

Q-NEX Networked Digital Podium NDP100

-- User Manual --



Returnstar Interactive Technology Group Co., Ltd.

Safety Instructions

- 1. General Safety Instructions
- 2. Placement
- 3. Power Supply
- 4. LCD Screen Care

1. Introduction

- 1.1 Internal NDP100 Topology Diagram
- 1.2 Device Connection Diagram
- 1.3 Terminology

2. Understanding the Podium

- 2.1 Dimensions
- 2.2 Overview of Digital Podium
- 2.3 Tabletop Introduction
- 2.4 Podium's Interface Introduction
- 2.5 Core Components of the NDP100
 - 2.5.1 NMP Interface View
 - 2.5.2 Touch Panel
 - 2.5.3 Handheld Microphone
 - 2.5.4 Lapel Microphone

3. Start Using Digital Podium

- 3.1 Unlock Digital Podium
- 3.2 Power and Network Access
 - 3.2.1 Connect Touch Panel to NMP
- 3.3 Connecting IFPs to NDP100
- 3.4 NDP100 Connectivity Options
 - 3.4.1 Using the Built-in PC
 - 3.4.2 Connecting your laptop by HDMI
 - 3.4.3 Connecting USB Flash Drive
 - 3.4.4 Using Document Camera(Optional)

4. Wiring and Setup

- 4.1 Get ready for NMP
 - 4.1.1 WAGO Connector Installation Guide
 - 4.1.2 Terminal Block Installation Guide
- 4.2 AV Control
 - 4.2.1 Video Matrix Switch
 - 4.2.1.1 Touch-following
 - 4.2.2 Audio Control
 - **4.2.2.1 SPEAKER**
 - 1. SPEAKER Connection Instructions
 - 2. Device Connection Diagram for SPEAKER
 - 3. Topology Diagram for SPEAKER
 - 4. SPEAKER Interface Control Features
 - 4.2.2.2 Audio
 - 1. Device Connection Diagram for AUDIO
 - 2. Topology Diagram for AUIDO
 - 3. Audio Interface Control Features
 - 4.2.2.3 Mic

Wired Mic in NDP100

4.3 Device Control

- 4.3.1 Power control
 - 1. DISPLAY

Unified Power Switch

- 2. UP-DOWN
- 3. EXTERNAL
- 4.3.2 IR Control
 - 1. Air Conditioner-Identified in the code database
 - 2. Air Conditioner-Unable to Identify in the Code Database
 - 3. Operating IR-Controlled Devices through Q-NEX Platforms
- 4.3.3 RS232 Control
- 4.4 Broadcasting (Multimedia)
 - 4.4.1 Device Connection Diagram for Broadcasting
 - 4.4.2 Topology Diagram for Broadcasting

Audio Topology for Broadcasting

- 4.4.3 Integrating NDP100 into Campus
- 4.4.4 Broadcasting Process
- 4.4.5 Campus-wide Broadcasting Solutions with NDP100
- 4.5 Live-streaming
 - 4.5.1 Device Connection Diagram for Live-streaming
 - 4.5.2 Topology Diagram for Live-streaming
 - 4.4.3 Live Streaming Setup and Operation Steps

5. Expanded Control and Connectivity

- 5.1 Control Box
 - 5.1.1 Interface View
 - 5.1.2 Topology Diagram
 - 5.1.3 CBX Paring
 - 1. DIP Switch Configuration
 - 2. Pairing and Setup
 - 5.1.4 CBX Device Control

6. Appendix

- 6.1 NDP100 Demo Sample Unit
 - 6.1.1 Introduction to Demo Sample Unit
 - 6.1.2 Connecting the Demo Sample Unit
 - 6.1.3 Local Control
 - 6.1.4 Remote Control and Broadcasting
 - 6.1.5 Upgrading to Production Environment
- 6.2 Network Environment Requirement

7. Contact Us

Safety Instructions

To ensure the safe and effective operation of this equipment, please read the following instructions carefully. Failure to comply with these guidelines may result in serious injury or damage to the device.

1. General Safety Instructions

- **Power Source**: To safely disconnect the equipment from power, remove the power cord from the unit or the power source. The power plug serves as the disconnect device and should remain easily accessible.
- **No User-Serviceable Parts**: There are no user-serviceable parts inside this equipment. Do not open the device. All servicing should be performed by qualified personnel. Removing the cover may expose you to dangerous voltages and will void the warranty.
- **Ventilation**: Ensure proper ventilation to avoid overheating. Do not block any ventilation openings. Install the equipment in accordance with the manufacturer's instructions. Avoid placing the device in a confined space without sufficient airflow.

2. Placement

- **Stable Surface**: Place the equipment on a stable surface to prevent it from tipping over. Avoid placing it on an unstable cart, stand, tripod, or table.
- **Heat Sources**: Keep the equipment away from direct sunlight, radiators, heat registers, stoves, or other heat-producing devices.
- **Water and Moisture**: Do not expose the equipment to rain, moisture, or any type of liquid. Avoid placing liquid-filled objects, such as vases, on or near the equipment.
- **Magnetic Fields**: Keep the device away from strong magnetic fields that could interfere with its operation.

