Calibration Operations Guide

Bubble Level for GlobalMems Gsensor

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2015/08/23

Revision History

Ver.	Date	Updates	Descriptions
1.0	Feb.25th, 2015	Only support MTK Platform	first Release
1.1	Mar.03th, 2015	UI adjustment	Add button(clear offset)
1.2	Jun.26th, 2015	Package rename	Net.androgames.level => com.globalmems.level
1.3	Aug.23th, 2015	Adjust APK	DisplaySettings.java => compatible apk setup

A. Introduction

Application of GlobalMems Gsensor calibration.

Name	GLevel
Project Name	GLevel
Application Name	G-sensor Calibration
Package Name	com.globalmems.level
Create Activity	Level.java
Min SDK Version	11

LAUNCHER : The apk(Glevel_L.apk) on behalf of the show on the desktop icon.
DEFAULT : The apk(Glevel_D.apk) on behalf of the show in the setting => display.

B. Bubble Level Features

1. Install & Run Glevel_L.apk,

2. First boot, it will trigger GsensorCalibrationBoardCastReceiver..

```
if (intent.getAction().equals(Intent.ACTION_BOOT_COMPLETED)) {
    if (!offset.exists()){
        Intent nintent = new Intent(context, Level.class);
        nintent.addFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
        context.startActivity(nintent);
    }
else
    log.e(TAG,"offset existed, Do nothing”);
```

3. Before Calibration
   See Figure 1

Note：Please keep the device in a horizontal desktop.

4. Click Button “G-sensor calibration”
   The bubble moves to the center.
   See Figure 2
   Calibration has been successful at this time.

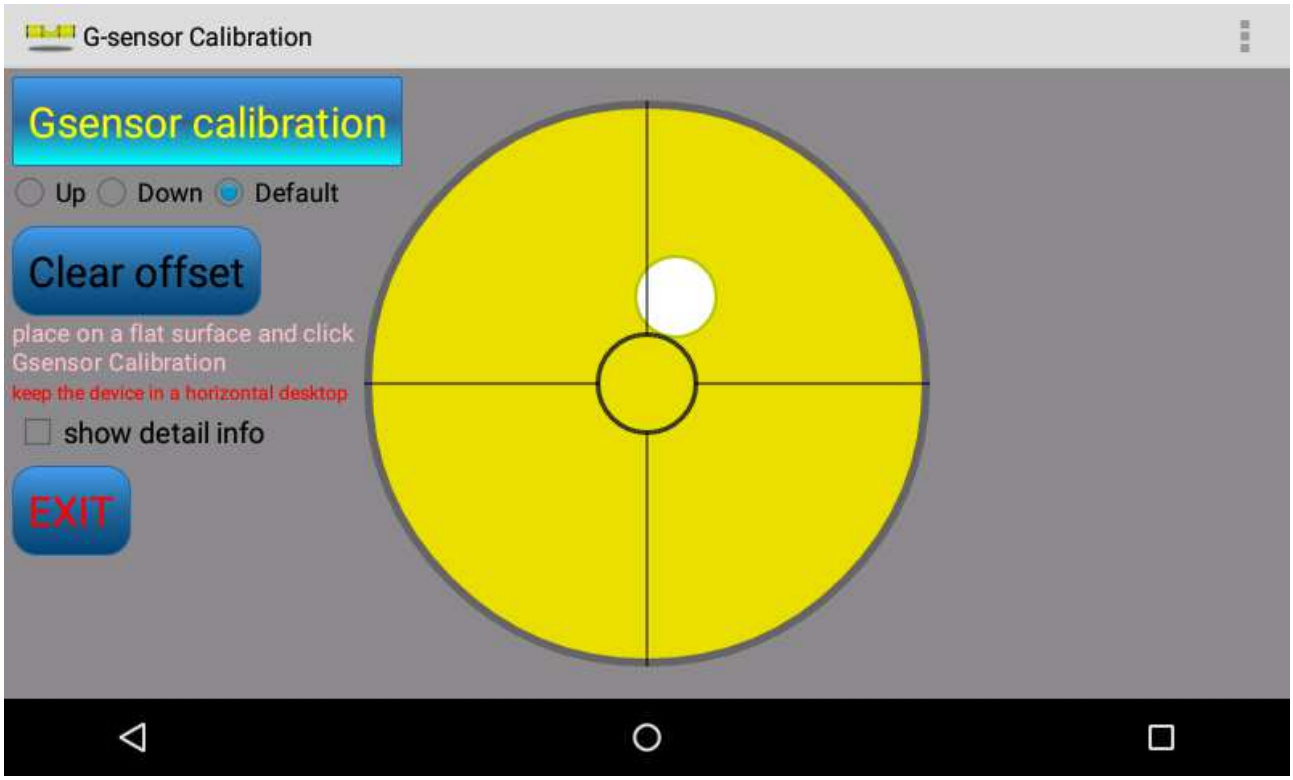


Figure 1(Before calibration)

