

Specification

NVDAK-10xxS Console Unit

NVDAK Series	Computer Unit	Console Unit
MAX. Resolution	3840x2160@30Hz (4:4:4) or 1920x1080@60Hz (4:4:4) (Depend on Model, See " Order Information ")	
Video Extension	HDMI / DVI / DP x 1 (In) (Depend on Model)	HDMI / DVI x 1 (Out) (Depend on Model)
Audio Extension	3.5mm SPK Jack x 1 (In) (Audio Embed)	3.5mm SPK Jack x 1 (Out) (Audio Extract)
IR Extension	3.5mm IR Jack x 1 (In) 3.5mm IR Jack x 1 (Out)	3.5mm IR Jack x 1 (Out) 3.5mm IR Jack x 1 (In)
USB 2.0 Extension	USB-B x 1	USB-A x 2 (Keypad) USB x 1 (Front USB 2.0)
Serial Control	RJ11 x 1	RJ11 x 1
Unit ID Setting	Rotary Switch x 3 (MAX. 999)	Rotary Switch x 2 (MAX. 99*)
Button & Switch	Function Button x 2 Reset Button x 1 Slide Switch x 1	Function Button x 2 Reset Button x 1 Slide Switch x 2
HDCP Compliance	HDCP 1.4	
Link Port	RJ45 x 1 (CAT.5e/6/7)* or 1.25Gbps SFP Module (Duplex LC, Single-Mode Fiber)	
Extension Range*	MAX. 100M with CAT.5e/6 (to LAN HUB) MAX. 70KM with Single-Mode Fiber (to LAN HUB)	
Power Supply	DC 12V or PoE (Depend on Model) (PoE Models Also Have Optional DC Jack)	
Operation Environment	0~40°C, Humidity<80%	
Storage Temperature	-20~60°C	
Material	Aluminum	Aluminum
H x W x D (mm)	40 x 135 x 100	40 x 135 x 100
Weight (g)	560	560

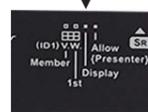
* For console stations >99, apply NVDAK-10xxM (Console MAX. Units).

Description



Function Switch

The function switch decides which function this unit serves.



Member	Member units of video wall #1
1st	1st unit of video wall #1
Display (Default)	Normal console unit in KVM applications (switch directly)
Allow	Video receiver in conference application (confirm before switch)

Label	Description
Ps	Power Supply Connect to DC 12~48V Power Supply (Optional for PoE Models)
Br	Reset Button Click to Restart Unit
Sf	Function Switch Switch to Decide the Function of the Unit (See "Function Switch")
Xc	LAN Link Port Connect to LAN HUB via CAT.5e/6 Cable or SFP Fiber Module (Duplex LC)
Vo	Video Output Connect to a DVI or HDMI Monitor (Depend on Model)
Wv	Video Scaling Switch Switch to Select Native Resolution or Down-Scaled Resolution (Down-Scaled to 720P for 1080P Models and 1080P for 4K Models)
Ao	Audio Output Connect to an Active Speaker (Auto Audio Extract when Connected)
Uh	USB HID Port Connect to a USB Keyboard/Mouse
Uk	USB Keypad Port Connect to a USB Keypad (For Control)
S1	Function Button 1 Click to Change OSD Font Size Click to Accept Connection (when Function Switch = Allow)
S2	Function Button 2 Click to Reject Connection (when Function Switch = Allow)
Lr	Reset LED Flash Green = Initiating Procedure, Emit Blue = Working Now
ID	ID Switch Switch to Determine Computer Unit's ID Number (01~99)
Sc	Serial Control Port Connect to Serial Control Computer via RJ11 Cable
Ro	IR Extension (IR Out) Connect to External IR Blaster
Ri	IR Extension (IR In) Connect to External IR Sensor (Also Accept IR Control Signal)
U2	USB 2.0 Port Connect to a USB 2.0 Device Flash Yellow when USB 2.0 = On, Dark when USB 2.0 = Off
Lu	USB 2.0 LED
Ls	Status LED Emit Red = LAN Unconnected, Emit Blue = Communicate Properly, Flashing = No Incoming Video Signal

