

Digital 2 channel Capture board Version 3.0

(Multi card & Multi-application version :

DLL Version 3.05 .

Driver Version 3.02 .

Chip Version 3.02 .)

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2 468-2, 2

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| | | |
|---|---------------------------------------|-----------|
| 1. | | 4 |
| 2. | | 5 |
| 3. | | 6 |
| 3.1. | | 6 |
| 3.2. | | 6 |
| 3.3. | CAMERA : | 7 |
| 3.4. | LVDS./RS422 : | 7 |
| 3.5. | CAPTURE CONTROLLER : | 7 |
| 3.6. | DMA CONTROLLER : | 8 |
| 3.7. | SYNC GENERATOR/I2C CONTROLLER : | 8 |
| 3.8. | DIO : | 8 |
| 3.9. | PCI MASTER CORE : | 8 |
| 4. I/O CONNECTOR | ..... | 9 |
| 4.1. CAMERA CONNECTOR | ..... | 9 |
| 4.1.1. Bracket | ..... | 9 |
| 4.1.2. | ..... | 10 |
| 4.1.2.1. | ..... | 10 |
| 4.1.2.2. | Camera Cable Mode :TRIGGER_MODE..... | 11 |
| 4.1.2.3. | Camera Cable Mode :I2C_MODE..... | 12 |
| 4.2. (PHOTO COUPLER) ENCODER | ..... | 13 |
| 4.2.1. IN[3:0] : | ..... | 13 |
| 4.2.2. OUT[3:0] : | ..... | 13 |
| 4.2.3. EXT_PWR : | ..... | 14 |
| 4.2.4. EXT_GND : | ..... | 14 |
| 4.2.5. ENC0_A+,ENC0_A-,ENC0_B+,ENC0_B-, ENC1_A+,ENC1_A-,ENC1_B+,ENC1_B- | ..... | 14 |
| 4.2.6. +5V : | ..... | 14 |
| 4.2.7. GND : | ..... | 14 |
| 4.3. BOARD SYNC IN/OUT | ..... | 14 |
| 4.4. GENERAL TTL I/O CONNECTOR | ..... | 15 |
| 5. | ..... | 16 |
| 5.1. CAMERA BIT SELECTOR | ..... | 16 |
| 5.2. LINE FILTER | ..... | 16 |
| 5.3. LOOKUP TABLE | ..... | 17 |
| 5.4. DATA SELECTOR | ..... | 17 |

| | | |
|------------|---------------------|-----------|
| 6. | SYNC | 18 |
| 6.1. | (TRGH) | 18 |
| 6.1.1. | | 18 |
| 6.1.2. | | 18 |
| 6.1.2.1.1. | : | 18 |
| 6.1.2.1.2. | : | 19 |
| 6.1.2.1.3. | : | 19 |
| 6.2. | (TRGV) | 19 |
| 6.2.1. | | 19 |
| 6.2.2. | | 19 |
| 6.2.2.1. | : | 20 |
| 6.2.2.2. | : | 20 |
| 6.2.2.3. | : | 20 |
| 6.3. | SYNC I/O | 20 |
| 7. | | 22 |
| 7.1. | | 22 |
| 7.2. | API FUNCTION LIST | 22 |
| 7.2.1. | | 22 |
| 7.2.1.1. | DC_Init | 22 |
| 7.2.1.2. | DC_End | 22 |
| 7.2.1.3. | DC_GetMaxCards | 23 |
| 7.2.1.4. | DC_SelectCard | 23 |
| 7.2.1.5. | DC_GetCurCardNumber | 23 |
| 7.2.1.6. | DC_GetVersion | 24 |
| 7.2.2. | I/O | 24 |
| 7.2.2.1. | DC_WriteReg | 24 |
| 7.2.2.2. | DC_ReadReg | 25 |
| 7.2.3. | Digital I/O | 25 |
| 7.2.3.1. | DC_InIrqSet | 25 |
| 7.2.3.2. | DC_InRead | 26 |
| 7.2.3.3. | DC_InReadOvl | 26 |
| 7.2.3.4. | DC_CancelReadOvl | 27 |
| 7.2.3.5. | DC_OutWrite | 27 |
| 7.2.3.6. | DC_GpioReadIn | 28 |
| 7.2.3.7. | DC_GpioWriteOut | 28 |
| 7.2.3.8. | DC_GpioWriteOE | 28 |
| 7.2.4. | Capture | 29 |
| 7.2.4.1. | DC_Open | 29 |

| | | |
|----------|----------------------------------|----|
| 7.2.4.2. | DC_Close..... | 30 |
| 7.2.4.3. | DC_Start | 30 |
| 7.2.4.4. | DC_Stop..... | 31 |
| 7.2.4.5. | DC_GetFrame | 31 |
| 7.2.4.6. | DC_CancelGetFrame | 32 |
| 7.2.5. | <i>Capture</i> | 33 |
| 7.2.5.1. | DC_SetCameraCableMode | 33 |
| 7.2.5.2. | DC_SetCapInfo..... | 34 |
| 7.2.5.3. | DC_SetFilter | 35 |
| 7.2.5.4. | DC_SetLookupTable..... | 36 |
| 7.2.5.5. | DC_SetExposure..... | 37 |
| 7.2.6. | <i>Encoder</i> | 37 |
| 7.2.6.1. | DC_SetEncoderUpDownCounter | 38 |
| 7.2.6.2. | DC_GetEncoderUpDownCounter..... | 38 |
| 7.2.7. | <i>SYNC generator</i> | 39 |
| 7.2.7.1. | DC_SetTrgH | 39 |
| 7.2.7.2. | DC_SetTrgV | 40 |
| 7.2.7.3. | DC_SetSyncOut..... | 41 |
| 7.2.7.4. | DC_SyncOutToggle | 42 |
| 7.2.7.5. | DC_SetClkOutFreq..... | 43 |
| 7.2.8. | <i>I2C command</i> | 43 |
| 7.2.8.1. | DC_I2cInit | 43 |
| 7.2.8.2. | DC_I2cRst | 44 |
| 7.2.8.3. | DC_I2cWrite | 44 |
| 7.2.8.4. | DC_I2cRead..... | 45 |
| 7.2.8.5. | DC_I2cStart | 45 |
| 7.2.8.6. | DC_I2cStop..... | 46 |
| 7.2.9. | ..... | 46 |
| 7.2.9.1. | DC_Prog | 46 |
| 7.3. | ..... | 47 |

1.

ENVY-ID2V3

PCI BUS

Differential Cable

LVDS

RS422

Version 1.0

Version 3.0

API

, ,

,API

가

가

가

가

2.

