PenMount PCI Utilities for Linux

Users' Guide

Version 1.5
23/Jul/'15

PenMount®
TOUCH SCREEN SOLUTIONS

Preface

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Revision Table

Date	Revision	Changes
01/07/2014	1.3	Update the PCIMSet new features in V1.3 build 16.
27/07/2014	1.4	(1) Integrate the pmfu and PCIMSet users guide. (2) Update PCIMSet information to V1.4 build 1. (3) Update pmfu information to V1.4 build 3.
23/07/2015	1.5	(1) Update PCIMSet information to V1.5 (build 3). (2) Update pmfu information to V1.5 (build 1). (3) Update supported device lists.

Table of Content

1. Introduction

This document provide information about using the PCIMSet and pmfu utility. The PCIMSet utility is for changing PenMount touch settings and for touch issues diagnosis. The pmfu utility is for updating device firmware.

1.1. Requirements

1.1.1. System Requirements

The PenMount PCI utilities supports the following Linux kernel configurations:

Linux kernel 2.6
Linux kernel 3.0

1.1.2. Device Requirements

Series	Control Board	USB	RS-232 / UART
PenMount 1100 Series	PM1100		v
PenMount 1200 Series	PM1200	v	v
	PM1201	v	v
PenMount 1300 Series	PM1300A	v	
	PM1302	v	v
PenMount 1400 Series	PM1400A	v	v
	PM1401	v	v
PenMount 1500 Series	PM1500	v	v
PenMount 2100 Series	PM2101		v
	PM2102	v	v
PenMount 2200 Series	PM2201	v	v
PenMount P2-06 Series	PM1110		v
	PM1210	v	v
	PM2103	v	v
	PM2203	v	v
	PM2300	v	v
PenMount P2-08 Series	PM1310	v	v
	PM1410	v	v
	PM1710	v	v
	PM1711	v	

1.2. Special Notice

On some systems that use X window and have PenMount X input driver already installed, there is chance that the X driver would prevent the PenMount PCI utilities from communicate with PenMount P2 devices, and result in no device found. In this case, please temperately disable the PenMount X input driver before using the utilities.

1.3. Limitation

The PenMount PCI utilities only support one PenMount PCI Device at this time.

Please notice that the I2C interface is not yet supported in current utility releases. Please consider change device settings with other supported interfaces.

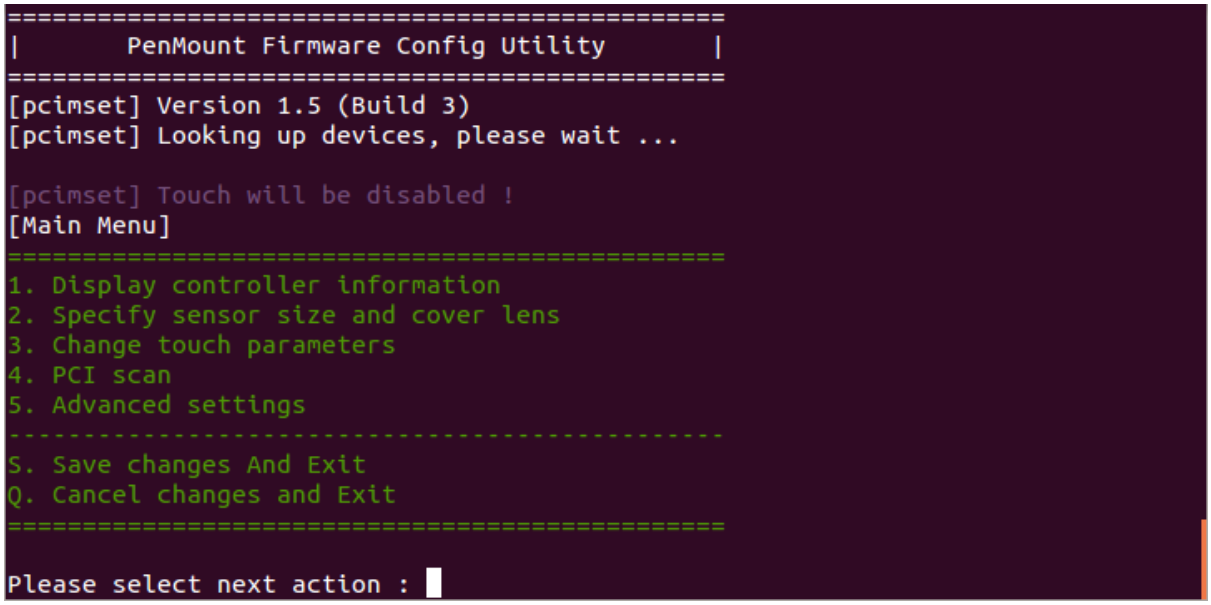
2. PCIMSet

2.1. Running the Program.

1. Using pcimset does not require installation. After decompress the package, there will be four directories indicating different platforms.