3. Power Supply

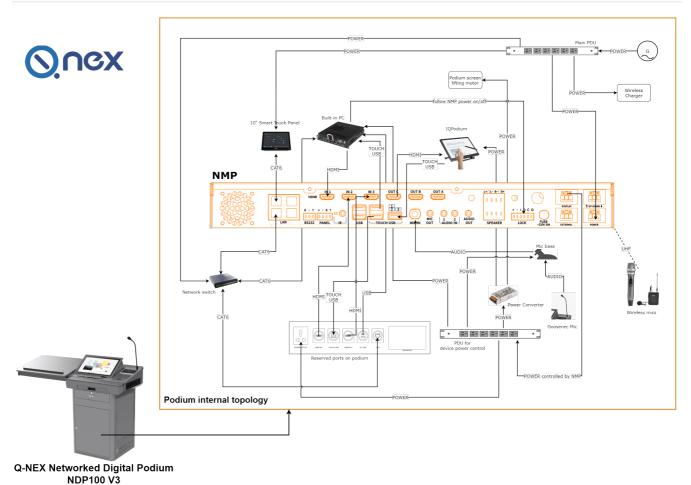
- **Voltage Compatibility**: Ensure the operating voltage of the equipment matches the local power supply. Using incorrect voltage may damage the device and void the warranty.
- **Storm Precautions**: During thunderstorms or when the equipment is not in use for an extended period, unplug the power cord and any connected cables to protect the device from power surges.
- **Power Cord Care**: Handle the power cord with care. Avoid pinching, bending, or placing heavy objects on it. Only use the power cord provided with the equipment, and do not modify or extend it.
- **Grounding**: Ensure that the power outlet used is properly grounded to prevent electric shock.
- **Power Outages**: Sudden power failures may damage the equipment. If a power outage occurs, turn off the device and unplug the power cord to protect it from potential damage.

4. LCD Screen Care

- **Cleaning**: Unplug the power cord before cleaning the screen. Use a soft, dry, lint-free cloth to clean the display. Avoid using water, spray cleaners, or abrasive materials that could scratch or damage the screen.
- **Pressure Avoidance**: Do not apply excessive pressure to the LCD screen. Interact with the touchscreen using the provided stylus or a soft, non-abrasive object.
- **Image Retention Prevention**: To prevent image retention or screen burn-in, avoid displaying static images on the LCD screen for extended periods. Use a screen saver or regularly change the displayed content.

1. Introduction

1.1 Internal NDP100 Topology Diagram

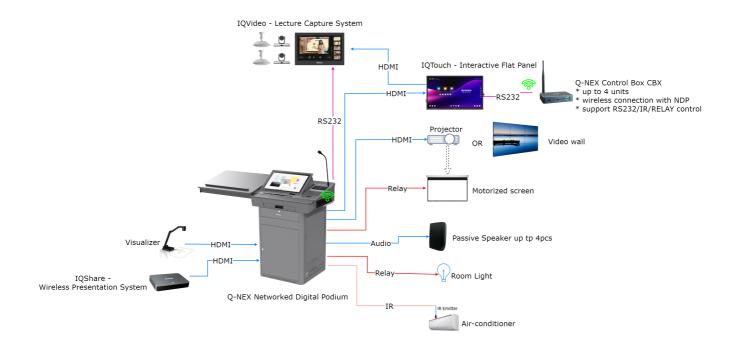


1.2 Device Connection Diagram

For references:

Onex

Smart classroom solution with Networked Digital Podium

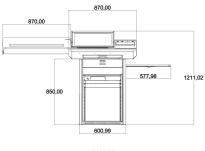


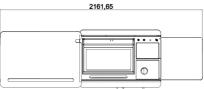
1.3 Terminology

Term	Descriptions	
<u>NMP</u>	Networked Media Processor, NMP is the core component of NDP that enables functionalities such as remote device control, audio/video matrix switching, and advanced features like "Touch-Following,", "Broadcasting", and "Live Streaming".	
<u>Touch</u> <u>Panel</u>	The Touch Panel serves as the primary controlling interface, providing intuitive touch-based controls for the operation of the NDP.	
<u>Web-</u> <u>console</u>	Web-console is a web-based platform for remote device management of NDP/NMP, constituting a part of NDP. This platform enables operations similar to the Touch Panel for individual devices and also allows simultaneous operations on multiple NDP and NMPs. Additionally, it provides functions such as scheduling device controls, broadcasting, and live streaming.	
Q-NEX App	A mobile application for controlling Q-NEX (NDP, NMP) systems	
<u>Dashboard</u>	The Dashboard is the backend management system of the Q-NEX platform, constituting a part of NDP/NMP. Basic configurations such as IP lookup for the Touch Panel during the initial stage, or login information for Web-Console and Q-NEX App, as well as operations related to learning and utilizing the infrared code library mentioned in this document, all rely on the support of the Dashboard system.	
Device Connection Diagram	Illustrates the physical connections and layout between devices, emphasizing direct connections and interface relationships. Helps understand specific device connections, including ports, cables, and physical details of the connections.	
Topology Diagram	Depicts the overall architectures and logical relationships between devices. Emphasizes the roles and positions of devices within the network, as well as data flow and transmission paths. Helps understand the structure and operation of the network.	