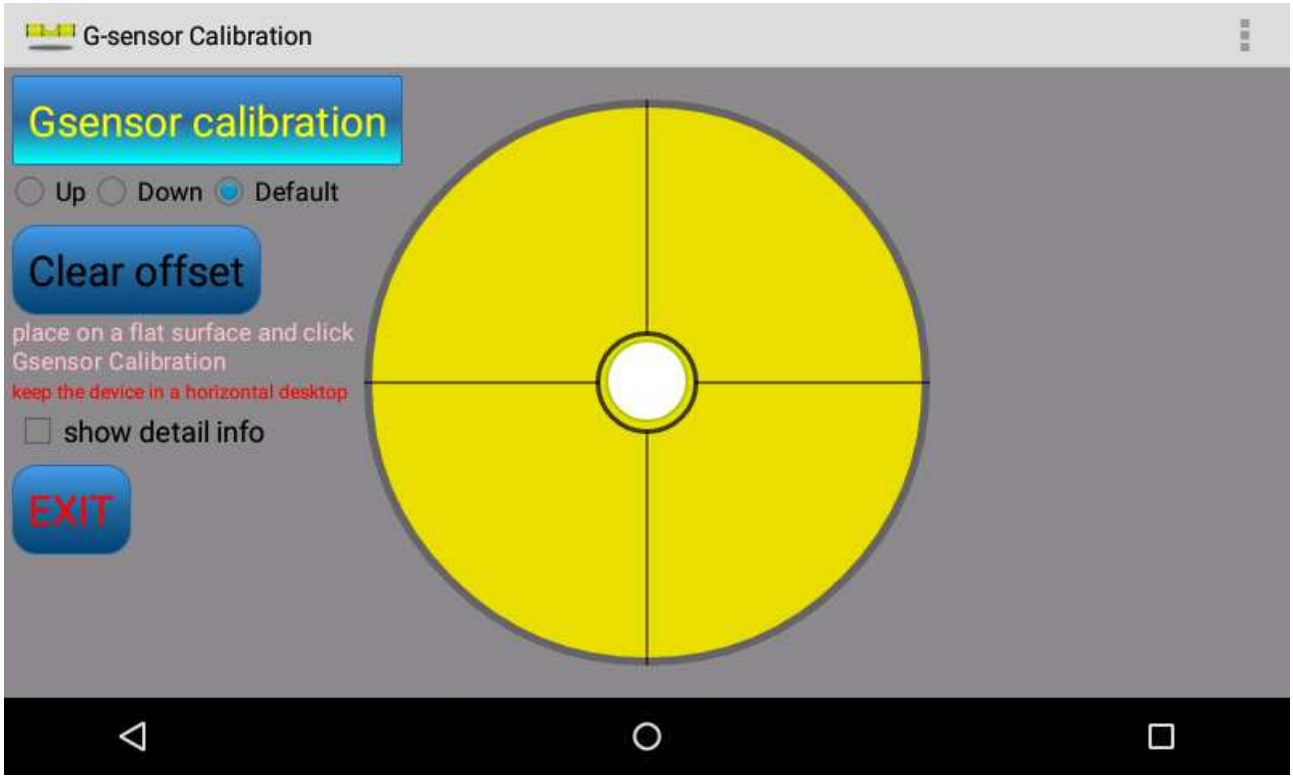


Figure 2(after calibration)

X/Y/Z value of close to 0/0/9.81

And the offset value save to /data/misc/gsensor_offset.txt.

