



## **ISL29038 Device Driver Integration Guide**

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### **ISL29038 ALS/PROX Sensor Driver Integration Guide**

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## 1 Introduction

This document describes the device driver integration of “ISL29038 sensor device driver” with android and Linux kernel for panda-board, which is developed by VVDN Technologies for Intersil Corporation.

This Document is made for the reference of

- Product managers and QAD at VVDN & Intersil to understand the device driver integration.
- Engineering Team at VVDN for integrating and testing the device driver for panda-board.

## 2 Extract the Driver package

The extracted directory will contain the following files

- ISL29038.c
- ISL29038.h

### 2.1.1 Copying driver files

- Copy the isl29038.c to kernel/drivers/input/misc/ directory in the Linux kernel for panda-board

```
# cp isl29038.c kernel/drivers/input/misc/
```

- Copy the ISL29038.h to standard header file path kernel/include/linux/ of the Linux kernel for panda-board

```
# cp isl29038.h kernel/include/linux/
```

## 3 Adding the driver to kernel build system

### 3.1.1 Adding entry in Kconfig

- Change directory to kernel/drivers/input/misc inside the Linux kernel source code for panda-board.

```
# cd kernel/drivers/input/misc
```

- Open the Kconfig in the current directory with any editor of choice
- Go to the end of file and add the following configuration just before the #endif

```
config INPUT_ISL29038
```

```
bool "ISL29038 I2C driver for sensor device driver"
```

```
default y
```

```
depends on I2C=y
```

```
help
```

```
This is a device driver for Intersil Corporation's ISL29038  
ALS Proximity sensor.
```

- Save and exit.

**Note:** This step will add our sensor entry in the kernel's configuration menu. User can unselect this entry using kernel's menuconfig system if its compilation with panda-board is not required.

## 4 Adding entry in Makefile

- Change directory to `kernel/drivers/input/misc` inside the Linux kernel source code for panda-board.

```
# cd kernel/drivers/input/misc
```

- Open the Makefile in the current directory with any editor of choice.
- Go to the end of file and add the following.

```
obj-$(CONFIG_INPUT_ISL29038) += isl29038.o
```

**Note:** After this step the ISL29038 sensor driver is integrated with kernel build system.

## 5 Add driver and device information in board file

- Change directory to `kernel/arch/arm/mach-omap2` inside the Linux kernel source code for panda-board.

```
# cd kernel/arch/arm/mach-omap2
```

- Edit the file `board-omap4panda.c` under current directory with editor of choice. Do Steps 3 to 5 to edit the file.

- Include the sensor driver header file at the beginning of file along with other include files.

```
#include <linux/isl29038.h>
```

- Add this global structure declaration to the file

```
Static struct isl29038_platform_data isl29038_data = {
```

```
.gpio_irq = 39 /* GPIO pin number to be assigned as interrupt
```

```
For interrupt mode only, otherwise leave as -1 */
```

```
};
```

NOTE: Please assign gpio39 if it is not assigned to any other driver. It will fail to request otherwise.

```
static struct i2c_board_info __initdata isl29038_info[] = {  
    {  
        I2C_BOARD_INFO("isl29038",isl29038_I2C_ADDR),  
        .platform_data = &isl29038_data,  
    },  
};
```

- Inside function "omap4\_panda\_i2c\_init" add the following code to register ISL29038 device with i2c core.

```
omap_register_i2c_bus(4,400,isl29038_info,ARRAY_SIZE(isl29038_info));
```

- Save and exit
- Now the sensor driver is integrated with Linux kernel for panda-board.

#### IMPORTANT NOTE:

- Please make sure you use one sensor device at a time for GPIO 39 interrupt functionality.
- Comment the *omap\_register\_i2c\_bus* for other sensor devices of same slave address on same bus.
- Use `gpio_irq = -1` to disable the interrupt functionality for unselected device.