Directory	Target Platform
armv4t	ARM V4
armv7	ARM V7
i686	X86 32bit
x86_64	X86 64bit

2. Open the terminal
3. Change the directory to PCIMSet utility. Administrator authorization is required to open it.
4. After opening the PCIMSet successfully, you will see. The following screen will appear.



The menu context might be different according to the device firmware version used. For ODM firmware versions, there is no “Specify sensor size and cover lens” option in the main menu.

2.1.1. Detect USB only

By default, the pcimset scans all the USB ports and tty devices for PenMount P2. This might take a long time to find a device. If there is only USB device connected, user may also specify the “-usb” parameter to save time.

```
sudo ./pcimset –usb
```

2.1.2. Specify a COM Port for RS-232 Device

To specify a target tty device for detecting PenMount P2, please use the “-d” parameter.

```
sudo ./pcimset –d /dev/ttyUSB0
```

2.2. Summary

PCIMSet offers the following functions:

1. Display controller information: Displays information about the controller.
2. Specify sensor size and cover lens: Modify the touchscreen size and cover glass thickness supported by the controller.
3. Change touch parameters: Modifies the number of touch points and touch parameters such as the orientation.
4. PCI scan: Tests the functions of the touch panel.
5. Advanced settings: Change the setting of interface, sensitivity, etc.

S. Save changes And Exit: Saves the modifications and exit.

Q. Cancel changes and Exit: Cancel the modified parameters and exit.

Notes：

- If the modified parameters are not saved, the controller will operate with the original parameters.
- If the pcimset prompts for no device found, please verify if the controller interface and connection are normal.

2.3. Features

The pcimset utility display menus and requires users to operate with keyboard for choosing the options and changing the settings.

2.3.1. Display Controller Information

Choosing the “Display Controller Information” option in the main menu will display the information about the PenMount P2 device.

```
[PenMount Device Settings]
================================================
Device       : PM2201 Control Board
Location     : Serial ttyUSB0 (38400 bps)
Firmware     : D03.1.1.0
Panel Size   : 7.0 inch (Wide)
Cover Lens   : 4.0 mm (Glass)
================================================
```

- Device: The PenMount P2 controller model number.
- Location: The interface, and the port that the PenMount P2 device is connected.
- Firmware: Firmware version. Versions that starts with Dxx indicates that this is ODM firmware.
- Boot Version: The version of the boot loader firmware.
- Panel Size: The target touchscreen size.
- Cover Lens: The target cover glass thickness.

2.3.2. Specify Sensor Size and Cover Lens

On standard PenMount P2 firmware, Choosing the “Specify Sensor Size and Cover Lens” option in the main menu allows user to change the target panel size of cover lens thickness settings. On ODM firmwares however, this settings is not adjustable, and will not be listed in

```
[Specify Touch Sensor Settings]
================================================
1. Change Panel Size : 10.4 inch
2. Change Cover Lens : 1.1 mm (Glass)
------------------------------------------------
Q. Exit to upper menu
================================================

Please select action :
```

the menu.

1. Change Panel Size: Modify the touch panel size.

```
[Supported Panel Sizes]
================================================
[0] 10.4 inch (e.g. P3008)
[1] 8.4 inch (e.g. P3007)
------------------------------------------------
[Q] Exit to upper menu
================================================

Please specify new panel size ID :
```

