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Title:

## Moonitor16s How to Update Documentation

Summary:

This document describes how to update the firmware in order to prove the function and performance of the following subsystem: Subsystem name: Moonitor16s BMS

### **Purpose of the Document:**

The purpose of this document is to provide guidance on how to perform Over-The-Air (OTA) firmware updates for the Moonitor 16s device. It aims to help users understand the importance of keeping their device's firmware up-to-date and the potential risks associated with not doing so.

### **Importance of Updating Firmware:**

Updating firmware is a crucial aspect of device maintenance as it ensures the device functions optimally, fixes known bugs and vulnerabilities, and enhances overall security. By updating firmware, users can benefit from new features, bug fixes, performance improvements, and security patches, ensuring their device is always up-to-date and functioning at its best. Neglecting to update firmware can result in device malfunction, reduced performance, security vulnerabilities, and even compromise user data. Therefore, it is highly recommended that users regularly update their device's firmware to ensure it remains in optimal condition.

The main tasks of the subsystem are:

- Reading 6-16 voltage signals from any kind of lithium battery system
- Controlling outputs depending on the cell safety status
- Sending Voltage and temperature data over Wifi API and GUI

Maintainer:

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### Abbreviations

Abbreviation	Description
TSP	Test Specification Procedure
6-16s	Can be 6s,7s,8s,9s,10s,11s,12s,13s,14s,15s,16s
OV cut	Over Voltage cut
UV cut	Under Voltage cut
OT cut	Over Temperature cut
OTA programming	Over the Air programming

# 1. Introduction

The Moonitor BMS system requires rigorous testing and adherence to high quality standards to ensure customer satisfaction. As such, we have implemented an Over-the-Air (OTA) programming procedure that is essential to the functionality of our BMS systems. With OTA programming, customers have the ability to securely update the firmware of their BMS devices over a wifi connection, enabling the easy replacement of outdated software or updating the functionality of the system.

OTA programming also provides a convenient method for updating the BMS system to meet new customer requirements. This eliminates the need for cable connections or physical proximity to the system, as all that is required is a network connection to the device's IP address.

This document outlines the importance of OTA programming in the Moonitor BMS system and provides a step-by-step guide for conducting OTA updates, ensuring that our customers can take full advantage of the benefits of this critical feature.

# 2. Procedure

## 1. Open Settings page of Moonitor16s

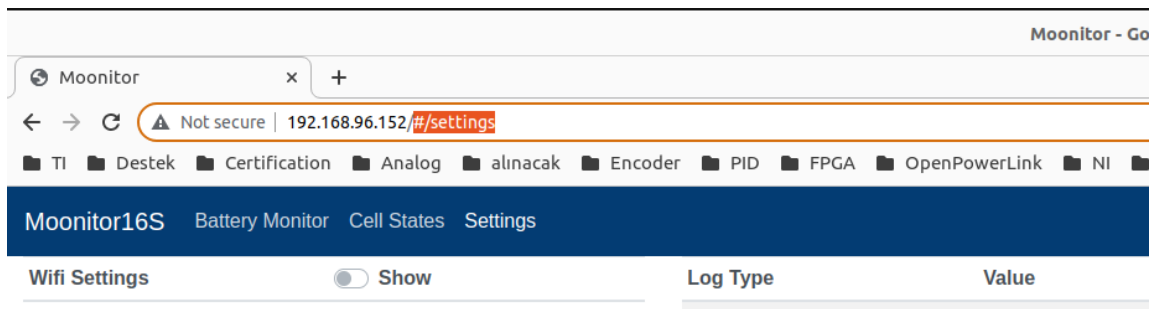
To begin the OTA programming procedure for Moonitor16s, first ensure that your BMS system is functioning properly and that you have access to the device's IP address. Navigate to the Settings page and make a note of the current software version.