2. Understanding the Podium

2.1 Dimensions





No	Name	Description
1	Body	870(L) x 609(W) x 1211.02(H) mm
2	Tabletop	2161.65(L) x 609(W)

2.2 Overview of Digital Podium



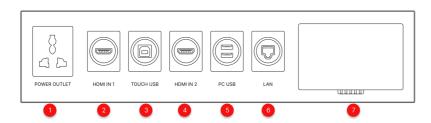
No	Name	Description	
1	Tabletop	Stable surface for teaching activities.	
2	Wireless Microphones	Two high-quality wireless microphones for flexible voice capture during lectures or presentations. Note: Wireless receiver built into NMP for easy pairing.	
3	Sliding Cover Panel	Protective storage cover, made of eco-friendly material with improved durability. Supports up to 30kg weight. Dimensions : 870(L) x 600(W) x 18(H) mm	
4	Wireless Keyboard and Mouse Combo	Providing control for the built-in PC during lectures and presentations.	
5	Keyboard Tray	Space-efficient tray designed for the wireless keyboard and mouse, ensuring convenient access during use. Dimensions : 507(L) x 180(W) mm	
6	Front Drawer	Secure storage compartment with a combination lock and key, offering extra safety for sensitive devices or materials. Dimensions : 480(L) x 220(W) x 100(H) mm	
7	Rack/Shelf	Spacious storage area for the NMP, built-in PC, and other necessary equipment. Dimensions: 500(L) x 490(W) x 590(H) mm	
8	Foldable Stand	Versatile platform designed for supporting teaching equipment, such as document cameras or additional displays, with an ergonomic folding design for easy storage. Dimensions: 575(L) x 545(W) mm, Weight Capacity: 15kg	

2.3 Tabletop Introduction



No	Name	Description	
1	Interactive Pen Display	Central touchscreen supporting both finger touch and pen input. Positioned for interaction during lectures.	
2	Groove	Holder for the Interactive Pen Display's active capacitive pen Dimensions : 390(L) mm	
3	Secure Drawer with Combination Lock and Key	Storage drawer equipped with both combination lock and key for secure storage of important items.	
4	Wireless Charging	Integrated wireless charging pad for smartphones, with a 15W output.	
5	Interface	Input/output connections for device integration such as USB drives, laptops, or other peripherals.	
6	Cabinet Antenna (5- in-1)	Antenna unit for Wi-Fi and UHF communications. Includes 2 antennas for built-in PC Wi-Fi, 2 antennas for NMP Wi-Fi, and 1 UHF antenna for wireless microphone.	
7	Touch Panel	Central control interface for managing classroom devices and settings.	
8	Touch Panel Button	An extension of the Touch Panel's power button on the tabletop. A short press puts the screen into sleep mode or wakes it, while a long press (over 3 seconds) powers the device on or off.	
9	Up/Down Buttons	Motorized control for adjusting display height, with limit switch functionality. Red and blue indicator lights show the status: red means the sliding cover is not fully latched and the buttons won't respond, while blue allows normal operation.	
10	Gooseneck Microphone	High-quality microphone for capturing clear audio during lectures. Dimensions : 600(L) mm	

2.4 Podium's Interface Introduction



No.	Interface Name	Description	
1	Power Outlet	Provides power supply for the lecturer's laptop or other low-powered devices. The Note: Avoid connecting high-powered appliances to this port to prevent potential damage to the Networked Digital Podium.	
2	HDMI IN 1	Connects the lecturer's laptop or other HDMI source as input for display on the Networked Digital Podium.	
3	Touch USB	Enables touch control functionality for the lecturer's laptop when connected, allowing interaction with the podium's display.	
4	HDMI IN 2	An additional HDMI input port for connecting secondary input devices like a camera or another laptop.	
5	PC USB	Two USB ports extend the built-in PC's connectivity, allowing external devices such as USB flash drives or peripherals.	
6	LAN	Provides network connectivity for the lecturer's laptop via a wired Ethernet connection.	
7	5-in-1 Cabinet Antenna	Combines multiple antennas for enhanced communication: (1) 2 * 2.4 GHz and 5 GHz dual-band Wi-Fi for the built-in PC. (2) 2 * 2.4GHz Wi-Fi for NMP to connect external CBXs. (3) 1 * UHF antenna for the wireless mic receiver built into the NMP.	

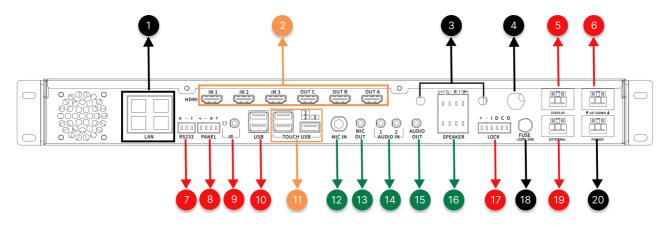
2.5 Core Components of the NDP100



The NDP100 comprises essential core components that enable functionalities such as remote device control, audio/video matrix switching, and advanced features like "Touch-Following,", "Broadcasting," and "Live Streaming".