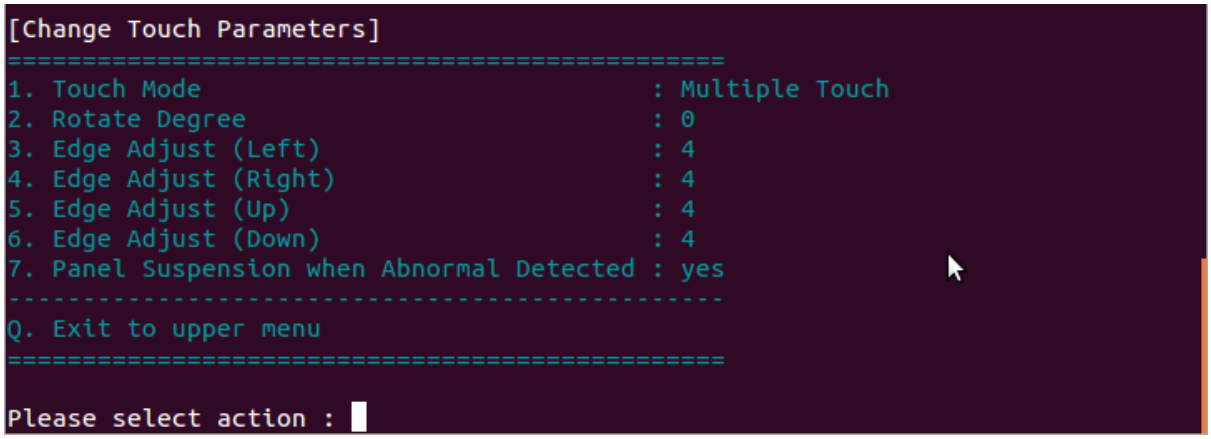
2. Change Cover Lens: Cover glass thickness.

```
[Supported Cover Lens]
================================================
[1] 1.1 mm (Glass)
[2] 1.8 mm (Glass)
[3] 2.8 mm (Glass)
------------------------------------------------
[Q] Exit to upper menu
================================================

Please specify new cover lens ID :
```

Q. Exit to upper menu: Go back to the previous menu.

2.3.3. Change Touch Parameters

Choosing the “Change touch parameters” option in the main menu allows user to change the common touch parameters used by PenMount P2.



1. Touch Mode: The touch mode, could be: Single Touch, Dual Touch, or Multiple Touch.
2. Rotate Degree: Orientation, could be: 0, 90, 180, or 270 (CCW).
3. Edge Adjust (Left): Parameter for the edge compensation (left)
4. Edge Adjust (Right) : Parameter for the edge compensation (right)
5. Edge Adjust (Up) : Parameter for the edge compensation (top)
6. Edge Adjust (Down) : Parameter for the edge compensation (bottom)
7. Panel suspension when Abnormal Detected: Setting for panel operation suspension when abnormal signal interference detected. Please notice that this setting might not be supported by some firmware version.

Q. Exit to upper menu: Go back to the previous menu

2.3.4. PCI Scan

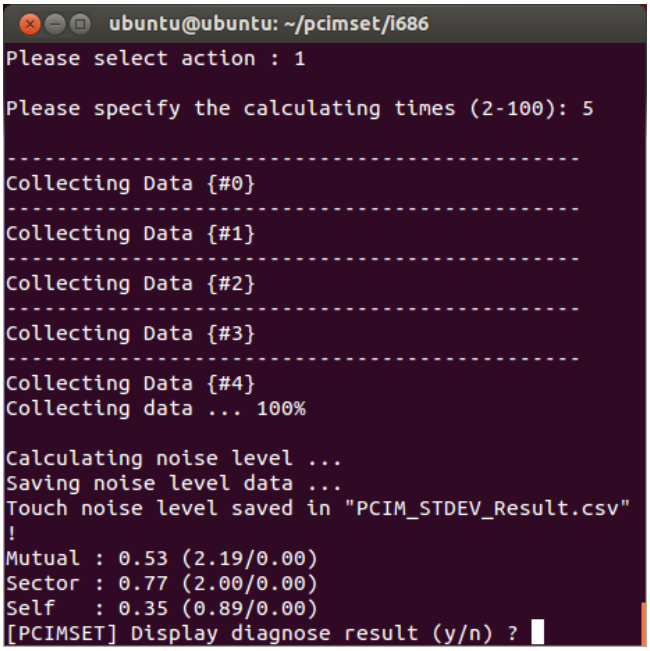
Choosing the “PCI Scan” option in the menu will perform diagnosis on touch panels.

