Crystal Image through
Imaging **Innovation**

PIXELPLUS

SURROUND VIEW MONITORING SYSTEM

PI5008K Change Resolution
User Guide

Rev 0.1

Last Update : 2018.08.16

Contents

1. Overview

This documentation explains how to change the I/O resolution.

This documentation is an example of the 1024x600(WSVGA) output on the 1280x720P(HD) input.

The I/O resolution of PI5008K only supports the multiple of 8.

2. How to use

2.1. PI5008KViewGenTool

2.1.1. Set input resolution

< Path : SDK\tools\PI5008KPCTool_pkg\[Data]\camera\ >

Fig2-1.Input Resolution of PI5008KViewGenTool
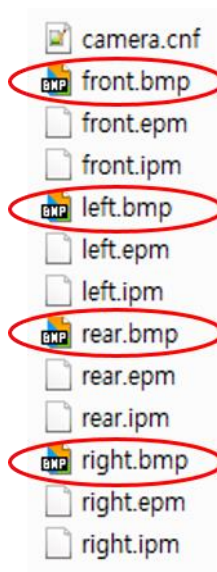
Change the BMP files of each camera channel to the input resolution file.

The size of front.bmp, left.bmp, right.bmp and rear.bmp is 1280x720(HD).

2.1.2. Set output resolution

< Path : Path : SDK\tools\PI5008KPCTool_pkg\[Data]\config\viewGenTool.cnf >

Fig2-1.Output Resolution of PI5008KViewGenTool

In viewGenTool.cnf, change width and height of [View] to the output resolution.

2.1.3. Execute PI5008KViewGenTool

2.1.4. Apply firmware

2.1.4.1. Nor flash

Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\SVM\Nor\viewmode_config.h>

to <SDK\source\pi5008sdk\source\config\viewmode_config.h>

2.1.4.2. Nand flash

Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\SVM\Nand\viewmode_config.h>

to <SDK\source\pi5008sdk\source\config\viewmode_config.h>

2.1.5. Apply flash image

2.1.5.1. Nor flash

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\SVM\Nor\svm_lut_nor.bin>

    to <SDK\flashimage\Nor\svm_lut_nor.bin>

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\car_img.bin>

    to <SDK\flashimage\Nor\car_image.bin>

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\PGL_image.bin>

    to <SDK\flashimage\Nor\pgl_image.bin>

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\SVMConfig.bin>

    to <SDK\flashimage\Nor\SVMConfig.bin>

2.1.5.2. Nand flash

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\SVM\Nand\svm_lut_ftl.bin>

    to <SDK\flashimage\Nand\FTL\svm_lut_ftl.bin>

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\SVM\Nand\

svm_lut_nonftl.bin>

    to <SDK\flashimage\Nand\non-FTL\svm_lut_nonftl.bin>

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\car_img.bin>

    to <SDK\flashimage\Nand\non-FTL\car_image.bin>

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\PGL_image.bin>

    to <SDK\flashimage\Nand\non_FTL\pgl_image.bin>

- Copy from <SDK\tools\PI5008KPCTool_pkg\[Data]\outBin\SVMConfig.bin> to <SDK\flashimage\Nand\FTL\SVMConfig.bin>

2.2. Firmware

< Path : SDK\source\pi5008sdk\source\config\board_config.h >

2.2.1. Supported resolution

```
//=======================================
//  E. Video Resolution
//=======================================
#define VID_RESOL_BITSHIFT        (12)
#define VID_RESOL_MASKBIT         (0xF<<VID_RESOL_BITSHIFT)
#define VID_RESOL_SD720H          (0<<VID_RESOL_BITSHIFT) //CVBS 720x480i, 720x576i
#define VID_RESOL_SD960H          (1<<VID_RESOL_BITSHIFT) //CVBS 960x480i, 960x576i
#define VID_RESOL_SDH720          (2<<VID_RESOL_BITSHIFT) //Reserved. 720x480p, 720x576p
#define VID_RESOL_SDH960          (3<<VID_RESOL_BITSHIFT) //Reserved. 960x480p, 960x576p
#define VID_RESOL_HD720P          (4<<VID_RESOL_BITSHIFT) //1280x720p
#define VID_RESOL_HD960P          (5<<VID_RESOL_BITSHIFT) //1280x960p
#define VID_RESOL_HD1080P         (6<<VID_RESOL_BITSHIFT) //1920x1080p
#define VID_RESOL_HD800_480P      (7<<VID_RESOL_BITSHIFT) //800x480p
#define VID_RESOL_HD1024_600P     (8<<VID_RESOL_BITSHIFT) //1024x600p
```

