

PolyG -

Data Acquisition DLL



LXSM-D1WD10 ()
 PloyG- PC 가
 가 win32 API DLL
 DLL
 가 ,
 USB DLL 8 1 ,
 DLL 가 가
 D1WD10
 : Visual C++ 6.0



PolyG

가

가

DLL



- Real Time Stream Data Acquisition
- Variable Sampling Frequency (Hz): 128, 256, 512, 1024, 2048
- Variable voltage gain : 16 step (x 0.1 ~ x 17)
- : Win98se/Me/2000/XP
- 가 - PolyG .(PolyG- .)



LXSM-D1WD10.DLL	DLL core,
LXSM-D1WD10.LIB	link
LXSM-D1WD10.H	include

LXSM-D1WD10

D1WD10	_____	5
	_____	7
	_____	7
	_____	8
<input type="checkbox"/>	_____	8
<input type="checkbox"/>	_____ ?	9
<input type="checkbox"/>	_____	9
	_____	10
<input type="checkbox"/>	1. message_map _____ 가 _____	10
<input type="checkbox"/>	2. _____	10
<input type="checkbox"/>	_____	11
	_____	13
<input type="checkbox"/>	_____	13
	_____	14
	_____	15
	_____	15
Init_Device	_____	16
<input type="checkbox"/>	_____	16
<input type="checkbox"/>	_____	16
<input type="checkbox"/>	_____	16
<input type="checkbox"/>	_____	16
<input type="checkbox"/>	_____	16
Start_Stream	_____	18
<input type="checkbox"/>	_____	18
<input type="checkbox"/>	_____	18
<input type="checkbox"/>	_____	18
<input type="checkbox"/>	_____	18
<input type="checkbox"/>	_____	18