1. Get Noise Level

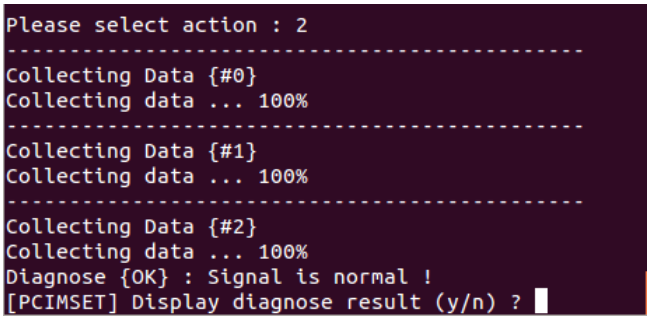
Test the level of noise interference to the touch panel.

If you would like to test the level of noise interference, enter the number of times when you see the following screen.

If you enter “5”, the detection will be conducted five times. Test results will be saved automatically in the file ”PCIM_STDEV_Result.csv” as indicated in the following screen shot.



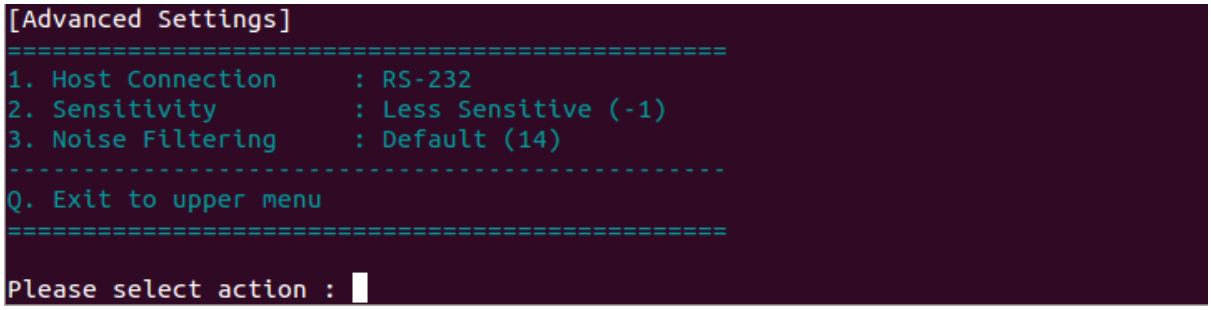
2. Diagnose Panel
   Test if every drive line and sense line is working normally. To test if the touch panel is functioning normally, the following screen will appear and start testing.



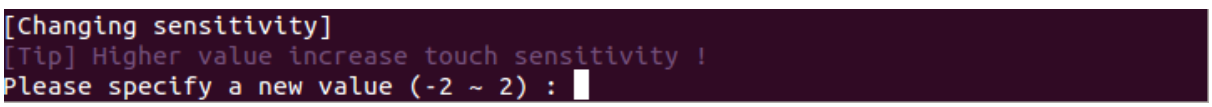
Q. Exit to upper menu：Go back to the previous menu

2.3.5. Advanced settings

Choosing the “Advanced settings” option in the main menu allows user to change sensitivities or noise filtering levels that might affect the touch performance.

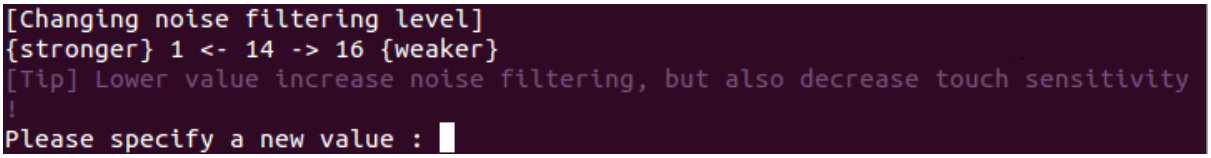


1. Host Connection: Interface.
2. Sensitivity: Sensitivity setting.



3. Noise Filtering: Change the filter setting

Q. Exit to upper menu: Go back to the previous menu



3. Pmfu

The pmfu utility is for updating the touch firmware on field, and for updating the parameters used by the PenMount firmware.