Description

NVDAK-10xxS Console Unit

- Allows User to Assign Any Computer to Any Console Station inside a LAN System (MAX. 999 Computers and 599 Consoles)
- Fast and Easy Installation Empowered by the 3-Steps Easy Install (Connect - ID Assign - Scan)
- Intuitive and Easy-to-Learn Control Methods :
 - Easy Keypad Hotkey
 - Keyboard Hotkey
 - Serial Control
 - IR Control
- Supports Most Popular Resolutions Up to FHD or 4K@30Hz (Depend on Model)
- HDCP 1.4 Compliance Ensures Uninterrupted Video Playback
- DVI / HDMI / DisplayPort Models Available for The Computer Unit
- Single-Monitor / Dual-Monitor Models Available
- IR Extension Facilitates Remote Control of Display or Sources
- Group Setting Allows Multiple Consoles / Video Walls Switch Together
- Anchor Setting Allows Quick Return to the Favorite Channel Mapping
- Name Setting Allows Assignment of Meaningful Names to the Units
- Video Wall Function Up to 5x5 or 3x8 (MAX. 25 Displays)
- Optional : Mouse Roaming KM Switch / Programming Keyboard
- Ideal for : Control Room / Emergency Response Center / Data Center / Mission Control / Industrial Control / Automation / Video Conference / Education

Package Contents

- KVM Matrix Extender Console Unit x 1
- Power Adapter Set x 1
- User's Manual x 1
- Tutorial x 1
- Foot Pad Set x 1

You May Also Need:

- Computer Unit
- RJ11 Cable + RJ11 to DB9 Adapter (For Serial Control Application)
- IR Extension Kit (IR Sensor x 1, IR Blaster x 1)
- Bracket

* Wired selector & IR controller also available

User's Manual

MAX. 99 Consoles

KVM HDMI Matrix Extender over LAN (Console Unit) with HDMI 1.4, USB 2.0, Audio, IR Extensions with Hotkey, Keypad, Serial, IR Controls

The NVDAK-1000 series control room solution is an over-LAN KVM matrix extender consisting of the computer units (with video options) and 3 options of console units (Console / Console MAX / Display for different purposes). For Dual/Triple/Quad-Monitor users, there's also NVDAK-1200 series to apply.

Order Information NVDAK-10xxS

Model	Link Port	Video	MAX. Resolution	MAX. Units
NVDAK-1031SD	GbE LAN	DVI	1920x1080@60Hz (4:4:4), 8-bit	99
NVDAK-1031S	Non-PoE	HDMI		
NVDAK-1032S	GbE LAN PoE		HDMI	
NVDAK-1038S	Fiber LAN SFP Module	HDMI		
NVDAK-1041S	GbE LAN Non-PoE		3840x2160@30Hz (4:4:4), 8-bit	
NVDAK-1042S	GbE LAN PoE			
NVDAK-1048S	Fiber LAN SFP Module			

Also Required

Series	Function	Tx / Rx	Feature
NVDAK-10xxP	Computer Unit	Tx	Computer Unit with DVI/HDMI/DP Options
NVDAK-10xxM	Console MAX Unit	Rx	Supreme Console Unit for Up to 599 Consoles
NVDAK-10xxR	Display Unit	Rx	Display Unit for Multiple Video Wall or Video Broadcast

Also Available : NVDAK-1200 Series Dual Monitor Control Room Solution

Nueteq Technology, Inc.
11F, No.112, Sec. 1, Zhong-Xiao E Rd.,
Taipei, Taiwan

The final specification is the actual product based.
Features and functions may be added or changed after the manual was written. Please visit our website to download the latest version of manual for reference.

PP5-MVLK35Z-201



Installation

NVDAK-10xxS Console Unit

- WARNING**
- Ensure that all devices are powered off before connecting to the Unit.
 - Make sure all devices you will connect are properly grounded.

