

Supplemental information for PN-CD701

Ver.1.2 SHARP corporation November, 2021

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It is supplemental document of both setup and operation manual.

There are reference information which are not described in manual, please utilize it as well as setup / operation manual.

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1. System requirement



System requirement

Hardware	Must have a USB 2.0 compliant port.			
	Windows 8.1 (32-bit or 64-bit version), Windows 10 (32-bit or 64-bit version) (Windows 10 recommended.)			
Operating system	macOS v10.12, v10.13			
	Google Chrome OS Version 75 or later			

*MacOS is supported with mouse operation and single touch.
Chrome book is supported multi touch(touch digitizer), but Touch pen does not work.

<Referenced information>

PN-CD701, because of featuring 4K resolution, should be recommended the controller which has sufficient ability for 4K resolution.

- "Sufficient" means
- -60Hz refresh rate on 4K resolution.
- -Smooth operation on 4K resolution in the application produced by Microsoft(i.e. Windows Ink).

2. Condition of connecting Mac / Chrome OS



PN-CD701 is designed for using with Windows devices. It supports both Mac OS and Chromebook but there are some limitations.

	Mas OC	Obranalisada		
	Mac OS	Chromebook		
How to connect	* It is common for both Mac OS and Chrome book Connection method 1: USB type-C (If the device has USB type-C port)) Connect by using USB type-C cable - Video, sound, touch signal, LAN connection and also power delivery are available - Touch function works with no special driver Connect by using both HDMI and USB A-B cable - Video and sound are available by HDMI cable - Touch signal and LAN connection are available by USB A-B cable - Power delivery is NOT available (AC adapter required) - Touch function works with no special driver			
Limitation	Works as mouse operation / single touch	 Support multi touch (touch digitizer), but Touch pen does NOT work. 		
Technical Background	 Mac OS is the system which does not support touch operation, essentially. Some of our IWB product supports Mac OS with Multi touch operation, but it emulates function of touch pad and it requires special driver. It is not provided special driver because it is designed for Windows. 	 PN-CD701 supports Windows pen-digitizer input by touch hardware itself. It is distinguished whether finger touch or pen touch. In case of using it with Chromebook, touch pen does not work because Chrome OS can not recognize pen-digitizer input. 		

3. Outline of USB type-C



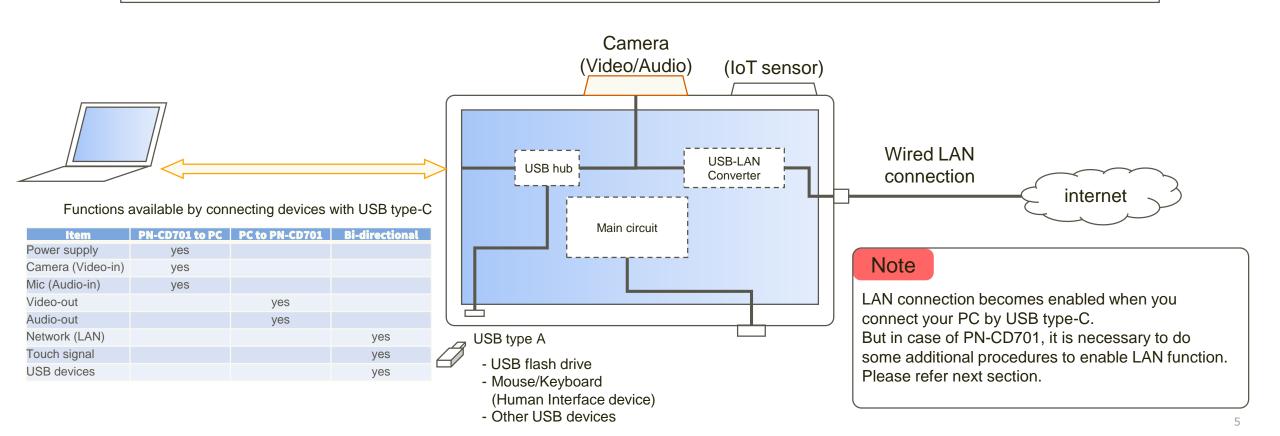
USB type-C is a new standard which has various capabilities for connecting IT devices.

