

# **MOD-SIX Lumina MET-PIR Updating Instructions**

**March 2023**

This manual provides instructions for updating the firmware of the MET-PIR as used with the MOD-SIX Lumina Nixie Clock.

<b>Revision/Update Information:</b>	This is a new manual
<b>Clock Firmware:</b>	V01-57
<b>MET-PIR Firmware:</b>	V1.5a

**<http://www.badnixie.com>**

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**March 9, 2023**

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Your feedback on this manual would be greatly appreciated. Send comments to: [lumina-doc-comments@glaver.org](mailto:lumina-doc-comments@glaver.org)

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## **Preface**

This manual provides instructions for performing a firmware update on the MET-PIR component of the MOD-SIX Lumina.

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## **Intended Audience**

This manual is intended for all MOD-SIX Lumina Nixie Clock owners.

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## **Important Cautions**

Like all electronic devices, the clock system components can be damaged by static electricity. When updating the MET-PIR firmware, always touch the aluminum base plate first to discharge any static.

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## **Applicable hardware**

This document covers the MET-PIR, a component of the MOD-SIX Lumina Nixie clock.

# 1

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## Identifying the installed firmware

Most of the existing field population of MET-PIRs has version 1.4 firmware installed. A small number of MET-PIRs may have an early version of 1.5 firmware installed.

Rather than detailing the somewhat complex steps to determine the exact firmware installed on your MET-PIR, we will just go ahead and update it to V1.5a, the latest version.

**Note: There is no harm in "updating" a MET-PIR that is already running firmware 1.5a using this procedure.**

## 2

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# MET-PIR firmware updating procedure

The MET-PIR firmware is updated wirelessly using Bluetooth® low energy via the *nRF Device Firmware Update* utility. This free utility is available for Android™ phones and tablets as well as Apple® iPhone® and iPad® devices. The examples provided here are from an Android device. However, the *nRF Device Firmware Update* utility operates similarly on Apple devices.

**Note:** There are many official and unofficial applications for managing nRF devices. The specific one you need is *nRF Device Firmware Update* from Nordic Semiconductor ASA.

You will need the following in order to update the MET-PIR firmware:

- MET-PIR with its two AAA batteries properly installed
- Android phone or tablet **or** Apple iPhone or iPad, with Bluetooth low energy support in both hardware and operating system
- *nRF Device Firmware Update* utility for Android devices, available free from Google Play at <https://play.google.com/store/apps> **or** *nRF Device Firmware Update* utility for Apple devices, available free from the Apple App Store at <https://www.apple.com/ios/app-store>
- Updated MET-PIR V1.5a firmware kit, downloaded from [http://www.badnixie.com/MOD-SIX\\_Info\\_Page.html](http://www.badnixie.com/MOD-SIX_Info_Page.html) and copied to your phone or tablet

The firmware kit is a .ZIP file. You should not extract the contents of the .ZIP file as the *nRF Device Firmware Update* utility relies on the specific .ZIP contents.

**Figure 2–1 MET-PIR view showing control button**

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## MET-PIR firmware updating procedure

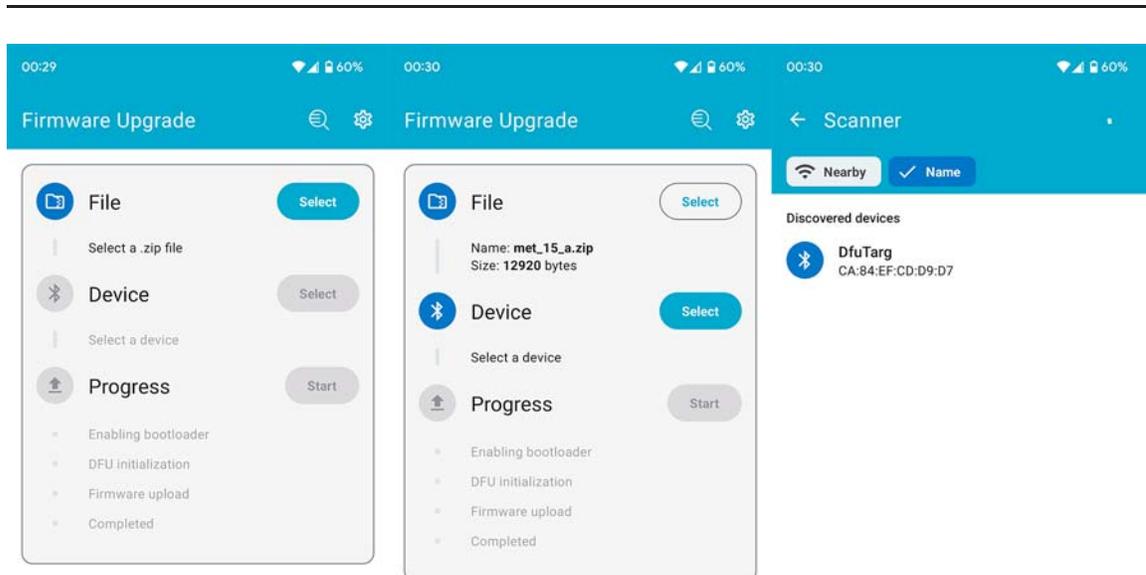
The above picture shows the top of the MET-PIR with the location of the control button indicated by an arrow.