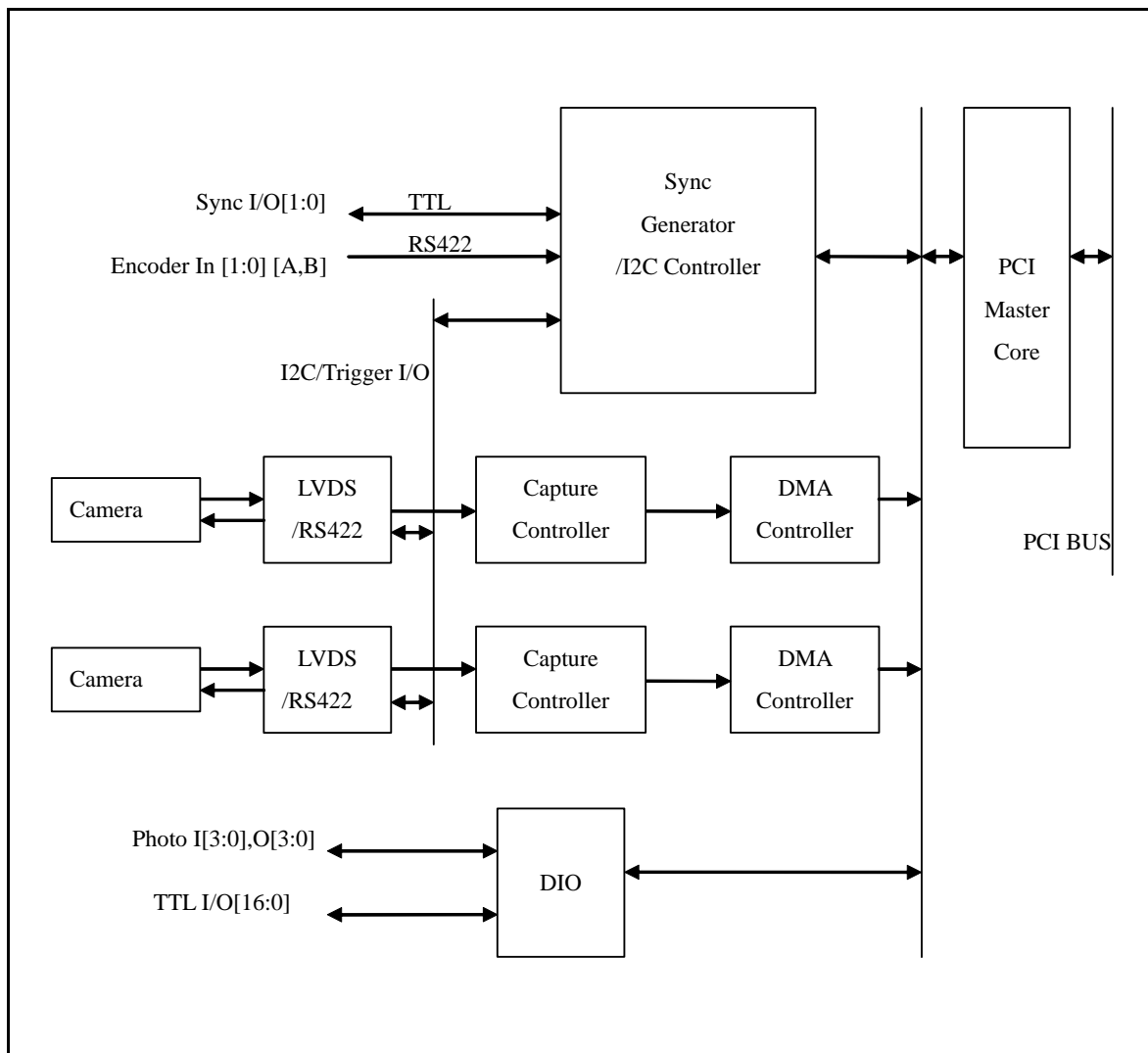
2D .
LVDS(RS-644) RS-422 ().
65MHz(LVDS) (RS-422 20MHz).
(4 /) TTL(17bit I/O) DIO .
가 .
() () .
Offset, High-pass, Band-pass, Low-pass .
Lookup table , 1, 2, 4,8,16 가 .
2 channel DMA controller 32bit/33Mhz PCI BUS CPU 가 .

3.

3.1.



3.2.



<ENVY-ID2V3 >

3.3. Camera :

가 . 가
 . LVDS, RS-422 type Line Scan camera Area camera
 .
 Color CMOS/CCD sensor module mobile 가
 가 LVDS
 가 .

3.4. LVDS./RS422 :

LVDS type RS-422 type
 . LVDS 65MHz 가 RS-422 20Mhz
 가 .