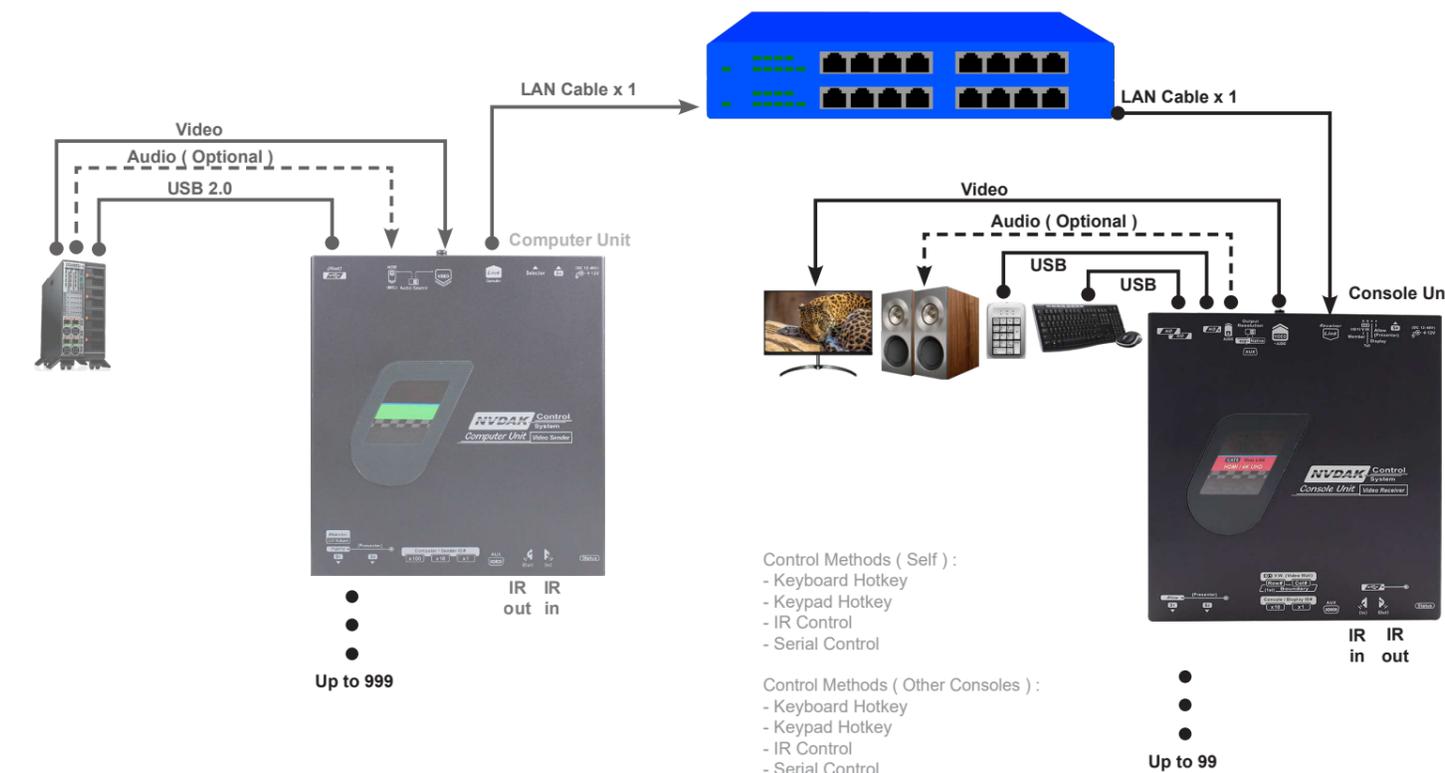
- Connect the console unit to a computer with proper video cable to the video output (HDMI/DVI/DP, depend on model), with USB A-B cable to the USB 2.0 or 3.2 port, 3.5mm Audio Cable to the SPK output port.
- Connect the console unit to a LAN HUB with CAT.5e/6 cable(s) or single-mode fiber cable(s). (Depend on Model)
- After All Units Installed
- Set unit ID with the ID rotary switches. (Each Unit Should Have A Unique ID)
- Apply proper power.
- Scan the entire system with the NodeQ command (See "Scan Units")

- NOTE: If users encounter no screen display in computer connection
- Make sure the device cables are correctly and firmly attached.
 - Set your display device's input source as HDMI.
 - Check the PC BIOS configuration about the video output setting.
 - Connect your computer to the HDMI Display DIRECTLY to check if the video signal gets through.
 - Slide the switches to the correct positions according to your displays.
 - Apply EDID Copy to your display. (See User's Manual of the Computer Units)

LAN Considerations

- LAN HUB should be at least 10Gbps (The more the computers, the higher speed the HUB should be)
- LAN HUB should support **IGMP** (VLAN if the HUB is to be used with other purposes)
- LAN HUB should have SFP cages when fiber models are to be applied (The SFP modules applied on fiber units and the HUB should be identical)
- Available SFP module options for fiber units :
(Duplex LC, Single-Mode, 9/125 μm)
(a) SFP Module **Not Included**
(b) **10KM** 1.25Gbps SFP Module
(c) **20KM** 1.25Gbps SFP Module
(d) **30KM** 1.25Gbps SFP Module
(e) **70KM** 1.25Gbps SFP Module
User should specify module option when placing order.
- For the CAT.5e/6 units, cabling should be connected with due care.
- Use **≥10Gbps port** when cascading switching HUB.
- Connect the console units and computer units **only to the 1Gbps ports** of the switching HUB.

