MILLITRONIC
Future Network

IP CKVM Extender_PoE

9NIPCKVM1301-P

User **Manual**

· Oct-2022 / v1.0 ·

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1. Product Information

The software based IP CKVM procides real-time and low latency
audio/video over IP and remote USB access function,
which uses Ethernet to replace HDMI and USB interface and overcomes
signal decay in long distance.

PC/Server can use standard IP network and Ethernet cable to expand
additional HDMI and USB interfaces with IP CKVM for applications.

With simple IP setting and auto connect GUI interface,
it is compatible with 3th party's HDMI monitor, web cameras,
CMS management tool, and conference room APP.

You can find related documents and driver download from the link below:
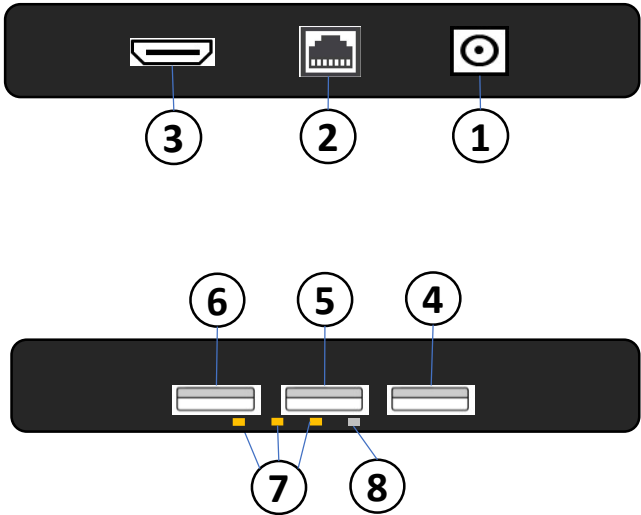https://millitronic.com.tw/download/

1-1 Package Contents

Before start using this product, please check if there is anything missing in the package, and contact your dealer to claim the missing item:
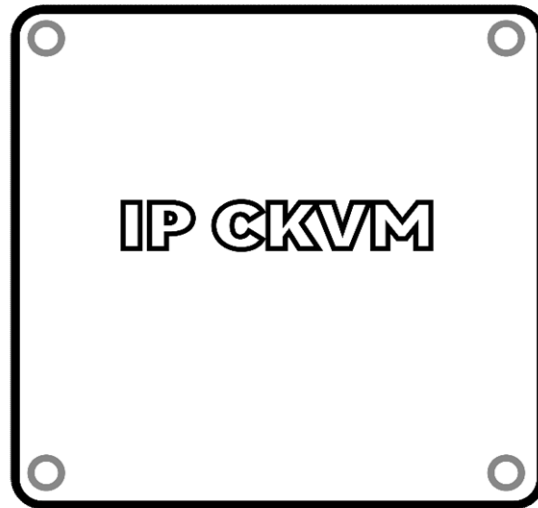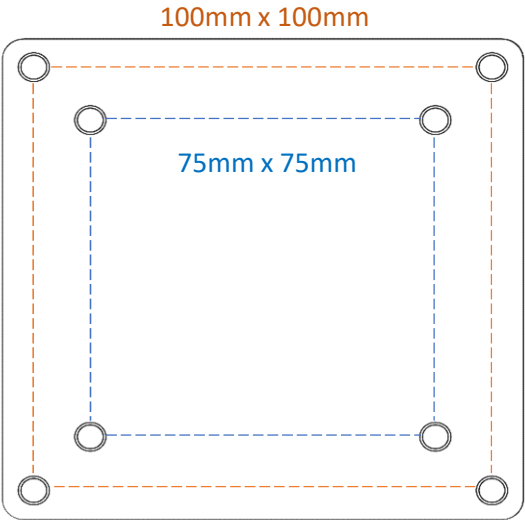
IP CKVM

1-2 Hardware Overview

▲ Interface

100mm x 100mm

75mm x 75mm

▲ VESA MIS-D

No.	Description
1	DC Power Jack
2	PoE PD / 802.3af at / 25W
3	HDMI Port (ver1.4 up to 4K30Hz)
4	USB Port1 (ver2.0)
5	USB Port2 (ver2.0)
6	USB Port 3 (ver2.0)
7	LED
8	Reset Button

1-3 LED Status
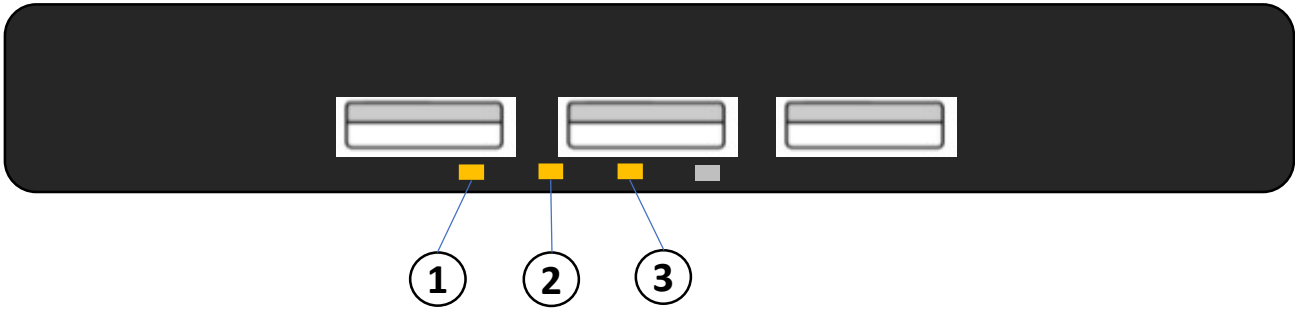
| Function	Color	Status	Description
1 Power	Orang	ON	to indicate power Adaptor attached
		OFF	DC Adaptor non-connected
2 Connect	Orang	ON	to indicate device connected Host PC
		OFF	RJ45 non-connected or Ethernet interface fail
		Blinking	failed to obtain IP address from DHCP Server
3 Work	Orang	ON	to indicate device identified
		OFF	connection failed or APP is not running
		Blinking	connection is normal and APP is waiting

2. Installation

2-1 Hardware Installation

▼ P2P Connect Mode

with PoE PCIe Network Card
(expansion card)