2.5.1 NMP Interface View

The Networked Media Processor (NMP) serves as the central control unit responsible for managing and coordinating various functionalities of the digital podium.



No.	Interface	Description	
1	RJ45 * 4	Ethernet ports (100Mbps, non-PoE) for NMP network connectivity; also enables NMP to function as a switch.	
2	HDMI Matrix 3 * 2	Enables simultaneous display on both the podium and classroom screens, allowing teachers to control and present lesson content directly from the podium without needing to turn around frequently.	
3	2.4G Wi-Fi Antenna Interface * 2	Built-in 2.4G Wi-Fi RP Transceiver within NMP, allowing wireless device integration and control expansion with Q-NEX's CBX component.	
4	UHF Wireless Microphone Antenna Interface * 1	Built-in receiver for UHF wireless microphones, supporting one-to-two wireless microphone setups for teaching/meeting scenarios.	
5	Display (WAGO) * 1	Provides power output for connected devices, such as projectors, TVs, Interactive Flat Panels (IFP), and smart podiums.	
6	UP-DOWN (WAGO) * 1	Offering up, pause, and down functions for connected devices like projector screens and motorized curtains.	
7	RS232 * 1	Allows connection to devices equipped with standard RS232 ports, such as Pan-Tilt-Zoom (PTZ) cameras and Interactive Flat Panels (IFP), etc.	
8	Panel * 1	Interface for connection to mechanical control panels, allowing direct control of basic devices and AV matrix switching without the need for network connectivity.	
9	IR * 2	IR learner port * 1: Used for learning IR remote control codes. IR emitter port * 1: For infrared remote-control functionality.	
10	USB * 2	Reserved for card reader	
11	TOUCH USB *	TOUCH USB IN * 1 : Receives touch signals from the Interactive Pen Display. TOUCH USB OUT * 2 : Sends touch signals to OPS or Laptop for	

		touch-following functionality. For details, refer to section <u>4.2.1.1 Touch-following</u> .	
12	6.35mm Wired Microphone In * 1	Interface for connecting a 6.35mm wired microphone.	
13	3.5mm MIC Mixed Out * 1	Mixes audio from both the microphone input and the wireless microphones (handheld and lapel) for combined output.	
14	AUDIO IN * 2	Two 3.5mm line-in interfaces for connecting external audio devices such as laptops, smartphones, etc.	
15	AUDIO OUT	Audio output interface for connecting to speakers or amplifiers.	
16	External Speaker Output	The NMP includes a built-in power amplifier, capable of delivering 2* (40w+40w) output, designed to connect with passive speakers. (Fixed impedance speakers only).	
17	Built-in OPS Control (LOCK Interface) * 1	Be used to monitor and control the OPS within the Digital Podium, synchronized with NDP power management.	
18	Power Fuse *	Power fuse for protection against electrical faults.	
19	EXTERNAL Port (WAGO) * 1	External port interface for lighting control and other devices. there are two methods to control lighting and other devices: 1. Direct Connection to NMP-External: With this mode, users can directly manage lighting control using NMP. 2. Integration with SPDT Switch: By replacing the existing switch panel with a Single Pole Double Throw (SPDT) switch and connecting it to NMP, both NMP and the switch panel can control the lighting.	
20	NMP Power Supply (WAGO) * 1	Power supply for NMP, supporting wide voltage range (110-240 V AC).	

2.5.2 Touch Panel



The Touch Panel allows users to access NMP functionalities such as power control, matrix switching, volume adjustment, and Divisible Room operations. Even in LAN-connected environments without Internet access, users still can perform local operations like matrix switching and volume adjustments.

The Touch Panel serves as the primary controlling interface, providing intuitive touch-based controls for the operation of the NDP.

2.5.3 Handheld Microphone



No.	Description
1	LCD Screen
2	Power Button

Handheld Microphone Usage:

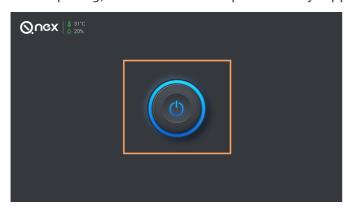
- Press the power button to turn on the microphone; long press to turn off.
- Press **once** to switch channels; press **three** times quickly to enter pairing mode, , and press **once more** to exit pairing mode.

Paring Instructions:

Please note that the microphones are pre-configured before shipping. Unless necessary, there is no need to reconfigure them.

1. To pair the handheld microphone, simply point it directly at the longest antenna on the right side of the NDP100, which is dedicated to UHF wireless communication.

2. Before paring, turn the NDP main power off by tapping the power button on the Touch Panel.



- 3. Press the power button **three** times quickly to enter pairing mode.
- 4. Immediately power on NMP using Touch Panel, then the microphone will automatically pair with NMP (the NMP has a built-in receiver).
- 5. Successful pairing indicated by solid green MIC 1 light on MMP.

■Note:

- Ensure the NMP main power is off before starting pairing.
- To ensure successful pairing, bring the microphone close to the NMP's antenna during the pairing process.