Connection Pattern



- Control Methods (Self) :
- Keyboard Hotkey
 - Keypad Hotkey
 - IR Control
 - Serial Control

- Control Methods (Other Consoles) :
- Keyboard Hotkey
 - Keypad Hotkey
 - IR Control
 - Serial Control

3-Steps Quick Installation

The most satisfying feature of the NVDAK-1000 series is the fast installation which ensures short installation time and lower cost than ever. Simply follow the procedures :

1 Connect

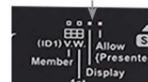
Properly connect all units to the computers / switching hub / KVM devices.

2 ID Setting

User should set a unique ID for each console unit.



Make sure the function switch is at the "display" step



3 Scan System (Repeat this step everytime the system is altered)

Supply power to the system. After the system is ready, use the keyboard to enter hotkey :

" Left-Ctrl " + " Left-Ctrl " + " //NodeQ&& " + " Enter "

After the keyboard connected console unit done with scanning system (will take a while, and beeps when finished), the console unit will build and store the system composition in the memory. If only one console is employed, user may start using now. If multiple consoles are to be employed, the memory should be copied to all console units (recommended) using the following hotkey :

" Left-Ctrl " + " Left-Ctrl " + " **//CFG " + " Enter "

After the copying is done (will take a while, and beeps when finished), user can use every console unit to control the system.

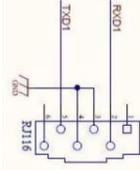
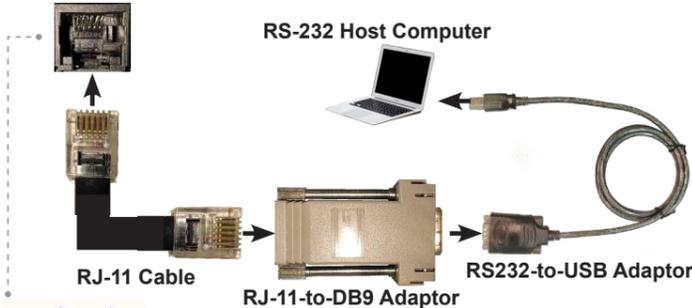


Serial Control (Full Functions) NVDK-10xxS Console Unit

For advanced users, they may connect the serial control port to the serial host for more informative and timely controls. For example, the system composition and entitled names and only be revealed with serial control.

Connect the front serial port to the serial host (computer) via an RJ11 cable and an RJ11-to-DB9 adaptor and an RS232-to-USB adaptor.

Front RJ-11 of Receiver

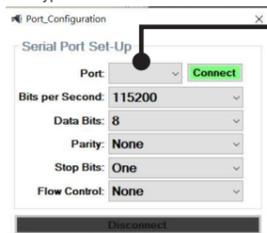


Users may also follow the pin definition of the front RJ-11 port to build their own cable. User may also buy RJ-11 to USB cable to make the connection.

[RS-232 Connection]

Terminal Software

Since Windows 10 no longer provide terminal software, users must acquire 3rd party terminal software such as "Hyper! Terminal". After the connected, enter the following parameters to start the serial communication.



Depends on Computer

Terminal Commands

The terminal commands are the same as the keyboard hotkey commands (Omit Hotkey Leading Code). There are certain commands and informations that only shows in the terminal software, and this is why the serial control is important to make advanced configurations.

Hotkey Control - Keyboard (Full Functions)

When keyboard hotkey is to be applied, user must enter hotkey leading code to enter hotkey mode first. This is to separate normal keyboard inputs from hotkey commands. Default hotkey leading code is **double click of Left-Ctrl**. After the hotkey is entered, click enter to finish.