LXSM-D1WD10

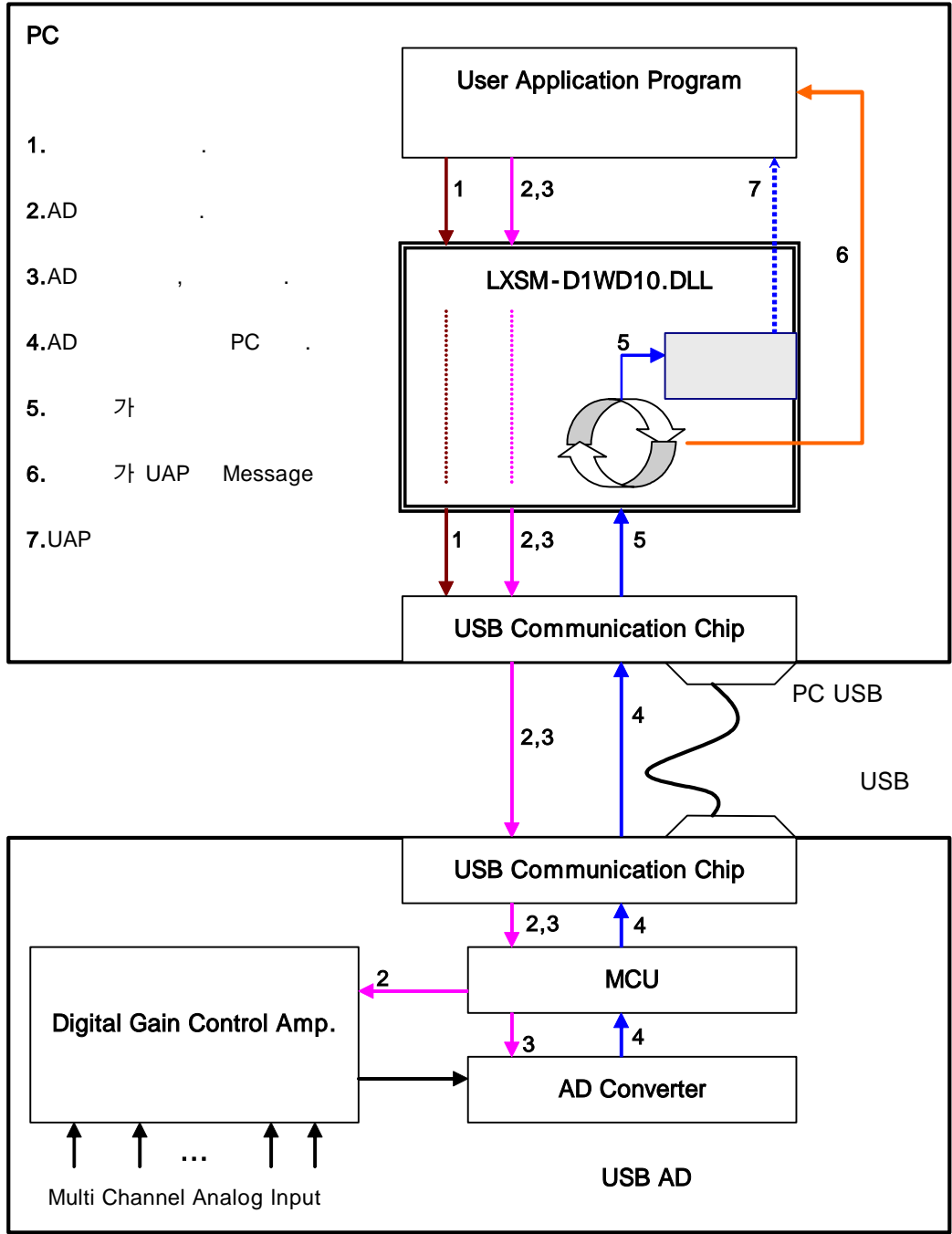
Stop_Stream	19
<input type="checkbox"/>	19
<input type="checkbox"/>	19
<input type="checkbox"/>	19
<input type="checkbox"/>	19
<input type="checkbox"/>	19
Close_Device	20
<input type="checkbox"/>	20
<input type="checkbox"/>	20
<input type="checkbox"/>	20
<input type="checkbox"/>	20
<input type="checkbox"/>	20
Set_ADCMaxNumChannel	21
<input type="checkbox"/>	21
<input type="checkbox"/>	21
<input type="checkbox"/>	21
<input type="checkbox"/>	21
<input type="checkbox"/>	21
Set_SampleFreq	22
<input type="checkbox"/>	22
<input type="checkbox"/>	22
<input type="checkbox"/>	22
<input type="checkbox"/>	22
<input type="checkbox"/>	22
Set_PGA_SourceGroup	23
<input type="checkbox"/>	23
<input type="checkbox"/>	23
<input type="checkbox"/>	23
<input type="checkbox"/>	23
<input type="checkbox"/>	23
Set_PGA_EachChannel	26
<input type="checkbox"/>	26

LXSM-D1WD10

<input type="checkbox"/>	_____	26
<input type="checkbox"/>	_____	26
<input type="checkbox"/>	_____	26
<input type="checkbox"/>	_____	26
Set_PGA	_____	27
<input type="checkbox"/>	_____	27
<input type="checkbox"/>	_____	27
<input type="checkbox"/>	_____	27
<input type="checkbox"/>	_____	27
<input type="checkbox"/>	_____	27
Set_ConfigChannel	_____	28
<input type="checkbox"/>	_____	28
<input type="checkbox"/>	_____	28
<input type="checkbox"/>	_____	28
<input type="checkbox"/>	_____	28
<input type="checkbox"/>	_____	28
- 1 . D1WD10		5
- 2.		7
- 3.		9
- 1. D1WD10 DLL		6
- 2 가		8
- 3		13
- 4 ID.....		17
- 5 gain_idx PGA		24