HDMI

Ethernet
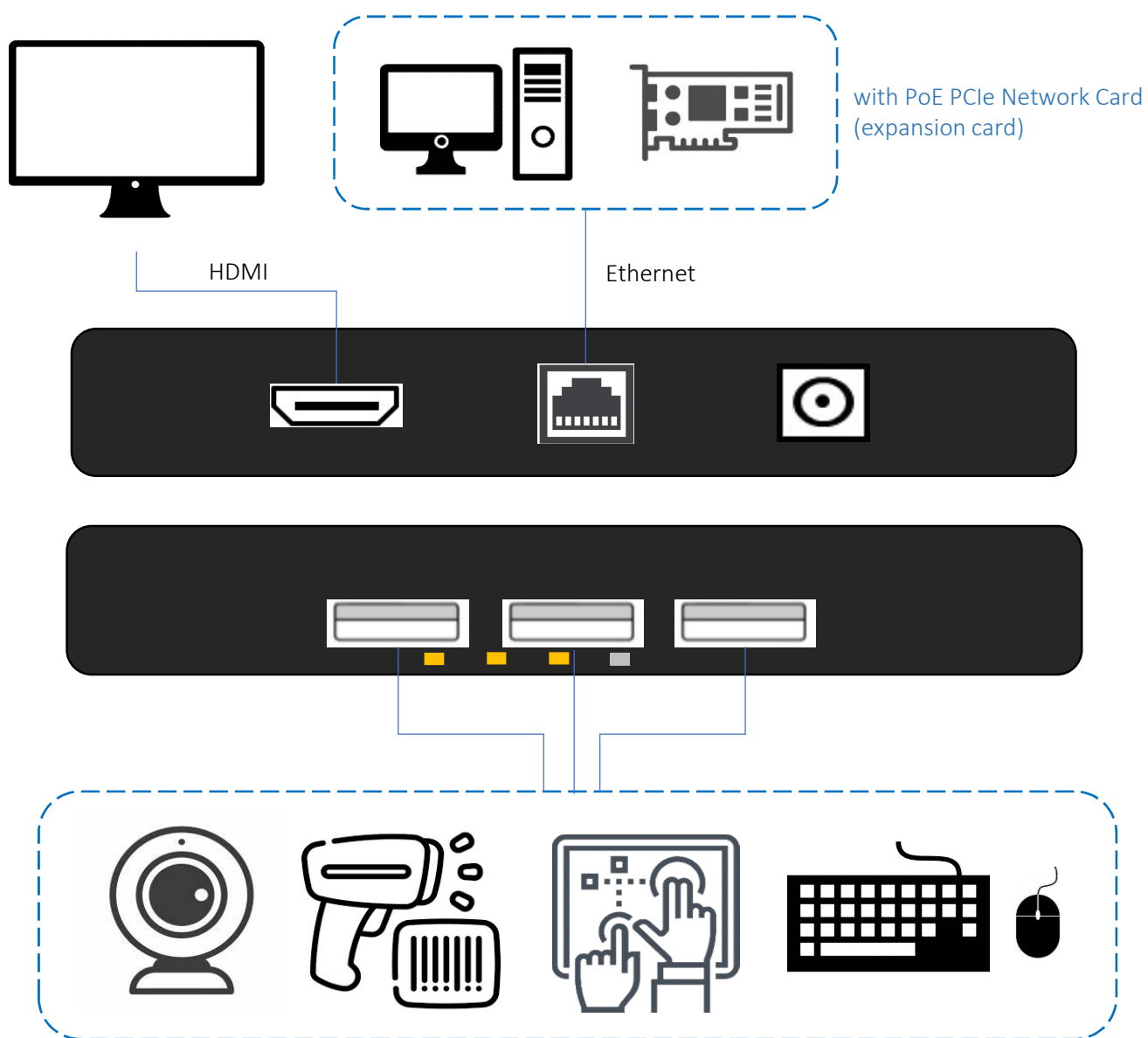
2-1 Hardware Installation (P2P Connect Mode)

▼ **Infrastructure Connect Mode**

PoE PSE

Switch
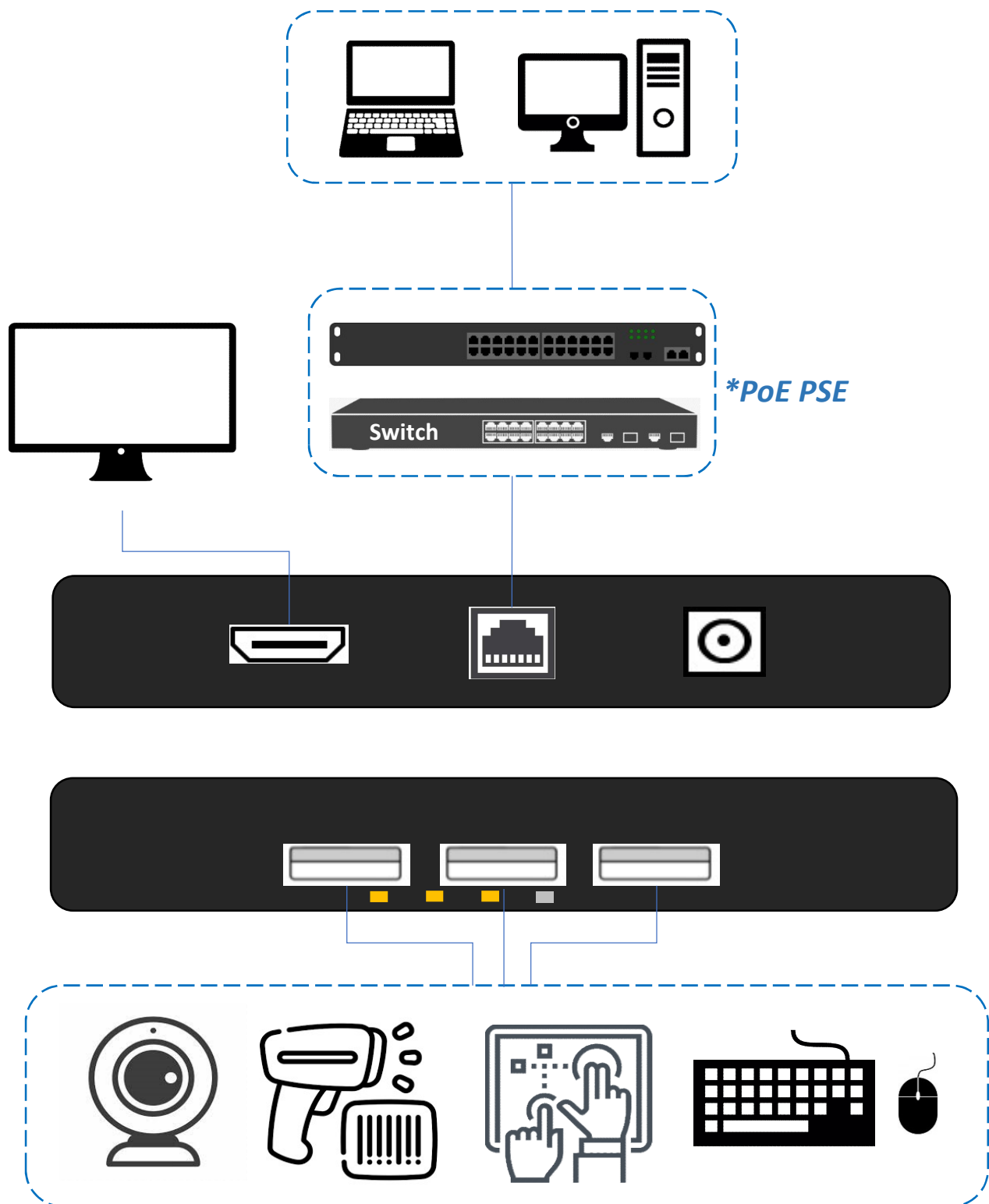
2-2 Software Installation

2-2-1 System Requirements

RECOMMENDED	
Operating System	windows10 / windows 11
Processor	Intel 7th i5 1.5GHz above
Memory	8GB RAM above
Storage	
Ethernet	100Mbps above

You can find related driver download from the link below:

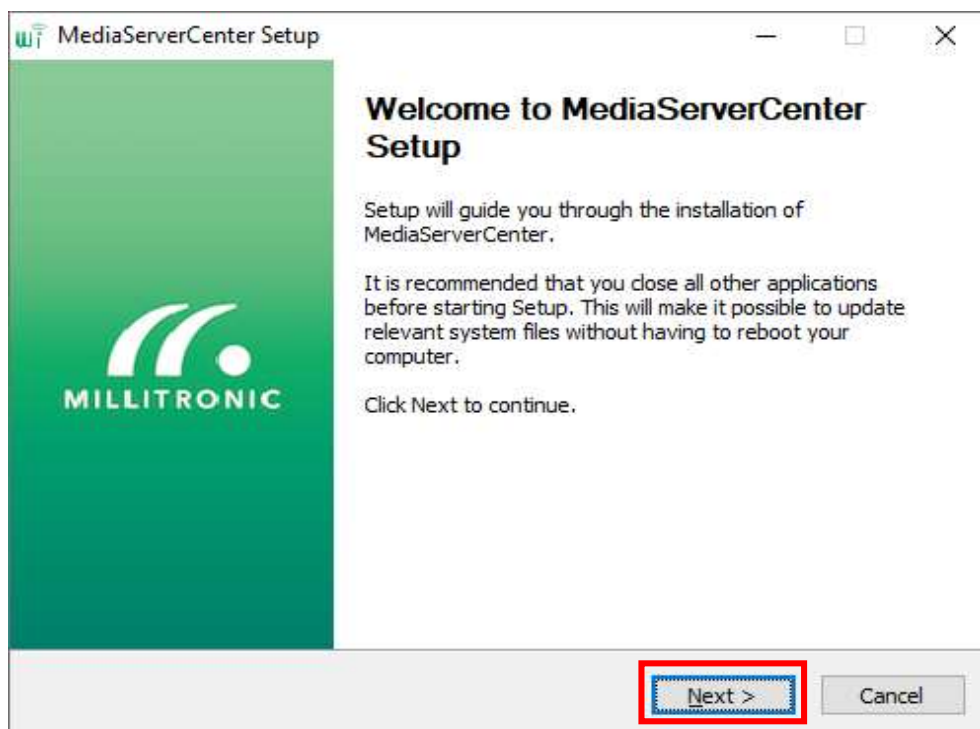https://millitronic.com.tw/download/

2-2-2 Driver Installation

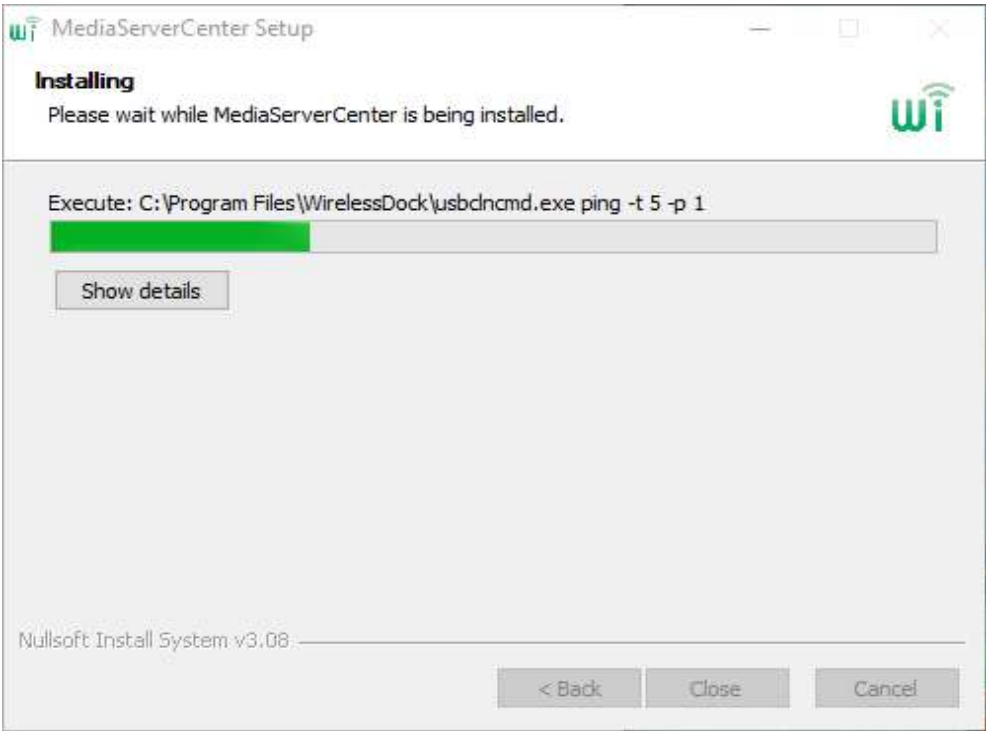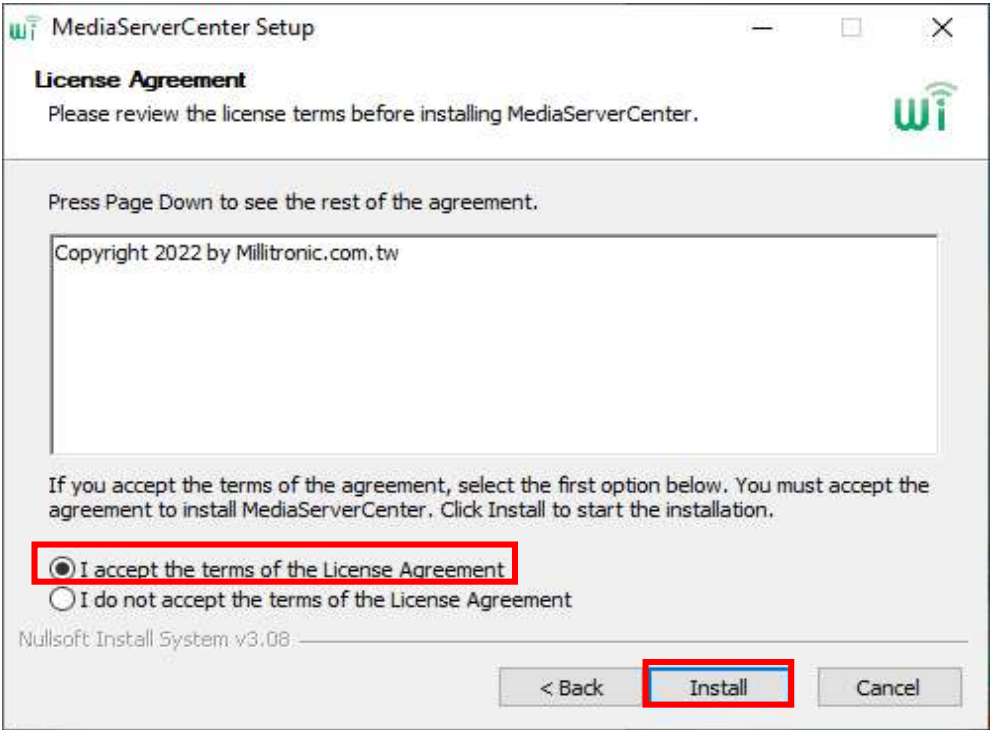1. Locate and download "Install.exe" file.

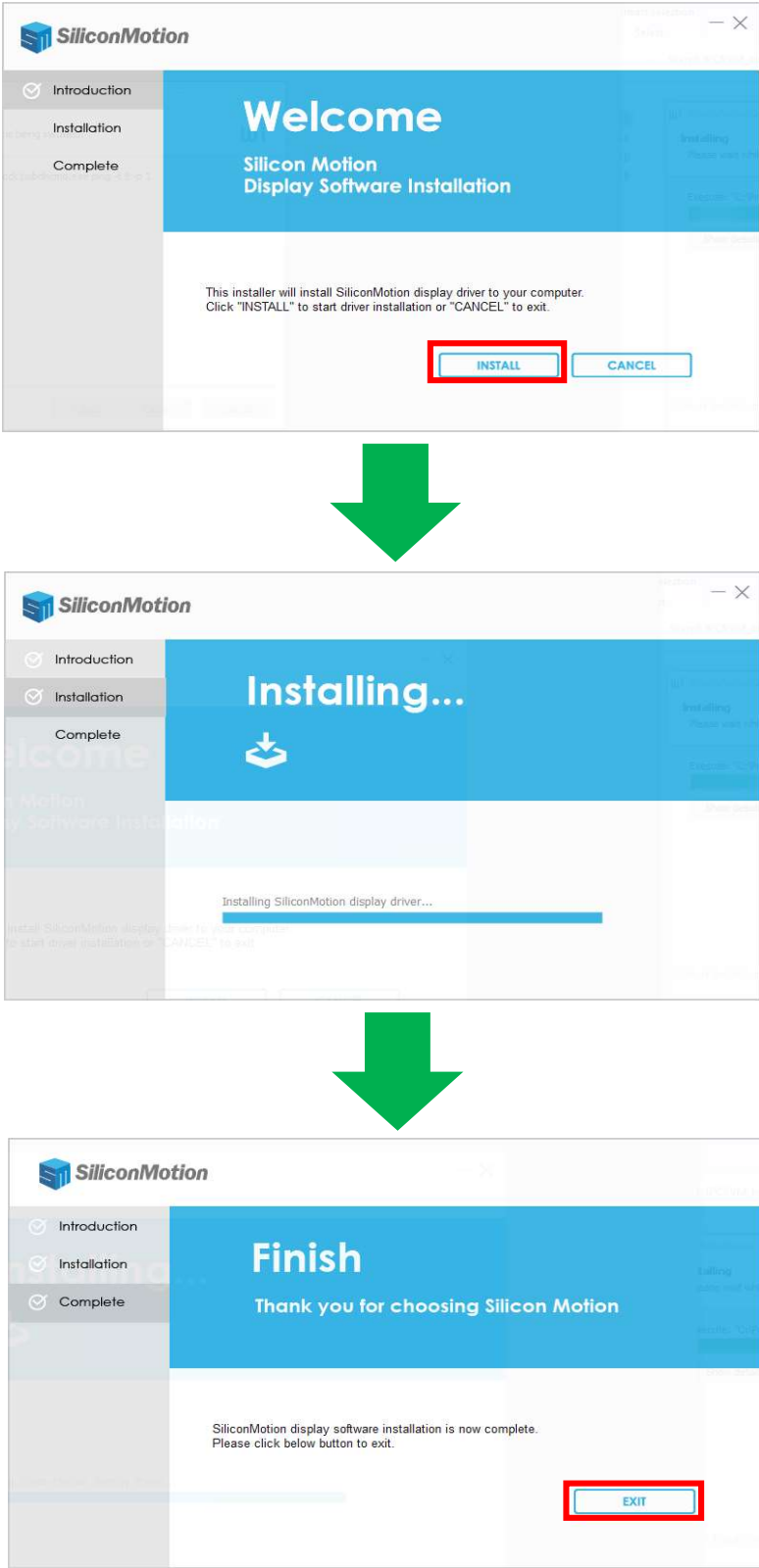2. Locate and double-click the "Install.exe" file. (It's usually be in your "Downloads" folder.)