3.1. Display Usage

By specifying the “-h” parameter, the pmfu utility displays the supported parameters and their usages.

```
penmount@penmount:~$ sudo ./pmfu -h
================================================
-h          : Print Usage.
-d <path>   : Assign RS-232 device path. Only accept devices in /dev.
-f <path>   : Assign firmware file path.
-fwver      : Show current device firmware version. (USB Only)
-chkver     : Force update even if same version.
-defparam   : Load default parameters of the device.
-loadparam  : Load parameters from specified file, update to device, and exit.
-updateparam : Simliar to the "-loadparam", but without updating the firmware fi
rst.
-saveparam : Save parameters from device to file, and exit.
-usb        : Detect USB only.
-retry      : Automatically retry update if fail.
================================================
```

3.2. Check Current Firmware Version

The “-fwver” parameter provides a convenient way for checking the current version.

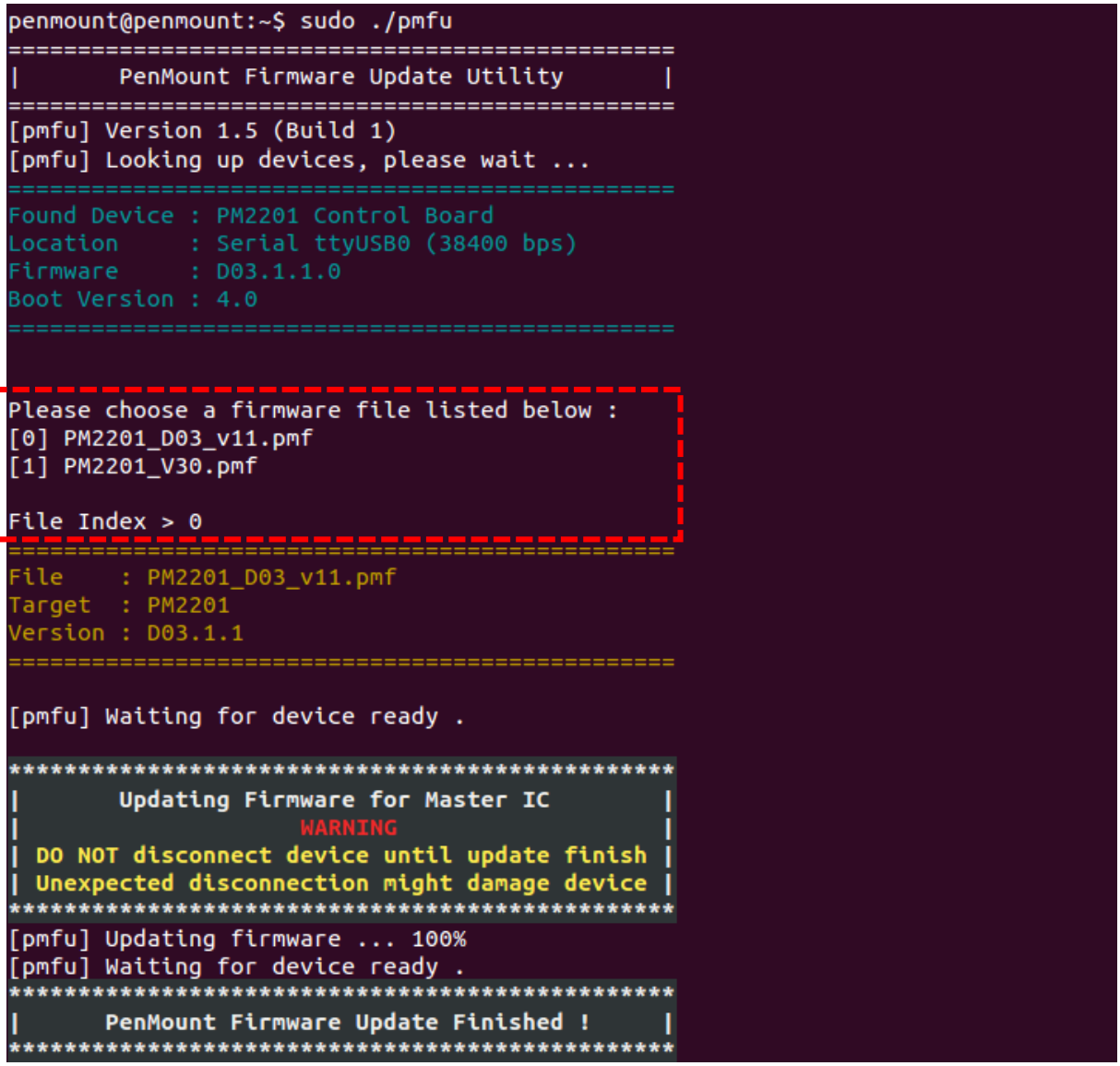
```
penmount@penmount:~$ sudo ./pmfu -fwver
2.3
```

3.3. Update Firmware

Pmfu is designed to support firmware update in console. In the case that there is only one compatible firmware file, the pmfu utility will use it for updating. However, if there are several files, user must manually select one of them.

