

ADLINK Technical Document

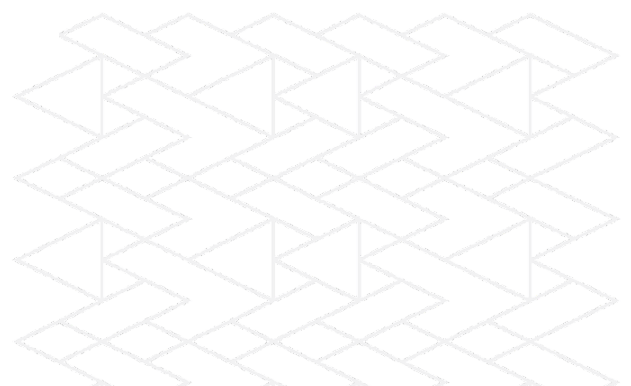
Abstract	How to install Linux drivers for the WD-DASK/X		
OS	Linux		
Keyword	Linux, WD-DASK/X		
Related Products	PCIe-9814, PCIe-9834, PXIe-9834, PCIe-9842, PXIe-9842, PXIe-9848, PCIe-9852, PXIe-9852, PCI-9816, PCI-9826, PCI-9846, PXI-9816, PXI-9826, PXI-9846, PCI-9820		
Date	2021-08-26	No.	202110001

- Issue Details:

To build a Linux software application to operate an ADLINK Digitizer DAQ card (e.g. PCIe-9834), download the Linux drivers and install them. The steps for downloading and installing the Linux drivers are detailed in this document.

- More information:

ADLINK provides pre-built driver binaries for Ubuntu LTS Linux kernels. These binaries are regularly updated and officially supported to work with specific Linux kernels indicated in this document and on the ADLINK website. If you want to use another Linux OS or Linux Kernel, you need to sign the NDA to get the driver source code and build the Linux driver by yourself.

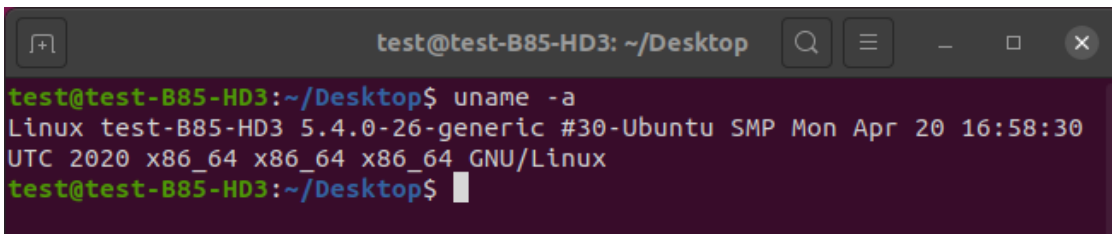


- Solution:

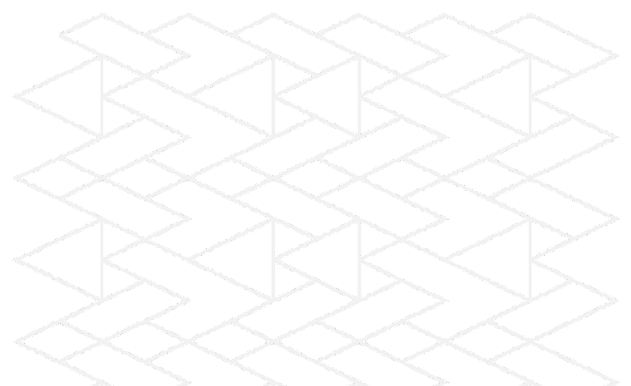
Step 1:

Find out the system kernel version. Go to the terminal and type “uname -a”.

NOTE: ADLINK only supports Linux Kernel version 4.15.0-20-generic, 5.4.0-26-generic, and 5.4.0-47-generic.



```
test@test-B85-HD3: ~/Desktop
test@test-B85-HD3:~/Desktop$ uname -a
Linux test-B85-HD3 5.4.0-26-generic #30-Ubuntu SMP Mon Apr 20 16:58:30
UTC 2020 x86_64 x86_64 x86_64 GNU/Linux
test@test-B85-HD3:~/Desktop$
```



Step 2:

Go to the official ADLINK website, search for “WD-DASK/X”, and download the driver corresponding to your OS and kernel version.