LXSM-D1WD10

D1WD10



- 1 . D1WD10

LXSM-D1WD10

DLL

-1

-1

- 1. D1WD10

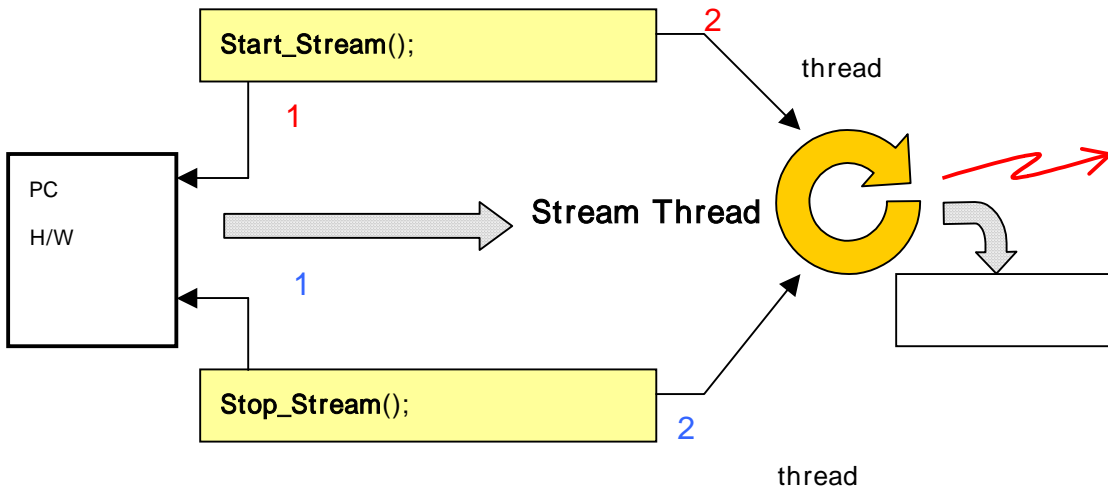
DLL

		DLL
1.	USB , USB	Init_Device Close_Device
2. AD	AD , , ..	Set_ADCMaxNumChannel Set_SampleFreq Set_PGA_SourceGroup Set_PGA Set_PGA_EachChannel 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-D1WD10



DLL - 2 DLL Start_Stream
 , AD 가 PC , DLL
 PC 가
 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-D1WD10



□

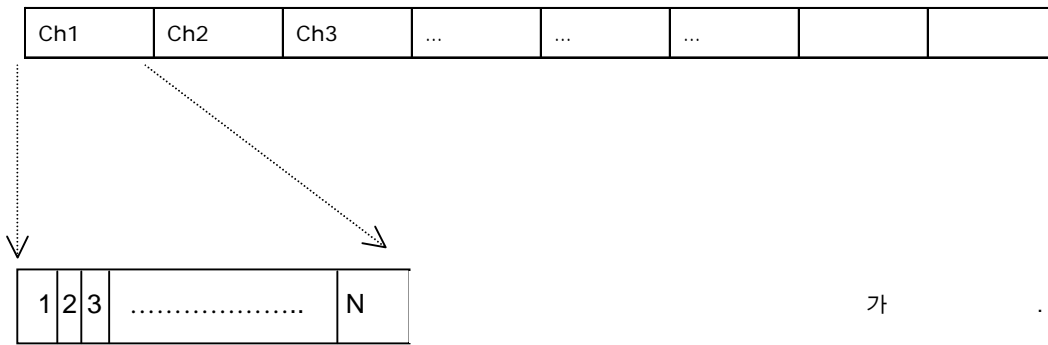
DLL

float

ch1,ch2,ch3,....,

가

: float



가

-3.