Some of these capabilities are unique to USB type-C.

Please see descriptions below how to utilize new functions.

Major functions of USB type-C

- Connect devices and data transfer (Same as USB 2.0 but higher speed)
- "DP alt mode" which means that it works as a DisplayPort to transmit video.
- "Power delivery" function enables user to supply power up to 100W (20V/5A)



3. Outline of USB type-C



Caution for running USB type-C cable

◆ When a USB type-C cable is connected, the functions shown it the table below are available.

Function of USB type-C	Available/ Not Available	
DP Alt mode(Video stream)	Available	
Network *	Available	
Touch (Data Transport)	Available	
Power Delivery	Available(MAX 60W)	

[Note]

"In case you using USB-C cable from your market (not delivered with PN-CD701), the take care the this cable should be supported power charging of 60W or more."

Table. Function of USB type-C

- ◆ The USB Type C cable may also provide power to the connected PC. Contact your local electrical contractor before running the supplied cable under carpets, behind walls or over ceiling tiles, as regulations may vary.
- ◆ If you use 8m USB type-C cable(PN-ZU01), please observe the following points. It may cause a fire.
 - Do not use the USB type-C cable rolled/tied up.
 - Do not lay the USB type-C cable under the carpet.
 - Do not to be routed inside the building structure (e.g., walls, ceilings, etc.).
 - If a cable is damaged, never use the cable.
 - If you connect this cable to PN-CD701, please fix the cable with a clamp.
 - This cable has a "SOURCE" connector and a "DISPLAY" connector. Be careful not to mistake the orientation.



Figure. Fixed the cable





Figure. Connector

3. Outline of USB type-C



Caution for running USB type-C cable

- USB type-C Out can be used for video output.
 - Only video signals are output from USB type-C Out.
 - The signal of Wireless Cast can not be output.
 - Do not convert the cable from the USB type-C cable.
 - Only the same display or allowed display is supported for the display connected to the Out side.



You can display video on a second device using USB-C Out. The USB-C cable enables touch without connecting a touch cable.



If you want to touch on the second display, please connect as follows. *Touch settings on the PC must be set.

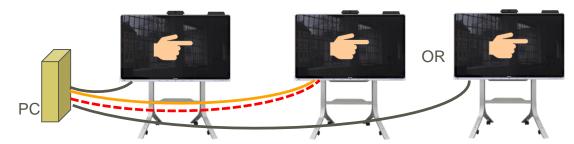




Figure. Rear Left View

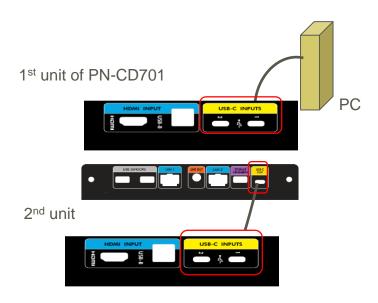


Figure. Daisy chain connection

4. Conditions of network connections to the PN-CD701



4-1. Common functions of both LAN ports

PN-CD701 has 2 wired LAN ports.

One is "LAN 1", and the other is "LAN 2".

Each port serves a different function, see below for details of each port.

LAN 1: LAN port for connecting external PC/s

LAN 1 connection is routed to USB type-C and USB-B ports. The connected PC device will receive internet access via the USB type-C or USB-B port.

(Please confirm this method of network access is acceptable with the network IT administrator).

LAN 2: LAN port for output data & control of PN-CD701

The port is mandatory for using IoT services (WSI Work Space Intelligence or 3rd party services).

Collected data by IoT sensors are uploaded to internet via this LAN port.

Furthermore, the main body will be controlled via this port by using "Crestron connected" devices.