Direct link (login required):

https://www.adlinktech.com/Products/Data_Acquisition/SoftwareandDrivers/WD-DASK_X

Software Download :**PCIe-9814 Driver**

Linux Ubuntu

- 
-  WD-DASK/X, v21.03 for Ubuntu 18.04 & 20.04 (4.15.0-20-generic, 5.4.0-26-generic, 5.4.0-47-generic)
(5.37MB)
Upload: 2021-03-24
 -  WD-DASK/X, v20.01 for Ubuntu 16.04 & 16.04.6 i686, Linux Driver and SDK for ADLINK Digitizer
(5.23MB)
Upload: 2020-03-02

Step 3:

Go to the terminal and type “tar zxvf WD-DASK-xxxxxx.tar.gz” to unpack the .gz file. There are two files in the target folder.

```
ist@ist-MXC2300: ~/Documents
ist@ist-MXC2300:~/Documents$ tar zxvf WD-DASK-X_21.03_release.tar.gz
WD-DASK-X_21.03_release/
WD-DASK-X_21.03_release/wd-dask_ubuntu_21.03.release.deb
WD-DASK-X_21.03_release/readme
ist@ist-MXC2300:~/Documents$
```

Step 4:

Go to the terminal and type “sudo dpkg -i wd-dask_XXXXXX.deb” to install the driver. Alternatively, double-click the .deb file in the graphical user interface. Reboot when done.

```
ist@ist-MXC2300: ~/Documents/WD-DASK-X_21.03_release
ist@ist-MXC2300:~/Documents/WD-DASK-X_21.03_release$ sudo dpkg -i wd-dask_ubuntu_21.03.release.deb
[sudo] password for ist:
Selecting previously unselected package wd-dask-x.
(Reading database ... 142460 files and directories currently installed.)
Preparing to unpack wd-dask_ubuntu_21.03.release.deb ...
Unpacking wd-dask-x (21.03) ...
Setting up wd-dask-x (21.03) ...
Current kernel version: 5.4.0-26-generic
Copy default config file...
>>>> Copy Successfully <<<<<

Copy driver files...
>>>> Copy Successfully <<<<<

Copy firmware files...

Copy library files...
>>>> Copy Successfully <<<<<

Copy adlink udev permission files...
```

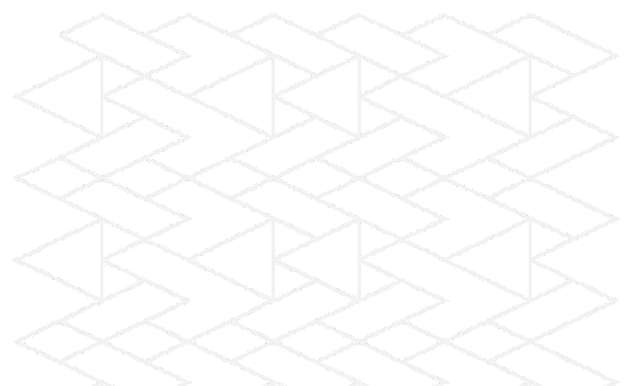
**wd-dask-x**
ADLINK Technology Inc.

[Install](#)

Support kernel version:
Ubuntu 18.04 (4.15.0-20-generic)
Ubuntu 20.04 (5.4.0-26-generic, 5.4.0-47-generic)

Details

Version	21.03
Updated	2021年八月19日
License	Proprietary
Source	wd-dask_ubuntu_21.03.release.deb
Download Size	0 bytes



Step 5:

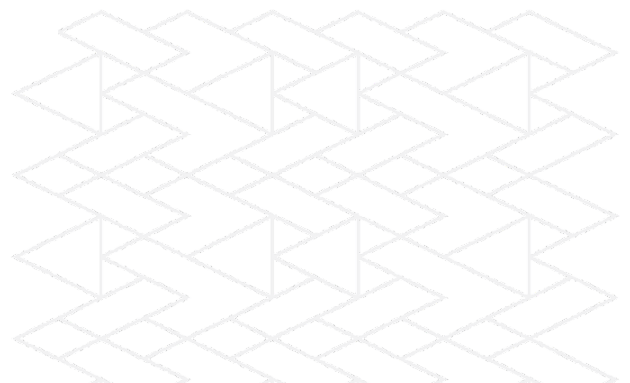
After reboot, go to the terminal and type “lspci” to check if the system has detected and allocated resources for ADLINK devices.

```
ist@ist-MXC2300: ~/Documents/WD-DASK-X_21.03_release
ist@ist-MXC2300:~/Documents/WD-DASK-X_21.03_release$ lspci | grep Ad
09:00.0 Unassigned class [ff00]: Adlink Technology Device 9814 (rev 01)
10:00.0 Non-VGA unclassified device: Adlink Technology Device 2300 (rev 01)
ist@ist-MXC2300:~/Documents/WD-DASK-X_21.03_release$
```