가

= 512/

. 1

64

-2

- 2

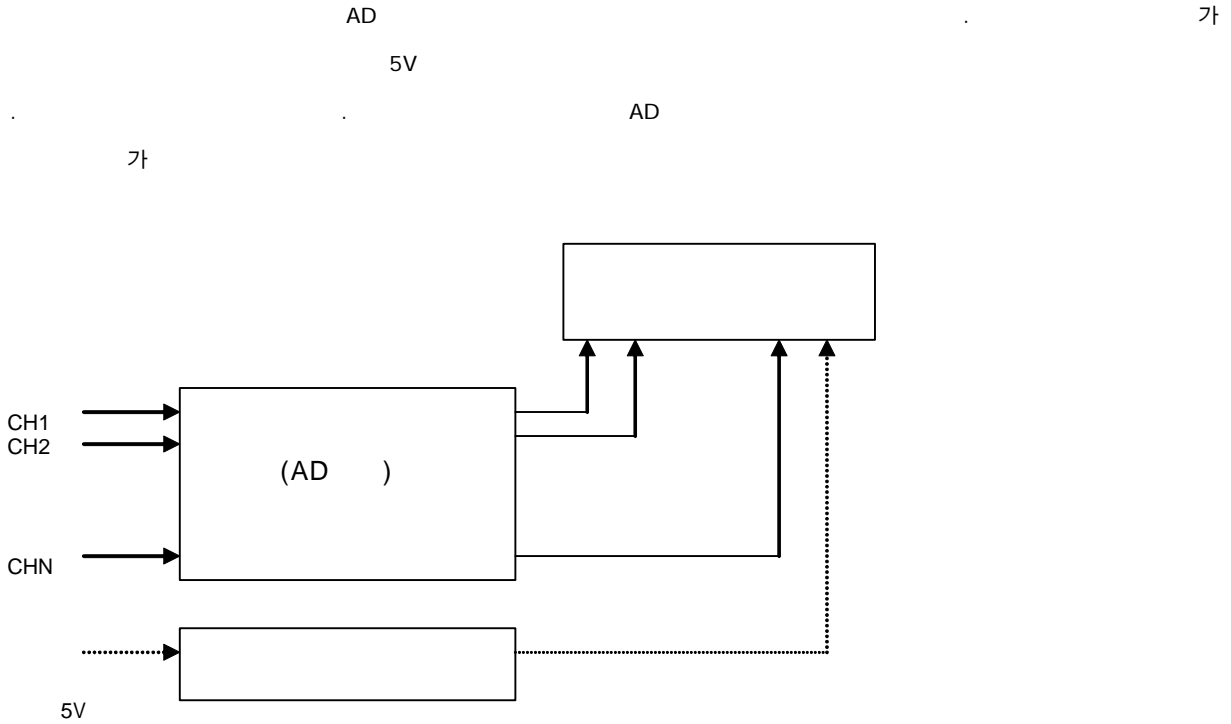
가

		가
2	256	4096 Hz
4	128	2048 Hz
8	64	1024 Hz
16	32	512 Hz
32	16	512 Hz

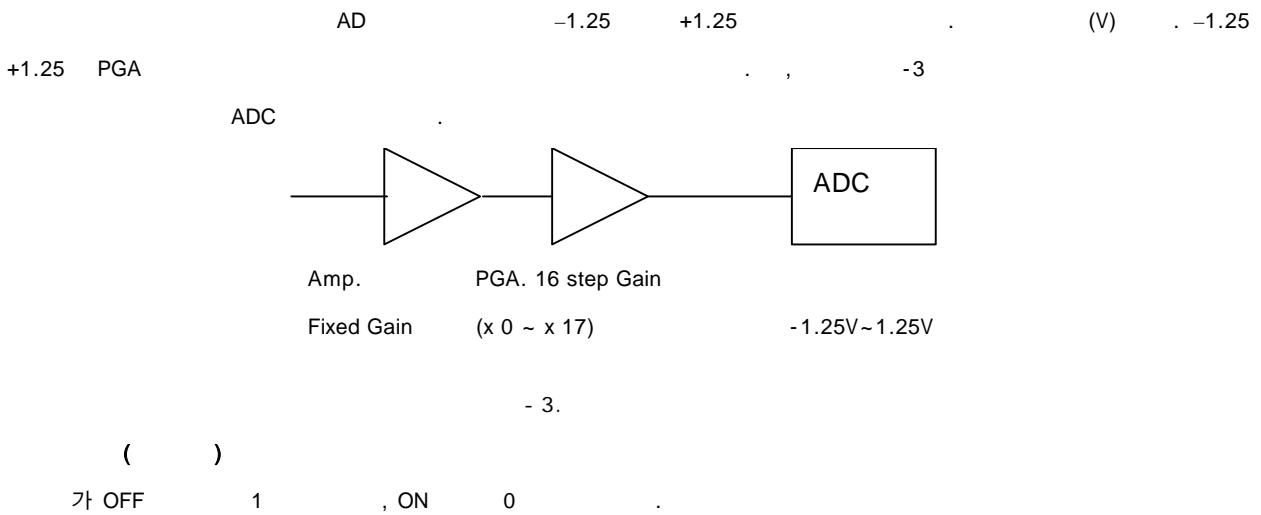
LXSM-D1WD10

□

?



□



LXSM-D1WD10

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-D1WD10.h

OnStreamData 가

2

□ 2.

...View.h

```

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

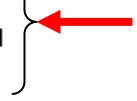
```

LXSM-D1WD10

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

□

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

가	()
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

Stop_Stream DLL AD Start_Stream

LXSM-D1WD10

2 가 . 2가
Hz .

$$() = (512/) \times (1/)$$

LXSM-D1WD10



D1WD10 DLL , -3 8

