

Android HAL Integration Guide: ISL29028A

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Table of Contents

1	INTRODUCTION	4
2	HAL RELEASE.....	4
3	HAL INTEGRATION (BUILDING FROM SOURCE)	5
4	HAL INTEGRATION (USING PREBUILT LIBRARY FILES).....	6
5	VALIDATING THE HAL FILES.....	7

1 Introduction

This document describes how to integrate HAL layer for isl29028A in Android source code (Android 4.1 and later versions). This involves adding new HAL files in Android source code and building images to be validated on the target platform (This release is tested on Pandaboard Rev A3).

2 HAL Release

Product	Target platform on which ISL29028A is integrated (E.g. Pandaboard Rev A3)
Software	Android HAL for Light and Proximity sensor
Driver Version	1.0
Released files	<ol style="list-style-type: none"> 1. InputEventReader.cpp 2. InputEventReader.h 3. LightSensor.cpp 4. LightSensor.h 5. ProximitySensor.cpp 6. ProximitySensor.h 7. SensorBase.cpp 8. SensorBase.h 9. Sensors.cpp 10. Sensors.h 11. Android.mk
Features	<ol style="list-style-type: none"> 1. Supports Light measurement to be passed to Android application layer for isl29028A 2. Supports Proximity measurement to be passed to Android application layer for isl29028A

3 HAL integration (Building from source)

IMPORTANT NOTE:

The following steps are given w.r.t Pandaboard Rev A3 hardware platform and the android 4.4.3 software platform. This steps should be same for other platforms too. In case of any issues please contact our support engineer.

STEP 1:

Copy the complete directory (which contain all files) named as **intersil** (provide in the release tar file **INTERSIL_ISL29028A_AndroidHAL_v1.0.tar.bz2**) to the below path in android source code

<android top directory>/hardware/<vendor>/intersil

E.g. android/hardware/ti/intersil

STEP 2:

Edit sensors.h file for the sensor device driver to which we are building the HAL.

<android top directory>/hardware/<vendor>/intersil/sensors.h

E.g. Android/hardware/ti/intersil/sensors.h

```
#define DEVICE_NAME          "<Driver-name>"
```

```
#define PROX_ENABLE_SYSPATH  "<sysfs-path>"
```

```
#define ALS_ENABLE_SYSPATH   "<sysfs-path>"
```

E.g.

```
#define DEVICE_NAME          "isl29028A"
```

```
#define PROX_ENABLE_SYSPATH  "/sys/intersil/isl29028A/prox_status"
```

```
#define ALS_ENABLE_SYSPATH   "/sys/intersil/isl29028A/als_status"
```

DEVICE_NAME is the name of the sensor hardware it must be same as we registered in our sensor device driver.

PROX_ENABLE_PATH is the sysfs path for attributes to enable the Prox mode

ALS_ENABLE_PATH is also the sysfs path for attributes to enable the mode for ALS

IMPORTANT NOTE: In order for the HAL to work properly appropriate drivers should be already present in the Android Linux kernel used in this build.

STEP 4:

IMPORTANT NOTE: Make sure that Android source does not have any other software sub module that will produce sensors.default.so to avoid any library conflicts.

Rebuild the Android source code after making the changes as indicated in the above step. After build process make sure we have the file **"sensors.default.so"** (HAL generated binary) available in **<android top directory>/out/target/product/<vendor>/system/lib/hw/** directory.

Now flash the android images to the permanent storage media in target platform and boot it. Follow instruction described in Section 5 to test / validate the sensor HAL library.

4 HAL Integration (Using prebuilt library files)

If we already have an android built for the target platform with appropriate sensor drivers enabled, copy the **"sensors.default.so"** library file (provided in this release) to the following path in the permanent storage media used to flash the Android images.

/lib/hw directory in the partition named "system" in the permanent storage media

OR

/system/lib/hw in the root partition of device if it exists

After this boot the Android image and install any standard Android application to test the sensor features. Testing steps are as described in following section.

