
A12 IMAGE PROCESSING API

Haotek ONLY

Image Processing 相关功能都可通过下面这个函数来实现。

int AmbaImg_Proc_Cmd(UINT32 cmd, UINT32 param1, UINT32 param2, UINT32 param3)

函数描述如下:

Input:

UINT32 cmd: command id, 每个 command id 代表一种功能

UINT32 param1: parameter 1, depends on command id

UINT32 param2: parameter 2, depends on command id

UINT32 param3: parameter 3, depends on command id

Return:

0: OK

-1: NG

常用功能如下:

手动白平衡 I

Parameter	Description
cmd	MW_IP_SET_WB_GAIN
param1	当前 vin 通道
Param2	用于设置 GainR; GainG; GainB; 单位为 4096
Param3	0

示例:

```
AMBA_DSP_IMG_WB_GAIN_s WbGain =  
    {WB_UNIT_GAIN, WB_UNIT_GAIN, WB_UNIT_GAIN, WB_UNIT_GAIN, WB_UNIT_GAIN};  
AmbaImg_Proc_Cmd(MW_IP_GET_WB_GAIN, 0, (UINT32)&WbGain, 0);  
  
WbGain.GainR = (UINT16)atoi(argv[2]);  
WbGain.GainG = (UINT16)atoi(argv[3]);  
WbGain.GainB = (UINT16)atoi(argv[4]);  
  
AmbaPrint(" GainR : %5d, GainG : %5d, GainB : %5d ", WbGain.GainR, WbGain.GainG, WbGain.GainB);  
AmbaImg_Proc_Cmd(MW_IP_SET_WB_GAIN, 0, (UINT32)&WbGain, 0);
```

手动白平衡 II

Parameter	Description
cmd	MW_IP_SET_PIPE_WB_GAIN
param1	当前 vin 通道
Param2	配置当前 mode, IP_MODE_VIDEO or IP_MODE_STILL
Param3	用于设置 GainR; GainG; GainB; 单位为 4096

示例:

```
UINT8 Mode = 0;
AMBA_DSP_IMG_WB_GAIN_s WbGain = {WB_UNIT_GAIN, WB_UNIT_GAIN, WB_UNIT_GAIN, WB_UNIT_GAIN, WB_UNIT_GAIN};
Mode = (UINT8)atoi(argv[2]);
if (Mode == 0) {
    AmbaImg_Proc_Cmd(MW_IP_GET_PIPE_WB_GAIN, 0, IP_MODE_VIDEO, (UINT32)&WbGain);
}else{
    AmbaImg_Proc_Cmd(MW_IP_GET_PIPE_WB_GAIN, 0, IP_MODE_STILL, (UINT32)&WbGain);
}
WbGain.GainR = (UINT16)atoi(argv[3]);
WbGain.GainG = (UINT16)atoi(argv[4]);
WbGain.GainB = (UINT16)atoi(argv[5]);
AmbaPrint(" Mode : %d, GainR : %5d, GainG : %5d, GainB : %5d ", Mode, WbGain.GainR, WbGain.GainG,
    WbGain.GainB);
if (Mode == 0) {
    AmbaImg_Proc_Cmd(MW_IP_SET_PIPE_WB_GAIN, 0, IP_MODE_VIDEO, (UINT32)&WbGain);
}else{
    AmbaImg_Proc_Cmd(MW_IP_SET_PIPE_WB_GAIN, 0, IP_MODE_STILL, (UINT32)&WbGain);
}
```

设置白平衡模式

Parameter	Description
cmd	MW_IP_SET_MULTI_AWB_CONTROL_CAPABILITY
param1	当前 vin 通道
Param2	AWB MenuMode 常用取值: 0: WB_AUTOMATIC 1: WB_INCANDESCENT 2: WB_D4000 3: WB_D5000 4: WB_SUNNY 5: WB_CLOUDY 13: WB_WATER
Param3	0