3.3.1. Update Firmware by Choosing from a List of Files

By default, the pmfu utility will search the same directory for compatible firmware files. If there are several files, the pmfu utility will display a menu and prompt user for choosing one of them.



3.3.2. Update Firmware by Specifying a Firmware File

User may also specify the file name that pmfu is going to use for updating.

```
penmount@penmount:~$ sudo ./pmfu PM2201_D03_v11.pmf
================================================
|       PenMount Firmware Update Utility       |
================================================
[pmfu] Version 1.5 (Build 1)
[pmfu] Looking up devices, please wait ...
================================================
Found Device : PM2201 Control Board
Location     : Serial ttyUSB0 (38400 bps)
Firmware     : D03.1.1.0
Boot Version : 4.0
================================================

================================================
File    : PM2201_D03_v11.pmf
Target  : PM2201
Version : D03.1.1
================================================

[pmfu] Waiting for device ready .

************************************************
|       Updating Firmware for Master IC        |
|                   WARNING                    |
| DO NOT disconnect device until update finish |
| Unexpected disconnection might damage device |
************************************************
[pmfu] Updating firmware ... 100%
[pmfu] Waiting for device ready .
************************************************
|      PenMount Firmware Update Finished !     |
************************************************
```

3.3.3. Checking Firmware Version before Updating

The “-chkver” parameter can be used if user would like to skip update if the device firmware version is equal to the specified firmware file.

```
penmount@penmount:~$ sudo ./pmfu PM2201_D03_v11.pmf -chkver
================================================
|       PenMount Firmware Update Utility       |
================================================
[pmfu] Version 1.5 (Build 1)
[pmfu] Looking up devices, please wait ...
================================================
Found Device : PM2201 Control Board
Location     : Serial ttyUSB0 (38400 bps)
Firmware     : D03.1.1.0
Boot Version : 4.0
================================================

================================================
File    : PM2201_D03_v11.pmf
Target  : PM2201
Version : D03.1.1
================================================

[pmfu] Target device uses same firmware version !
```

3.4. Updating Firmware Parameters

There are several parameters that pmfu supported for reading or writing the PenMount P2 firmware parameter.

3.4.1. Saving Current Firmware Parameters

User can use the “-saveparam” to save the current PenMount P2 firmware parameter to a file with the “ini” extension.

