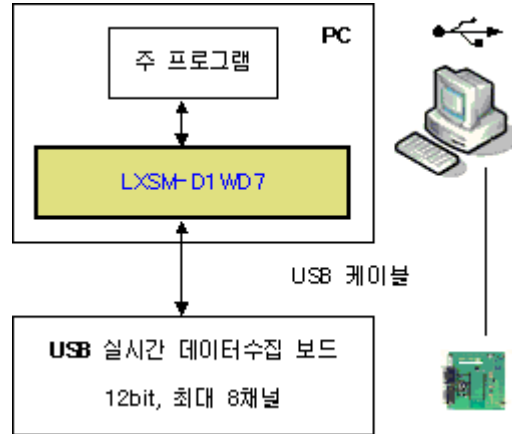


8ch 12bit USB Data Acquisition SDK



LXSM-D1WD7 USB ()
 8ch 12bit) PC 가 가
 S/W DLL USB1.1
 PC DLL
 DLL 7 1
 가 가
 D1WD7
 Visual C++ 6.0 DLL
 Win 32 API visual
 C++



- DLL : WIN32 API
- Analog Input Channel : Max 8 ch
- Real Time Stream Data Acquisition
- Variable Sampling Frequency (Hz): 8Hz, 16Hz, 32Hz, 64Hz, 128Hz, 256Hz, 512Hz, 1024Hz 가 가 가 .
- Variable voltage gain : 16 step (x 1 ~ x 8)
- : Win98se/Me/2000/XP
- 가 - USB
 - QECG-3(LXC3203), QEEG-2(LXE3202), QEEG-4(LXE3204), QEMG-4(LXM3204)
 - SmartEEG-8 (LXSE8), SmartEEG-2 (LXSE2)
 - FL-AUS100



| | |
|----------------|-----------|
| LXSM-D1WD7.DLL | DLL core, |
| LXSM-D1WD7.LIB | link |
| LXSM-D1WD7.H | include |