Install.exe

3. A dialog box will appear. Follow the instructions to install the application and driver.

2-2-2 Driver Installation

MediaServerCenter Setup

License Agreement
Please review the license terms before installing MediaServerCenter.

Press Page Down to see the rest of the agreement.

Copyright 2022 by Millitronic.com.tw

If you accept the terms of the agreement, select the first option below. You must accept the agreement to install MediaServerCenter. Click Install to start the installation.

◉ I accept the terms of the License Agreement
○ I do not accept the terms of the License Agreement

Nullsoft Install System v3.08

< Back   Install   Cancel

MediaServerCenter Setup

Installing
Please wait while MediaServerCenter is being installed.

Execute: C:\Program Files\WirelessDock\usbdncmd.exe ping -t 5 -p 1

Show details

Nullsoft Install System v3.08
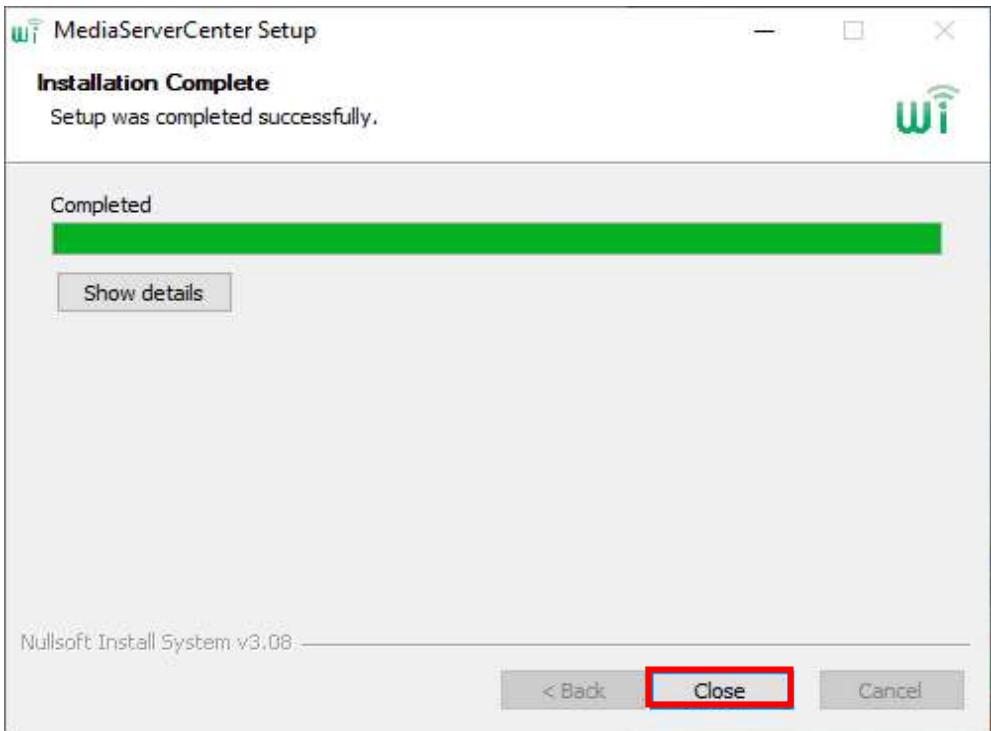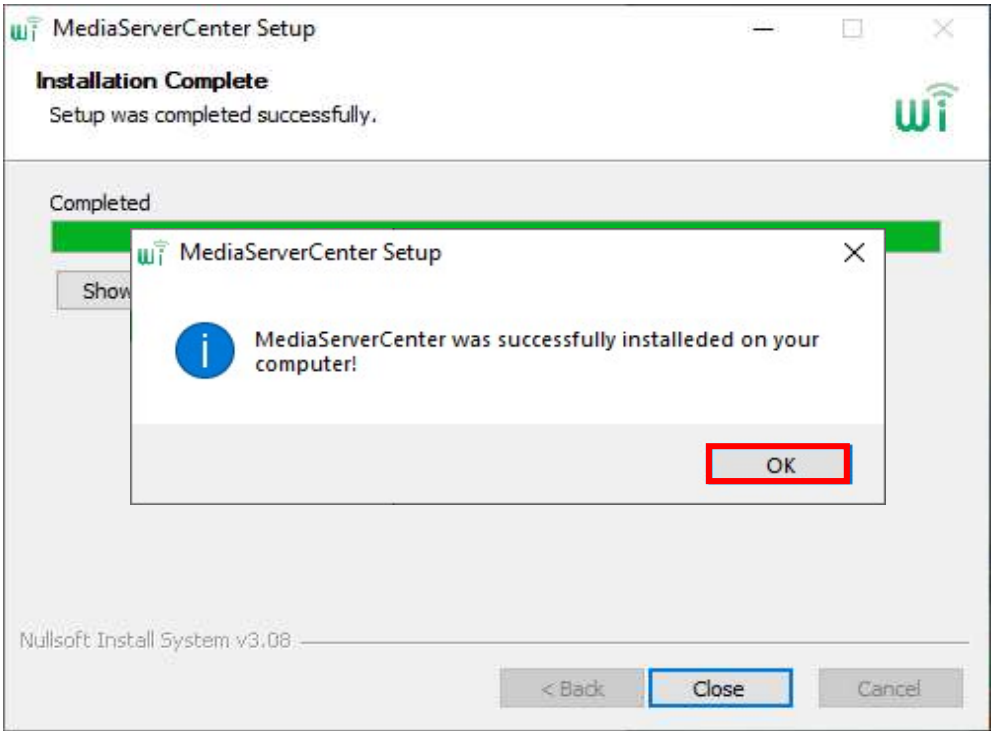
< Back   Close   Cancel