가 .

- 3

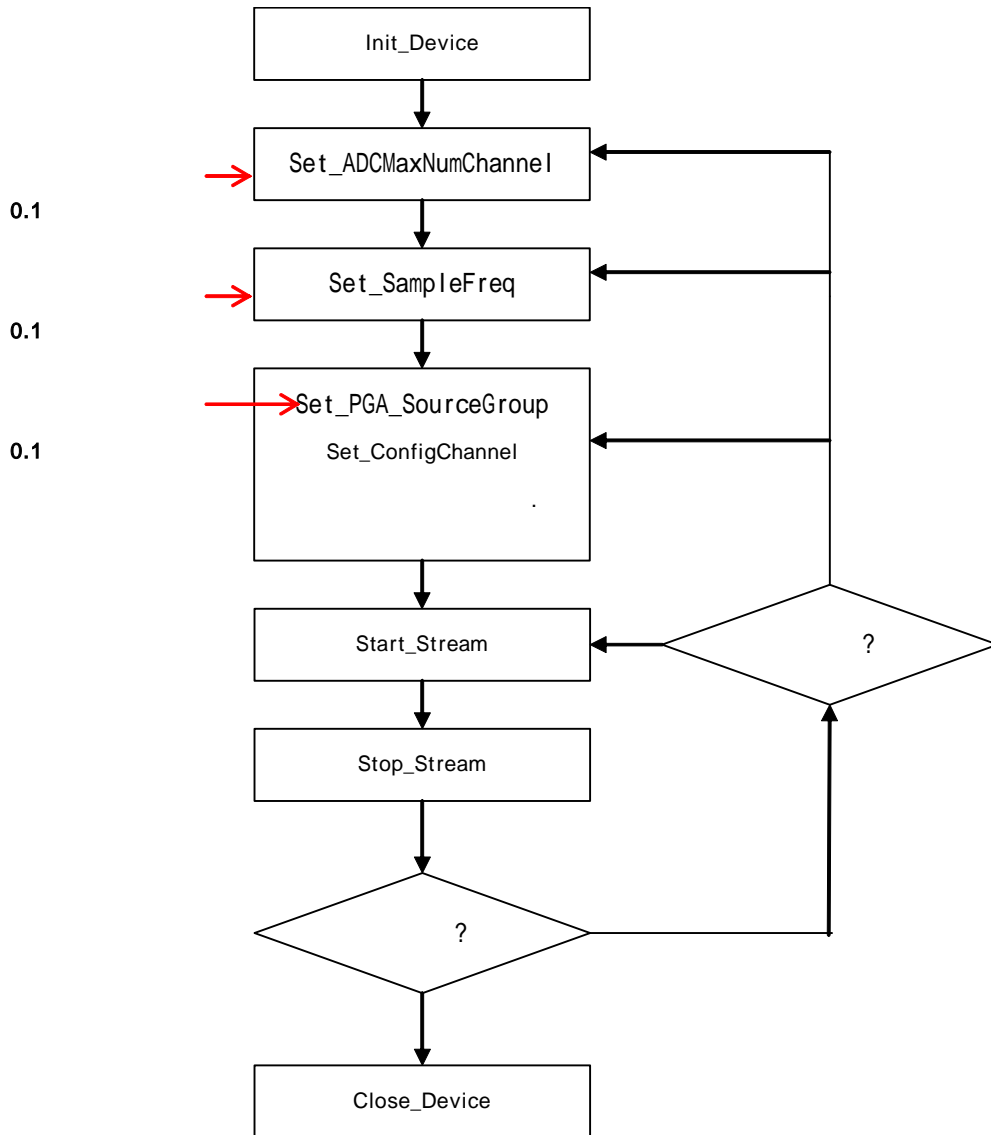
Function	
short Init_Device(HWND msgtarget_window,int pid);	DLL DLL PC ID .
short Start_Stream();	AD .
short Stop_Stream();	AD .
short Close_Device();	, .
short Set_ADCMaxNumChannel (unsigned char maxnum_channel);	AD . 1,2,4,8,16,32,64가 .
short Set_SampleFreq(unsigned char samplefreq_idx);	. .
short Set_PGA_SourceGroup(unsigned char sourcegroup_idx, unsigned char gain_idx);	. : PolyG-A sourcegroup_idx =0, gain_idx = 4 21 4 .
short Set_PGA_EachChannel(unsigned char channel_idx, unsigned char gain_idx);	. : channel_idx = 0, gain_idx = 7 1 7 .
short Set_PGA(unsigned char gain_idx);	PGA(Programmable Gain amp)
short Set_ConfigChannel (unsigned char *Is_Select_Channel);	. .