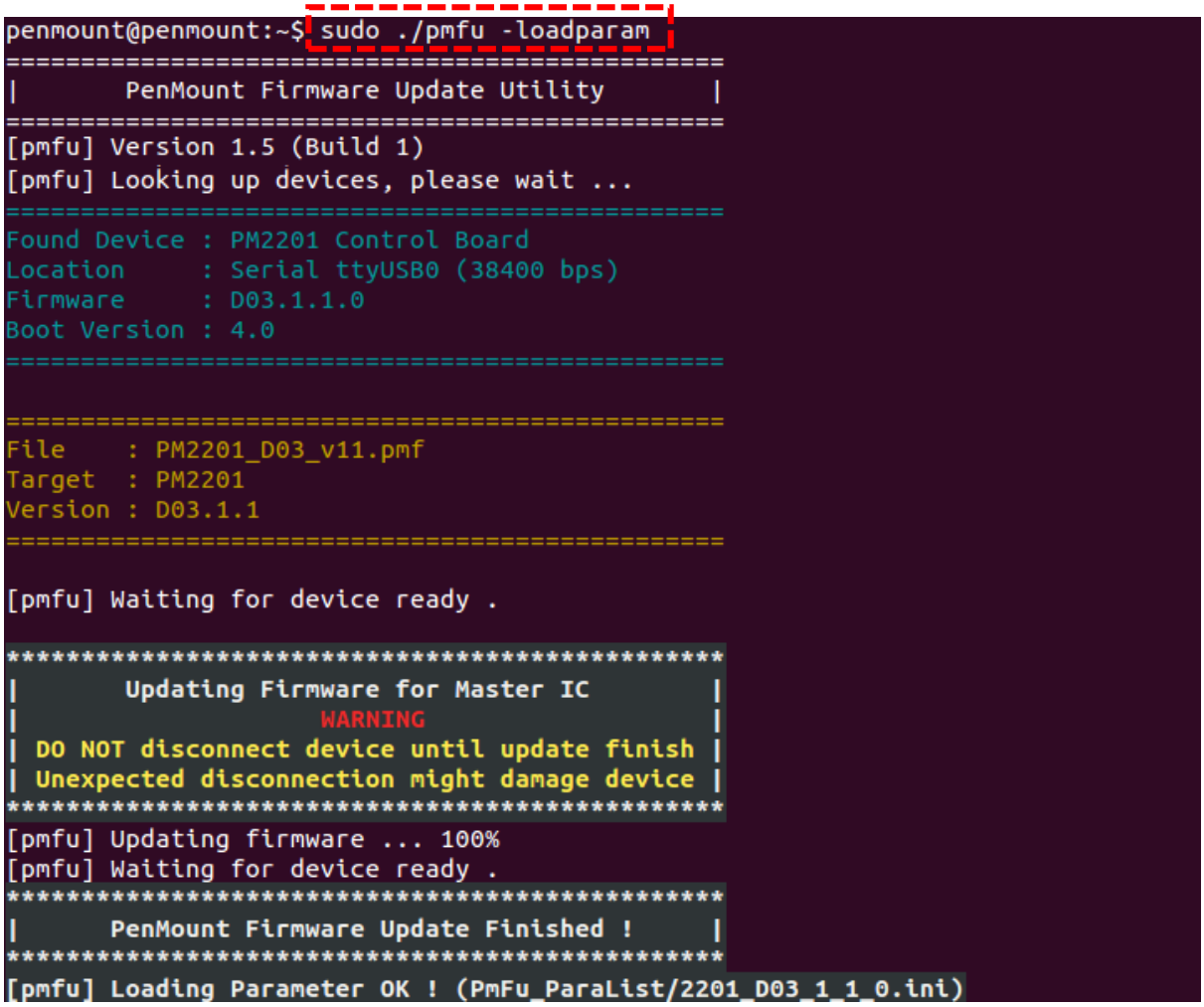
```
penmount@penmount:~$ sudo ./pmfu -saveparam
================================================
|       PenMount Firmware Update Utility       |
================================================
[pmfu] Version 1.5 (Build 1)
[pmfu] Looking up devices, please wait ...
================================================
Found Device : PM2201 Control Board
Location     : Serial ttyUSB0 (38400 bps)
Firmware     : D03.1.1.0
Boot Version : 4.0
================================================

[pmfu] Saving Parameter OK ! (PmFu_ParaList/2201_D03_1_1_0.ini)
```

The generated file can be found in the “PmFu_ParaList” directory. The ini file is a text file looks like below.

```
penmount@penmount:~$ cat PmFu_ParaList/2201_D03_1_1_0.ini
153 008 001 000 001 000 008 015 015 015 056 008 049 006 018 035 005 016 160 016
255 016 003 003 016 004 007 014 005 003 007 014 000 000 007 010 014 014 000 000
000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 224 035 000 010 010
008 008 000 000 000 000 032 002 017 119 018 112 000 008 255 002 014 000 000 000
000 000 000 000 000 102
```