11

12 –

IoT sensor • • 16 FOR SERVICE FOR CAM 5 10

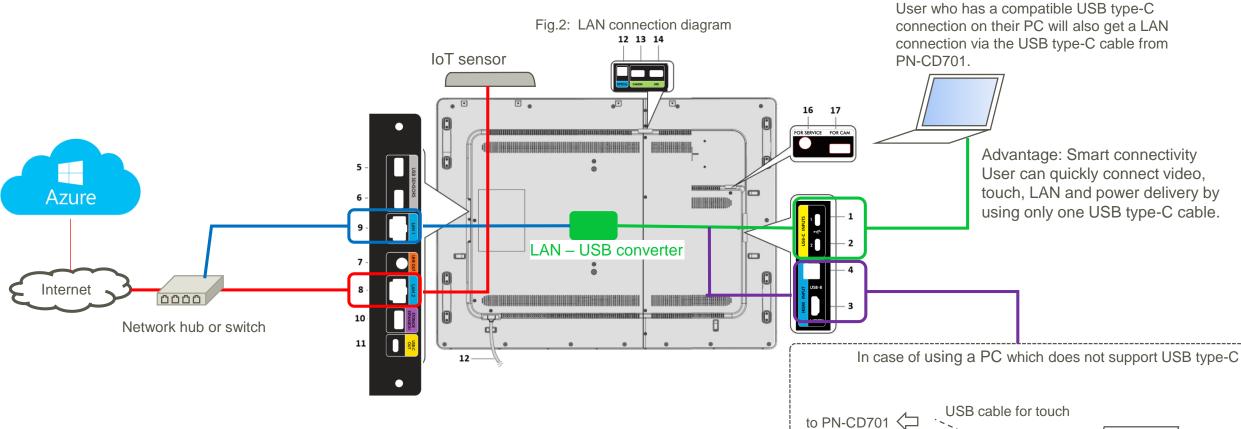
Fig. 1: Backside of PN-CD701

12 13 14

4. Conditions of network connections to the PN-CD701



4-2. Use case



Note:

Please DO NOT connect both USB type C cable and HDMI/USB type B (for touch) cable to same PC simultaneously. it may cause of malfunction.

In case of using a PC which does not support USB type-C

to PN-CD701 USB cable for touch

HDMI cable

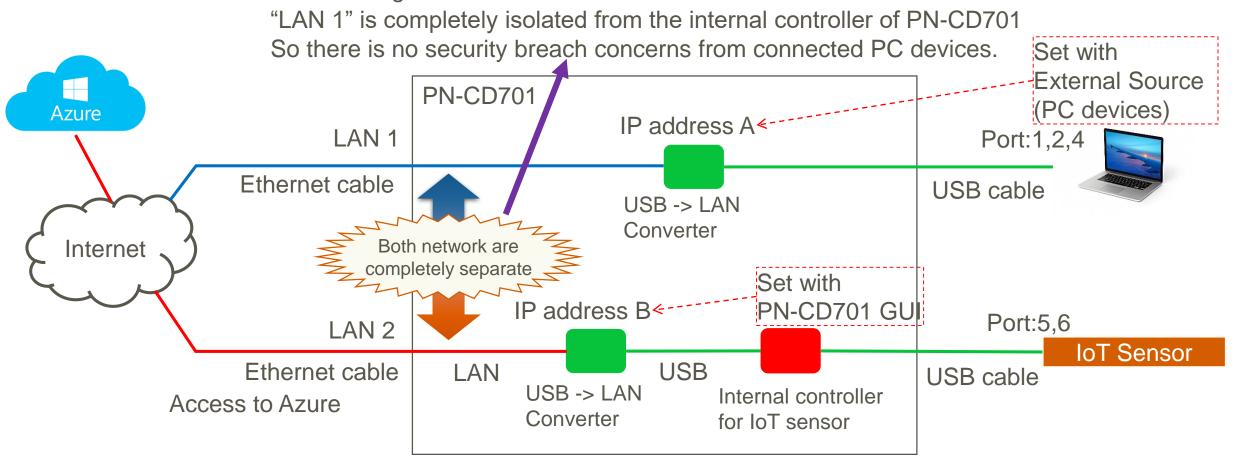
to AC outlet

4-3. Technical background



4-3-1. Network isolation

- Each LAN port (LAN 1, LAN 2) are separate and will have different IP addresses.
- There are no network management devices (routers or switches) inside.
- Works with different LAN settings.