2-2-2 Driver Installation
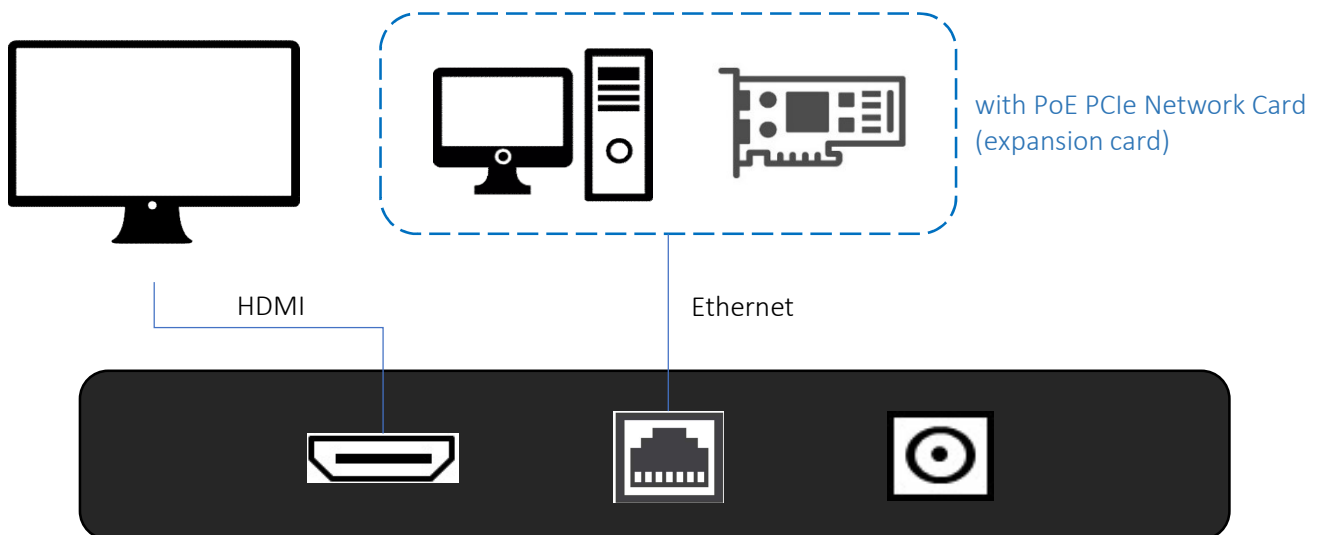
2-2-2 Driver Installation

4. Finishing the installation

3. Network Setup

3-1 Quick Setup (P2P Connect Mode)

1. Follow the instructions to set up the hardware, as shown below.

with PoE PCIe Network Card
(expansion card)

HDMI   Ethernet

3-1 Quick Setup (P2P Connect Mode)

2. Change your PC(location) IP Address

i. Select **Start** , then select **Settings** > **Network & Internet** .

ii. Select **Ethernet**, then select the **Ethernet network** you're connected to.

iii. Under **IP assignment**, select **Edit**.

iv. Under **Edit IP settings**, select **Manual**.

v. Under **Edit IP settings**, choose **Manual**, then turn on **IPv4**.

vi. When you're done, select **Save**.

Edit IP settings

① Manual

IPv4

② ⬤ On

IP address

③ 192.168.2.1

Subnet prefix length

④ 255.255.255.0   ×

Gateway

Preferred DNS

Alternate DNS

⑤ Save   Cancel

3-1 Quick Setup (P2P Connect Mode)

3. Launch an installed application (CKVMdashboard)

CKVMdash
borad

4. It will automatically connect and display.

3-2 Advance Modification (Infrastructure Connect Mode)

1. Follow the instructions to set up the hardware, as shown below.

Ethernet

*PoE PSE

Switch

HDMI

Ethernet

3-2 Advance Modification (Infrastructure Connect Mode)

2. Change your PC(location) IP address and connect to IP CKVM

i. Select **Start** , then select **Settings** > **Network & Internet** .

ii. Select **Ethernet**, then select the **Ethernet network** you're connected to.

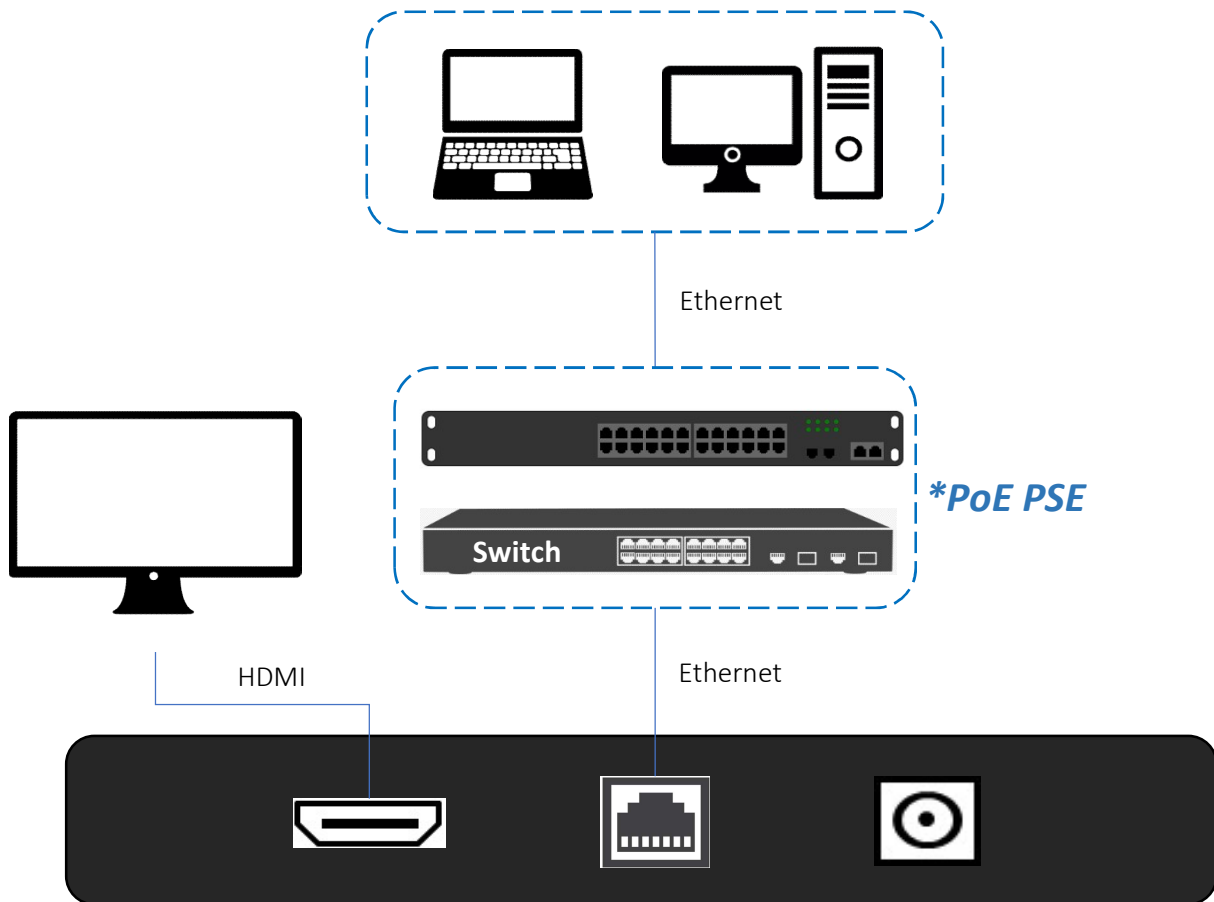iii. Under **IP assignment**, select **Edit**.

iv. Under **Edit IP settings**, select **Manual**.

v. Under **Edit IP settings**, choose **Manual**, then turn on **IPv4**.

vi. When you're done, select **Save**.