3.5. Capture Controller :

. Bit ->

Offset->Filter->Lookup Table->Data Selector

3.6. DMA Controller :

CPU

가 가

3.7. Sync Generator/I2C controller :

Sync

Encoder

I2C_MODE

I2C

3.8. DIO :

Photo-Coupler

TTL

3.9. PCI Master Core :

Local BUS

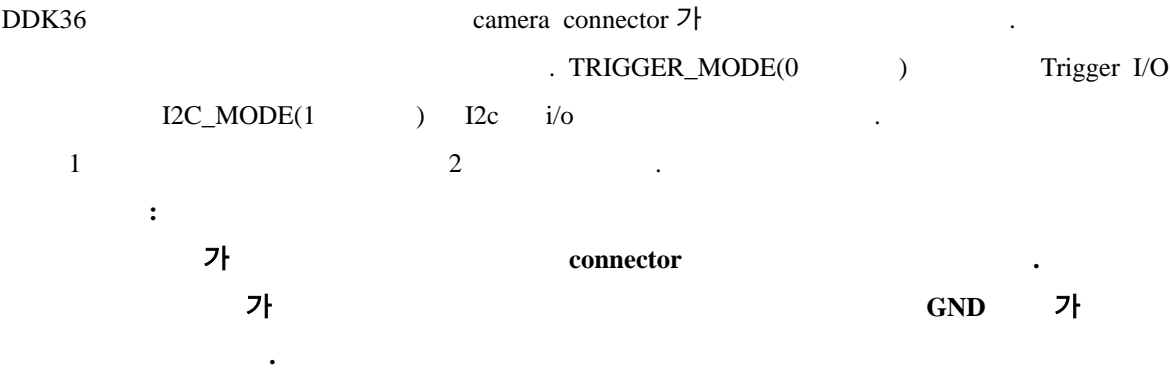
PCI BUS

가

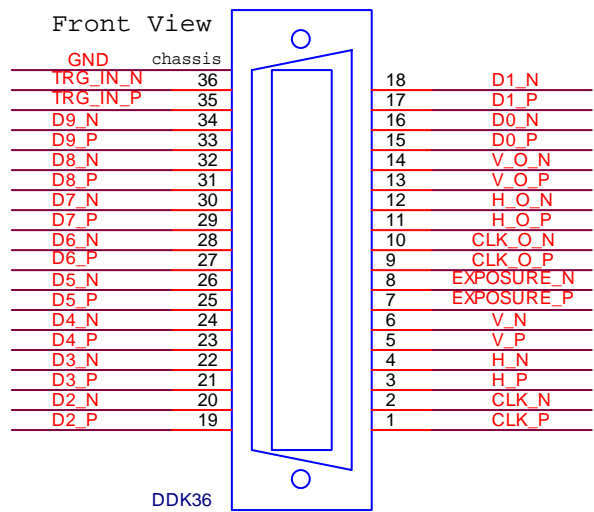
Host PCI BUS

4. I/O connector

4.1. Camera Connector



4.1.1. Bracket



4.1.2.

| Pin Name | Pin Number | In/Out (Board side) | TRIGGER_MODE (Trigger Cable Mode) | I2C_MODE (I2C Cable Mode) |
|------------|------------|---------------------|---------------------------------------|--|
| CLK_P | 1 | In | Clock input Normal | Clock input Normal |
| CLK_N | 2 | In | Clock input Inverse | Clock input Inverse |
| H_P | 3 | In | Horizontal sync input Normal | Horizontal sync input Normal |
| H_N | 4 | In | Horizontal sync input Inverse | Horizontal sync input Inverse |
| V_P | 5 | In | Vertical Sync input Normal | Vertical Sync input Normal |
| V_N | 6 | In | Vertical sync input Inverse | Vertical sync input Inverse |
| D0_P | 15 | In | Data bit 0 Normal | Data bit 0 Normal |
| D0_N | 16 | In | Data bit 0 Inverse | Data bit 0 Inverse |
| D1_P | 17 | In | Data bit 1 Normal | Data bit 1 Normal |
| D1_N | 18 | In | Data bit 1 Inverse | Data bit 1 Inverse |
| D2_P | 19 | In | Data bit 2 Normal | Data bit 2 Normal |
| D2_N | 20 | In | Data bit 2 Inverse | Data bit 2 Inverse |
| D3_P | 21 | In | Data bit 3 Normal | Data bit 3 Normal |
| D3_N | 22 | In | Data bit 3 Inverse | Data bit 3 Inverse |
| D4_P | 23 | In | Data bit 4 Normal | Data bit 4 Normal |
| D4_N | 24 | In | Data bit 4 Inverse | Data bit 4 Inverse |
| D5_P | 25 | In | Data bit 5 Normal | Data bit 5 Normal |
| D5_N | 26 | In | Data bit 5 Inverse | Data bit 5 Inverse |
| D6_P | 27 | In | Data bit 6 Normal | Data bit 6 Normal |
| D6_N | 28 | In | Data bit 6 Inverse | Data bit 6 Inverse |
| D7_P | 29 | In | Data bit 7 Normal | Data bit 7 Normal |
| D7_N | 30 | In | Data bit 7 Inverse | Data bit 7 Inverse |
| D8_P | 31 | In | Data bit 8 Normal | Data bit 8 Normal |
| D8_N | 32 | In | Data bit 8 Inverse | Data bit 8 Inverse |
| D9_P | 33 | In | Data bit 9 Normal | Data bit 9 Normal |
| D9_N | 34 | In | Data bit 9 Inverse | Data bit 9 Inverse |
| CLK_O_P | 9 | Out | Clock output Normal | Clock output Normal |
| CLK_O_N | 10 | Out | Clock output Inverse | Clock output Inverse |
| H_O_P | 11 | Out | H_O_P, Horizontal Sync output Normal | SCLK_O_P, I2C Serial Clock Output Normal |
| H_O_N | 12 | Out | H_O_N, Horizontal Sync output inverse | SCLK_O_N, I2C Serial Clock Output Inverse |
| V_O_P | 13 | Out | V_O_P, Vertical Sync output Normal | RESET_N_P, Camera Reset low active Normal |
| V_O_N | 14 | Out | V_O_N, Vertical Sync output inverse | RESET_N_N, Camera Reset low active Inverse |
| EXPOSURE_P | 7 | Out | EXPOSURE_P, Exposure output normal | SDA_OE_N_P, I2C data output enable low active normal |
| EXPOSURE_N | 8 | Out | EXPOSURE_N, Exposure output inverse | SDA_OE_N, I2C data output enable low active inverse |
| TRG_I_P | 35 | In | TRG_I_P, Trigger Input Normal | SDA_I_P, I2C data input Normal |
| TRG_I_N | 36 | In | TRG_I_N, Trigger Input Inverse | SDA_I_N, I2C data input Inverse |
| GND | chassis | | GND | GND |

4.1.2.1.

TRIGGER_MODE, I2C_MODE

4.1.2.1.1. CLK_P/CLK_N :

Clock input, 가

4.1.2.1.2. H_P,H_N :

Horizontal sync input, 가

4.1.2.1.3. V_P,V_N :

Vertical sync input , 가 . Area

4.1.2.1.4. D[9:0]_P,D[9:0]_N :

4.1.2.1.5. CLK_O_P,CLK_O_N :

4.1.2.1.6. GND :

. Connector

Board

GND 가

GND

4.1.2.2. Camera Cable Mode :TRIGGER_MODE

4.1.2.2.1. H_O_P,H_O_N :

가

. DC_SetTrgH

4.1.2.2.2. V_O_P,V_O_N :

가

. area

. DC_SetTrgV

4.1.2.2.3. EXPOSURE_P,EXPOSURE_N :

가

. DC_SetExposure

4.1.2.2.4. TRG_I_P,TRG_I_N :

DC_SetTrgH,DC_SetTrgH, DC_SetSyncOut

Trigger In

4.1.2.3. Camera Cable Mode :I2C_MODE

4.1.2.3.1. H_O_P,H_O_N :

SCLK_O_P, SCLK_O_N 가 , I2C .

4.1.2.3.2. V_O_P,V_O_N :

RESET_N_P, RESET_N_N 가 Camera Low active

4.1.2.3.3. EXPOSURE_P,EXPOSURE_N :

SDA_OE_N_P,SDA_OE_N_N 가 I2C LOW active

4.1.2.3.4. TRG_I_P,TRG_I_N :

SDA_I_P,SDA_I_N 가 I2C .