Hotkey Leading Code

In some cases where more detailed controls are required, user may connect a **keyboard** to the USB HID port and enter hotkey commands. In such cases, users are required to enter a **hotkey leading code** to enter hotkey mode. Available hotkey leading codes includes

- (a) "Left-Ctrl" + "Left-Ctrl"
- (b) "Scroll Lock" + "Scroll Lock"
- (c) "Shift" (hold) + "Num Lock" + "Num Lock" + Release "Shift"

Command List - Keyboard Hotkey

Enter **hotkey leading code** to enable the hotkey mode, then enter the **hotkey command**. After the hotkey command is entered, click **enter** to execute.

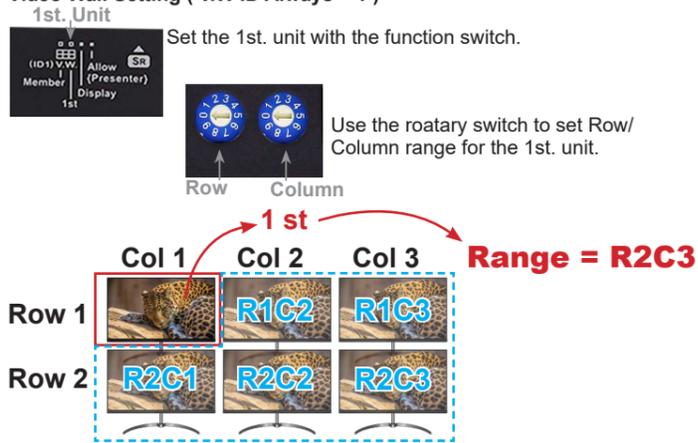
There are several **key variables** employed :

- I** : ID of Target Computer Unit
- R** : ID of Target Console Unit
- **** : All Console Units
- *8W** : ID of Target Video Wall
- *2G** : ID of Target Group
- &N** : Name of Target Console Unit or Computer Unit
- &*N** : Name of Target Group or Video Wall

Video Wall (V.W ID Always = 1)

The console unit may support 1 set of video wall. If multiple video walls are to be applied to the system, console MAX units (NVDK-10xxM) or display units (NVDK-10xxR) should be employed. Video wall configuration should be done at the installation stage when setting IDs :

Video Wall Setting (V.W ID Always = 1)



Video Wall MAX. Size

- Limit 1 : MAX Unit = 25
- Limit 2 : MAX Row = 5
- MAX Column = 8

Members

Set the member unit with the function switch.



Use the rotary switch to set Row/Column location for the member unit.

Note ! Merge Video Wall after Configuration (See Hotkey)

Command List - Keyboard Hotkey NVDK-10xxS Console Unit

Command	Function
Switching Related	
I	Switch the Keyboard Connected Console to Computer # I
R/I	Switch Console # R to Computer # I
R/++	Switch Console # R to the Next Computer ID
R/--	Switch Console # R to the Previous Computer ID
R/+++	Enable All Functions of Console # R
R/---	Disable All Functions of Console # R
Note : R may be replaced by other variables : ** / *8W / *2G / &N / &*N	
EDID Management - See "Tutorial"	
USB 2.0 Management - See "USB 2.0"	
Video Wall Management - See "Video Wall"	
Group Management	
2G/I/ + R R... R	Add to group # G the following units : R - R (Also *8W for Video Wall)
2G/I/-	Delete group # G
/I/* + *2G	Create a group # G
Entitle Names	
R/name+ &N	Entitle name N to the console unit # R
<T/name+ &N	Entitle name N to the Computer unit # I
*8W/name+ &N	Entitle name N to the video wall # W
*2G/name+ &N	Entitle name N to the group # G
Anchoring (Favorite Channel Mapping)	
**/!	Anchor current channel mapping of all consoles
**/!	All consoles switch to the anchored channels
System Related	
//NodeQ&&	Scan the system composition with the keyboard connected console
**/CFG	Copy the scan result to all other consoles
//Stat?	Show system composition (serial control only)
//Name?	Show entitled names (serial control only)
**/ID+	Show IDs of all consoles (OSD)
**/ID-	Hide IDs of all consoles (OSD)
R//Reboot	Reboot the target console unit # R (other variables also applicable)
<T//Reboot	Reboot the target computer unit # I
<*/Reboot	Reboot all computer units
R//Factory	Return the target console unit # R to default (other variables also applicable)
<T//Factory	Return the target computer unit # I to default
<*/Factory	Return all computer units to default