4-3. Technical background



4-3-2. Network requirements for WSI (IoT sensor data)

Tips: Required network connection for IoT sensors is always LAN 2

Internet connections

Internet connections are available using intranet. If network devices filter IoT packets, they can accessed though router, proxy, GW/FW.

Condition of IP address

It can use DHCP. And supports both IPv4 and IPv6.

Required port(s) for uploading / downloading IoT sensor data

Port number	Protocol	Remarks
8883	MQTT	
443	MQTT over WebSockets	
5671	AMQP	
443	AMQP over WebSockets	
443	HTTPS	

4-3-3. Other network requirements

Port "80" and "843" are required by Crestron connected.



5-1. OOBE

Out-Of-Box-Experience(OOBE) is displayed at the first startup or after resetting. Since there is a setting to search for the latest FW in the OOBE setting, Please prepare the Internet environment at LAN2 and execute the update.



Figure. OOBE



5-2. USB Flash Drive*1

You can update using a USB flash drive. Please perform the following procedure.

- 1.Please start your computer and Download the "PN-CD701" Zip file from the SHARP Information Display Downloader*2.
- 2.Unzip the downloaded file and save the "FWU_Config" file and "WCD70" directory to the USB memory directly under the root.
- 3. "Insert the USB flash drive into the USB terminal of "FOR CAM" next to the Service port."
- 4. Please tap "Update" of "USB Firmware Updates" in the Admin menu. After scanning the file, Please tap "Continue".



Figure. SHARP Information Display Downloader



Figure. Update procedure

- 5. Wait for the update to complete. (Approximately 10 minutes)

 Do not turn off the power until the OOBE is displayed as it may cause a malfunction.
 - *1 If the FW update is performed in this way, the setting value will be cleared, so reconfiguration is required.
 - *2 If you do not have the tool, please contact an authorized SHARP servicing dealer or service center.
 - *3 Do not let go of the buttons until the "Egg" picture appears on the screen.



Figure. Egg picture



List of setting values that will be initialized by updating using a USB Flash Drive

item		configurable range	initial
	Volume	0~100% / Mute	50
Quick	Mic toggle	ON / OFF	ON
Settings	Brightness	0~100	mode 1 : 65
			mode 2 : 100
	White Balance	ON/OFF	ON
	Contrast	0~100%	50
	Sharpness	0~100%	0
Display	Color	0~100%	50
Display	Tint	0~100%	50
	Source Alias	<edit></edit>	USB-C 1
	Source Alias	<edit></edit>	USB-C 2
	Source Alias	<edit></edit>	HDMI
Network	TCP/IP	DHCP / Manual	DHCP
INCLWOIK	Proxy	None / Manual	None
	High Contrast	ON / OFF	OFF
	Font size	3 levels	2
	24-hour time	ON / OFF	OFF
	Set Automatically	ON / OFF	ON
	Set Automatically	In OFF case: Date. Time	ON
	Time zone	<select></select>	OFF
	Idle screen time	1 minute / 3 minutes /5 minutes / 10 minutes / 30 minutes / 1 hour / Never	3 min
System	Power Saving Timeout	5 minutes / 30 minutes / 1 hour / 3 hours / 6 hours / 12 hours / Never	5 min
	Language	English/Español/Français/Deutsch/Italiano/Русс кий/日本語	English
	USB-C Video Stream	SST(Single Stream Transport) / MST(Multi Stream Transport)	SST
	LAN1 Network	ON / OFF	OFF
	Bluetooth	ON / OFF	OFF
	Temperature	Fahrenheit / Celsius	Fahrenheit
Sensor Hub	Enable Sensors	ON / OFF	ON