4.2. (photo coupler) Encoder

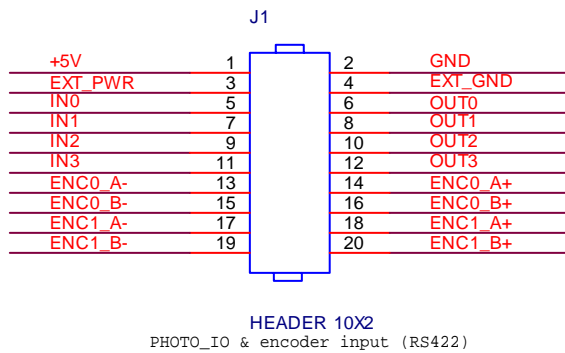
Photo Coupler

, 4

가 . 4 , 4

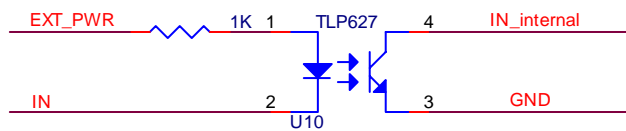
. JP1

connector



4.2.1. IN[3:0] :

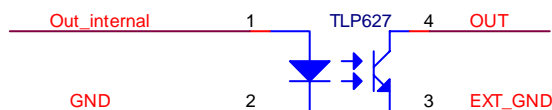
4



EXT_PWR 가 IN LOW Board LOW 가 .
EXT_PWR 4 .

4.2.2. OUT[3:0] :

4



Out internal High OUT
. EXT_GND 4 .

4.2.3. EXT_PWR :

, IN[3:0] . 24V
가 .

4.2.4. EXT_GND :

OUT[3:0] GND .

4.2.5. ENC0_A+,ENC0_A-,ENC0_B+,ENC0_B-, ENC1_A+,ENC1_A-,ENC1_B+,ENC1_B-

. RS422 .
ENC0, ENC1 A,B RS422
+,- .

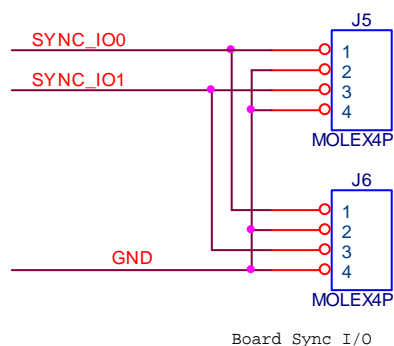
4.2.6. +5V :

+5V .

4.2.7. GND :

GND .

4.3. Board Sync In/Out



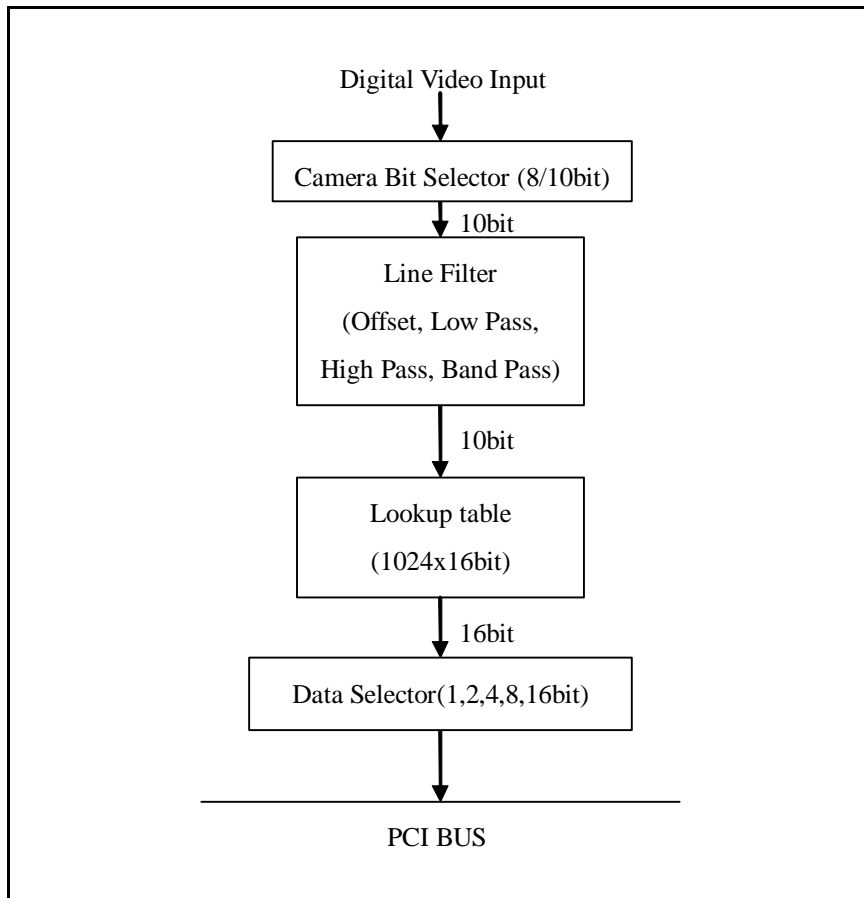
connector 가 .

SYNC_IO0,SYNC_IO1 가

5.

가 가 .