2.5.4 Lapel Microphone



No.	Description
1	Lapel Mic Port
2	Power Switch (Slider)
3	Antenna
4	LCD screen
5	Volume Adjust
6	Channel Button

Usage Instructions:

- Slide the power button to the left to turn on the power, and slide it to the right to turn off the power.
- Channel Button: Press **once** to switch channels; press **three** times quickly to enter the pairing mode, and press **once more** to exit pairing mode.

Pairing Instructions:

Please note that the microphones are pre-configured before shipping. Unless necessary, there is no need to reconfigure them.

- 1. To pair the microphone, simply point it directly at the longest antenna on the right side of the NDP100, which is dedicated to UHF wireless communication.
- 2. Before paring, turn the NDP main power off by tapping the power button on the Touch Panel.
- 3. With the lavalier microphone powered on, quickly press the pairing button **three** times to enter pairing mode.
- 4. Immediately proceed to power on the NMP main power via the Touch Panel, then the lavalier microphone will automatically pair with the NMP (the NMP has a built-in receiver)
- 5. Upon successful paring, the MIC 2 indicator light on the front of the NMP will remain solid (green).

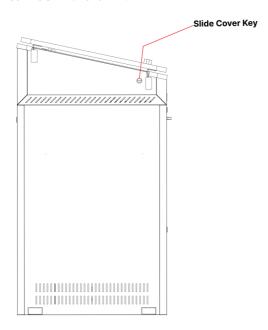
■Note:

- Ensure the NMP main power is off before starting pairing.
- To ensure successful pairing, bring the microphone close to the NMP's antenna during the pairing process.

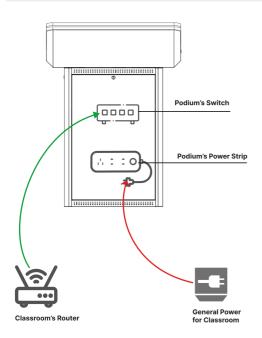
3. Start Using Digital Podium

3.1 Unlock Digital Podium

1. Insert the key into the keyhole on the left side of the Digital Podium, and the sliding cover panel can be withdrawn.



3.2 Power and Network Access



- 1. The NDP100 is equipped with an integrated switch and power strip.
- 2. Upon arrival in the classroom, connect the NDP100's power strip to the general power supply within the classroom to provide power to the NDP100. (Grounding work inside the NDP100 has been completed before shipment.)

3. Prepare a network cable with sufficient length. Connect one end to the switch of the NDP100 and the other end to the router in the classroom.

■ Note:

For users who have purchased the NDP100 demo sample unit for the first time, please refer to section <u>6.1 NDP100 Demo Sample Unit</u> for detailed instructions.

3.2.1 Connect Touch Panel to NMP

The Touch Panel is a 10-inch Android touchscreen device, custom-designed to work with the NMP (a core component of NDP100). Its applications are tailored specifically for controlling various functions of the NDP100, such as video matrix switching, volume, and microphone control, as well as infrared and RS232 control, etc.

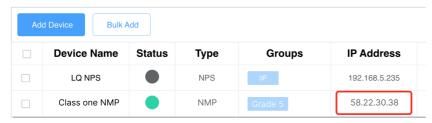
- 1. After purchasing, you'll receive your account details from our sales team via email or other methods (e.g., WhatsApp, phone).
- 2. Log in to the Web Console at https://mg.gnextech.com/console/login.
- 3. In Web Console, use the "Dashboard" button to access the Dashboard platform.



For platform roles, see "1.3 Terminology" in the User Manual.

 Retrieve the NDP IP address by logging into the <u>Dashboard</u> and visiting the '*Devices* >>
 Processor Manage' page. Identify your NMP and note the IP address from the 'IP Address' column.

Enter this IP on the Touch Panel and click 'Connect." to establish a connection with the NMP.



■Note:

- If connection issues arise, use the router device or NMP config Tool.exe to identify the correct IP address, particularly in situations where DHCP changes may not be immediately reflected in the web-based backend.
- For consistent access, consider using the Q-NEX Config Tool to set a static IP for the NMP, preventing IP changes post-reboot or network alterations.

5. Enter IP Address: After connecting to the network, input the NMP IP address on the Touch Panel.



6. Unlock the Touch Panel to activate the NDP100 main power.



■Note:

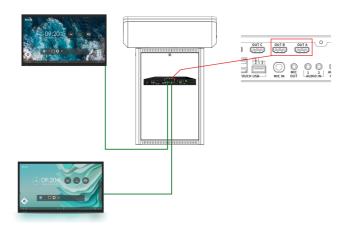
Due to the NDP100 <u>Unified Power Switch</u> power management strategy, simply unlocking the Touch Panel and turning on the NDP100 main power will automatically power on the corresponding devices.

7. Use the **UP / DWON** buttons on the tabletop, to elevate the Digital Podium's display to the desired angle.

■ Note:

If the interactive pend display screen doesn't raise when pressing "UP," ensure the sliding cover is fully to the left.

3.3 Connecting IFPs to NDP100



- 1. **Prepare HDMI Cable**: Ensure you have a sufficiently long HDMI cable to connect the IFPs to the NDP100.
- 2. **Connect HDMI Cable**: Plug one end into IFP and the other into NDP100's HDMI Out port, preferably HDMI Out A.