5 Validating the HAL files

The driver provides a simplified user interface for verifying the sensor device driver operation

STEP1:

The first step after loading the new Linux kernel image with driver is to check if the driver really loaded and detected the ISL29028A sensor wired to the target platform. Use the below commands

```
root@android # cd /sys/intersil/isl29028A
```

```
root@android # ls
```

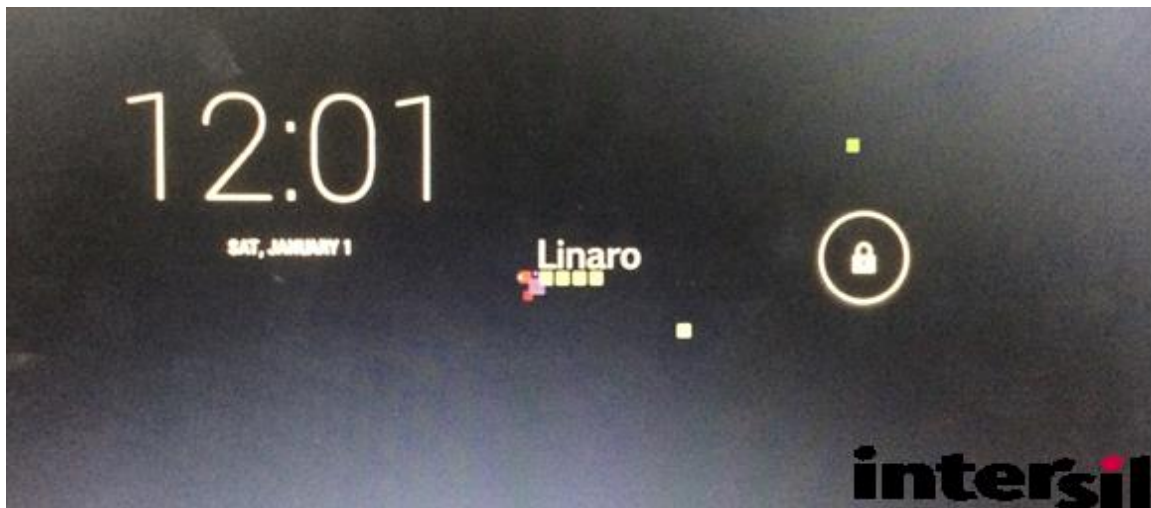
```
als_status
```

```
prox_status
```

```
lux_value
```

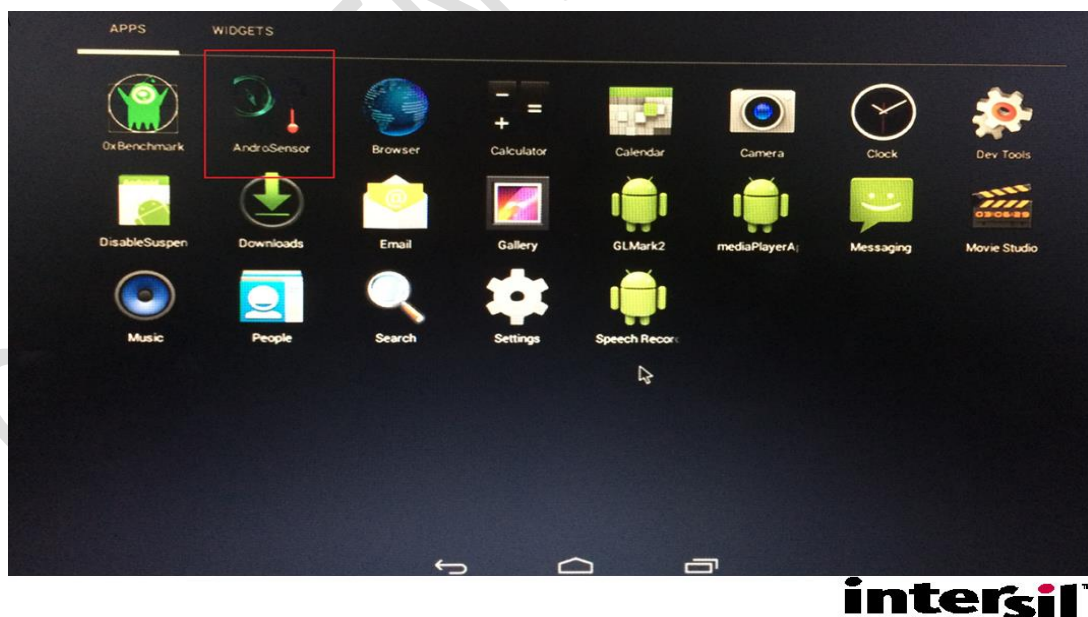
STEP2:

Connect the Display to Pandaboard through HDMI. The display is as shown below



STEP3:

Download an application like Androsensor from google play store and install it on Android.



STEP4:

After successful installation of this app we can see the proximity and als values.