CPU



<Data >

5.1. Camera Bit Selector



5.2. Line Filter

Offset
2nd order Low-Pass Filter, Band-pass filter, High-pass filter

5.3. Lookup Table

Line Filter 1024X16bit

가 CPU

5.4. Data Selector

Data selector 1,2,4,8,16bit

Filter Lookup table

1,2,4

8,16bit

CPU

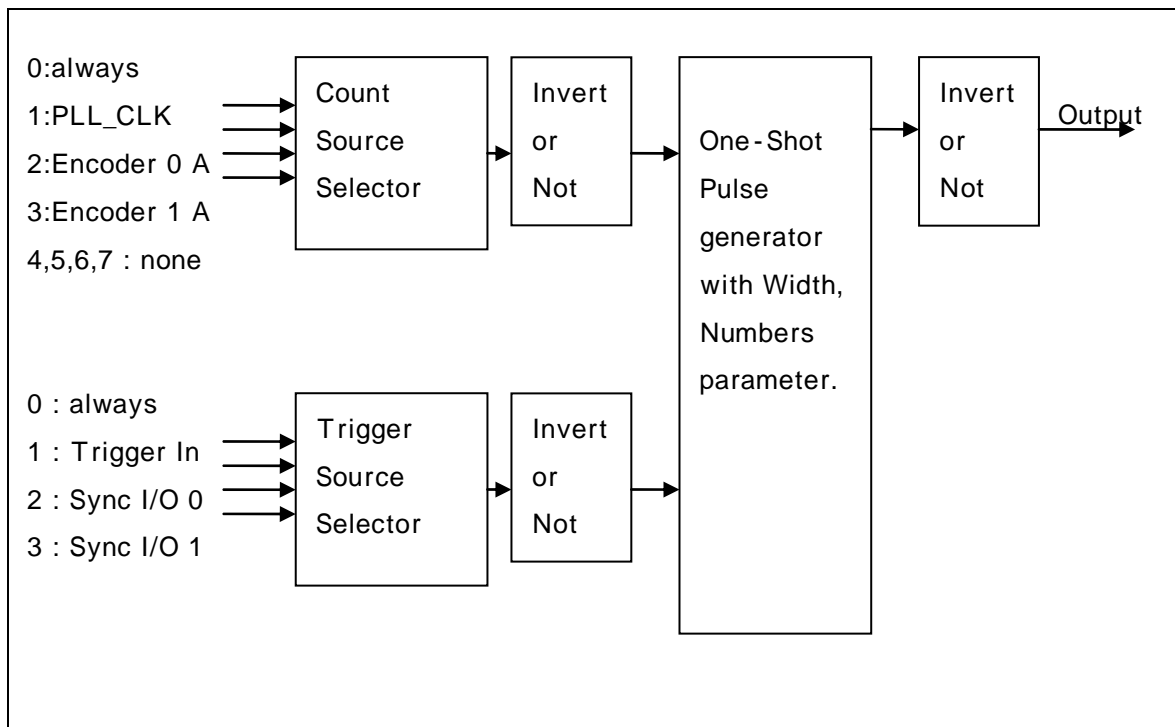
6. Sync

6.1. (TrgH)

6.1.1.

Count Source Selector, Trigger Source Selector, Trigger Source Inverter, One-Shot Pulse Generator, Output Inverter

Count Source selector Trigger Source Selector, Inversion



< (TrgH) >

6.1.2.

CountSource Numbers Width
 High pulse

DC_SetTrgH

6.1.2.1.1.

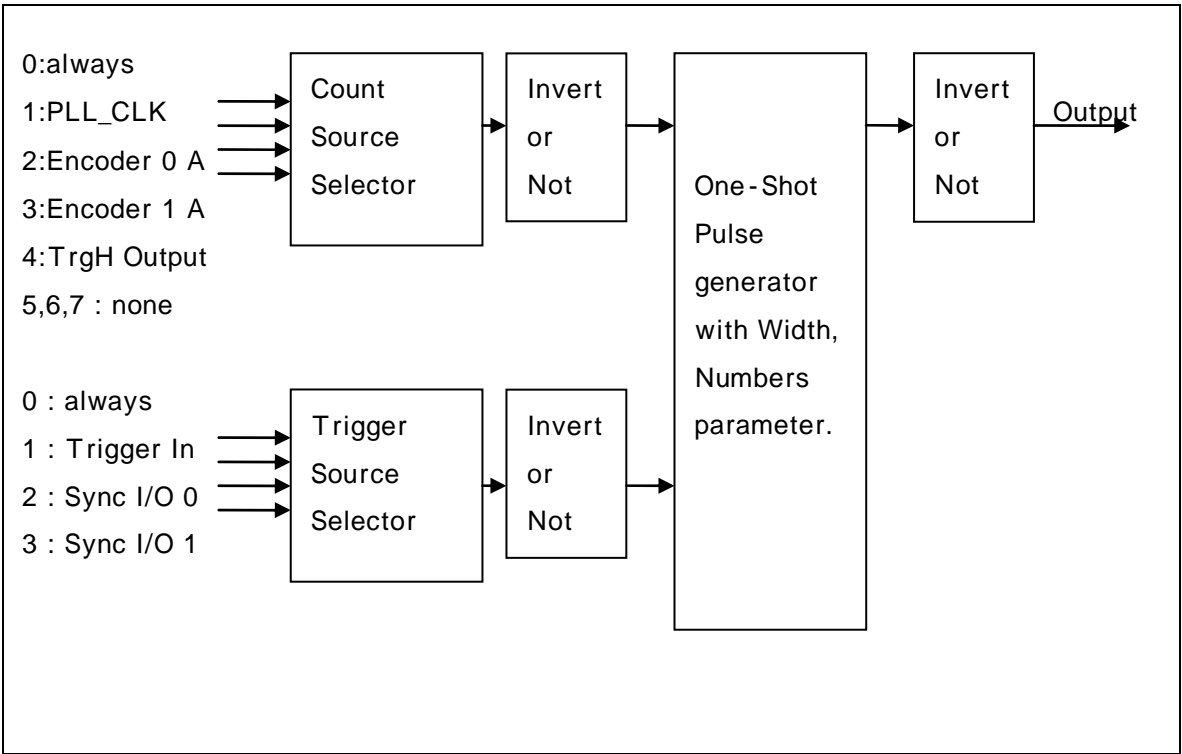
CountSource always One-shot Pulse generator
 trigger source Invert

6.1.2.1.2. :
 TriggerSource always CountSource 1,2,3
 Numbers 가 Width
 High

6.1.2.1.3. :
 Trigger Source 1,2,3 가 CountSource 1,2,3 가 Numbers
 CountSource 가 Width High
 . Numbers TriggerSource

6.2. (TrgV)

6.2.1.
 Count Source Selector
 4 가



< (TrgV) >

6.2.2.
 CoutSource Numbers Width
 High pulse
 . TrgH CountSource 4 TrgH

가 Area Camera
 DC_SetTrgV

6.2.2.1. :

CountSource always One-shot Pulse generator
 TrgSource Inversion

6.2.2.2. :