Once the classroom displays are set up, users can utilize the Q-NEX software to manage input and output sources.

For instructions on how to perform video switching with the NDP100, please refer to section <u>4.2.1</u> Video Matrix Switch.

3.4 NDP100 Connectivity Options

3.4.1 Using the Built-in PC

The NDP100 comes with a built-in PC, tailored to enhance teaching and operational experiences. The built-in PC is pre-installed the Windows 11 Pro operating system.

Switch the input source to **OPS** (the first icon) by Touch Panel, Web Console, or Q-NEX APP. Please refer to section 4.2.1 Video Matrix Switch for more details.



■Note:

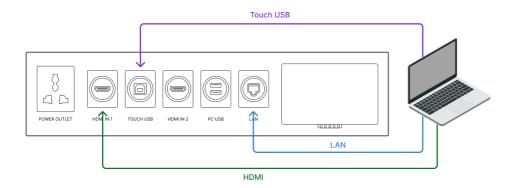
Please note that the operating system requires to purchase license from Microsoft separately.

The built-in PC serves as one of the default input sources for the NDP100 and can be <u>switched</u> using Q-NEX software such as Touch Panel, Q-NEX App, and Q-NEX Web-console.

The built-in OPS comes with proprietary software, <u>IQClass One</u>, developed by IQ&Q-NEX:

IQClass One is interactive teaching software with split-screen writing and 40-point interaction. It features gesture recognition and easy access to teaching resources. Review lessons conveniently with screen recording and QR code sharing. Enjoy simultaneous student interaction and unlimited writing space.

3.4.2 Connecting your laptop by HDMI



Connect the **HDMI IN 1** and **Touch USB** ports to enable the **touch-following** functionality.

Use the **LAN port** to provide internet access for the laptop (Provided the NDP100 is connected to a router with internet access.)

Switch the input source to *laptop* (the second icon) by Touch Panel, Web Console, or Q-NEX APP. Please refer to section 4.2.1 Video Matrix Switch for more details.



3.4.3 Connecting USB Flash Drive



The Digital Podium's USB ports are linked to the built-in PC. Simply insert a USB flash drive into the port to access and operate its contents directly on the Interactive Pen Display.

3.4.4 Using Document Camera(Optional)

Connect the Document Camera to the HDMI IN 2 (recommended) and Power Supply port.



Switch the input source to the second icon by Touch Panel, Web Console, or Q-NEX APP. Please refer to section <u>4.2.1 Video Matrix Switch</u> for more details.



■ Note:

HDMI IN 1 and **Touch USB** are paired to support interactive touch control and should be used accordingly for devices requiring touch functionality.

4. Wiring and Setup

In addition to the basic functionalities provided in the preceding sections, the NDP100 is capable of interfacing with classroom devices for remote control and advanced operations.

To enable these advanced features, system integrators are required to perform basic wiring and setup tasks. This section focuses on detailing these essential connections and configurations necessary for integrating the NDP with classroom devices.

4.1 Get ready for NMP

4.1.1 WAGO Connector Installation Guide

The NMP includes several WAGO connectors that require proper wiring. These connectors are designated for DISPLAY, UP-DOWN, EXTERNAL, and POWER interfaces.

While the POWER interface is pre-configured before shipment, the other three interfaces need to be wired on-site based on the specific layout and requirements of the installation environment.

Follow the steps below to correctly install these connectors.

Step	Screenshot	Instructions
S1	>=10mm	Wire Preparation 1. Strip the insulation off the ends of the wires. Refer to the image for specific length requirements 2. If the wires are stranded, twist them together to form a single strand.
52	L - Fire Wire Ground Wire N -Zero Wire	 Wire Connection to WAGO Connector 1. Align the wires according to their respective terminals on the WAGO connector. ⚠ Ensure strict adherence to the correct sequence for live and neutral wires. 2. Firmly insert a flathead screwdriver into the small hole above the wire (to open the clamping mechanism below). 3. Apply slight pressure to push the wire into the terminal hole. 4. Remove the screwdriver, allowing the clamping mechanism to secure the wire firmly in place. 5. Gently tug on the wire to ensure it is securely fastened.
S 3	Step 1: Step 2:	Cover Installation for WAGO Connector 1. Align the cover with the WAGO connector 2. Press down firmly on the cover until it snaps securely into place.



Marning:

During installation, be cautious not to connect the neutral and live wires of the AC power supply (positive and negative poles of the DC power supply) to the Wago port simultaneously, as it may cause a short circuit.

4.1.2 Terminal Block Installation Guide

The NDP features several terminal block interfaces that also require proper wiring, these include interfaces for RS232, PANEL, SPEAKER, and LOCK.

These terminal block connections need to be configured on-site, tailored to the specific size and requirements of the installation environment.

Follow these steps to install the terminal blocks:

Step	Screenshot	Instructions
S1	The state of the s	Turn the screwdriver counter-clockwise to loosen the screw.
S2	The state of the s	Insert the bare wire into the hole of the terminal block
S 3	THE LE	Turn the screwdriver clockwise to tighten the screw.

4.2 AV Control

The AV Control section of the NMP encompasses various features aimed at managing audiovisual signals through the NMP.