示例:

```
UINT8 wbmode = 0;
AWB_CONTROL_s AwbCtrl1;
memset(&AwbCtrl1, 0, sizeof(AwbCtrl1));
AmbaImg_Proc_Cmd(MW_IP_GET_MULTI_AWB_CONTROL_CAPABILITY, 0, (UINT32)&AwbCtrl1, 0);
wbmode = (INT8)atoi(argv[2]);
AwbCtrl1.MenuMode = wbmode;
AmbaImg_Proc_Cmd(MW_IP_SET_MULTI_AWB_CONTROL_CAPABILITY, 0, (UINT32)&AwbCtrl1, 0);
AmbaPrint("----wb mode: %d, MenuMode: %d", wbmode, AwbCtrl1.MenuMode);
```

设置测光模式（AE Metering Mode）

Parameter	Description
cmd	MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY
param1	当前 vin 通道
Param2	MeteringMode 取值: 0: AE_METER_CENTER 1: AE_METER_AVERAGE 2: AE_METER_SPOT
Param3	0

示例:

```
INT8 MeteringMode = 0;
static AE_CONTROL_s AeControlTmp;
MeteringMode = 0;          //value :0, 1, 2
AmbaImg_Proc_Cmd(MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY, 0, (UINT32)&AeControlTmp,0);
AeControlTmp.MeteringMode=MeteringMode;
AmbaImg_Proc_Cmd(MW_IP_SET_MULTI_AE_CONTROL_CAPABILITY, 0, (UINT32)&AeControlTmp,0);
```

设置 EvBias

Parameter	Description
cmd	MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY
param1	当前 vin 通道
Param2	取值范围: 支持 -3EV~+3EV, 单位为 32, 即取值为 -96, -64, -32, 0, 32, 64, 96; 其中 0 为正常曝光。
Param3	0

示例:

```
INT16 EvBias = 0;
AE_CONTROL_s AeCtrlMode;
EvBias = (INT16)atoi(argv[2]);
AmbaImg_Proc_Cmd(MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY, 0, (UINT32)&AeCtrlMode,0);
AeCtrlMode.EvBias = EvBias;
AmbaImg_Proc_Cmd(MW_IP_SET_MULTI_AE_CONTROL_CAPABILITY, 0, (UINT32)&AeCtrlMode,0);
```

设置拍照 ISO

Parameter	Description
cmd	MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY
param1	当前 vin 通道
Param2	取值范围: ISO index: 0: AE_ISO_AUTO 7: AE_ISO_100 8: AE_ISO_200 9: AE_ISO_400 10: AE_ISO_800 11: AE_ISO_1600 12: AE_ISO_3200 13: AE_ISO_6400
Param3	0

示例:

```

UINT16 IsoValue = 0;
UINT8 chNo = 0;
AE_CONTROL_s AeCtrlMode = {0};
IsoValue = (UINT16)atoi(argv[2]);
AmbaPrint(" still iso value: %d ", IsoValue);

AmbaImg_Proc_Cmd(MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY, chNo, (UINT32)&AeCtrlMode,0);
AeCtrlMode.StillIso= IsoValue;
AmbaImg_Proc_Cmd(MW_IP_SET_MULTI_AE_CONTROL_CAPABILITY, chNo, (UINT32)&AeCtrlMode,0);