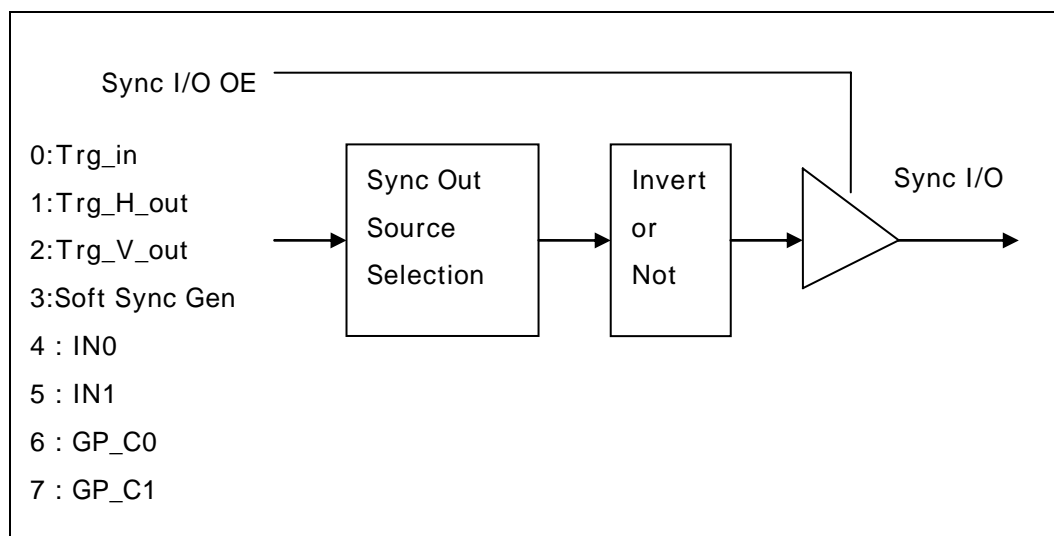
TriggerSource always CountSource 1,2,3
 Numbers 가 Width
 High 가

6.2.2.3. :

Trigger Source 1,2,3 가 CountSource 1,2,3,4 가
 Numbers 가 Width High Numbers
 TriggerSource

TrgH CountSource 4 TrgH
 가 TrgH

6.3. Sync I/O :



<Sync I/O >

Source Selection : Trigger Input, Trigger H out, Trigger V output, Soft Sync
 Gen(DC_SyncOutToggle) IN0,IN1 TTL
 GP_C0,GP_C1 .

Invet or not : inverse 가 가 .
 Sync I/O OE : 가 가 .
 DC_SetSyncOut .

Return Values

0,
Error Code : DC_ERR_NOT_INITIALIZED

7.2.1.3. DC_GetMaxCards

return 1
0
가 1

Int DC_GetMaxCards(int handle);

Parameters

handle : . DC_Init

Return Values

7.2.1.4. DC_SelectCard

I/O

Int DC_SelectCard(int handle,int card_number);

Parameters

handle : . DC_Init

Card_number : 0 – (max_card_numbers-1)

0
가 N 0 N-1
가

Return Values

Error Code : DC_ERR_CARD_NUMBER_INVALID

7.2.1.5. DC_GetCurCardNumber

Int DC_GetCurCardNumber (int handle);

Parameters

handle : . DC_Init .

Return Values

. 0 .

7.2.1.6. DC_GetVersion

DLL version, Device Driver Version, Board Chip version .

DC_Init 가 ,

DLL version : 0x0305, Driver Version : 0x0302, Chip Version : 0x0302 .

Int DC_GetVersion (int handle,DWORD *DllVer, DWORD *DrvVer, DWORD *ChipVer);

Parameters

handle : . DC_Init .

DllVer: DLL version . NULL .

DrvVer: Driver version . NULL .

ChipVer: Chip Version . NULL .

Return Values

error code

7.2.2. I/O

7.2.2.1. DC_WriteReg

```
int DC_WriteReg(  
int handle,  
    DWORD offset,  
    DWORD data  
);
```

Parameters

handle : . DC_Init .

Offset :

Data :

Return Values

0

7.2.2.2. DC_ReadReg

```
int DC_ReadReg (  
int handle,  
    DWORD offset,  
    DWORD *data  
);
```

Parameters

handle : . DC_Init .
Offset : offset address from the base
data :

Return Values

error code

7.2.3. Digital I/O

7.2.3.1. DC_InIrqSet

. 0-3 가 connector photo coupler .

```
Int DC_InIrqSet(  
    int handle,  
    DWORD ipen,  
    DWORD inen  
);
```

Parameters

handle : . DC_Init .
ipen : 0-3 0-3 가 1
가 .
inen : 가 1 가
.

return values

error code

7.2.3.2. DC_InRead

```
Int DC_InRead(  
int handle,  
    DWORD *data  
);
```

Parameters

handle : . DC_Init .
data : DWORD .
*data [3:0] 가 .

return values

error code.

7.2.3.3. DC_InReadOvl

DC_InIrqSet 가 Sleep
가 가 (*status)
(*data) .

```
Int DC_InReadOvl(  
int handle,  
    DWORD *data,  
    DWORD *status
```

);

Parameters

handle : . DC_Init .
*status : 가 '1' 가 .
*data : (5us
) 1 0 .

return values

error code

7.2.3.4. DC_CancelReadOvl

ADDA_InReadOvl .

Thread

thread .

int DC_CancelReadOvl (int handle);

Parameters

handle : . DC_Init .

Return values

Error code

7.2.3.5. DC_OutWrite

Int DC_OutWrite(int handle,DWORD data);

Parameters

handle : . DC_Init .
Data : [3:0] 가 '1' photo
coupler 가 .

return values

error code.

7.2.3.6. DC_GpioReadIn

GPIO

```
Int DC_GpioReadIn(int handle,DWORD *data);
```

Parameters

handle : DC_Init
data : [17:0] GPIO
가 High 1 Low 0

return values

error code.

7.2.3.7. DC_GpioWriteOut

GPIO output register

```
Int DC_GpioWriteOut(int handle,DWORD data);
```

Parameters

handle : DC_Init
data : [17:0] GPIO Out

return values

error code.

7.2.3.8. DC_GpioWriteOE

GPIO output enable

```
Int DC_GpioWriteOE (int handle,DWORD data);
```

Parameters

handle :
data : [17:0] GPIO OE 가 '1'
GPIO Out Open

return values

error code.

7.2.4. Capture

2

7.2.4.1. DC_Open

가

```
BYTE *DC_Open(  
int handle,  
    int channel,  
    int Height,  
    int Width,  
    int Frames,  
    int BitsPerClk  
);
```

Parameters

handle :

channel : Capture channel 0 – 1.