There are video wall related commands to be execute by keyboard hotkey control or serial control :

There are several **key variables** employed :

- *8W** : ID of Target Video Wall
- *8W-n** : Sub Video Wall Number (n = 1~5)
- *8W-rc** : Specific Target Video Wall (r = row location, c = Column location)

Command	Function
Video Wall Related	
8W/I/+	Merge Video Wall # W (After changing video wall configurations, merge the video wall to apply changes)
8W/I/-	Disband Video Wall # W
*8W//W;RO x	Set Video Wall Rotation Angle (x=1 for 180°, x=2 for 270°, x=3 for top row 180°)
*8W//W;H h^l h^r	Set Video Wall Horizontal Bezel Compensation (h = total width, h ^l = left bezel width, h ^r = right bezel width)
*8W//W;V v^t v^b	Set Video Wall Vertical Bezel Compensation (v = total height, v ^t = top bezel height, v ^b = bottom bezel height)
Note : W may be replaced by other variables : *8W-n / *8W-rc	

Sub Video Wall

As mentioned above, user may assign certain part of the video wall as a sub video wall. User may use the following commands to assign subvideo walls (1~5).

Command	Function
Sub Video Wall Related	
/I/* + *8W-n	Assign a 2x2 sub video wall # n under video wall # W
/I/* - *8W-n	Delete the sub video wall # n under video wall # W
*8W-n//W;RC l c	Configure video wall range (row range = l , column range = c) of the sub video wall # n under video wall # W
*8W-n//W;SRC l c	Assign the 1st. unit of the sub video wall # n under video wall # W (row location = l , column location = c)
Note : If multiple consoles are to control the assigned sub video wall, user should run the scan step of the installation, and copy the memory to other console units.	

Note !

Merge Video Wall after Configuration to Enable Those Changes

Hotkey Control - Keypad (Simple Functions)

In most cases, simple keypad control fulfills daily needs. User can install usb keypad (wired or wireless) to the keypad port. Simply input the commands and then click "enter" to execute.



Input ID Finish with Enter

Command	Function
Switching Related	
I	Switch the Keyboard Connected Console to Computer # I
R/I	Switch Console # R to Computer # I
R/++	Switch Console # R to the Next Computer ID
R/--	Switch Console # R to the Previous Computer ID
R/+++	Enable All Functions of Console # R
R/---	Disable All Functions of Console # R
Note : R may be replaced by other variables : ** / *8W / *2G / &N / &*N	

Video Down-Scale

User may select native resolution or down-scaled resolution for video output. For example, for a 4K system mixed with some FHD monitors, user may apply down-scaling for those console units of the FHD monitors so that both the 4K monitors and FHD monitors can enjoy pixel-to-pixel matched video with perfect clarity. The down-scaled resolution varies based on models. For 4K models (NVDK-104xS), the down-scaled resolution is 1080P. For FHD models (NVDK-103xS), the down-scaled resolution is 720P. User may switch the scaling switch to enable down-scaling :



Computer Unit Selection Considerations

- Computer Units Have the options of FHD DVI/HDMI and 4K HDMI/DisplayPort. Select the proper video interface based on your computer.
- Do not** mix 4K computer units with 1080P console units or display units. (Console units and display units can be of higher resolution than the computer units, but not vice versa)
- Multi-monitor applications : Only switch the console units to the computer units with identical monitor count. (Dual-monitor to Dual-monitor ...) Switching console units to the computer unit with different monitor count might not work well for the extended desktops
- Scale-down function of the console unit and display unit is useful when some of the monitors are of lower resolutions, scaling them down may keep other monitor displaying at their best resolution.
- If multiple video walls are to be installed, display units or console max units should be applied. If only one video wall is required, console unit should be enough for most applications.
- For the environment with high EMI or in environment sensitive to EMI, fiber models should be considered.

Advanced Operations - See " Tutorial "

Restricted Switching (Partial Functions)

Asides from switching with all functions, the console units are also capable of switching with partial functions. User can leave the USB 2.0 behind, and switch other functions to the target computer.

Commands*	Description
* R ; 2 I *	Switch the target console # R to computer # I (Exclude USB 2.0)
* R ; 3 I *	Switch the target console # R to computer # I (Exclude Audio & USB 2.0)