- 3 가 , Set_PGA_SourceGroup

LXSM-D1WD10



가 Init_Device 가 Set_ADCMaxNumChannel
Set_SampleFreq
가 MCU
Set_ADCMaxNumChannel, Set_SampleFreq, Set_PGA 0.1



LXSM-D1WD10



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

LXSM-D1WD10

Init_Device

□

short Init_Device(HWND msgtarget_window, int pid);

□

DLL DLL , Id .
DLL PC USB ID 가 ,

Close_Device ID ID -4

□

HWND msgtarget_window

- I/O :
- : D1WD10

int pid

- I/O :
- : PC USB
-4 ID .

□

Close_Device

가 . Close_Device 가 .

□

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

LXSM-D1WD10

- 4 ID.

	ID
PolyG-A	14
PolyG-E	15
PolyG-I	16
PolyG-U	17

LXSM-D1WD10

Start_Stream

□

short Start_Stream();

□

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

□

Init_Device - Set_ADCMaxNumChannel , 가 . Stop_Stream

□

□

- 1 : .
- 0
 - -1 : Init_Device
 - -2 : 가 .
 - -3 : .
 - -4 : .
- 2 .

LXSM-D1WD10

Stop_Stream

short Stop_Stream();

AD

DLL

Start_Stream

가

Init_Device

- 1 가
- 0
 - -1: Init_Device
 - -3:

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Close_Device

□

short Close_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-D1WD10

Set_ADCMaxNumChannel

short Set_ADCMaxNumChannel(unsigned_char maxnum_channel);

AD 가 . Pc .