Height : Frame

Width : Frame

Frames : Capture

BitsPerClk :

1,2,4,8,16

가

return values

Error Codes :

DC_ERR_CHANNEL_INVALID

DC_ERR_OPEN_BITS_PER_CLK_INVALID

DC_ERR_FRAMES_INVALID

DC_ERR_FRAME_SIZE_INVALID

DC_ERR_FRAME_BUFFER_ALLOC_FAILS

7.2.4.2. DC_Close

DC_Open . DC_Open

```
DC_Close (  
    int handle,  
    Int channel  
);
```

Parameters

handle : .
channel : . 0 1.

return values

Error Codes :
DC_ERR_CHANNEL_NOT_OPENED
DC_ERR_CHANNEL_INVALID

7.2.4.3. DC_Start

```
Int DC_Start(  
    int handle,  
    int channel  
);
```

Parameters

handle : .
channel : Capture channel 0 – 1.

return values

DC_ERR_ALREADY_STARTED,
DC_ERR_CHANNEL_NOT_OPENED.
DC_ERR_START_FAILS :

DC_Start

Parameters

return values

7.2.4.5. DC_GetFrame

```
Int DC_GetFrame(
    int handle,
    Int channel,
    int no_blocked,
    BYTE **buf,
    WORD *length
```


);

Parameters

handle : .
channel : channel number.
no_blocked :
1
가 length 0 buf 가
0 가
buf : 가
NULL
length : 가
0 : no_blocked 1 가
1- (Frames-1) :
NULL

return values

DC_ERR_CHANNEL_INVALID
DC_ERR_FRAME_OVER_RUN : PCI CHIP 가
DC_ERR_BUFFER_OVERFLOW : CPU 가
Frames-1 가
DC_ERR_CHANNEL_NOT_OPENED.
DC_ERR_DMA_TRANSFER_FAILS :

7.2.4.6. DC_CancelGetFrame

DC_GetFrame blocked thread 가 가

DC_GetFrame

thread

process

```
int DC_CancelGetFrame(  
    int handle,  
    int channel  
);
```

Parameters

handle :
channel : channel number

return values

Error Codes :
DC_ERR_CHANNEL_INVALID
DC_ERR_NO_GET_FRAME_PENDING.

7.2.5. Capture

Capture controller 가

7.2.5.1. DC_SetCameraCableMode 가

가 TRIGGER_MODE, I2C_MODE 가
Camera Cable

```
int DC_SetCameraCableMode (  
    int handle,  
    int channel,
```

```
int mode
);
```

Parameters

handle : .

channel : channel number 0 – 1.

mode : 0,1 가 .

0 : TRIGGER_MODE .

1 : I2C_MODE I2C control .

Return values

error code

7.2.5.2. DC_SetCapInfo

Capture controller .

```
int DC_SetCapInfo(
    int handle,
    int channel,
    int HBP,
    int VBP,
    int ClkEdgeHigh,
    int HSyncEdgeHigh,
    int VSyncEdgeHigh,
    BYTE LineArea,
    BYTE Input10Bits
);
```

Parameters

handle : .

channel : channel number.

HBP : 가 가 . 0 .

VBP : 가 가 . 0 .

ClkEdgeHigh: Camera 가 .

1 : , 0 : .

HSyncEdgeHigh : 가 .

1 : , 0 : .

VSynEdgeHigh : 가 .

1 : , 0 : .

LineArea :

1 : Line Camera Mode, .

0 : Area Camera Mode,

Input10Bits : 10bit 8bit

. 10bit 가 .

cap_data[9:0], camera cam_data[9:0]

1 : camera connector [9:0] .

cap_data[9:0] = cam_data[9:0].

0 : camera connector [7:0] [9:8] .

cap_data[9:2] = cam_data[7:0];

cap_data[1:0] = 0;

return values

error code

7.2.5.3. DC_SetFilter

Digital Line filter .

mode 0 .

int DC_SetFilter(

int handle,

int channel,

DWORD mode,

DWORD fsHz,

DWORD cutoffHz,

int offset,

```
float q
);
```

parameters

handle : .

mode : Filter mode.

0 : direct mode. Filtering .

1 : High pass filter mode. High pass filter .

2 : Low pass filter mode.

3 : band pass filter mode.

fsHz : Video clock . Hz

cutoffHz : filter cutoff . Hz

offset : filter offset . -1024 - +1024 가 .

q : Q . float

return values

Error Codes.

7.2.5.4. DC_SetLookupTable

Lookup table Table

WORD data[1024]

```
int DC_SetLookupTable(
    int handle,
    int channel,
    int index,
    DWORD value
);
```

Parameters

handle : .

channel : channel number

index : 0-1023 가

value : 16bit 가 . 가

return values

Error Codes :

DC_ERR_LUT_INDEX_RANGE_INVALID

7.2.5.5. DC_SetExposure

Camera Cable mode 가 0

가

Exposure

```
int DC_SetExposure(  
    int handle,  
    int channel,  
    int enable,  
    int ActiveHigh,  
    WORD Width  
);
```

Parameters

handle :

channel : channel

enable : 1 exposure Inactive

ActiveHigh : 1 Active High, 0 Active Low

width : . line mode clock area mode

input h_sync 가 가

return values

error code

7.2.6. Encoder

가

A,B

A

. A,B

32bit up/down counter

encoder

7.2.6.1. DC_SetEncoderUpDownCounter

encoder A,B 32bit

```
int DC_SetEncoderUpDownCounter(  
    int handle,  
    int channel,  
    DWORD val  
);
```

Parameters

handle :
channel : channel number.
val : 32bit unsigned value . encoder

return values

error code.

7.2.6.2. DC_GetEncoderUpDownCounter

A,B

```
int DC_GetEncoderUpDownCounter(  
    int handle,  
    int channel,  
    DWORD *val  
);
```

Parameters

handle :
channel : channel number.
val : 32bit unsigned

Return values

error code

7.2.7. SYNC generator



7.2.7.1. DC_SetTrgH

가 0 가 . H_SYNC_0

```

int DC_SetTrgH (
int handle,
int channel,
int CountSource,
int CntSrcInvert,
int TriggerSource,
int TrgSrcInvert,
int OutInvert,
WORD Width,
WORD Numbers
);
  
```

Parameters

handle : .

channel : channel number 0 – 1.

CountSource :

0 : 1

1 : PLL Clock

2 : Encoder 0 A

3 : Encoder 1 A

4,5,6,7 : none

CntSrcInvert : 가 가 . 1 0

. encoder .

TriggerSource : .

0 : always
 1 : trigger input, Camera connector TRG_I_P, TRG_I_N
 2 : Channel 0 Sync I/O input. Board Sync I/O connector SYNC_I00
 3 : channel 1 Sync I/O input. Board Sync I/O connector SYNC_I01

TrgSrcInvert : 가 가 . 1 0
 .
 OutInvert: 가 가 . 1 .
 Width : . 0-0xff 가 .
 Numbers : 가 . 0-0xffff 가 .