Edit IP settings

① Manual ⌄

IPv4

② ⬤ On

IP address

③ 192.168.2.1

Subnet prefix length

④ 255.255.255.0 ✕

Gateway

Preferred DNS

Alternate DNS

⑤ Save   Cancel

3-2 Advance Modification (Infrastructure Connect Mode)

3. Launch an installed application (CKVMdashboard)

CKVMdash borad

4. It will automatically connect and display.
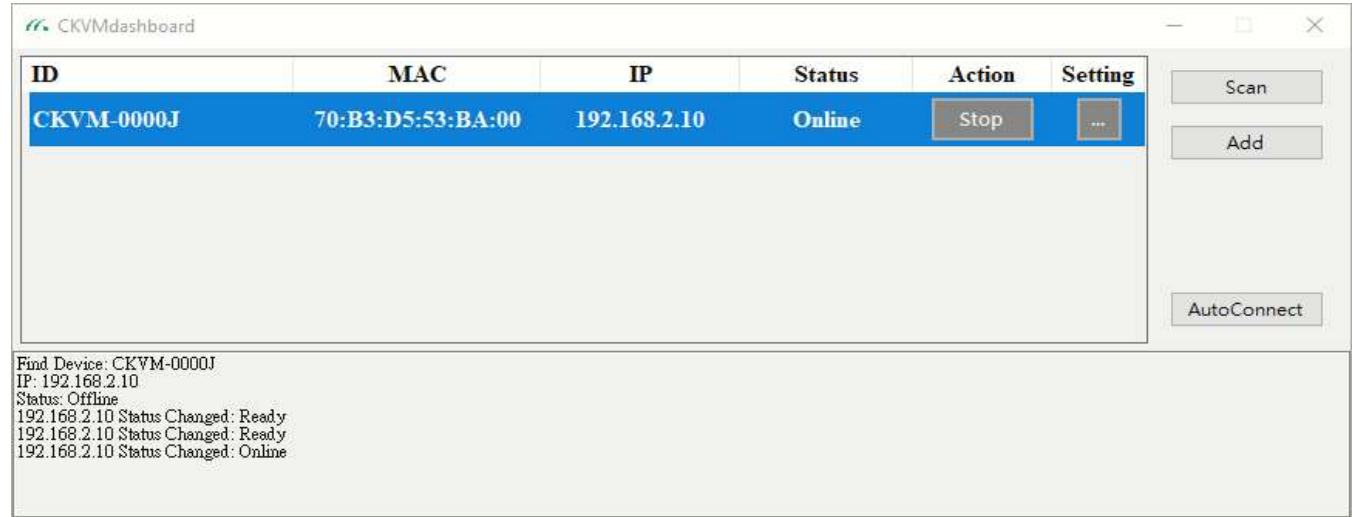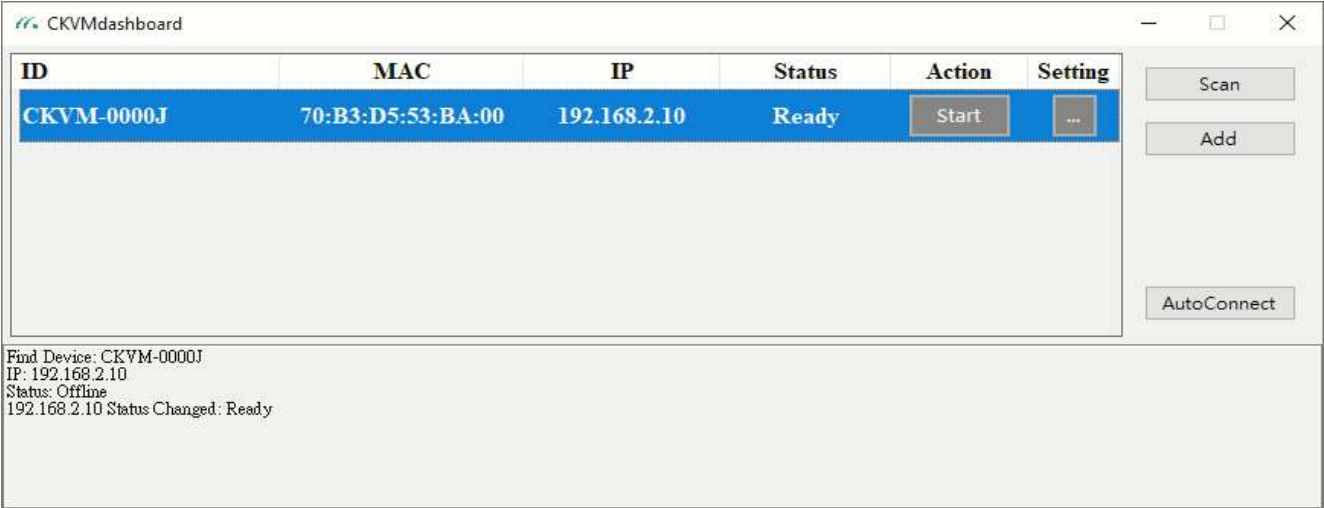
3-2 Advance Modification (Infrastructure Connect Mode)

5. Change your CKVMdashboard app settings
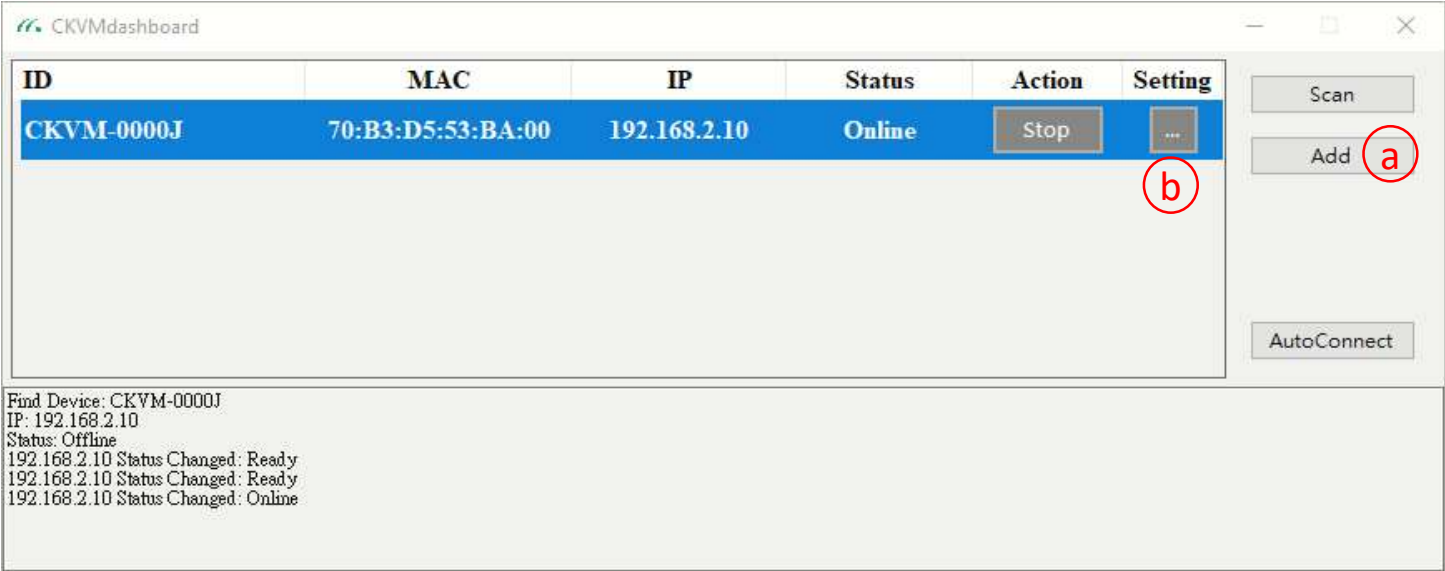
a: When you change the IP_CKVM's IP or connect to others IP_CKVM, press this button and enter the IP_CKVM IP to connect.
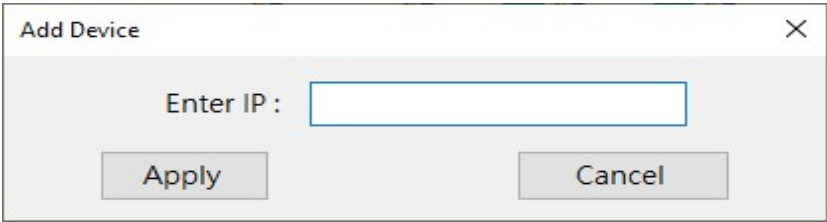
b: Change the IP_CKVM's configuration
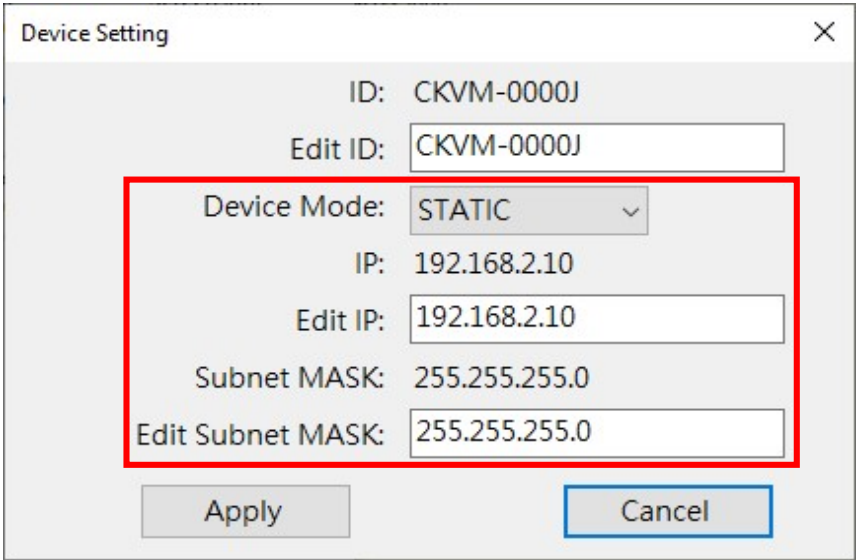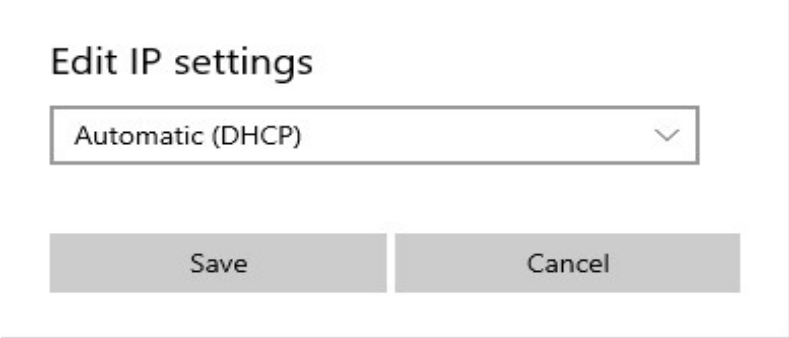
Modify the content follow your local area network construct (DHCP server).
IP_CKVM's IP must be the same local area network.
When you're done, select Apply.
(IP CKVM will reboot, please wait for 30 secconds)

