\_fault
  - bit 2 stack\_config\_fault
  - bit 3 current\_imbalance
  - bit 4 stacks\_ready
  - bit 5 invalid\_configurable\_registers
- Updated SunSpec string.StrEvt1 in models 803 lithium\_ion\_bank and 804 lithium\_ion\_string to pass through all Evt1 flags from stack
- Added configurable SunSpec Modbus scale factors

## 2.4.2. Resolved Issues

- #11049: Multi-Stack Controller UI Data Explorer tab occasionally freezes
- #11098: SunSpec 802 "SetOp" point has incorrect enumerated values

- #10026: Overflowing Modbus points due to large scale factors

## 2.5. Bundle 21.2.1



Availability of this package is 2024-04

This is a small hotfix release to resolve small bugs in the application and user interface. No new features or major changes are included aside from the small fixes.



This Bundle is required to have have the [Platform 2.2.6](#) or later installed.

### 2.5.1. Resolved Issues

- #10806: Multi-Stack Controller current limits can briefly drop to 0A when a stack disconnects
- #10807: Stack enable flag can be reset when stack communication is interrupted
- #11022: Operator Interface radial gauges offset in some web browsers
- #11058: Some connect/disconnect and clear faults requests are ignored
- #11077: Multi-Stack Controller watchdog warning prevents Multi-Stack Controller operation while enabled

## 2.6. Bundle 21.2.0



Availability of this package is 2024-02

This release adds support for the latest version of firmware for the G5 High-Voltage BMS BMS with Faraday version 5.8.0.



This Bundle is required to have have the [Platform 2.2.6](#) or later installed.

### 2.6.1. What's New

- Add support for BMS firmware 5.8.x versions

### 2.6.2. Resolved Issues

- #10184: Multi-Stack Controller SunSpec server reports the wrong stack enabled status in the 803 model, point "string.StrSt" and bit 0

## 2.7. Bundle 21.1.0



Availability of this package is 2023-12



This is the second release after Bundle 21.0.0 (made available in 2023-10) which adds support for the G5 High-Voltage BMS with Faraday firmware version. This new support includes a new version of the user interfaces and a major update to the data models and configuration for the product. Support for older versions of BMS firmware are still maintained and the majority of features for these older versions remain unaltered.



This Bundle must have the [Platform 2.2.0](#) or later installed.

## 2.7.1. What's New

- Access to stack BMS Operator Interface available for all installed stacks through the `/stack/<stack_index>` URL
- Removed HTTP JSONP API at `/bms/gbc`
- Removed SunSpec Modbus TCP draft 3 800 series models
- Replaced components and registers in data model with YAML based data model
- Added YAML based configuration file aligned with YAML data model
- Added support for maintaining configurations across software upgrades
- Added support for latest SunSpec Modbus TCP 800 series models (801, 802, 803, 804, 805)
- Added configurability for the SunSpec Modbus model base offset and instance counts
- Moved the base offset for the SunSpec Modbus map from 40000 to 0
- Replaced Multi-Stack Controller Operator Interface registers page with read-only data explorer
- Replaced Multi-Stack Controller Operator Interface log download page with simplified page
- Removed Multi-Stack Controller Operator Interface stack details pages
- Historical logging of per cell and per temperature data
- Historical logging of all stack faults and warnings
- Reduced stack limit from 36 to 16

## 2.7.2. Resolved Issues

- #3291: Data measurement downloads for large historical periods greater than 14 days can fail

## 2.7.3. Known Issues

- #10184: Multi-Stack Controller SunSpec server reports the wrong stack enabled status in the 803 model, point "string.StrSt" and bit 0
- #10806: Multi-Stack Controller current limits can briefly drop to 0A when a stack disconnects
- #10807: Stack enable flag can be reset when stack communication is interrupted
- #11058: Some connect/disconnect and clear faults requests are ignored
- #11077: Multi-Stack Controller watchdog warning prevents Multi-Stack Controller operation while enabled

- #12046: Cell Interface statistics have incorrect indeces
- #11652: Stack communication timeouts can cause momentary invalid data
- #12206: SunSpec Modbus points `CellVMaxMod`, `CellVMinMod`, `ModTmpMinMod`, and `ModTmpMaxMod` in model 803 `lithium\_ion\_string` do not index modules correctly on cell voltage and temperature statistics respectively

## 2.8. Bundle 17.0.0



Availability of this package is 2023-06

This is the first release which adds support for later versions of BMS firmware. It also provides a number of additional features for display and UPS support. Lastly it provides a number of critical bug fixes.



This Bundle must have the [Platform 2.2.0](#) or later installed.

### 2.8.1. What's New

- Added support for BMS firmware version 'descartes' from factory
- Added display support through VGA port for BMS Operator Interface with touchscreen support via USB
- Added support for multiple uninterruptable power supply (UPS) with USB connection for communication
- Ensure contactors are opened before entering service lockout on stacks
- Added NECS remote access for remote support

### 2.8.2. Resolved Issues

- #5032: Data measurement logging can stop for a few minutes if too many users are viewing historical data
- #6290: Multi-Stack Controller can lose the persisted stack BMS supported version after an upgrade
- #5698: Open wire ratio display does not work properly in some cases in the Operator Interface
- #6006: Unable to import configuration on unlocked Multi-Stack Controller Operator Interface
- #8024: Data measurement logging can stop data collection permanently in rare cases

## 2.9. Bundle 11.0.0



Availability of this package is 2022-05

This is the first broadly distributed public release of platform for the nController products. The following sections will outline the major differences between the Grid Battery Controller application features.