	item	configurable range	initial
	Wireless LAN Name	<edit></edit>	-
	Wallpaper	<select></select>	-
	Installed App	<select></select>	-
	Country	<select></select>	-
	Province / Region / State	<select></select>	-
	City	<select></select>	-
Admin	Operation Mode User Passcode	[US model] MODE1 Auto power-off after 4hrs. with no operation: Never Wake On LAN: On IoT sensor always on: Off In-Device Motion sensor: On Power Saving timeout: 5min(Network standby) MODE2 Auto power-off after 4hrs. with no operation: NEVER Wake On LAN: On IoT sensor always on: On In-Device Motion sensor: On Power Saving timeout: 5min(Backlight off) [EU model] MODE1 Auto power-off after 4hrs. with no operation: 4hrs Wake On LAN: Off IoT sensor always on: Off In-Device Motion sensor: Off Power Saving timeout: 5min(Standby) MODE2 Auto power-off after 4hrs. with no operation: NEVER Wake On LAN: On IoT sensor always on: On In-Device Motion sensor: On Power Saving timeout: 5min(10% Backlight) <change></change>	
	Admin Passcode	<pre><change></change></pre>	_
	Automatic Update	ON / OFF	ON
	Firmware Update Window	Start Time / End Time	2:00 / 5:00
	Smart Switcher	ON / OFF	ON
	LAN1 Always-on Connection	·	OFF
	Wireless Casting	ON / OFF	ON
	Wake On LAN	ON / OFF	-
	IoT Sensor Hub Always On	ON / OFF	-
	In-device Motion Sensor	ON / OFF In ON case: Keep Standby In Time Slot	_

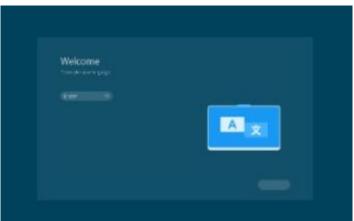
SHARP
Be Original.

- 1. If the firmware update is completed successfully, the screen on the right will be displayed.
- 2. When the firmware update is completed successfully, the screen on the right will appear. If you do not have an Internet connection, an error message will appear, but please continue to the next step.

3. After the initial settings are complete, check to see if the firmware version is up to date.

(If the update is not completed successfully)

4. If the screen shown in (4) is displayed, the update has not been completed successfully. If this screen appears, turn off the main power of PN-CD701 as it is, and then turn it back on after at least 5 seconds. The firmware update will be performed again.



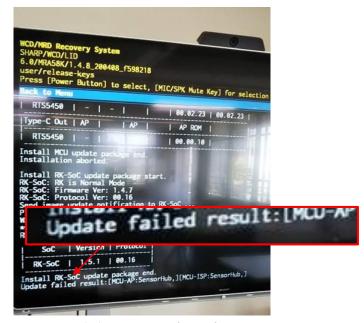
(1) Initial startup screen after the update is successfully completed



(3) Device information display



(2) Error message when no Internet connection is available



(4) Update failure image



5-3. OTA Firmware Updates

Note

This method requires a network environment.

Connect an Internet-capable LAN cable to LAN2 terminal.

PN-CD701 will perform the firmware update directly via the Internet.

If you want to update the FW while keeping the display settings, you can use OTA update.

- 1.Please open the setting menu of PN-CD701 and press the Admin menu.
- 2. Click Update in OTA Firmware Updates.

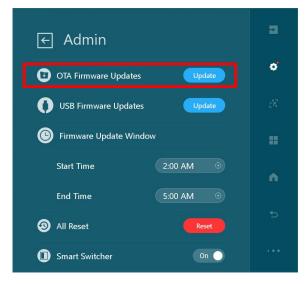


Figure. Admin menu

6. Enable LAN 1 Network



6-1. Procedure to enable LAN1 Network



6-2. LAN 1 network always on

If you want to enable LAN1 function permanently, it can be set via "Admin" menu.

Access "Admin" menu

Switch "LAN1 Network Always-on" to "on"



LAN1 Network becomes available permanently Please consider network security when selecting this option

6. Enable LAN 1 Network



6-3. Matrix of LAN1 Network status

LAN 1 Network will be back to "disable" after disconnect PC devices because of security issue. (Except when you choose "LAN 1 Network Always-on".)