3-2 Advance Modification (Infrastructure Connect Mode)

6. If this PC will use the IP_CKVM, you must change PC's IP settings.

i. Select **Start** , then select **Settings** > **Network & Internet** .

ii. Select **Ethernet**, then select the **Ethernet network** you're connected to.

iii. Under **IP assignment**, select **Edit**.

iv. Under **Edit IP settings**, select **Automatic (DHCP)**.

v. When you're done, select **Save**.

Edit IP settings

Automatic (DHCP) ⌄

| Save | Cancel |

4. Linux OS Guide

1. Build Kernel Module and Copy

    a.   **Cd to ./mlvc_v6.1.0.8-0.1.2 and do "make" to build mlvc.ko**

    b.   **Copy mlvc.ko to previous path**

```
david@ubuntu:~/mlvc/mlvc_v.6.1.0.8-0.1.2$ make
make -C /lib/modules/`uname -r`/build M=`pwd` modules
make[1]: Entering directory '/usr/src/linux-headers-5.4.0-136-generic'
  CC [M]  /home/david/mlvc/mlvc_v.6.1.0.8-0.1.2/main.o
  CC [M]  /home/david/mlvc/mlvc_v.6.1.0.8-0.1.2/hcd.o
  CC [M]  /home/david/mlvc/mlvc_v.6.1.0.8-0.1.2/link.o
  CC [M]  /home/david/mlvc/mlvc_v.6.1.0.8-0.1.2/urb.o
  LD [M]  /home/david/mlvc/mlvc_v.6.1.0.8-0.1.2/mlvc.o
  Building modules, stage 2.
  MODPOST 1 modules
  CC [M]  /home/david/mlvc/mlvc_v.6.1.0.8-0.1.2/mlvc.mod.o
  LD [M]  /home/david/mlvc/mlvc_v.6.1.0.8-0.1.2/mlvc.ko
make[1]: Leaving directory '/usr/src/linux-headers-5.4.0-136-generic'
david@ubuntu:~/mlvc/mlvc_v.6.1.0.8-0.1.2$ ll
total 15252
drwxrwxr-x 2 david david    4096 Jan 30 23:46 ./
drwxrwxr-x 3 david david    4096 Jan 30 23:46 ../
-rw-rw-r-- 1 david david    2944 Jan 30 23:45 ftdefs.h
-rw-rw-r-- 1 david david    2444 Jan 30 23:45 fthclink.h
-rw-rw-r-- 1 david david     424 Jan 30 23:45 ftrelease.h
-rw-rw-r-- 1 david david   18845 Jan 30 23:45 hcd.c
-rw-rw-r-- 1 david david 1622552 Jan 30 23:46 hcd.o
-rw-rw-r-- 1 david david   40458 Jan 30 23:46 .hcd.o.cmd
-rw-rw-r-- 1 david david   12153 Jan 30 23:45 link.c
-rw-rw-r-- 1 david david 1610096 Jan 30 23:46 link.o
-rw-rw-r-- 1 david david   38469 Jan 30 23:46 .link.o.cmd
-rw-rw-r-- 1 david david    6597 Jan 30 23:45 main.c
-rw-rw-r-- 1 david david 1606776 Jan 30 23:46 main.o
-rw-rw-r-- 1 david david   40469 Jan 30 23:46 .main.o.cmd
-rw-rw-r-- 1 david david     791 Jan 30 23:45 Makefile
-rw-rw-r-- 1 david david 4450448 Jan 30 23:46 mlvc.ko
-rw-rw-r-- 1 david david     310 Jan 30 23:46 .mlvc.ko.cmd
-rw-rw-r-- 1 david david     179 Jan 30 23:46 mlvc.mod
-rw-rw-r-- 1 david david    2284 Jan 30 23:46 mlvc.mod.c
-rw-rw-r-- 1 david david     299 Jan 30 23:46 .mlvc.mod.cmd
-rw-rw-r-- 1 david david    5752 Jan 30 23:46 mlvc.mod.o
-rw-rw-r-- 1 david david   30968 Jan 30 23:46 .mlvc.mod.o.cmd
-rw-rw-r-- 1 david david 4445864 Jan 30 23:46 mlvc.o
-rw-rw-r-- 1 david david     344 Jan 30 23:46 .mlvc.o.cmd
-rw-rw-r-- 1 david david      46 Jan 30 23:46 modules.order
-rw-rw-r-- 1 david david       0 Jan 30 23:46 Module.symvers
-rw-rw-r-- 1 david david     148 Jan 30 23:45 releasenote.txt
-rw-rw-r-- 1 david david    5898 Jan 30 23:45 urb.c
-rw-rw-r-- 1 david david 1558808 Jan 30 23:46 urb.o
-rw-rw-r-- 1 david david   38286 Jan 30 23:46 .urb.o.cmd
david@ubuntu:~/mlvc/mlvc_v.6.1.0.8-0.1.2$
```

```
david@ubuntu:~/mlvc/mlvc_v.6.1.0.8-0.1.2$ cp -f ./mlvc.ko ../
david@ubuntu:~/mlvc/mlvc_v.6.1.0.8-0.1.2$ cd ../
david@ubuntu:~/mlvc$ ll
total 5092
drwxrwxr-x  3 david david    4096 Jan 31 00:28 ./
drwxr-xr-x 18 david david    4096 Jan 30 23:45 ../
-rwxrwxr-x  1 david david   26968 Jan 30 23:46 mlvcctrl*
-rw-rw-r--  1 david david     166 Jan 30 23:45 mlvcctrld.service
-rw-rw-r--  1 david david 4450448 Jan 31 00:28 mlvc.ko
-rw-rw-r--  1 david david  716416 Jan 30 23:45 mlvc-pkg_x64.tmp
drwxrwxr-x  2 david david    4096 Jan 30 23:46 mlvc_v.6.1.0.8-0.1.2/
```