4.2.1 Video Matrix Switch



The NMP's Video Matrix Switch routes video signals from multiple input sources to different output displays.

- Connect input sources, such as laptops, document cameras, IQShare(wireless presentation system), etc., to **HDMI INs**.
- Connect display devices, like IFP, TV, projector, etc., to **HDMI OUTs**.

For the NDP100 interfaces, we have established the following configurations:

HDMI INs for NDP100:

HDMI IN Port	Input Source
HDMI IN 1	Built-in PC
HDMI IN 2	Podium HDMI IN 1
HDMI IN 3	Podium HDMI IN 2

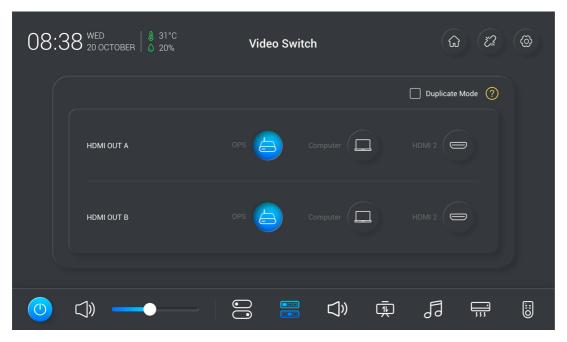
HDMI OUTs for NDP100:

HDMI OUT Port	Output Destination
HDMI OUT A	Display 1
HDMI OUT B	Display 2
HDMI OUT C	Interactive Pen Display

■Note:

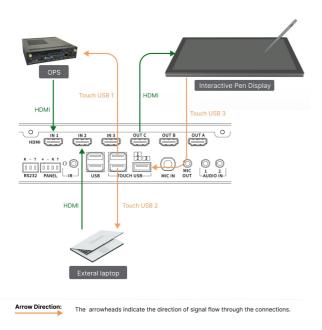
For information on the deployment of HDMI OUT ports on the NDP100, please refer to "3.3 Connecting IFPs to NDP100."

After connecting the desired input and output devices, users can perform video matrix switching from various input sources to different output displays via Touch Panel, Web-console, or Q-NEX App.



4.2.1.1 Touch-following

"Touch-following" is a feature that enables continuous touch operation across multiple input sources. It allows users to switch between devices without interrupting touch functionality, ensuring a smooth and uninterrupted user experience.



Technical Wiring Instructions for NDP100 Touch-Following Feature:

• Interactive Pen Display

NDP100 Port	Target Device Port	Purpose
OUT A (HDMI)	HDMI Input	Video signal from NDP100 to Pen Display
Touch USB 3	USB-B Input	Touch signal from Pen Display to NDP100

• OPS Module

NDP100 Port	Target Device Port	Purpose
IN 1 (HDMI)	HDMI Output	Video signal from OPS to NDP100
Touch USB 1	USB-B Input	Touch signal from NDP100 to OPS

• External Laptop

NDP100 Port	Target Device Port	Purpose
IN 2 (HDMI)	HDMI Output	Video signal from Laptop to NDP100
Touch USB 2	USB-B Input	Touch signal from NDP100 to Laptop

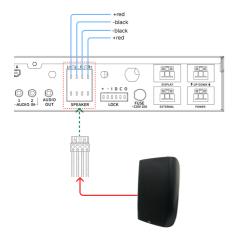
■Note:

- Ensure all connections are secure to maintain stable signal flow.
- Match the HDMI and USB ports according to the table for correct functionality.
- For troubleshooting, check all cables and ports in the above sequence.

4.2.2 Audio Control

4.2.2.1 SPEAKER

1. SPEAKER Connection Instructions



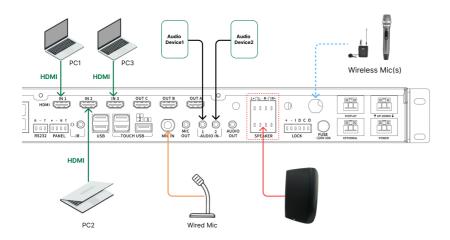
Line Type Representation:

Lines	Descriptions
→	Arrow Direction : The arrowheads indicate the direction of the device connection
	Solid line: Indicate devices connected via wired cables.
1	Dashed line : Indicate devices directly plugged into interfaces (without intermediary cables)

- 1. The NMP features an integrated power amplifier capable of delivering **2*(40w+40w)** output, designed specifically for connecting with passive speakers.
- 2. It's important to note that the NMP only supports *fixed impedance* speakers and does not support fixed voltage speakers.
- 3. To connect passive speakers, users should replace the speaker cable with a **Phoenix audio connector** and plug it into the designated speaker interface.
- 4. The NMP supports the connection of up to **two pairs** of passive speakers.

After successful wiring and setup, you can control the volume via the Touch Panel, Web-console, or Q-NEX APP.