LXSM-D1WD7

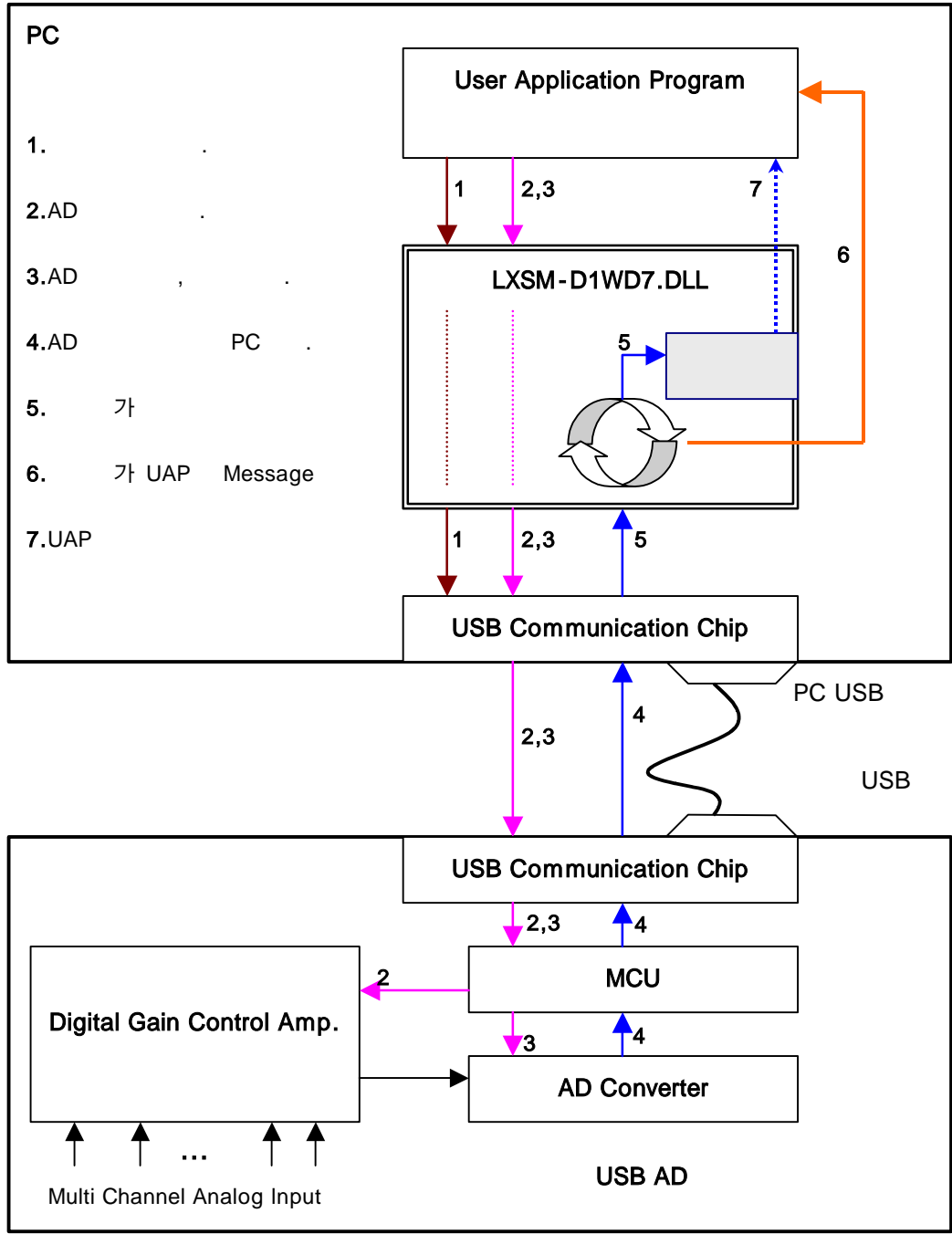
| | | |
|--------------------------|----------------|------------|
| D1WD7 | | 4 |
| | | 6 |
| | | 6 |
| | | 7 |
| <input type="checkbox"/> | | 7 |
| <input type="checkbox"/> | | 7 |
| | | 8 |
| <input type="checkbox"/> | 1. message_map | 가 8 |
| <input type="checkbox"/> | 2. | 8 |
| <input type="checkbox"/> | | 9 |
| | | 10 |
| <input type="checkbox"/> | | 10 |
| | | 11 |
| | | 11 |
| Init_Device | | 12 |
| <input type="checkbox"/> | | 12 |
| <input type="checkbox"/> | | 12 |
| <input type="checkbox"/> | | 12 |
| <input type="checkbox"/> | | 12 |
| <input type="checkbox"/> | | 12 |
| Start_Stream | | 14 |
| <input type="checkbox"/> | | 14 |
| <input type="checkbox"/> | | 14 |
| <input type="checkbox"/> | | 14 |
| <input type="checkbox"/> | | 14 |
| <input type="checkbox"/> | | 14 |
| Stop_Stream | | 15 |
| <input type="checkbox"/> | | 15 |
| <input type="checkbox"/> | | 15 |

LXSM-D1WD7

| | | |
|--------------------------|-------|-----------|
| <input type="checkbox"/> | _____ | 15 |
| <input type="checkbox"/> | _____ | 15 |
| <input type="checkbox"/> | _____ | 15 |
| Close_Device | _____ | 16 |
| <input type="checkbox"/> | _____ | 16 |
| <input type="checkbox"/> | _____ | 16 |
| <input type="checkbox"/> | _____ | 16 |
| <input type="checkbox"/> | _____ | 16 |
| <input type="checkbox"/> | _____ | 16 |
| Set_SampleFreq | _____ | 17 |
| <input type="checkbox"/> | _____ | 17 |
| <input type="checkbox"/> | _____ | 17 |
| <input type="checkbox"/> | _____ | 17 |
| <input type="checkbox"/> | _____ | 17 |
| <input type="checkbox"/> | _____ | 17 |
| Set_PGA | _____ | 18 |
| <input type="checkbox"/> | _____ | 18 |
| <input type="checkbox"/> | _____ | 18 |
| <input type="checkbox"/> | _____ | 18 |
| <input type="checkbox"/> | _____ | 18 |
| <input type="checkbox"/> | _____ | 18 |
| Set_ConfigChannel | _____ | 20 |
| <input type="checkbox"/> | _____ | 20 |
| <input type="checkbox"/> | _____ | 20 |
| <input type="checkbox"/> | _____ | 20 |
| <input type="checkbox"/> | _____ | 20 |
| <input type="checkbox"/> | _____ | 20 |