```

设置拍照快门时间

Parameter	Description																																				
cmd	MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY																																				
param1	当前 vin 通道																																				
Param2	取值范围, 常用 Shutter index: <table><tr><td>index 0</td><td>8(s)</td><td>index 128</td><td>4</td></tr><tr><td>index 256</td><td>2</td><td>index 384</td><td>1</td></tr><tr><td>index 512</td><td>1/2</td><td>index 640</td><td>1/4</td></tr><tr><td>index 768</td><td>1/8</td><td>index 809</td><td>1/10</td></tr><tr><td>index 850</td><td>1/12.5</td><td>index 884</td><td>1/15</td></tr><tr><td>index 937</td><td>1/20</td><td>index 978</td><td>1/25</td></tr><tr><td>index 1012</td><td>1/30</td><td>index 1106</td><td>1/50</td></tr><tr><td>index 1140</td><td>1/60</td><td>index 1234</td><td>1/100</td></tr><tr><td>index 1268</td><td>1/120</td><td>index 1396</td><td>1/240</td></tr></table>	index 0	8(s)	index 128	4	index 256	2	index 384	1	index 512	1/2	index 640	1/4	index 768	1/8	index 809	1/10	index 850	1/12.5	index 884	1/15	index 937	1/20	index 978	1/25	index 1012	1/30	index 1106	1/50	index 1140	1/60	index 1234	1/100	index 1268	1/120	index 1396	1/240
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index 1140	1/60	index 1234	1/100																																		
index 1268	1/120	index 1396	1/240																																		

	index 1524 1/480 index 1652 1/960
Param3	0

注意：手动设置 *StillShutter* 时，曝光时间不能超过 *DefaultParams* 中设置的最长曝光时间，否则会死机。

示例：

```
UINT8 chNo = 0;
```

```
AE_CONTROL_s AeCtrlMode = {0};
```

```
Sht = (UINT16)atoi(argv[2]);
```

```
AmbaPrint(" Sht: %d ", Sht);
```

```
AmbaImg_Proc_Cmd(MW_IP_GET_MULTI_AE_CONTROL_CAPABILITY, chNo, (UINT32)&AeCtrlMode,0);
```

```
AeCtrlMode.StillShutter = Sht;
```

```
AmbaImg_Proc_Cmd(MW_IP_SET_MULTI_AE_CONTROL_CAPABILITY, chNo, (UINT32)&AeCtrlMode,0);
```

调整图像亮度

Parameter	Description
cmd	MW_IP_IMAGE_BRIGHTNESS
param1	当前 vin 通道
Param2	配置当前 dsp image mode
Param3	取值范围 -256 ~ 256 0 ：默认效果。

示例：

```
UINT16          bright = 0;
```

```
AMBA_DSP_IMG_MODE_CFG_s Mode;
```

```
memset(&Mode, 0, sizeof(Mode));
```

```
bright = (UINT16)atoi(argv[2]);
```

```
AmbaImg_Proc_Cmd(MW_IP_SET_IMAGE_BRIGHTNESS, 0, (UINT32)&Mode, (UINT32)bright);
```

```
MW_IP_SET_IMAGE_SATURATION
```

```
RVal = AmbaImgProc_Set_Saturation((UINT8)channelNo, (AMBA_DSP_IMG_MODE_CFG_s *)modeCfg, (UINT16)satu);
```

调整图像饱和度

Parameter	Description
cmd	MW_IP_IMAGE_SATURATION
param1	当前 vin 通道
Param2	配置当前 dsp image mode

Param3	取值范围 0 ~ 256 64 : 默认效果, 不改变。
--------	-----------------------------------------------

示例:

```

UINT16      satu = 0;
AMBA_DSP_IMG_MODE_CFG_s Mode;
memset(&Mode, 0, sizeof(Mode));
satu = (UINT16)atoi(argv[2]);
AmbaImg_Proc_Cmd(MW_IP_SET_IMAGE_SATURATION, 0, (UINT32)&Mode, (UINT32)satu);
MW_IP_SET_IMAGE_CONTRAST
RVaL = AmbaImgProc_Set_Contrast((UINT8)channelNo, (AMBA_DSP_IMG_MODE_CFG_s *)modeCfg, (UINT16)
    contrast);

```

调整图像对比度

Parameter	Description
cmd	MW_IP_IMAGE_CONTRAST
param1	当前 vin 通道
Param2	配置当前 dsp image mode
Param3	取值范围 0 ~ 256 64 : 默认效果, 不改变。

示例:

```

UINT16      contrast = 0;
AMBA_DSP_IMG_MODE_CFG_s Mode;
memset(&Mode, 0, sizeof(Mode));

contrast = (UINT16)atoi(argv[2]);
AmbaImg_Proc_Cmd(MW_IP_SET_IMAGE_CONTRAST, 0, (UINT32)&Mode, (UINT32)contrast);