	Maxnum_channel
PolyG-A	32
PolyG-I	16
PolyG-U	8

Init_Device가 . 가 . Start_Stream
 가 . 가 . 2, 4096Hz
 가 32 Start_Stream 4096 Hz
 , 32 512Hz (-2)

unsigned_char maxnum_channel

- I/O :
- : . 8,16,32 가 .

- 0 : .
 가 . : 32 16 . -2 .
- 0
 - -1 : Init_Device
 - -2 : 가
 - -3 :
 - -10 : 가 1,2,4,8,16,32,64가

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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 : 0 14 : 7(128Hz),8(256Hz),9(512Hz), 10(1024Hz), 14(16384Hz)

- 1:
- 0
 - -1 : Init_Device가
 - -3 :
 - -4 :
 - 2
 - -10 : 가

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Set_PGA_SourceGroup



short Set_PGA_SourceGroup(unsigned char sourcegroup_idx, unsigned char gain_idx)



PGA(Programmable Gain amp)		gain_idx	PGA	
Gain_idx	5	,	-3	ADC
PGA				
Sourcegroup_idx				
PolyG-A	1 21	, sourcegroup_idx = 0	ch1	ch21
PolyG-A	17	Set_PGA_SourceGroup(0,15)		
Sourcegroup_idx				PolyG-A
	25 10, PolyG-I	11, PolyG-U	12	sourcegroup_idx



Init_Device



unsigned char sourcegroup_idx

- I/O -
- : 25 10, 11, 12

unsigned char gain_idx

- I/O -
- : 0 15.



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

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- 5 gain_idx PGA

Gain_idx	PGA Gain
0	0.1
1	0.2
2	0.4
3	0.7
4	1.00
5	1.36
6	1.70
7	2.55
8	3.40
9	4.25
10	5.67
11	6.80
12	8.50
13	10.20
14	11.90
15	17.00

LXSM-D1WD10

10 PolyG-A sourcegroup_idx

Sourcegroup_idx		
0	1 ~ 21	EEG (21)
1	22	ECG (1)
2	23	PPG (1)
3	24	RESP (1)
4	25	GSR (1)
5	26,27,28,29	EMG (4)
6	30,31	EOG (2)

11. PolyG-I sourcegroup_idx

Sourcegroup_idx		
0	1 ~ 8	EEG (8)
1	9	ECG (1)
2	10	PPG (1)
3	11	RESP (1)
4	12	GSR (1)
5	13,14	EMG (2)
254	15	1
255	16	2

12. PolyG-U sourcegroup_idx

Sourcegroup_idx		
0	1,2	EEG (2)
1	3	ECG (1)
2	4	PPG (1)
3	5	RESP (1)
4	6	GSR (1)
5	7,8	EMG (2)

LXSM-D1WD10

Set_PGA_EachChannel

short Set_PGA_EachChannel(unsigned char channel_idx, unsigned char gain_idx)

1	PGA(Programmable Gain amp)	.	Gain_idx
5	PolyG-A EOG1(ch 30)	17	Set_PGA_EachChannel (29, 15)

Init_Device

unsigned char channel_idx

- I/O -
- : PolyG-A 0 31 . PolyG-I 0 15 , PolyG-U 0 7 .

unsigned char gain_idx

- I/O -
- : 0 15.

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

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Set_PGA

short Set_PGA(unsigned char gain_idx)

PGA(Programmable Gain amp)

. gain_idx

PGA

. Gain_idx

5

Init_Device

unsigned char gain_idx

- I/O -
- : 0 15.

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

LXSM-D1WD10

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; Is_Select_Channel[32]=1; (
        가          .)          0
        ( -3)          가
        . Ch3, ch6          가
        :          가
    
```

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

Start_Stream

unsigned char * Is_Select_Channel

- I/O :

- 1:
- 0
- -2: 가

LXSM-D1WD10

“**M**easuring is Believing”

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, S/W .
,

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