



PCIe-U30x Series

4/8/12-ch PCI Express® x4 Gen3
USB3 Vision Top Performing Frame Grabbers

Function Library Reference

Manual Rev.: 1.0

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Part No: 50-11269-1000

Revision History

Revision	Release Date	Description of Change(s)
1.00	Oct. 22, 2019	Initial release

Preface

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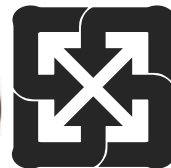
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Battery Labels (for products with battery)



Li-ion



廢電池請回收

California Proposition 65 Warning



WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris (1,3-dichloro-2-propyl)phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



NOTE:

Additional information, aids, and tips that help users perform tasks.



CAUTION:

Information to prevent **minor** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



WARNING:

Information to prevent **serious** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

The PCIe-U30x series Function Library Reference provides necessary API details, where developers can develop power control applications and get product information in C/C++, C#/VB.Net.

1.1 Setting Up the Build Environment

All header files, DLL and library files are located in:

\\ADLINK\U3 Series\Include

Type	File	Description	Required by
Include	SmartU3.h	Header file required for all C/C++ applications	All applications using APIs
	SmartU3.vb	Function definitions required for all VB.Net applications	
	SmartU3.cs	Function definitions required for all C# applications	
DLL	SmartU3.dll	Dynamic link library files required for all applications	
Library	SmartU3.lib SmartU3x64.lib	Exports API function definitions, required for all Visual C/C++ applications	

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2 Function Library

2.1 List of Functions

Category	Function
Device Control	SmartU3_Register_Card
	SmartU3_Release_Card
	SmartU3_Get_ID
	SmartU3_Get_MCUVersion
	SmartU3_Get_Ports
	SmartU3_Get_ProductPN
	SmartU3_Get_ProductSN
Power Management	SmartU3_Power_Enable
	SmartU3_Get_Power_Enable

2.2 Function Library

2.2.1 Device Control Functions

SmartU3_Register_Card

Initializes a specified device. This function should be called before other functions except those with no Number parameter.

Syntax

C/C++

```
short SmartU3_Register_Card (unsigned short card_num)
```

Parameter(s)

Card_num:

Indicates the number of devices with the first card numbered 0, the second card numbered 1, etc.

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

- 3 The count of calling `SmartU3_Register_Card` must be less than 32
- 13 Driver is not found or there is no card

SmartU3_Release_Card

Closes the device and releases all allocated resources. This function should be called before terminating the application.

Syntax

C/C++

```
short SmartU3_Release_Card (unsigned short  
wCardNumber)
```

Parameter(s)

wCardNumber:

Indicates the value returned from calling `SmartU3_Register_Card`.

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

- 2 Invalid `wCardNumber` parameter. `wCardNumber` is less than 32

SmartU3_Get_ID

Initializes the hardware and software states of a PCI-bus data acquisition card, then returns a numeric card ID that corresponds to the initialized card. `Register_Card` must be called before any other functions can be called for a particular card. The function initializes the card and variables internal to the library. Because PCI-bus data acquisition cards meet plug-and-play specifications, the

base address (pass-through address) and IRQ level are assigned directly by the system BIOS

Syntax

C/C++

```
short SmartU3_Get_ID (unsigned short wCardNumber, unsigned short *wID)
```

Parameter(s)

wCardNumber:

Acquired from the return value of SmartU3_Register_Card

wID:

Indicates the card ID set by SW1 switch, a value from 0 to 15. Card ID and SW1 switch settings correlate as shown

Card ID	SW1 switch			
	4	3	2	1
0	off	off	off	off
1	off	off	off	on
2	off	off	on	off
3	off	off	on	on
4	off	on	off	off
5	off	on	off	on
6	off	on	on	off
7	off	on	on	on
8	on	off	off	off
9	on	off	off	on
10	on	off	on	off
11	on	off	on	on
12	on	on	off	off
13	on	on	off	on
14	on	on	on	off
15	on	on	on	on

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

- 2 Invalid *wcardnumber* parameter. *wcardnumber* is less than 32
- 11 Invalid *wID*

SmartU3_Get_MCUVersion

Retrieves the PoE MCU version.

Syntax

C/C++

```
short SmartU3_Get_MCUVersion (unsigned short  
wCardNumber, char* sVersion, long lSize)
```

Parameter(s)

wCardNumber:

Retrieved from the return value of SmartU3_Register_Card.

sVersion:

Pointer of an allocated character buffer. The suggested buffer size is 16.

The buffer will retrieve the version string after executing this function.

The version format is [Major number].[Minor number]. e.g. 1.3

lSize:

The size of the *sVersion* buffer.

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

- 2 Invalid *wcardnumber* parameter. *wcardnumber* is less than 32
- 11 Invalid *sVersion*

SmartU3_Get_Ports

Retrieves the number of ports.

Syntax

C/C++

```
short SmartU3_Get_Ports(unsigned short wCard-
Number, unsigned short *wPort)
```

Parameter(s)

wCardNumber:

Indicates the value returned from calling SmartU3_Register_Card.

wPort:

Indicates the number of ports.

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

```
-2   Invalid wCardNumber parameter. wCardNumber
      is less than 32
```

SmartU3_Get_ProductPN

Retrieves the the product P/N (Part Number).

Syntax

C/C++

```
short SmartU3_Get_ProductPN (unsigned short
wCardNumber, char* sVersion, long lSize)
```

Parameter(s)

wCardNumber:

Retrieved from the return value of SmartU3_Register_Card.

sVersion:

Pointer of an allocated character buffer. The suggested buffer size is 16.