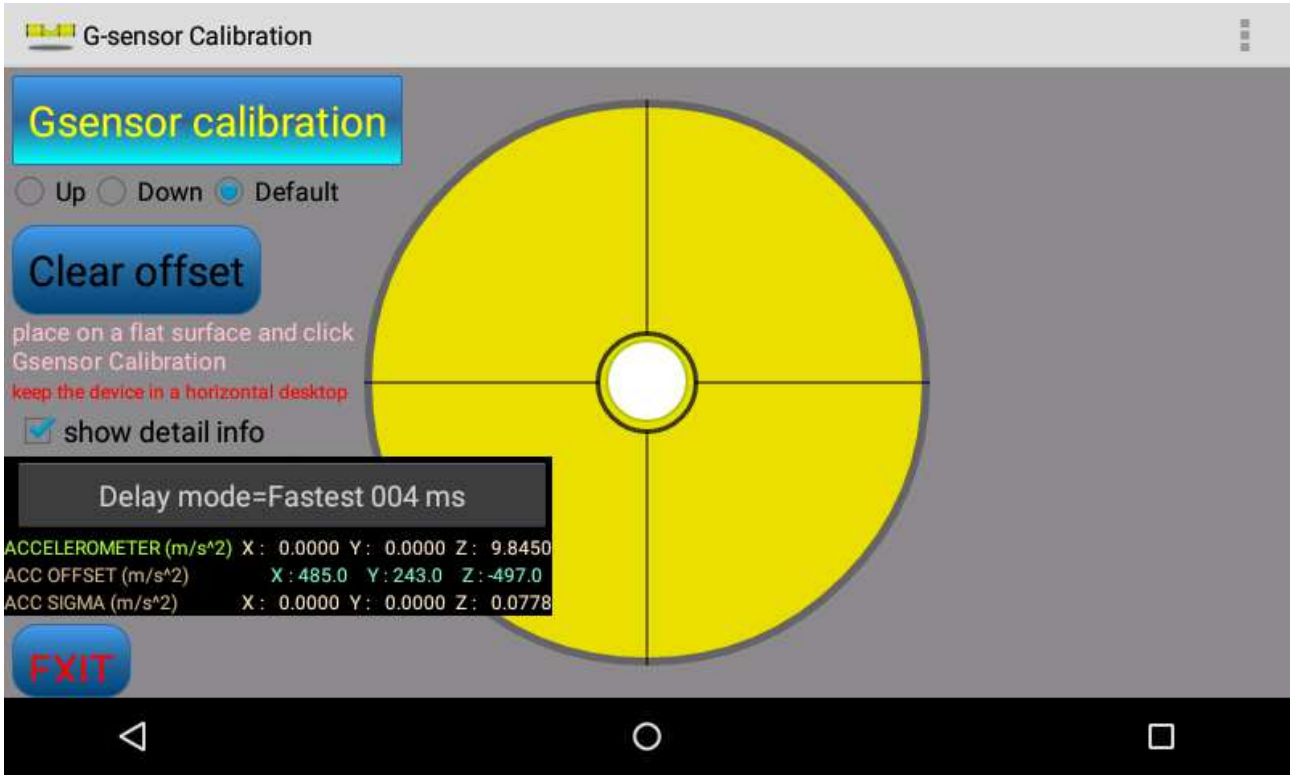


Figure 3(show detail info)

C. The APK put inside the "setting > display"

The following is placed inside the apk: “setting” > “display”

1. File “$Android\packages\apps\Settings\res\xml\display_settings.xml”

Add the following code to add an option to perform link “Level”

```
<PreferenceScreen
        android:key="gma_ACC"
        android:title="@string/gma_calibration">
        <intent
                android:action="android.intent.action.MAIN"
                android:targetPackage="com.globalmems.level"
                android:targetClass="com.globalmems.level.Level"/>
</PreferenceScreen>
```

2. File ”$Android\packages\apps\Settings\res\values\strings.xml”

Add <string name="gma_calibration">G-sensor Calibration</string>

3. Put Glevel_D.apk in /system/priv-app
   /system/priv-app 中包括 Launcher，systemui, settingsprovider 等，均是系統的核心應用，這些應用能使用系統級的權限，Android 4.4 之前的所有/system/app 下的軟件都能使用系統級的權限。

4. Adjust the APK permissions to system_app
   Put Glevel into $Android/external/
   mmm $Android/external/Glevel

5. Compatible code ,If gsensor_offset.txt existed will show icon on Setting>Display
File "$Android\packages\apps\Settings\src\DisplaySettings.java"

Add the following code to

```
File file = new File("/data/misc/gsensor_offset.txt");
    if(file != null && !file.exists()){
    //getPreferenceScreen().removePreference(findPreference("gma_ACC")); //for non-mtk use
    mDisplaySettingsExt.removePreference(findPreference("gma_ACC"));//for mtk platform
    }
```

