

# **BMP085 Module**

## **Digital Pressure Sensor**

### **BMP085 Module Porting Guide**

#### **Version 1.2**

<b>Document Release</b>	<b>Date</b>	<b>Modification</b>	<b>Author</b>
<b>Version 1.1</b>	<b>2011/10/19</b>	<b>Initial Version</b>	<b>CDPDA Howard</b>
<b>Version 1.2</b>	<b>2012/4/8</b>	<b>Second Version</b>	<b>CADTC Alvin</b>

# Introduction

This document describes how to port BMP085 pressure module for Linux to ARM based Embedded System. Then illustrate an example to read pressure and temperature value.

## Build Environment

- Host : Ubuntu 11.04 64-bit
- Target : QT210 CORTEX-A8 development board
- Toolchain : Sourcery G++ Lite 2009q3-72 gcc-4.3.2
- Kernel: Linux-2.6.28.6

## Kernel Configuration

### 1. Modify Kernel Soure mach-smdkc110.c (Add bmp085 defined)

- vim ~/android-kernel-samsung-dev-full/arch/arm/mach-s5pv210/mach-smdkc110.c

In struct i2c\_board\_info

```
static struct i2c_board_info i2c_devs1[] __initdata = {  
    { I2C_BOARD_INFO("bmp085", 0x77), },  
}
```

### 2. Build Kernel

- cd ~/kernel/linux-2.6.28.6
- make menuconfig
- make -j4 zImage

# Build BMP085 Driver

## 1. Modify Makefile

```
KERNELDIR ?= ~/android-kernel-samsung-dev-full
```

## 2. Build and Install

- make -j4
- make install

# Testing BMP085 driver

## 1. Detect I2C bus (BMP085 have 0x77 Slave Address)

- i2cdetect 1

```
[root@QT210 /]# ./i2cdetect 1
WARNING! This program can confuse your I2C bus, cause data loss and worse!
I will probe file /dev/i2c/1.
I will probe address range 0x03-0x77.
Continue? [Y/n]
      0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f
00:                -----
10: -----
20: -----
30: -----
40: -----
50: 50 51 52 53 54 55 56 57 ----- UU -----
60: -----
70: ----- 76 77
```

## 2. Load driver

- modprobe bmp085

```
[root@QT210 /]# modprobe bmp085
bmp085 1-0077: BMP085 ver. 1.0 found.
bmp085 1-0077: Succesfully initialized bmp085!
```

### 3. Get temperature value

- `cat /sys/bus/i2c/devices/1-0077/temp_input`

```
[root@QT210 /]# cat /sys/bus/i2c/devices/1-0077/temp_input
328
```

### 4. Get pressure value

- `cat /sys/bus/i2c/devices/1-0077/pressure_input`

```
[root@QT210 /]# cat /sys/bus/i2c/devices/1-0077/pressure_input
101663
```

### 5. Get oversampling value

- `cat /sys/bus/i2c/devices/1-0077/oversampling`

```
[root@QT210 /]# cat /sys/bus/i2c/devices/1-0077/oversampling
3
```

### 6. Change oversampling value (0~3)

- `echo X > /sys/bus/i2c/devices/1-0077/oversampling`

Note : X can be an integer number from 0 to 3

### 7. Tester Code

- In HOST
  - `cd BMP085_Module_1.2_QT210/bmp085_app`
  - `make install`
- In Target
  - `bmp085_test`

```
[root@QT210 bmp085_app]# bmp085_test
Oversampling = 3
Temperature = 28.9 'C
Pressure = 1011.65 hPa
Altitude = 13.329 meters
```