Step 6:

Go to the terminal and type “lsmod” to check the driver service is activated and running in the Linux kernel.

```
ist@ist-MXC2300: ~/Documents/WD-DASK-X_21.03_release
ist@ist-MXC2300:~/Documents/WD-DASK-X_21.03_release$ lsmod
Module                Size  Used by
pcie9814               122880  0
pcie9852               122880  0
pxie9848               118784  0
pci9842                106496  0
pci98x6                131072  0
pci9820               122880  0
usb                    28672  0
usb_storage            77824  2 uas
nls_iso8859_1          16384  1
input_leds             16384  0
joydev                 24576  0
snd_hda_codec_hdmi    61440  1
snd_hda_codec_realtek 118784  1
snd_hda_codec_generic 81920  1 snd_hda_codec_realtek
ledtrig_audio          16384  2 snd_hda_codec_generic,snd_hda_codec_realtek
snd_hda_intel          53248  3
intel_rapl_msr         20480  0
intel_rapl_common     24576  1 intel_rapl_msr
```



Step 7:

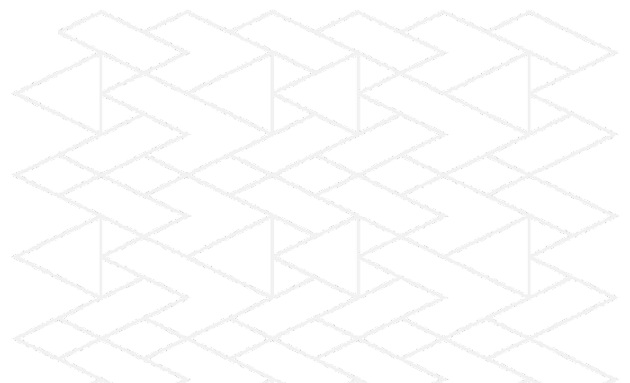
The ADLINK software package deploys files such as documents, utilities, and samples to the following folder: `//usr/local/adlink/wd-dask/`

```
ist@ist-MXC2300: /usr/local/adlink/wd-dask
ist@ist-MXC2300:~/Documents/WD-DASK-X_21.03_release$ cd /usr/local/adlink/wd-dask/
ist@ist-MXC2300:/usr/local/adlink/wd-dask$ ls
conf docs include readme reconfig.sh ref RelNotes.txt samples util
ist@ist-MXC2300:/usr/local/adlink/wd-dask$
```

Step 8:

Choose a sample program (e.g., `//usr/local/adlink/wd-dask/samples/9814_34/others/aidbf`). Users can modify the sample program as needed and type “make” to build the executable.

```
ist@ist-MXC2300: /usr/local/adlink/wd-dask/samples/9814_34
ist@ist-MXC2300:~$ cd /usr/local/adlink/wd-dask/
ist@ist-MXC2300:/usr/local/adlink/wd-dask$ ls
conf docs include readme reconfig.sh ref RelNotes.txt samples util
ist@ist-MXC2300:/usr/local/adlink/wd-dask$ cd samples/
ist@ist-MXC2300:/usr/local/adlink/wd-dask/samples$ ls
9814_34 9842 9852 common      Makefile      ReadmeFirst.txt
9820    9848 98x6 LargeSizeEx new_event_handling.txt sigevt
ist@ist-MXC2300:/usr/local/adlink/wd-dask/samples$ cd 9814_34/
ist@ist-MXC2300:/usr/local/adlink/wd-dask/samples/9814_34$ ls
CAIFilter      CAInfiniteTrg      CAInfiniteTrgCbEx CSelfTest  others
CAIMeasureStats CAInfiniteTrgCallback CAIsimuDma_dbclk  Makefile
ist@ist-MXC2300:/usr/local/adlink/wd-dask/samples/9814_34$
```



Step 9:

Launch the executable and check the output. The image below shows a successful execution of the ADLINK DAQ and the acquired data output to a .dat file.