D. Two kinds of differences apk in source

1. Modify AndroidManifest.xml

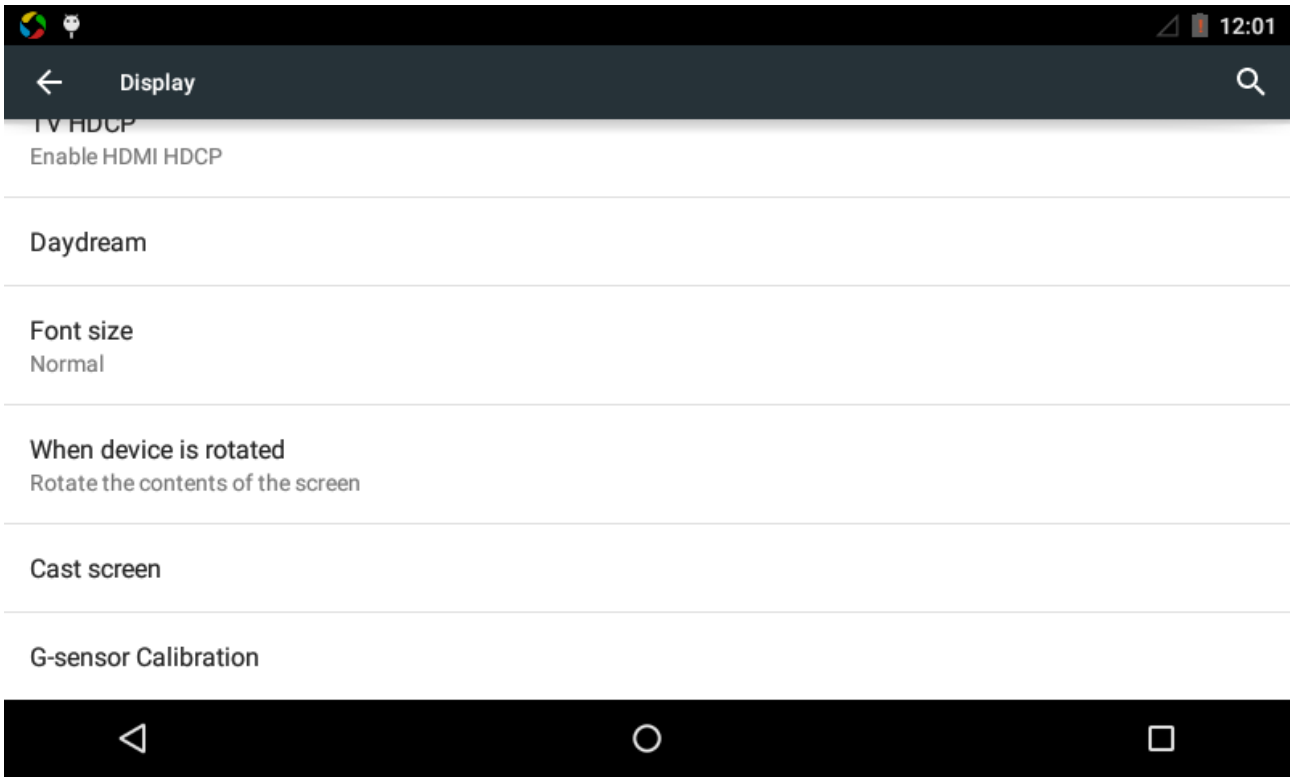
   <category android:name="android.intent.category.LAUNCHER"/>

   <category android:name="android.intent.category.DEFAULT"/>

LAUNCHER : The apk(Glevel_L.apk) on behalf of the show on the desktop icon.

DEFAULT : The apk(Glevel_D.apk) on behalf of the show in the setting -> display.

2. Rebuilding "Glevel_D.apk",and Install



BroadcastReceiver 剛安裝好時沒有辦法收到 Broadcast

Starting from Android 3.1, the system's package manager keeps track of applications that are in a stopped state and provides a means of controlling their launch from background processes and other applications.

Note that an application's stopped state is not the same as an Activity's stopped state. The system manages those two stopped states separately.
The platform defines two new intent flags that let a sender specify whether the Intent should be allowed to activate components in stopped application.

- System App

解決方法則是透過把 BroadcastReceiver 的 Application 直接 push 到 system/priv-app 下面
就可以直接讓 Application 成為 Active 狀態了

Ref:
http://fulungchen-blog.logdown.com/posts/261373-broadcast-receiver-active-inactive