4. Linux OS Guide

2. Use mlvcctrl

    a.   **Enter command with -h or help to print the command usage**

    b.   **Make sure to check using root permission**
       (it will ask sudo permission and passwords automatically)

```
david@ubuntu:~/mlvc$ ./mlvcctrl -h
Info : mlvcctrl version is v0.0.7

Usage: mlvcctrl  help
       mlvcctrl  server_add            <Host_IP>
       mlvcctrl  server_remove         <Host_IP>
       mlvcctrl  server_all_connect    <Host_IP>
       mlvcctrl  server_all_disconnect <Host_IP>
       mlvcctrl  show_list [-d]
       mlvcctrl  setup
```

3. Setup

    a.   **Use "mlvcctrl setup" to install mlvc-pkg**

```
david@ubuntu:~/mlvc$ ./mlvcctrl setup
[sudo] password for david:
Do setup mlvc-pkg package, check the installing path...
david@ubuntu:~/mlvc$
```

4. Mlvcctrld service

    a.   Use "**sudo systemctl status mlvcctrld.service** " to check active

    b.   After "**setup**" command, it will enable this service
       (need **reboot** or set **start** to active).

```
david@ubuntu:~$ sudo systemctl status mlvcctrld.service
[sudo] password for david:
● mlvcctrld.service - mlvc control autostart service
   Loaded: loaded (/lib/systemd/system/mlvcctrld.service; disabled; vendor preset: enabled)
   Active: inactive (dead)
```

4. Linux OS Guide

```
david@ubuntu:~$ sudo systemctl status mlvcctrld.service
● mlvcctrld.service - mlvc control autostart service
   Loaded: loaded (/lib/systemd/system/mlvcctrld.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2023-02-03 01:05:58 PST; 1s ago
 Main PID: 2592 (mlvcctrl)
    Tasks: 2 (limit: 4622)
   CGroup: /system.slice/mlvcctrld.service
           ├─2592 /opt/mlvc-pkg/mlvcctrl start -d -a
           └─2622 /opt/mlvc-pkg/sbin/mlvcd

Feb 03 01:05:58 ubuntu sudo[2598]: pam_unix(sudo:session): session closed for user root
Feb 03 01:05:58 ubuntu sudo[2611]:     root : TTY=unknown ; PWD=/ ; USER=root ; COMMAND=/opt/mlvc-pkg/sbin/mlvcd
Feb 03 01:05:58 ubuntu sudo[2611]: pam_unix(sudo:session): session opened for user root by (uid=0)
Feb 03 01:05:58 ubuntu sudo[2611]: pam_unix(sudo:session): session closed for user root
Feb 03 01:05:58 ubuntu sudo[2627]:     root : TTY=unknown ; PWD=/ ; USER=root ; COMMAND=/opt/mlvc-pkg/bin/mlvcioctl show
Feb 03 01:05:58 ubuntu sudo[2627]: pam_unix(sudo:session): session opened for user root by (uid=0)
Feb 03 01:05:58 ubuntu sudo[2627]: pam_unix(sudo:session): session closed for user root
Feb 03 01:05:58 ubuntu sudo[2630]:     root : TTY=unknown ; PWD=/ ; USER=root ; COMMAND=/opt/mlvc-pkg/bin/mlvcioctl ping 5:1
Feb 03 01:05:58 ubuntu sudo[2630]: pam_unix(sudo:session): session opened for user root by (uid=0)
Feb 03 01:05:58 ubuntu sudo[2630]: pam_unix(sudo:session): session closed for user root
```

5. Server add

    a. Use "**mlvcctrl server_add <Host_IP>**"
       to add target host and check the host by show_list

```
david@ubuntu:~/mlvc$ ./mlvcctrl server_add 192.168.50.148
Initialize mlvcd process and clean all servers...
[Info] Add IP address : 192.168.50.148
server is added successfully
connecting... connecting... done
```

6. Show Server List

    a. Check the host server numbers and check devices by –d

```
david@ubuntu:~/mlvc$ ./mlvcctrl show_list -d
Servers:
  192.168.50.148:33000 - connected (10/10)
    0001 - 090c:0768:0001 - avail - SMI USB Display (5-1.4, D0374542B7F0633D3C390000)
```

4. Linux OS Guide

7. Server all connect

    a.   Use "**mlvcctrl server_all_connect <Host IP>**" to connect host all devices

    b.   Make sure to check status "**conn**" after doing connect command

```
david@ubuntu:~/mlvc$ ./mlvcctrl show_list -d
Servers:
  192.168.0.129:33000 - connected (10/10)
    0008 - 090c:0768:0001 - avail - SMI USB Display (4-1.4, D0374542B7F0633D3C390000)
    0006 - 04a5:b000:2019 - avail - BenQ ideaCam S1 (4-1.1)

david@ubuntu:~/mlvc$ ./mlvcctrl server_all_connect 192.168.0.129
[Info] Start to connect all devices of the server ip : 192.168.0.129

david@ubuntu:~/mlvc$ ./mlvcctrl show_list -d
Servers:
  192.168.0.129:33000 - connected (8/10)
    0008 - 090c:0768:0001 - conn  - SMI USB Display (4-1.4, D0374542B7F0633D3C390000)
    0006 - 04a5:b000:2019 - conn  - BenQ ideaCam S1 (4-1.1)
```

8. Server all disconnect

    a.   Use "**mlvcctrl server_disconnect <Host IP>** " to disconnect all devices from the host

```
david@ubuntu:~/mlvc$ ./mlvcctrl show_list -d
Servers:
  192.168.0.129:33000 - connected (8/10)
    0008 - 090c:0768:0001 - conn  - SMI USB Display (4-1.4, D0374542B7F0633D3C390000)
    0006 - 04a5:b000:2019 - conn  - BenQ ideaCam S1 (4-1.1)

david@ubuntu:~/mlvc$ ./mlvcctrl server_all_disconnect 192.168.0.129
[Info] Disconnecting all devices of the server ip : 192.168.0.129

david@ubuntu:~/mlvc$ ./mlvcctrl show_list -d
Servers:
  192.168.0.129:33000 - connected (10/10)
    0008 - 090c:0768:0001 - avail - SMI USB Display (4-1.4, D0374542B7F0633D3C390000)
    0006 - 04a5:b000:2019 - avail - BenQ ideaCam S1 (4-1.1)
```

4. Linux OS Guide

9. Server remove

a. Use "mlvcctrl server_remove <Host_IP>" to remove the target host and check using by show_list

```
david@ubuntu:~/mlvc$
david@ubuntu:~/mlvc$ ./mlvcctrl server_remove 192.168.50.148
david@ubuntu:~/mlvc$
david@ubuntu:~/mlvc$
david@ubuntu:~/mlvc$
david@ubuntu:~/mlvc$ ./mlvcctrl show_list
Find 0 servers on the list:
```

10. Operation Flow

1	Set mlvcctrld.service is Active	▶	After setup, it will need reboot OS or set start up mlvcctrld.service
2	server_add <Host IP>	▶	Add server Host IP at server list
3	show_list -d	▶	Check Device ID from the list
4	Server_all_connect <Host IP>	▶	Connect server all devices
5	Server_all_disconnect <Host IP>	▶	Disconnect server all devices
6	server_remove <Host IP>	▶	Remove server by Host IP

Note : Remove all servers before OS shutdown and suspend

4. Certification

Country	Category	Compliance Standard
European Union	C E	EN 55032 EN 55035
United States Canada	FC	P15B ICES-003 Issue 7
Taiwan	D3E599	CNS 15936 CNS 15598-1 D字軌