The screenshot shows the Moonitor16s Settings page in a web browser. The page is titled "Moonitor16s" and has a navigation bar with "Battery Monitor", "Cell States", and "Settings". The "Settings" page is divided into several sections:

- Wifi Settings:** A "Show" button is visible.
- Voltage:** Fields for Under Voltage Alarm (2.9), Under Voltage Cut (3), Over Voltage Alarm (4.08), Over Voltage Cut (4.1), and Balance Voltage (4.8).
- Current Limits:** Fields for Charging (30) and Discharging (30).
- Temperature Cutoffs:** A radio button for "DO2 -> Fan" is selected. Fields for MCU Temperature Cut off (60) and AUX Temperature Cut off (60).
- Cells:** Fields for Cell Count (16) and Balance Cell Count (2).
- Aux:** Field for Aux Count (0).
- Log Type and Value:** A table showing system information:

Log Type	Value
Local IP	192.168.96.152
MAC	E8:68:E7:0D:8A:C8
Alarms	14
Loop Counter	16
Hardware version	V3
Software version	V8.167_ old
- Advanced Settings:** A "Show" button is visible.
- Buttons:** "Soft Restart" and "Save" buttons are at the bottom.

- Next, remove the "#/settings" text from the URL and replace it with "update". Hit enter to access the OTA update screen



- OTA update screen displays two buttons.



- Click on the "Choose File" button and locate the .bin file that we have provided specifically for your system. This unique file is designed to protect our copyright and ensure the security of your device.

- To maintain the integrity of our intellectual property, we provide each customer with a unique .bin file for their BMS system. This approach enables us to closely monitor and protect our copyright, as we assign specific bin files to individual customers based on their device's MAC address list. By doing so, we prevent our software from being copied and used in other projects without our permission. Each bin file will work for certain list of mac addresses.

- Once you click the "Update" button, the .bin file will be sent to the Moonitor16s device, triggering a firmware update. In the event of any issues, you can access the debug information on your serial window.

To properly configure the serial window, ensure that it is set to "No line ending" and a baud rate of 115200. By following these steps, you can quickly and easily update your BMS system and ensure that it is operating at peak performance.

- After updating the firmware, you may observe a reset on your OLED display or flashing of two LEDs on your Moonitor16s device. This indicates that the system has undergone a reset.

To verify the successful update, navigate back to the Settings page and check the software version. While the identifier may not specifically indicate "old" or "new," the new code should be readily identifiable as different from the previous version. By following these steps, you can ensure that your Moonitor16s BMS system is running the latest firmware version and functioning optimally.

The screenshot shows the Moonitor16S settings interface. The browser address bar indicates the URL is 192.168.96.152/#/settings. The page is divided into several sections:

- Wifi Settings:** A toggle switch labeled 'Show' is turned on.
- Voltage:** Includes fields for Under Voltage Alarm (2.9), Under Voltage Cut (3), Over Voltage Alarm (4.08), Over Voltage Cut (4.1), and Balance Voltage (4.8).
- Current Limits:** Includes fields for Charging (30) and Discharging (30).
- Temperature Cutoffs:** A toggle switch labeled 'DO2 -> Fan' is turned on. Fields for MCU Temperature Cut off (60) and AUX Temperature Cut off (60) are present.
- Cells:** Includes fields for Cell Count (16) and Balance Cell Count (2).
- Aux:** Includes a field for Aux Count (0).
- Log Type and Value:** A table showing system information:
 

Log Type	Value
Local IP	192.168.96.152
MAC	E8:68:E7:0D:8A:C8
Alarms	3049
Loop Counter	3051
Hardware version	V3
Software version	V8.167_new
- Advanced Settings:** A toggle switch labeled 'Show' is turned on.

At the bottom of the settings page, there are buttons for 'Soft Restart' and 'Save'.

Congratulations, your firmware has been successfully updated! Your Moonitor16s BMS system is now running the latest software version and is ready to deliver optimal performance.

Thank you for choosing our product and trusting us with your BMS needs.

### 3. Troubleshooting Guide:

#### Common Issues During OTA Programming Process for Moonitor16s BMS Firmware Update

- In the event of a networking issue during the update process, the device may display the previous software version, indicating an incomplete update due to network connectivity problems. To ensure successful updating, it is important to have your computer or phone in close proximity to the router and ensure that the Moonitor16s has sufficient network coverage.
- In the event of a reset during the software update, such as a power loss or external power cycle, the device's memory may be affected, potentially requiring technical support. Should this occur, please contact us via [info@sarperonal.com](mailto:info@sarperonal.com) or through our [Contact Us page](#) for further assistance.