This Bundle must have the [Platform 2.1.0](#) or later installed.

### 2.9.1. What's New

- Updated core HTTP JSONRPC API from previous URL /gbc to /bms/gbc
- Removed functionality for network configuration from previous `gbc_int_ethernet` and `gbc_ext_ethernet` components
- Removed functionality for real time clock configuration from `gbc_rtc` component
- Removed functionality for Modbus RTU serial interface from `gbc_modbus_rtu` component
- Removed functionality for PCS link from `pack_pcs` component
- Moved functionality for manufacturing information from `gbc_mfg_info` component to /platform/settings page
- Changed measurement logging page in 'Log' panel Operator Interface to /logs page and unified download file with date/time range selection

### 2.9.2. Known Issues

- #11022: Operator Interface radial gauges offset in some web browsers

## 3. Platform

### 3.1. Platform 2.3.5



Availability of this package is 2025-01

No customer-facing changes were made in this release.

### 3.2. Platform 2.3.2



Availability of this package is 2024-08

Fixed mDNS being unresponsive after factory restore from Platform v2.3.0 or v2.3.1

### 3.2.1. Resolved Issues

- #11991: Factory restore after 2.3.0 breaks mDNS

## 3.3. Platform 2.3.1



Availability of this package is 2024-05

It contains a number of stability improvements.

### 3.3.1. Resolved Issues

- #11544: Broken platform upgrades after factory restore
- #11519: Incompatibility with pre 2.3.0 Service Pack restores causing the UPS Manager function to fail

## 3.4. Platform 2.3.0: Service Pack 2



Availability of this package is 2024-05

This is a major public release of the platform for the nController products. It contains a number of new features, stability improvements and security updates.



Updating to Platform version 2.3.0 is a one-way, non-downgradable update.



Attempting to restore backups created on previous versions will only restore functions/bundles but not previous Platform versions.

### 3.4.1. What's New

- Added backup restore and log download to emergency web service
- Fixed restore partition status being possibly incorrect after restoring a backup
- Corrupted boot entries no longer initiate a factory restore
- Improved robustness of factory restore after a previous factory restore failure
- Mitigated Terrapin attack vulnerability
- Improved boot speed on rackmount form factor
- Minor security updates

### 3.4.2. Resolved Issues

- #10793: Multi-Stack Controller power loss without proper shutdown can prevent device from starting up in rare cases

- #10975: Internal network bridge not forwarding packets between other devices
- #9770: Function installation fails after an uninstall following a previous upgrade

### 3.4.3. Known Issues

- #5545: Failed updates requiring system rollback
- #11519: Incompatibility with pre 2.3.0 Service Pack restores causing the UPS Manager function to fail

## 3.5. Platform 2.2.6



Availability of this package is 2024-02

This is a minor public release of the platform for the nController products. It contains small stability improvements and security updates.

### 3.5.1. What's New

- Robustness improvements to function restart
- Robustness improvements to configuration import
- Updated operating system packages

## 3.6. Platform 2.2.0: Service Pack 1



Availability of this package is 2023-06

This is the next major public release of the platform for the nController products. It contains new features as well as improvements and fixes to a number of existing features. The following sections will outline the major differences between this version and the previous 2.1.0.

### 3.6.1. What's New

- Added HTTPS support
- Added configurable STP (Spanning Tree Protocol) on network interfaces
- Added unified YAML based configuration file import/export
- Increase backup restore process speed by 2x
- Added compressed Bundle support .fnz
- Added data keyspaces clear on Function install/uninstall
- Added debug log downloads from the user interface
- Added Function versions and status to /platform/functions

## 3.6.2. Resolved Issues

- #5105: Size in backups page does not properly calculate available space
- #7399: USB hotplug requires reboot
- #6047: Platform downgrades may not revert all platform data
- #6132: Backups filling available space causes a crash loop
- #5074: Erroneous error message displayed during restore of backup
- #6722: Some corner cases can cause platform upgrade failure
- #4603: Logs do not persist after a fatal platform error
- #4810: Uninstalling Functions can cause bad state requiring reboot

## 3.7. Platform 2.1.0: Factory



Availability of this package is 2022-05

This is the first public release of platform for the nController products. It introduced support for a new hardware platform and an array of new software features. The following sections will outline the major differences between the Grid Battery Controller platform features.

### 3.7.1. What's New

- New separate platform user interface available at /platform
- Addition of mDNS local URLs in the format ncontroller-<serial\_number>.local
- Removed /upgrade URL from product for platform upgrades
- Separation of platform upgrades from application upgrades using Bundles and Functions
- Ability to change network settings through the user interface at /platform/networks
- Ability to create, restore, download, and upload system backups at /platform/backups
- Ability to upgrade the platform at platform/settings
- Ability to reset the system to a factory state using the "Factory Reset" feature at platform/settings
- Ability to reboot and power off the product at platform/settings
- Ability to update the date, time, and timezone of the product at platform/settings

### 3.7.2. Known Issues

- #10793: Multi-Stack Controller power loss without proper shutdown can prevent device from starting up in rare cases

*From time to time Nuvation Energy will make updates to products in response to changes in available technologies, client requests, emerging energy storage standards, and other industry requirements. The product specifications in this document, therefore, are subject to change without notice.*

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