Press and hold the control button on the MET-PIR until three complete cycles of color change have appeared. A cycle consists of yellow / blue / green / red. At the end of the third cycle a new purple color will appear. Release the button when the purple color appears. The LED will remain lit in purple, indicating that the MET-PIR is now in firmware update mode.

**Note:** The control button is rather small and holding it through the three color cycles may be a bit uncomfortable.

Refer to the following illustrations for examples of each updating step.

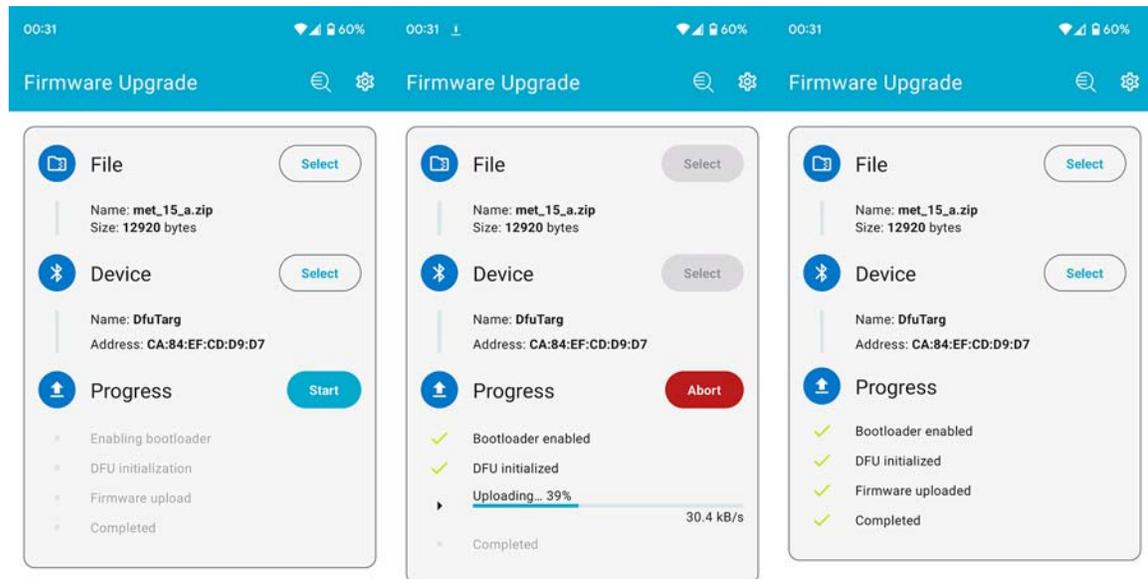
**Figure 2–2** Updating steps 1-3 (Android device example)



- Launch the *nRF Device Firmware Update* utility app on your phone or tablet and tap the highlighted "Select" button on the "File" line.
- Select the "met\_15\_a.zip" file from the file chooser and tap "OK".
- Tap the highlighted "Select" button on the "Device" line and wait for the device list to appear. Tap on the "DfuTarg" device to select it.

**Note:** Other devices may or may not appear in the list. The "DfuTarg" device is the MET-PIR. If you do not see the "DfuTarg" device, confirm that the MET-PIR is within radio range and its LED is still purple.

Figure 2–3 Updating steps 4-6 (Android device example)



- Tap the highlighted "Start" button on the "Progress" line.
- Observe the progress of the update procedure.
- Verify that the update completed properly by confirming the four green check marks.

At this point the MET-PIR should reboot, displaying a sequence of blue / red / green / green / green / green / green LED flashes to indicate it is now running v1.5a.

**Notes:** If the MET-PIR does not start to receive new firmware within 2 minutes after entering update mode, the update mode will time out and the unit will return to normal operation.

If you download incorrect firmware to the MET-PIR, simply repeat the process from the beginning using the correct firmware.

Updating the MET-PIR firmware does not change any previously configured settings on the unit.