Matrix of LAN1 Network status

E: LAN1 network connection is enable

D: LAN1 network connection is disable

	Setting	Setting USB type-C 1		USB type-C 2		USB-B	
		Plug	Unplug	Plug	Unplug	Plug	Unplug
LAN1 Network	ON	Е	D*1	Е	D*1	Е	D*1
	OFF	D	Ď	D	Ď	D	Ď
LAN1 Network Always-on	ON	Е	Е	Е	Е	Е	Е
	OFF	*2	*2	*2	*2	*2	*2

The Setting value of "LAN1 network" is automatically changed to OFF.

^{*1} If there are other connected terminals, Network connection will remain enable. And, setting of "LAN1 network" remains "ON".

^{*2} Depends on setting of "LAN1 Network".

7. How to install / use Android apps on PN-CD701



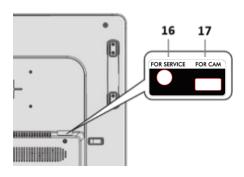
Note

In order to enable this function, the customer must contact the dealer.

7-1. Preparation: Allow installation of 3'rd party applications. (Sideloading*)

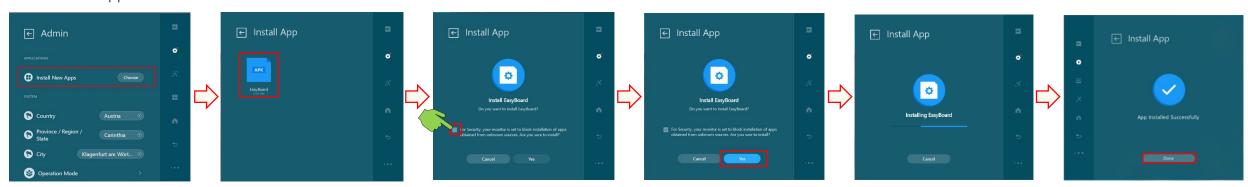
- You can install the app from "Admin" menu.
- Please insert the USB flash drive that .apk files are stored in the root into the USB socket labeled "FOR CAM".

[Note] Please take care that only limited number of APPs are working.



[Flow Chart]

Access to "Admin" and tap Choose .apk file you want to install "Install New Apps"



^{* &}quot;Sideloading" is a method to install some Android apps without using "Google Play Store".

PN-CD701 has been Android CTS (Compatibility Test Suite) certified, so it can be described as "Android inside" and the user/SI can install additional Android apps.

7. How to install / use Android apps on PN-CD701



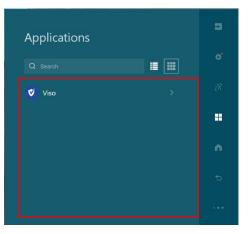
Note

In order to enable this function, the customer must contact the dealer.

7-2. How to display newly installed apps.

Please follow the steps below.





8. Notes on camera attached to PN-CD701



The camera attached to PN-CD701 supports 4K resolution, but camera video output is Full HD because the cable included with PN-CD701 is a USB2.0 cable.

(Because main application "Teams" and "Skype for Business" camera images are supported up to Full HD.)

If you want to show 4K image with different applications, please prepare the following connection environment.

[Preparation]

Replace the USB2.0 cable that connects camera and PN-CD701 with a USB3.0-compatible cable A-B type.

[How to connect PC and PN-CD701]

- A) Connect HDMI cable and USB3.0 cable.
- B) Connect PC and PN-CD701 with USB Type-C cable, and connect PC and camera with USB3.0 cable.