The buffer will retrieve the ADLINK product P/N (Part Number) string after executing this function.

lSize:

The size of the *sVersion* buffer.

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

```
-2   Invalid wcardnumber parameter. wcardnumber  
     is less than 32
```

SmartU3_Get_ProductSN

Retrieves the the product Serial Number.

Syntax

C/C++

```
short SmartU3_Get_ProductSN (unsigned short  
wCardNumber, char* sVersion, long lSize)
```

Parameter(s)

wCardNumber:

Retrieved from the return value of SmartU3_Register_Card.

sVersion:

Pointer of an allocated character buffer. The suggested buffer size is 16.

The buffer will retrieve the product serial number string after executing this function.

lSize:

The size of the *sVersion* buffer.

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

```
-2   Invalid wcardnumber parameter. wcardnumber
     is less than 32
```

2.2.2 Power Management Functions

SmartU3_Power_Enable

Controls power auto/off for each USB port.

Syntax

C/C++

```
short SmartU3_Power_Enable (unsigned short
wCardNumber, unsigned short wEnPort1, unsigned
short wEnPort2, unsigned short wEnPort3,
unsigned short wEnPort4, unsigned short
wEnPort5, unsigned short wEnPort6, unsigned
short wEnPort7, unsigned short wEnPort8)
```

Parameter(s)

wCardNumber:

Retrieved from the return value of SmartU3_Register_Card.

wEnPort1, wEnPort2, wEnPort3, wEnPort4, wEnPort5, wEnPort6, wEnPort7, wEnPort8:

Indicates the power mode of the smart U3 port with the following values:

0: power off

1: auto mode (enables the port to auto-detect the device and power output)

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

-2 Invalid wcardnumber parameter. wcardnumber is less than 32

Notes:

For the PCIe-U304, the last 4 parameters (wEnPort5, wEnPort6, wEnPort7, wEnPort8) must be assigned a "0" value to avoid a function error.

For the PCIe-U308e, ports 9-12 are always configured as auto mode and cannot be powered off.

SmartU3_Get_Power_Enable

Retrieves the power auto/off status.

Syntax

C/C++

```
short SmartU3_Get_Power_Enable (unsigned short  
wCardNumber, unsigned short *wEnPort1,  
unsigned short *wEnPort2, unsigned short  
*wEnPort3, unsigned short *wEnPort4, unsigned  
short *wEnPort5, unsigned short *wEnPort6,  
unsigned short *wEnPort7, unsigned short  
*wEnPort8)
```

Parameter(s)

wCardNumber:

Retrieved from the return value of SmartU3_Register_Card.

*wEnPort1, wEnPort2, wEnPort3, wEnPort4, wEnPort5,
wEnPort6, wEnPort7, wEnPort8:*

Indicates the power mode of the selected USB port with the following values:

0: power off

1: auto mode (enables the port to auto-detect the device and power output)

Return Code

No error occurs if the return value ≥ 0 , and if a negative value, as follows

```
-2   Invalid wcardnumber parameter. wcardnumber  
     is less than 32
```

Note: For the PCIe-U304, the value returned for the last 4 parameters (wEnPort5, wEnPort6, wEnPort7, wEnPort8) should be "0".

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Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

S'il vous plaît prêter attention stricte à tous les avertissements et mises en garde figurant sur l'appareil , pour éviter des blessures ou des dommages.

- ▶ Read these safety instructions carefully.
- ▶ Keep the User's Manual for future reference.
- ▶ Read the Specifications section of this manual for detailed information on the recommended operating environment.
- ▶ The device can be operated at an ambient temperature of 55°C.
- ▶ When installing/mounting or uninstalling/removing device, or when removal of a chassis cover is required for user servicing:
 - ▷ Turn off power and unplug any power cords/cables.
 - ▷ Reinstall all chassis covers before restoring power.
- ▶ To avoid electrical shock and/or damage to device:
 - ▷ Keep device away from water or liquid sources.
 - ▷ Keep device away from high heat or humidity.
 - ▷ Keep device properly ventilated (do not block or cover ventilation openings).
 - ▷ Always use recommended voltage and power source settings.
 - ▷ Always install and operate device near an easily accessible electrical outlet.
 - ▷ Secure the power cord (do not place any object on/over the power cord).
 - ▷ Only install/attach and operate device on stable surfaces and/or recommended mountings.
- ▶ If the device will not be used for long periods of time, turn off and unplug it from its power source
- ▶ Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools


- ▶ A Lithium-type battery may be provided for uninterrupted backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.

Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- ▶ The device must be serviced by authorized technicians when:
 - ▷ The power cord or plug is damaged.
 - ▷ Liquid has entered the device interior.
 - ▷ The device has been exposed to high humidity and/or moisture.
 - ▷ The device is not functioning or does not function according to the User's Manual.
 - ▷ The device has been dropped and/or damaged and/or shows obvious signs of breakage.
- ▶ Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up.
- ▶ It is recommended that the device be installed only in a server room or computer room where access is:
 - ▷ Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required.
 - ▷ Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location.

	<p>BURN HAZARD</p> <p>Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.</p> <p>RISQUE DE BRÛLURES</p> <p><i>Ne touchez pas cette surface, cela pourrait entraîner des blessures.</i></p> <p><i>Pour éviter tout danger, laissez la surface refroidir avant de la toucher.</i></p>
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Getting Service

Ask an Expert: <http://askanexpert.adlinktech.com>

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