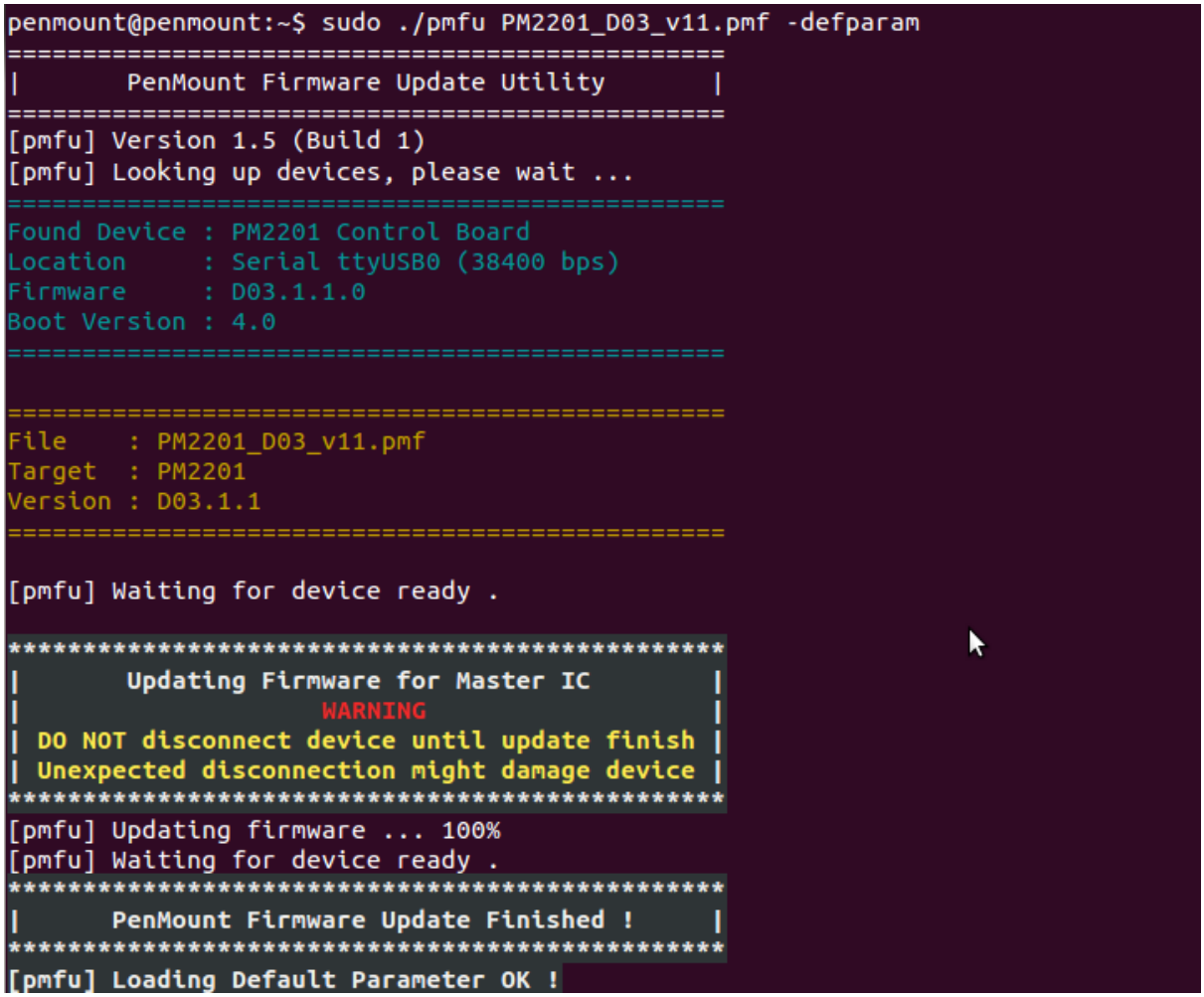
3.4.2. Updating Firmware Parameters after Firmware Update

The “-loadparam” parameter is used for reading values from a specified ini file, and then updates the device after pmfu finishes firmware updating. If no file name is specified, the pmfu will look into the “PmFu_ParaList” directory for the default ini file.



3.4.3. Loading the Default Firmware Parameters after Firmware Update

Without specifying the “-defparam” parameter, the PenMount P2 will continue using the parameters used in the firmware before updating. If user would like to use the default parameters of the new firmware, please add the “-defparam” when updating.


penmount@penmount:~$ sudo ./pmfu PM2201_D03_v11.pmf -defparam
| PenMount Firmware Update Utility |
[pmfu] Version 1.5 (Build 1)
[pmfu] Looking up devices, please wait ...
Found Device : PM2201 Control Board
Location   : Serial ttyUSB0 (38400 bps)
Firmware   : D03.1.1.0
Boot Version : 4.0
File   : PM2201_D03_v11.pmf
Target : PM2201
Version : D03.1.1
[pmfu] Waiting for device ready .
| Updating Firmware for Master IC |
| WARNING |
| DO NOT disconnect device until update finish |
| Unexpected disconnection might damage device |
[pmfu] Updating firmware ... 100%
[pmfu] Waiting for device ready .
| PenMount Firmware Update Finished ! |
[pmfu] Loading Default Parameter OK !