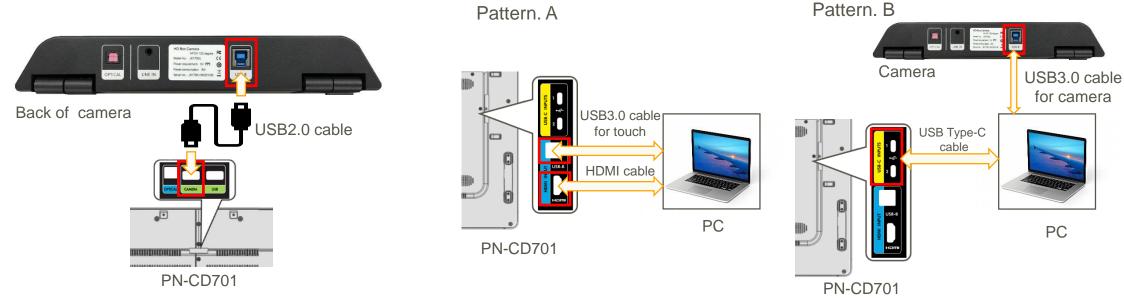


Figure. Preparation

Figure. How to connect PC and PN-CD701

9. Tips



1. What are red dot or bell mark on each icons in PN-CD701?

It indicates something update or attention in each items.

It is same as "Notification dot" which is implemented from Android 8 (Oreo).

Please tap each icons which are displayed red dot / bell to confirm updated information.

2. Wireless display projection conditions

The input of "Wireless Windows" and "Wireless Android" can be displayed by Windows10 or Android terminal that supports Miracast transmission.

- Windows: Windows 10 or later
- Android (version 6.0 or later are recommended)

Connection with all devices is not guaranteed.

Because it depends on the hardware of each terminal, it may not work on supported OS.

3. About WoL (Wake on LAN)

It is an Ethernet or token ring computer networking standard that allows a computer to be turned on or awakened by a network message.

Please ask to consult your IT manager or system integrator to use it.

Basically there are some limitation when you use it.

<Limitation>

- Simple message called "Magic packet" is used for waking up PN-CD701 . "Magic packet" is standard procedure for waking up PC device.
- It is mandatory to use WoL both target machine (PN-CD701) and PC device for control are existed in same network segment.
- When you use WoL, it is mandatory to set both target machine (PN-CD701) and controller (PC device) in same network segment
- Mac address of target machine is necessary. You can check it form PN-CD701's menu "Settings" → "Network" * It is mandatory to connect LAN cable

4. About data acquired by IoT sensor

Values such as temperature, humidity, and illuminance acquired by the IoT sensor are measured values near the PN-CD701, not average values in the room being used.







Attention/Update Locked
(UI for Settings Panel) (Admin setting is locked behind a password.)

10. Detail of setting menu items



Menu Items

Menu item details

The menu will differ depending on the input mode.

Quick Settings

	ım	

Adjusts the volume. (0-100%)

Temporarily mutes the audio.

Mic toggle

Toggle the microphone. Set whether to use a microphone.

Brightness

Adjusts the backlight brightness. (0-100)

Applications

Applications

Display the added app list. When you select an app, you can run that app.

Display

White Balance

Set whether to adjust white balance. When set to OFF, the input signal level is output as is.

Contrast

Adjusts the difference between the bright and dark portions of the image.

Sharpness

Adjusts the sharpness of the image.

Color

Adjusts the color intensity.

Tint

Adjusts the hue. Selecting + changes the color towards green, and selecting - changes it towards magenta.

SOURCES ALIAS

For each terminal, you can change the input mode name that is displayed during input mode selection or display.

The names of *USB-C 1, *USB-C 2 and *HDMI can be changed. (*Factory default.)

Network

TCP/IP

If your LAN has DHCP server and you wish to obtain an address automatically, change this setting to DHCP.

To set the address manually, set this to Manual.

IP Address Set the IP address.

Subnet Mask Specify the subnet mask.

MAC Address Confirm MAC Address.

Proxy

When using this monitor in the proxy environment, set to Manual.

Proxy Port Set a port number when connecting to the proxy server.

Proxy Exclude List Set the address do not use proxy server.

