



**SOLOMON
SYSTECH**

SPD2010

Touch device driver porting guide

SW

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Development Environment

- ❖ Kernel version : 3.4.5
- ❖ Android Version : 4.2.1
- ❖ AP : Exynos 5410

I2C information (1)

- ❖ I2C address : 0x53
- ❖ I2C name : "spd2010"
- ❖ I2C Speed : 100Kbps ~ 1Mbps
 - Normal : 400Kbps

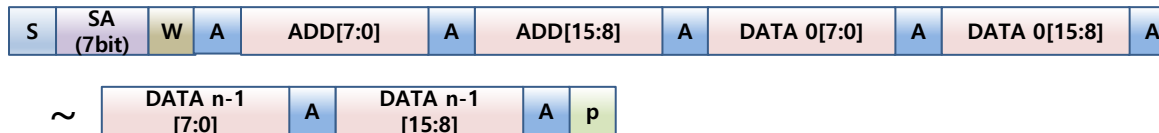
I2C information (2)

❖ Note

- Slave Address : 0x53(7bit), 0xA6(8bit)
- All command, address, data is 16bit width
- Byte Order : In all cases, LSB comes first and then MSB comes.
- Bit Order : In all cases, most significant bit comes first.
- Speed : up to 2.5Mbps

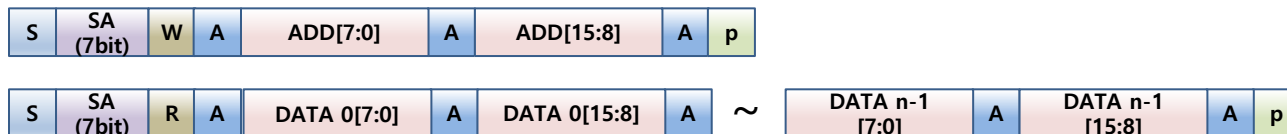
❖ Write Example

- S + SA7W + ADD[7:0] + ADD[15:8] + DATA0[7:0] + DATA0[15:8] ~ + DATA n-1[7:0] + DATA n-1[15:8] + P



❖ Read Example

- S + SA7W + ADD[7:0] + ADD[15:8] + P + S + SA7R + DATA0[7:0] + DATA0[15:8] ~ DATA n-1[7:0] + DATA n-1[15:8] + P



How to firmware update

- ❖ Used to update firmware in android apk.
- ❖ Send command and filename to the touch device driver by ioctl.
 - Command = 0xBC0B
- ❖ Return value
 - zero or greater than zero if update success, less than zero otherwise.

How to firmware update – sample code

```
jint Java_com_ssl_spd2010_DownloadActivity_Download(JNIEnv *env, jobject obj, jstring filename, jint sz)
{
    int fd;
    struct _download_ioctl down;
    int length;
    char *name;
    char tmp[256];

    fd = open(TOUCH_DEV, O_RDWR);
    if(fd < 0) {
        close(fd);
        return -1;
    }

    length = (*env)->GetStringLength(env, filename);
    down.sz = sz;
    down.file = (*env)->GetStringUTFChars(env, filename, 0);
    ioctl(fd, TOUCH_IOCTL_SET_DOWNLOAD, &down);
    (*env)->ReleaseStringUTFChars(env, filename, down.file);
    close(fd);
    return 0;
}
```

Attached files

- ❖ Files for I2C communication of device.
- ❖ Copy attached touch device driver files to the directory "drivers/input/touchscreen/"

File Name	content
spd2010.c	Touch device driver C source
spd2010.h	Touch device driver header source
spd2010_upgrade.c	File for update firmware
spd2010_upgrade.h	Firmware data for update

- ❖ For the following files, please add the contents to the file with the same name in "drivers / input / touchscreen" using the editor.

File Name	content
Kconfig	For "make menuconfig"
Makefile	Makefile

- ❖ After compiling with make command, check if "spd2010.o" and "spd2010_upgrade.o" files are created.

Attached files - Must be modified in the device driver file

- ❖ The device driver needs to be changed according to the porting environment.
- ❖ In the spd2010.h file
 - The GPIO pin reset for the device.

```
#define SPD2010_RESET_PIN      (EXYNOS5410_GPE0(3))  
#define SPD2010_INT_PIN      (EXYNOS5410_GPX0(2))  
#define SPD2010_IRQ          (IRQ_EINT(2))
```

- Resolution of panel

```
#define SPD2010_X_MAX          (356)    /* resolution X */  
#define SPD2010_Y_MAX          (400)    /* resolution Y */
```

- Number of node X & Y

```
#define SPD2010_MAX_X_NODE      (6)  
#define SPD2010_MAX_Y_NODE      (7)
```

- Number of maximum point number

```
/* The maximum supported number of fingers. */  
#define MAX_POINT_NUMBER        (5)
```

Attached files - Kconfig file

- ❖ It is to the kernel option.
- ❖ Copy Contents of attached Kconfig to Kconfig of Kernel
- ❖ Kernel Kconfig Location : drivers/input/touchscreen/
- ❖ Check [Solomon SPD2010 Touchscreen Interface] in make menuconfig
 - Device Drivers → Input device support → Touchscreens

```
.config - Linux/arm 3.4.5 Kernel Configuration

Touchscreens
Arrow keys navigate the menu. <Enter> selects submenus ---. Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ] excluded <M> module < > module capable

--- Touchscreens
< > Sentron Touchscreen Interface
[*] Solomon SPD2010 Touchscreen Interface
< > Sentron SSD6600 Touchscreen Interface
< > MELFAS MIT200 Touchscreen
< > ADS7846/TSC2046/AD7873 and AD(S)7843 based touchscreens
< > AD7877 based touchscreens
< > Analog Devices AD7879-1/AD7889-1 touchscreen interface
< > Atmel mXT I2C Touchscreen
< > AUO in-cell touchscreen using Pixcir ICs
< > BU21013 based touch panel controllers
< > cy8ctmg110 touchscreen
< > Cypress TTSP touchscreen
< > Dynapro serial touchscreen
< > Hampshire serial touchscreen
< > EETI touchscreen panel support
< > EETI eGalax multi-touch panel support with I2C
< > EETI eGalax multi-touch panel support
< > Fujitsu serial touchscreen
< > Ilitek ILI210X based touchscreen
< > COASIA WXVGA 10.1" touchscreen input driver
< > Gunze AHL-51S touchscreen
< > Elo serial touchscreens
< > Wacom W8001 penabled serial touchscreen
< > MAX11801 based touchscreens
< > MELFAS MIT200 (RSP) Touchscreen

v(+)

<Select> < Exit > < Help >
```

Attached files - Makefile file

- ❖ It is to the compile option.
- ❖ The code below has been added to be included in the compilation.
 - `Obj-$(CONFIG_TOUCHSCREEN_SPD_2010) += spd2010.o spd2010_upgrade.o`
- ❖ Copy Contents of attached Makefile to Makefile of Kernel

Thank You



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