Fig2-2.Supported Resolution of Firmware

2.2.2. Set input resolution

Set the input resolution to equal PI5008KViewGenTool.

```
//=======================================
// 3. Video Input Format DEFINITION
// BD_VIN_FMT = (E.Video Resolution)|(D.Video Frame)
//=======================================
#define BD_VIN_FMT   ((VID_RESOL_HD720P) | (VID_FRAME_NTSC_30)) // <--- user select
//                     ^^^^^^^^^^^^^^^^      ^^^^^^^^^^^^^^^^
```

Fig2-3.Input Resolution of Firmware

2.2.3. Set output resolution

Set the output resolution to equal PI5008KViewGenTool.

```
//=======================================
// 5. SVM VIDEO DEFINITION
// BD_SVM_IN_FMT = (BD_VIN_FMT)
// BD_SVM_OUT_FMT = (E.Video Resolution)|(D.Video Frame)
//=======================================
#define BD_SVM_IN_FMT    (BD_VIN_FMT)
#define BD_SVM_OUT_FMT   ((VID_RESOL_HD1024_600P) | (VID_FRAME_NTSC_60)) // <--- user select
//                         ^^^^^^^^^^^^^^^^^^^       ^^^^^^^^^^^^^^^^
```

Fig 2-3. Output Resolution of Firmware

2.2.4. Compile

< Path : SDK\source\pi5008sdk\Debug\pi5008_sdk-debug.bin >

2.2.5. Apply flash image

2.2.5.1. Nor flash

- Copy from <SDK\source\pi5008sdk\Debug\pi5008_sdk-debug.bin>
    to <SDK\flashimage\Nor\main_firm.bin>
- Copy from <SDK\source\pi5008sdk\Debug\pi5008_sdk-debug.bin>
    to <SDK\flashimage\Nor\main_firm_bk.bin>

2.2.5.2. Nand flash

- Copy from <SDK\source\pi5008sdk\Debug\pi5008_sdk-debug.bin>
    to <SDK\flashimage\Nand\FTL\main_firm.bin>
- Copy from <SDK\source\pi5008sdk\Debug\pi5008_sdk-debug.bin>
    to <SDK\flashimage\Nand\FTL\main_firm_bk.bin>

2.3. Bootloader

< Path : SDK\source\bootloader\bootloader\ >

2.3.1. Fimware

< Path : SDK\source\bootloader\bootloader\Makefile.defs >

2.3.1.1. Set DDR

```
# select DDR2 | DDR3
ENABLE_DDRx_INIT = DDR3
# select ddr speed 500 | 400
DDR_SPEED = 500
# select ddr bus bit 32 | 16
DDR_BUS_BIT = 32
```

Fig2-4. DDR of Bootloader

2.3.1.2. Set resolution

```
#define user setting
#DDR_RESOL_INOUT_OPER = HD720pToHD720p
#DDR_RESOL_INOUT_OPER = FHD1080pToFHD1080p
#DDR_RESOL_INOUT_OPER = SD720hToSD720h
#DDR_RESOL_INOUT_OPER = HD960pToHD720p
#DDR_RESOL_INOUT_OPER = HD960p47MToHD960p94M
#DDR_RESOL_INOUT_OPER = HD960p74MToHD960p94M
#DDR_RESOL_INOUT_OPER = HD960p54MToHD960p94M
#DDR_RESOL_INOUT_OPER = FHD1080pToHD720p
#DDR_RESOL_INOUT_OPER = SD720hToHD720p
#DDR_RESOL_INOUT_OPER = SD960hToHD720p
#DDR_RESOL_INOUT_OPER = HD720pToFHD1080p
#DDR_RESOL_INOUT_OPER = HD960pToFHD1080p # == HD960pToHD960p
#DDR_RESOL_INOUT_OPER = SD720hToFHD1080p
#DDR_RESOL_INOUT_OPER = SD960hToFHD1080p
DDR_RESOL_INOUT_OPER = HD720pToWSVGA
```

Fig2-5. Resolution of Bootloader

2.3.1.3. Bootloader binary

```
# support flash(Nor,Nand) boot
ENABLE_FLASH_BOOT = y
```

Fig2-6. Bootloader binary

2.3.2. Compile

< Path : SDK\source\bootloader\bootloader\bin\bootloader.bin >

2.3.3. Apply flash image

2.3.3.1. Nor flash

Copy from <SDK\source\bootloader\bootloader\bin\bootloader.bin>
  to <SDK/flashimage/Nor/bootloader.bin>

2.3.3.2. Nand flash

Copy from <SDK\flashimage\Nand\non-FTL\bootloader.bin>
  to <SDK/flashimage/Nand/non-FTL/bootloader.bin>

3. Revision History

Version	Date	Description
V0.1	20180816	