10. Detail of setting menu items



Menu Items

Menu Items

Sensor Hub System **Enable Sensors High Contrast** Emphasizes the difference between the bright and dark portions of the image. Set whether to enable the IoT sensor. Font Size **Device Information** Adjust the font size. OS/OS version 24-Hour Time Sets the time display format. Shows the monitor version. Model **Set Automatically** Shows the monitor model name. Set time and date automatically. Hardware ID/Serial number Date Set the date. Time Set the time. Shows the monitor serial number. Time Zone Software License Sets the time zone. Shows the software license agreement. Open Source Library **Idle Screen Time**

Shows the open source library.

Display the instruction manual.

E-Manual

Language

Sets the display language for the menu screen.

USB-C Video Stream

operation or no signal.

Power Saving Timeout

Set how DisplayPort is used.

Adjusts the sharpness of the image.

SST Use as single stream (DisplayPort1.2).

MST Use as multi-stream (DisplayPort1.2).

(This may not display correctly, depending on the computer (video card) that is connected.)

LAN1 Network

Set whether to enable or disable the LAN1 network. The setting will be reset when you unplug the USB cable or when display goes into standby mode, backlight off mode or backlight reduction mode.

Set the monitor to go into standby mode, backlight off mode, backlight reduction mode when the set time has passed with no

When changing this setting, a user passcode is required.

Bluetooth

Set whether to enable or disable Bluetooth. Select the device to connect via Bluetooth.

Temperature

Select temperature display in Celsius or Fahrenheit.

10. Detail of setting menu items



Menu Items

Admin

Edit Information

Edits the SSID of wireless LAN.

Choose A New Wallpaper

Change the wallpaper of Home screen.

Install New Apps

Install the new application.

- Save the file (*.apk) to which the application can be installed to USB memory.
- (2) Insert a USB memory into USB port "FOR CAM" or "storage expansion".
- (3) Press "Choose" to scan USB memory.
- (4) If there is an app that can be installed, that app will be displayed as a list. Select the app you want to install.
- (5) Check the check box and select Yes.

Country

Select the country where the monitor is installed.

Province / Region / State

Select the province / region / state where the monitor is installed.

City

Select the city where the monitor is installed.

Operation Mode

US

- MODE1 Wake On LAN is set to ON, In-Device Motion Sensor is set to ON, and IoT Sensor Hub Always On is set to OFF. (These settings can not be changed.)
- MODE2 Wake On LAN is set to ON, In-Device Motion Sensor is set to ON, and IoT Sensor Hub Always On is set to ON. These settings can be changed.

EU

- MODE1 Wake On LAN is set to OFF, In-Device Motion Sensor is set to OFF, and IoT Sensor Hub Always On is set to OFF. (These settings can not be changed.)
- MODE2 Wake On LAN is set to ON, In-Device Motion Sensor is set to ON, and IoT Sensor Hub Always On is set to ON. These settings can be changed.

Change User Passcode

Set a passcode for the user.

Change Admin Passcode

Set a passcode for the Administrator.

OTA Firmware Updates

Update the firmware from the network.

USB Firmware Updates

Update the firmware from the USB memory

Automatic Updates

Set whether to perform firmware update automatically.

Firmware Updates Window

Set the start time and end time of Windows update.

All Reset

Resets the settings to the factory default settings.

Reset Wireless LAN

Reset the Wireless LAN settings.

Smart Switcher

Sets whether the input into the input terminal automatically changes when a video signal is input into that terminal.

LAN1 always-on connection

Set the LAN1 network setting to always ON.

Wake On LAN

Set whether to enable Wake On LAN.

IoT Sensor Hub Always On

Set whether to always use the IoT sensor.

When this setting is ON, data collected by the IoT sensor is always uploaded to the cloud.

US

The backlight turns off when the power button is pressed, but the IoT sensor continues to operate, resulting in higher power consumption than in standby mode.

ΕU

Although pressing the power button reduces the brightness of the backlight, the IoT sensor continues to operate, resulting in higher power consumption than in Standby mode.

In Device Motion Sensor

Set whether to use motion sensor.

When using a motion sensor, the monitor will resume from standby mode if motion is detected in front of the monitor.

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