LXSM-D1WD7

D1WD7



- 1 . D1WD7

LXSM-D1WD7

DLL

-1

-1

- 1. D1WD7

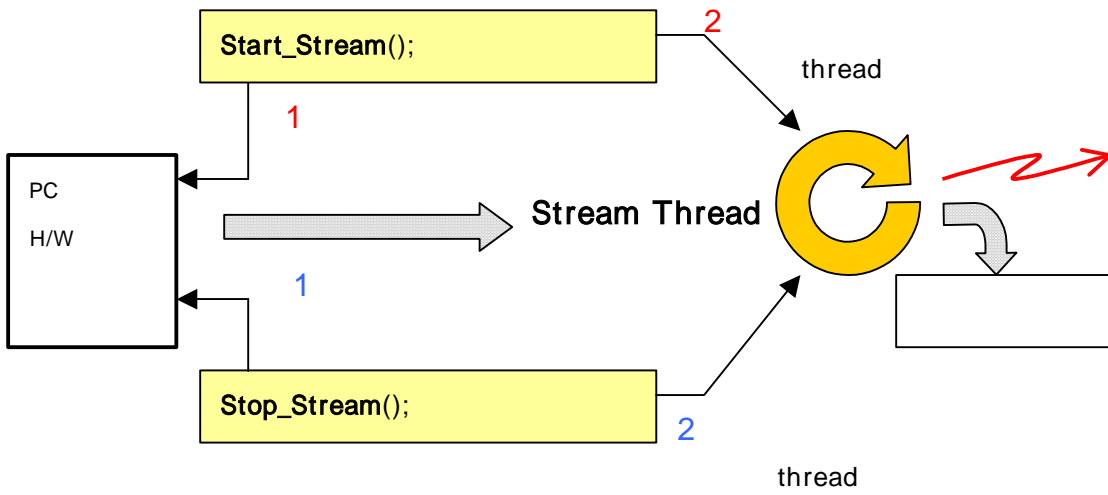
DLL

| | | DLL |
|----------|---|--|
| 1. | USB , USB | Init_Device Close_Device |
| 2. AD | AD | Set_SampleFreq Set_PGA Set_ConfigChannel |
| 3. AD , | AD On Off . AD ON AD 가 PC , DLL 가 AD | Start_Stream Stop_Stream |
| 4. AD PC | 가 PC 가 | PC가 |
| 5. 가 | AD DLL PC AD | DLL |
| 6. 가 UAP | 5 가 | DLL WM_AcqUnitData 가 WM_USER+1 |
| 7. UAP | 6 가 가 | DLL Callback |

LXSM-D1WD7



DLL - 2 DLL Start_Stream
 , AD 가 PC , DLL
 가
 Start_Stream
 가 가



- 2.



```

DLL
DLL
SendMessage(MSGTARGET_WINDOW, WM_AcqUnitData, 0, (LPARAM)AcqUnitData);
MSGTARGET_WINDOW Init_Device , WM_AcqUnitData

#define WM_AcqUnitData WM_USER+1
SendMessage (LPARAM)AcqUnitData AcqUnitData
    
```

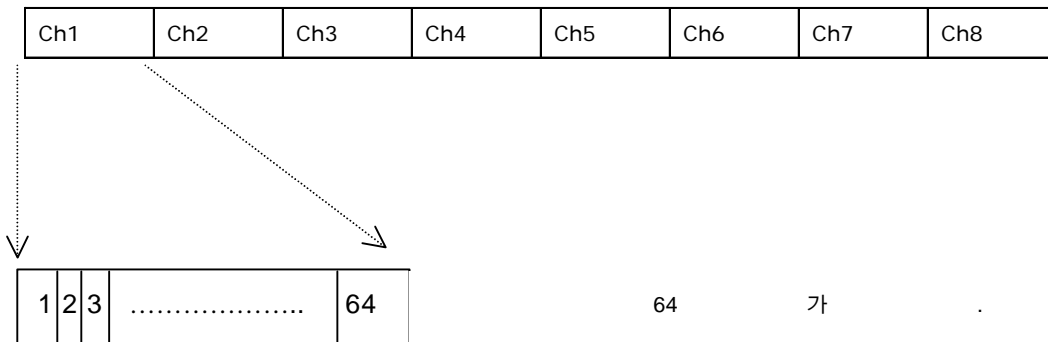
LXSM-D1WD7



□

DLL ch1,2,3,...,8 float 64 ()

: float 512

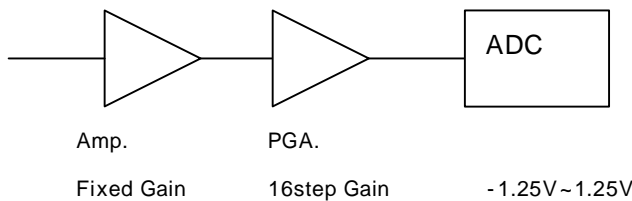


-3. 가

□

-1.25 +1.25 (V) -1.25 +1.25 PGA
-3 가

ADC



- 3.