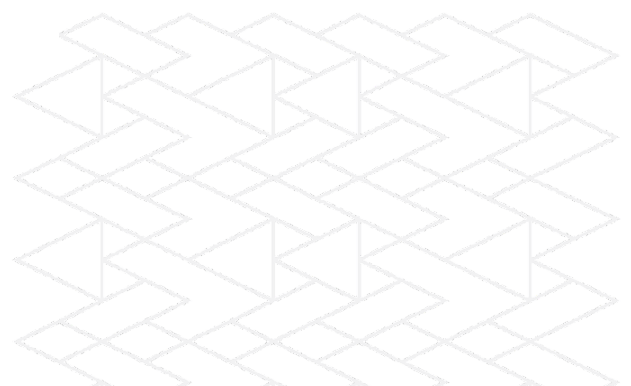
```
ist@ist-MXC2300: /usr/local/adlink/wd-dask/samples/9814_34/others/aidbf
This program inputs data from all channels by double-buffer mode, and store data to file 'aidbf.txt.dat'. The size of circular buffer is 4000.

(0) PCI-9820
(1) PXI-9816D (2) PXI-9826D (3) PXI-9846D
(4) PXI-9816H (5) PXI-9826H (6) PXI-9846H
(7) PXI-9816V (8) PXI-9826V (9) PXI-9846V
(10) PXI-9846VID (11) PCI-9816D (12) PCI-9826D
(13) PCI-9846D (14) PCI-9816H (15) PCI-9826H
(16) PCI-9846H (17) PCI-9816V (18) PCI-9826V
(19) PCI-9846V (20) PCIe-9816D (21) PCIe-9826D
(22) PCIe-9846D (23) PCIe-9816H (24) PCIe-9826H
(25) PCIe-9846H (26) PCIe-9816V (27) PCIe-9826V
(28) PCIe-9846V (29) PCIe-9842 (30) PXIe-9848
(31) PCIe-9852 (32) PXIe-9852 (33) PCIe-9814
(34) PCIe-9834 (35) PXIe-9834

Please select a card type: 33
Please input a card number: 0

Press any key to stop input operation.

Data count :
1992000
```



Step 10:

If necessary, adjust the data acquisition settings (default: 1 MB, 256 pages). To adjust the settings, on the command line, type “./reconfig.sh”. Refer to the following images for further details.

- a. Choose “Change to user setting”.

```
ist@ist-MXC2300: /usr/local/adlink/wd-dask
ist@ist-MXC2300: /usr/local/adlink/wd-dask$ ./reconfig.sh
Reset config setting procedure...

Cards is inserted now:
=====
Card          AI      AO      DI      DO      [unit: KB]
No card inserted.
=====

Please choose the flow:
(1) Change to User settings (2) Restore original factory settings
1
```

- b. Select the card type for configuration and “User Config” for configuration.

```
ist@ist-MXC2300: /usr/local/adlink/wd-dask
===== Configured Cards =====
Card Type   Cards   Buffer Size [unit: pages(4KB/page)]
           AI      AO      DI      DO
-----
PCI9820     1       256     0       0       0
PCI98x6     1       256     0       0       0
PCI9842     1       256     0       0       0
PXIe9848    1       256     0       0       0
PCIE9852    1       256     0       0       0
PCIE9814    1       256     0       0       0

=====
(1)PCI9820 (2)PCI98x6 (3)PCIE9842 (4)PXIe9848 (5)PCIE9852 (6)PCIE9814/34
Select the card type for configuration, or '0' to exit:6

=====
(1)User Config (2)Reset to Default
Select the config type for configuration, or '0' to exit:1
```


- c. Enter memory pages for AI for your device. After that, you need to check if the setting is correct.

```
ist@ist-MXC2300: /usr/local/adlink/wd-dask
*****
****          WD_DASK LINUX Configuration Utility          ****
*****

Card_Type : PCIe9814/9834

How many PCIe9814/9834 adapters in your machine : 1
Memory pages for AI function ( 1 Mem_Page = 4 KB ) : 1024

The setting for PCIe9814
\n-----
AI: 1024 Pages   AO: 0 Pages   DI: 0 Pages   DO: 0 Pages   for 1 PCIe9814 Ca
rds

                                are these                correct (Y/N) ?
y
```

- d. Reboot the system.

```
ist@ist-MXC2300: /usr/local/adlink/wd-dask

The memory size you configure for your WD-DASK adapters is 21 Mem_Pages.
kernel: x86_64
=====
Current Config:
Card      AI      AO      DI      DO      [unit: KB]
pci9842   1024    0       0       0
pci9820   1024    0       0       0
pcie9814  4096    0       0       0
pxie9848  1024    0       0       0
pcie9852  1024    0       0       0
pci98x6   1024    0       0       0
=====
Move Config file...
>>>> SYSTEM REBOOT REQUIRED <<<<

Do you want to reboot now? (Y/N)
y
```