

망고 210 ICS 4.0.4 5M MT9P111 Camera Developer Guide

<http://www.mangoboard.com/>

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Crazy Embedded Laboratory

Document History

Revision	Date	Change note

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1. 커널 수정

/kernel\$ vi arch/arm/mach-s5pv210/mach-mango210.c

```
#ifndef CONFIG_VIDEO_MT9P111
#include <media/mt9p111_platform.h>
#define CAM_ITU_CH_A
#undef CAM_ITU_CH_B
#endif
.....
#endif CONFIG_VIDEO_MT9P111

        &mt9p111
#endif
.....
#endif CONFIG_VIDEO_MT9P111
static struct mt9p111_platform_data mt9p111_plat = {
    .default_width = 640,
    .default_height = 480,
    .pixelformat = V4L2_PIX_FMT_YUYV,
    .freq = 44000000,
    .is_mipi = 0,
};

static struct i2c_board_info mt9p111_i2c_info = {
    I2C_BOARD_INFO("MT9P111", 0x7A>>1),
    .platform_data = &mt9p111_plat,
};

static struct s3c_platform_camera mt9p111 = {
#ifdef CAM_ITU_CH_A
    .id          = CAMERA_PAR_A,
#else
    .id          = CAMERA_PAR_B,
#endif
    .type        = CAM_TYPE_ITU,
    .fmt         = ITU_601_YCBCR422_8BIT,
    .order422    = CAM_ORDER422_8BIT_YCBYCR,
#ifdef CAM_ITU_CH_A
```

```

.i2c_busnum    = 0,
#else
.i2c_busnum    = 1,
#endif

.info          = &mt9p111_i2c_info,
.pixelformat   = V4L2_PIX_FMT_YUYV,
//.srclk_name   = "mout_mpll",
.srclk_name    = "xusbxti",
.clk_name      = "sclk_cam0",
.clk_rate      = 24000000,
.line_length   = 480,
.width         = 640,
.height        = 480,
.window        = {
.left    = 0,
.top     = 0,
.width   = 640,
.height  = 480,
},

/* Polarity */
.inv_pclk      = 0,//1//1: Falling Edge 0: Rising
.inv_vsync     = 0,//
.inv_href      = 0,//
.inv_hsync     = 1,//

.initialized   = 0,
#ifdef CAM_ITU_CH_A
.cam_power     = mango210_cam_power_A,
#else
.cam_power     = mango210_cam_power_B,
#endif
};
#endif

```

android/device/crazyboys/mango210\$ vi BoardConfig.mk

```
#USE_CAMERA_STUB := true
```

```
USE_CAMERA_STUB := false
.....
ifeq ($(USE_CAMERA_STUB),false)
BOARD_CAMERA_LIBRARIES := libcamera
endif
```

true로 되어있어서 false로 변경하였습니다.

BOARD_CAMERA_LIBRARIES := libcamera 로 정의 하기 위해서 입니다.

카메라가어나오는 보드에서

```
/android/out/target/product/mango210/system$ find . -name camera*
./lib/hw/camera.goldfish.so
./media/audio/ui/camera_click.ogg
./media/audio/ui/camera_focus.ogg
```

다른 릴리즈 버전에서는 아래와 같이 smdkv210.so이 확인됩니다.

```
/android/out/target/product/smdkv210/system$ find . -name camera*
./lib/hw/camera.goldfish.so
./lib/hw/camera.smdkv210.so
./media/audio/ui/camera_click.ogg
./media/audio/ui/camera_focus.ogg
```

./lib/hw/camera.smdkv210.so 이부분이 안올라가서 문제입니다.

mach 파일을 바꾸었기 때문에 **./lib/hw/camera.mango210.so**로 올라와야 합니다.

```
./target/product/mango210/obj/lib/camera.goldfish.so
./target/product/mango210/obj/lib/camera.mango210.so
```

정상적으로 컴파일은 되었으나 타겟보드 system에 옮겨지지 않았습니다.

아래 부분과 연관있습니다.

build/core/product_config.mk

```
ifeq ($(filter-out smdkc110 smdkv210,$(TARGET_BOARD_PLATFORM)),)

LOCAL_PATH:= $(call my-dir)
include $(CLEAR_VARS)

# HAL module implementation stored in
# hw/<COPYPIX_HARDWARE_MODULE_ID>.<ro.product.board>.so
LOCAL_MODULE_PATH := $(TARGET_OUT_SHARED_LIBRARIES)/hw
```

```

LOCAL_C_INCLUDES += $(PRODUCT_COMMON_DIR)/include
LOCAL_C_INCLUDES += $(PRODUCT_COMMON_DIR)/libs3cjpeg

LOCAL_SRC_FILES:= ₩
    SecCamera.cpp SecCameraHWInterface.cpp

LOCAL_SHARED_LIBRARIES:= libutils libcutils libbinder liblog libcamera_client libhardware
LOCAL_SHARED_LIBRARIES+= libs3cjpeg

ifeq ($(BOARD_USES_HDMI),true)
LOCAL_CFLAGS += -DBOARD_USES_HDMI
endif

LOCAL_MODULE := camera.$(TARGET_BOARD_PLATFORM)

LOCAL_MODULE_TAGS := optional

include $(BUILD_SHARED_LIBRARY)

endif
~

```

2. 안드로이드 수정

android/device/crazyboys/mango210\$ vi device.mk

```

# Camera
PRODUCT_PACKAGES += ₩
    camera.mango210 ₩
    gps.mango210

```

device.mk에서 빠진 부분을 추가하였습니다.
위에 문제가 해결 되었습니다.

3. 빌드 커널

./build_kernel config

```

Device Drivers --->
<*> Multimedia support --->

```

```
[*] Video capture adapters --->
```

```
<*> MT9P111 5M Camera Sensor
```

Video capture adapters

keys navigate the menu. <Enter> selects submenus --->. Highl
>. Pressing <Y> includes, <N> excludes, <M> modularizes featu
<Esc> to exit, <?> for Help, </> for Search. Legend: [*] built
dule < > module capable

```
--- Video capture adapters
[ ] Enable advanced debug functionality
-*- Enable old-style fixed minor ranges for video devices
[ ] Autoselect pertinent encoders/decoders and other help
< > I2C module for IR
Encoders, decoders, sensors and other helper chips ---
< > Virtual Video Driver
< > CPiA2 Video For Linux
< > SR030PC30 VGA camera sensor support
< > N00N010PC30 CIF camera sensor support
< > SR130PC10 CIF camera sensor support
< > SoC camera support
< > Samsung S5P and EXYNOS4 camera host interface driver
[*] V4L USB devices --->
< > S5K4BA supporting camera driver
< > S5KA3DFX Camera Sensor
< > S5K4ECGX Camera Sensor
< > N00N130PC20 Camera Sensor
<*> MT9P111 5M Camera Sensor
[*] Samsung Multimedia Devices
```

```
cp .config mango210_10.1inch_mt9p111_5m_defconfig
cp mango210_10.1inch_mt9p111_5m_defconfig arch/arm/configs/
./build_kernel defconfig mango210_10.1inch_mt9p111_5m_defconfig
./build_kernel
```

zImage가 만들어집니다.

만들어진 zImage는 /kernel/arch/arm/boot에 있고 image에도 생성됩니다.