Return values

error code

7.2.7.2. DC_SetTrgV
 가 0 가 . V_SYNC_0 .

```
int DC_SetTrgV (
int handle,
int channel,
int CountSource,
int CntSrcInvert,
int TriggerSource,
int TrgSrcInvert,
int OutInvert,
WORD Width,
WORD Numbers
);
```

Parameters

handle :
 channel : channel number 0 – 1.

CountSource :
 0 : always

- ```

1 : PLL Clock
2 : Encoder 0 A
3 : Encoder 1 A
4 : TrgH output signal
5 : none
6 : none
7 : none

```

|                |   |   |     |   |
|----------------|---|---|-----|---|
| CntSrcInvert : | 가 | 가 | . 1 | 0 |
|----------------|---|---|-----|---|

•

Encoder, TrgH Output

TriggerSource : .

- ```
0 : always
1 :          trigger input, Camera connector    TRG_I_P,TRG_I_N
2 : Channel 0 Sync I/O input. Board Sync I/O connector    SYNC_I00
3 : channel 1 Sync I/O input. Board Sync I/O connector    SYNC_I01
```

| | | | | |
|----------------|---|---|-----|---|
| TrgSrcInvert : | 가 | 가 | . 1 | 0 |
|----------------|---|---|-----|---|

•

Out Invert: 가 가 . 1 .

Width : 0-0xff 가 .

Numbers : 가 . 0-0xffff 가 .

Return values

error code

7.2.7.3. DC_SetSyncOut

SyncIO . TTL .

DC_SetSyncOut (

```
int handle,  
int channel,  
int Source,  
int OE,
```

```

    int Invert
);

```

Parameters

handle :
 channel : channel number
 Source :
 0 : Trigger input
 1 : TrgH output
 2 : TrgV output
 3 : DC_SyncOutToggle
 4 : IN0, 0
 5 : IN1, 1
 6 : GP_C0, general I/O input 0, LVTTL Level
 7 : GP_C1, general I/O input 1, LVTTL Level

OE : Output Enable, 1 Open
 Invert : 가 가 . 1 0

return values

error code.

7.2.7.4. DC_SyncOutToggle

DC_SetSyncOut 3 가

```

DC_SyncOutToggle (
    int handle,
    int channel,
    WORD width
);

```

Parameters

handle :
 channel : channel number
 width : toggle
 us 가 CPU

return values

error code.

7.2.7.5. DC_SetClkOutFreq

PLL

$$F = 40\text{Mhz} * \text{clk_o_number} / \text{ref_number}$$

가

$$\text{Fin} = F / \text{clk_o_number}, \text{Ffb} = 40\text{Mhz} / \text{ref_number}$$

$$35\text{kHz} < \text{Fin} \leq 1000\text{kHz}$$

$$35\text{kHz} < \text{Ffb} \leq 1000\text{kHz}$$

,
$$F = 10\text{Mhz} - 75\text{Mhz}$$
 가

$$\text{clk_o_number}, \text{ref_number}$$

```
int DC_SetClkOutFreq(  
    int handle,  
    int clk_o_number,  
    int ref_number  
);
```

parameters

handle :

clk_o_number : clock output

ref_number : 40Mhz clock

return values

error code

7.2.8. I2C command

Camera Cable mode I2C_MODE

7.2.8.1. DC_I2cInit

I2C

```
void DC_I2cInit(int handle,int channel,int DelayCnt);
```

parameters

handle : .
channel : channel number.
DelayCnt : I2C . 1-10 가
가 .
가
2 .

return values

error code

7.2.8.2. DC_I2cRst

Reset .

```
void DC_I2cRst(int handle,int channel);
```

parameters

handle : .
channel : channel number.

return values

error code

7.2.8.3. DC_I2cWrite

I2C 8bit .

```
void DC_I2cWrite(int handle,int channel,BYTE data);
```

parameters

handle : .
channel : channel number.
data : 8bit data

return values

error code

7.2.8.4. DC_I2cRead

I2C 8bit data .

```
int DC_I2cRead (int handle,int channel);
```

parameters

handle : .
channel : channel number.
data : 8bit data

return values

.

7.2.8.5. DC_I2cStart

I2C Start .

```
void DC_I2cStart(int handle, int channel);
```

parameters

handle : .
channel : channel number.
data : 8bit data

return values

none

7.2.8.6. DC_I2cStop

I2C Stop

```
void DC_I2cStop(int handle,int channel);
```

parameters

handle :
channel : channel number.

return values

none

7.2.9.

7.2.9.1. DC_Prog

report :
FPGA hex EEPROM NULL

```
int DC_Prog(  
    int handle,  
    void *report,  
    char *filename  
);
```

parameters

handle :
report : EEPROM

NULL

filename : HEX 가

return values

EEPROM BYTE 0
가

7.3.

0 가

가 .

CAP_BASE_DEVICE_OPEN_ERROR :

.

CAP_BASE_NO_HANDLE :

.

CAP_CARD_CHANNEL_OVERFLOW :

.

DC_ERR_NO_DEVICE :

가

.

DC_ERR_NO_HANDLE:

API

handle

.

.

DC_ERR_NOT_INITIALIZED :

Library 가

.

: DC_Init

DC_ERR_CHANNEL_INVALID :

.

: DC_Open, DC_Close, DC_GetFrame, DC_GetFrameAtPos, DC_CancelGetFrame, ... channel

가

.

DC_ERR_OPEN_BITS_PER_CLK_INVALID :

1, 2, 4, 8, 16

.

: DC_Open

DC_ERR_FRAMES_INVALID :

Open

가

.

256

.

: DC_Open

DC_ERR_FRAME_SIZE_INVALID :

가 Width*Height 가 4 가 .
: DC_Open

DC_ERR_FRAME_BUFFER_ALLOC_FAILS :
.
: DC_Open

DC_ERR_CARD_NUMBER_INVALID :
가 .
: DC_SelectCard

DC_ERR_CHANNEL_NOT_OPENED :
.
: DC_Start

DC_ERR_ALREADY_STARTED :
가 .
: DC_Start

DC_ERR_START_FAILS :
DMA .
: DC_Start

DC_ERR_NOT_STARTED :
.
: DC_Stop

DC_ERR_ALREADY_PENDING :
DC_GetFrame .
: DC_GetFrame

DC_ERR_FRAME_OVER_RUN :
PCI BUS 가 가
. DMA
. 10us
. : DC_GetFrame

DC_ERR_DMA_TRANSFER_FAILS :

DMA 가 .

: DC_GetFrame

DC_ERR_LUT_INDEX_RANGE_INVALID :

Lookup table Index .

: DC_SetLookupTable

- -