```

调整图像色度

Parameter	Description
cmd	MW_IP_IMAGE_HUE
param1	当前 vin 通道
Param2	配置当前 dsp image mode
Param3	取值范围 -15~15 0 : 默认效果, 不改变。

示例:

```

UINT16      Hue = 0;
AMBA_DSP_IMG_MODE_CFG_s Mode;

```

```
memset(&Mode, 0, sizeof(Mode));
```

```
Hue = (UINT16)atoi(argv[2]);
```

```
AmbaImg_Proc_Cmd(MW_IP_SET_IMAGE_HUE, 0, (UINT32)&Mode, (UINT32)Hue);
```

```
MW_IP_SET_IMAGE_SHARPNESS
```

```
RVal = AmbaImgProc_Set_Hue((UINT8)channelNo, (AMBA_DSP_IMG_MODE_CFG_s *)modeCfg, (INT16)sharp);
```

调整图像锐度

Parameter	Description
cmd	MW_IP_IMAGE_SHARPNESS
param1	当前 vin 通道
Param2	配置当前 dsp image mode
Param3	取值范围 0~6 3 : 默认效果, 不改变。

示例:

```
UINT16      sharp = 0;
```

```
AMBA_DSP_IMG_MODE_CFG_s Mode;
```

```
memset(&Mode, 0, sizeof(Mode));
```

```
sharp = (UINT16)atoi(argv[2]);
```

```
AmbaImg_Proc_Cmd(MW_IP_SET_IMAGE_SHARPNESS, 0, (UINT32)&Mode, (UINT32) sharp);
```

数字效果

Parameter	Description
cmd	MW_IP_SET_DIGITAL_EFFECT
param1	当前 vin 通道
Param2	取值范围: 0: DIGITAL_NO_EFFECT 1: DIGITAL_ART 2: DIGITAL_SEPIA 3: DIGITAL_NEGATIVE 4: DIGITAL_BW 5: DIGITAL_VIVID 6: DIGITAL_70FILM 7: DIGITAL_PUNK 8: DIGITAL_POPART
Param3	0

示例:

```
UINT8 DeTmp = 2;
// If user switch digital effect or scene mode then it need to Load cc still table
extern int AmbaIQParam_DigitalEffect_Load_Color_Table(UINT32 chNo, int DigitalEffect, int post, UINT8
modeSwitch); AmbaIQParam_DigitalEffect_Load_Color_Table(0, (int)DeTmp, 0, 1);
AmbaImg_Proc_Cmd(MW_IP_SET_DIGITAL_EFFECT, 0, DeTmp, 0);
```

场景模式

MW_IP_SET_CURR_SCENE_MODE

RVal = AmbaImg_CtrlFunc_Set_Scene_Mode((int)mode,(int)sceneMode);

Parameter	Description
cmd	MW_IP_SET_CURR_SCENE_MODE
param1	配置当前 mode, IP_MODE_VIDEO or IP_MODE_STILL
Param2	取值范围(sdk 各版本中 scene mode 略有差异) 请参看 AmbaImg_AaaDef.h 中的 Scene Mode definition
Param3	0

示例:

```
UINT8 DeTmp = 0;
// If user switch digital effect or scene mode then it need to Load cc still table
extern int AmbaIQParam_Scene_Mode_Load_Color_Table(UINT32 chNo, int sceneMode, int post, UINT8
modeSwitch);
AmbaIQParam_Scene_Mode_Load_Color_Table(0, (int)DeTmp, 0, 1);
AmbaImg_Proc_Cmd(MW_IP_SET_CURR_SCENE_MODE, IP_MODE_VIDEO, DeTmp, 0);
AmbaImg_Proc_Cmd(MW_IP_SET_CURR_SCENE_MODE, IP_MODE_STILL, DeTmp, 0);
```