LXSM-D1WD7

Visual C++ 6.0 view class

□ 1. message_map 가

```

BEGIN_MESSAGE_MAP(CTest_LXSM_D1WD5Uview, CView)
  {{{AFX_MSG_MAP(CTest_LXSM_D1WD5Uview)
    ON_COMMAND(ID_MENU_InitDevice, OnMENUInitDevice)
    ON_COMMAND(ID_MENU_CloseDevice, OnMENUCloseDevice)
    ON_COMMAND(ID_MENU_Sample128, OnMENSUSample128)
    ON_COMMAND(ID_MENU_Sample256, OnMENSUSample256)
    ON_COMMAND(ID_MENU_Sample512, OnMENSUSample512)
    ON_COMMAND(ID_MENU_Sample1024, OnMENSUSample1024)
    ON_COMMAND(ID_MENU_Sample2048, OnMENSUSample2048)
    ON_COMMAND(ID_MENU_Sample4096, OnMENSUSample4096)
    ON_COMMAND(ID_MENU_SetPga, OnMENUSetPga)
    ON_COMMAND(ID_MENU_StartStream, OnMENUStartStream)
    ON_COMMAND(ID_MENU_StopStream, OnMENUStopStream)
    ON_COMMAND(ID_MENU_SetMaxNumChannel, OnMENUSetMaxNumChannel)
    ON_COMMAND(ID_MENU_Sample8192, OnMENSUSample8192)
    ON_COMMAND(ID_MENU_Sample16384, OnMENSUSample16384)
  }}}AFX_MSG_MAP
  ON_MESSAGE(WM_AcqUnitData, OnStreamData) // !!!! STREAM데이터 메시지 처리.
END_MESSAGE_MAP()

```

WM_AcqUnitData

OnStreamData

WM_AcqUnitData LXSM-D1WD7.h

OnStreamData 가

2

□ 2.

...View.h

```

// Operations
public:
  CString y_text[65];
  long OnStreamData(WPARAM wParam, LPARAM lParam);

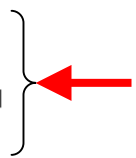
```


LXSM-D1WD7

view.cpp

```

long CTest_LXSM_D1WD5View::OnStreamData(WPARAM wParam,LPARAM lParam)
{
    // 파형디스플레이 SWEEP 루틴임.
    ACQPLOT_DLL_Array_Datain_Strip((float *) (lParam),MAXNUMBER_CHANNEL+1
    return 1;
}
    
```



□

ACQPLOT_DLL_Array_Datain_Strip (float *) (lParam), MAXNUMBER_CHANNEL+1

가 (-2)

가

가 , 가

가

- 2

| | () |
|--------|--------|
| 8Hz | 8 |
| 16Hz | 4 |
| 32Hz | 2 |
| 64Hz | 1 |
| 128Hz | 0.5 |
| 256Hz | 0.25 |
| 512Hz | 0.125 |
| 1024Hz | 0.0625 |

, 512Hz 가 0.125 가

64 (8 x 64 float) 0.125

가

가

Stop_Stream DLL AD

Start_Stream

LXSM-D1WD7

| function | |
|---|--|
| short Init_Device(HWND msgtarget_window, int pid); | DLL DLL PC ID |
| short Start_Stream(); | AD |
| short Stop_Stream(); | AD |
| short Close_Device(); | |
| short Set_SampleFreq(unsigned char samplefreq_idx); | |
| short Set_PGA(unsigned char gain_idx); | PGA(Programmable Gain amp) |
| short Set_ConfigChannel (unsigned char *Is_Select_Channel); | |

LXSM-D1WD7



| |
|---|
| , |
| <input type="checkbox"/> |
| short Init_Device(HWND msgtarget_window); |
| <input type="checkbox"/> |
| - |
| <input type="checkbox"/> |
| • 가 |
| <input type="checkbox"/> |
| |
| <input type="checkbox"/> |
| ■ 가 |

LXSM-D1WD7

Init_Device

□

short Init_Device(HWND msgtarget_window, int pid);

□

DLL DLL , Id
DLL PC USB ID 가 ,

Close_Device ID ID -3

□

HWND msgtarget_window

- I/O :
- : DLL

int pid

- I/O :
- : PC USB
-3 ID

□

Close_Device

가 . Close_Device 가 .

□

- 1 : 가
- 0
 - -1 : PC
 - -2 : 1 가 Close_Device
 - -3 :
가

LXSM-D1WD7

- 3

ID

| () | ID |
|-------------------|----|
| QECG-3 (LXC3203) | 6 |
| QEEG-2 (LXE3202) | 10 |
| QEEG-4 (LXE3204) | 9 |
| QEMG-4 (LXM3204) | 12 |
| SmartEEG-8(LXSE8) | 7 |
| SmartEEG-2(LXSE2) | 8 |
| FL-AUS100 | 11 |
| () | |
| | |

LXSM-D1WD7

Start_Stream

□

short Start_Stream();

□

AD PC , 1 PC
가 , DLL PC
가 -2 가 DLL 1
가 가 가 가
가

□

Init_Device가 , 가 . Stop_Stream

□

□

- 1 :
 - -1 : Init_Device
 - -2 : 가
 - -3 :
- 0

LXSM-D1WD7

Stop_Stream

short Stop_Stream();

stream

DLL

Start_Stream

가

Init_Device

- 1 가
- 0
 - -1: Init_Device
 - -3:

LXSM-D1WD7

Close_Device

□

short Close_Device();

□

- Init_Device
Start_Stream 가 , Close_Device
Stop_Stream 가

□

Init_Device

□

□

- 1 :
 - 0
 - -1 : Init_Device
 - -3 : Start_Stream 가 DLL 가
Stop_Stream Stop_Stream

LXSM-D1WD7

Set_SampleFreq

`short Set_SampleFreq(unsigned char samplefreq_idx);`

Init_Device

`unsigned char samplefreq_idx`

- I/O -
- : = $2^{\text{samplefreq_idx}}$, : 512 Hz samplefreq_idx 9
- 가 : 3 10 , : 7(128Hz),8(256Hz),9(512Hz),10(1024Hz)

- 1:
- 0
 - -1 : Init_Device가
 - -3 :
 - -10 : 가

LXSM-D1WD7

Set_PGA

short Set_PGA(unsigned char gain_idx)

| | PGA(Programmable Gain amp) | gain_idx | PGA |
|----------|----------------------------|----------|-----|
| Gain_idx | -4 | . | . |

Init_Device

unsigned char gain_idx

- I/O -
- : 0 15

- 1: .
- 0 .
 - -1 : Init_Device가 .
 - -3 : .
 - -10 : 가 .

LXSM-D1WD7

- 4 gain_idx

| Gain_idx | .() |
|----------|-------|
| 0 | 1 |
| 1 | 1.475 |
| 2 | 2 |
| 3 | 2.475 |
| 4 | 2.95 |
| 5 | 3.425 |
| 6 | 3.95 |
| 7 | 4.375 |
| 8 | 4.9 |
| 9 | 5.375 |
| 10 | 5.9 |
| 11 | 6.375 |
| 12 | 6.85 |
| 13 | 7.325 |
| 14 | 7.85 |
| 15 | 8.325 |

LXSM-D1WD7

Set_ConfigChannel

short Set_ConfigChannel(unsigned char * Is_Select_Channel);

```

        Is_Select_Channel          1          , 0
    .
    0      1          .      ch3, ch6
        Is_Select_Channel[2]=1; Is_Select_Channel[5]=1;
0
-3)          가          . Ch3, ch6          가
        :          가
    
```

| | | | | | | | |
|-----|-----|--|--|--|--|-----|--|
| Ch3 | Ch6 | | | | | ... | |
|-----|-----|--|--|--|--|-----|--|

Start_Stream

unsigned char * Is_Select_Channel

- I/O :

- 1:
- 0
- -2: 가

LXSM-D1WD7

“**M**easuring is Believing”

H/W, S/W .
, S/W .
,

LAXTHA Inc.

Advanced Scientific Instruments H/W & S/W

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general@laxtha.com

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