2. Device Connection Diagram for SPEAKER



Line Type Representation:

Lines	Descriptions
\longrightarrow	Arrow-head : indicates the direction of audio signal flow through the connections.
	Solid line: indicates physical cable connection.
	Dashed line: indicates wireless connection

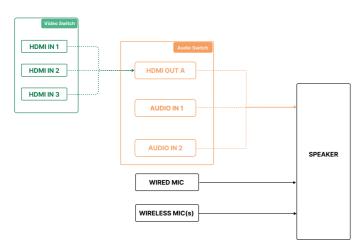
■Note:

Please note that this legend is designed to explain the flow of audio signals. It is not intended to restrict the compatibility to only these devices.

The NMP offers versatile connectivity options for various devices, enabling customized solutions for different scenarios.

If you find this legend doesn't meet your needs, feel free to consult our solutions team.

3. Topology Diagram for SPEAKER



Line Type Representation:

Lines	Descriptions
	Arrow Direction : indicates the direction of audio signal flow through the connections.
	Solid line : indicates the ability to output multiple audio signal simultaneously.
	Dashed line: only ONE audio source can be input to the speaker at a time

The Speaker interface supports simultaneous mixing and output of audio from:

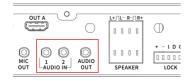
- 1. **HDMI OUT A / AUDIO IN 1 / AUDIO IN 2:** (one source at a time)
- 2. Wireless Microphone
- 3. **MIC IN**

4. SPEAKER Interface Control Features

After completing the necessary wiring setup, users can control the volume, treble, and bass of the device connected to the SPEAKER interface (e.g., passive speaker) via the Touch Panel, Web-console, or Q-NEX APP.

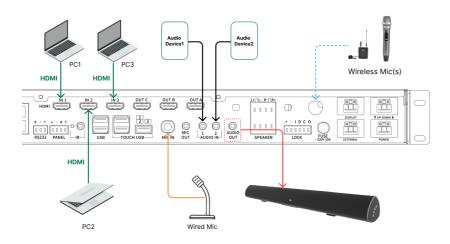


4.2.2.2 Audio



- 1. AUDIO IN: Connect external audio devices.
- 2. AUDIO OUT: Connect external sound amplification devices, such as speakers or amplifiers.

1. Device Connection Diagram for AUDIO



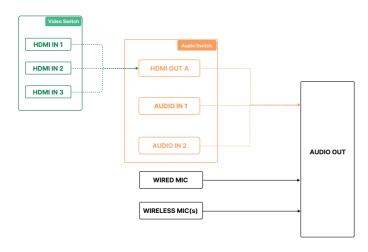
Line Type Representation:

Lines	Descriptions
→	Arrow-head : indicates the direction of audio signal flow through the connections.
	Solid line: indicates physical cables connection.
	Dashed line: indicates wireless connection

■Note:

- 1. This legend explains audio signal flow and isn't limited to specific devices. The NMP offers versatile connectivity for various needs. Reach out to our solutions team if you need further assistance."
- 2. Audio signals from the AUDIO IN interfaces can be directly output to the AUDIO OUT and SPEAKER interfaces. However, the signals cannot be output to the HDMI OUT interfaces.

2. Topology Diagram for AUIDO



Line Type Representation:

Lines	Descriptions
→	Arrow Direction : indicates the direction of audio signal flow through the connections.
	Solid line : indicates the ability to output multiple audio signal simultaneously.
	Dashed line: only ONE audio source can be input to the speaker at a time

The Audio-out serves as an output for audio signals from various input sources. It supports simultaneous mixing and output of audio from:

- 1. HDMI OUT A / AUDIO IN 1 / AUDIO IN 2: (one source at a time)
- 2. Wireless Microphone
- 3. **MIC IN**

3. Audio Interface Control Features

After completing the necessary wiring setup, users can control the Audio such as volume, treble, and bass via the Touch Panel, Web console, and Q-NEX APP.



4.2.2.3 Mic

The Mic sources can combine both wireless and wired input, with outputs directed simultaneously to the AUDIO OUT and SPEAKER interface.

Please note that the audio from the microphone (Mic-in) can be independently controlled through a dedicated control module. Users can control the volume or mute the microphone's audio using the dedicated Mic control module.



■Note:

- 1. Given the above screen capture, adjustments made within the Speaker module will affect HDMI OUT A, AUDIO IN 1, and AUDIO IN 2 sources, but will not affect the microphone (Mic-in).
- 2. During broadcasting, the Mic channel will be muted and users cannot unmute the microphone through the Touch Panel, Web Console, or Q-NEX APP during the broadcast. The mute will automatically be lifted when the broadcast ends.

Wired Mic in NDP100



The NDP100 is equipped with a gooseneck microphone suite, powered by a Power Power connected to the base.

The audio signal is input through the NMP's 6.35mm MIC IN port and output via the SPEAKER and AUDIO OUT ports.

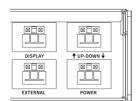
Please refer to the wiring diagram for installation and connection details.

■Note:

The gooseneck's power is also controlled by the Unified Power Switch. You may refer to section <u>Unified</u> <u>Power Switch</u> for more details.

4.3 Device Control

4.3.1 Power control



This section governs the power management and operational control of connected devices through interfaces like Display, Up-Down, and External Wago connectors. Users can regulate power distribution and device states by NMP.

Power Specifications:

- 1. NMP device maximum power: 2000W.
- 2. DISPLAY port maximum power: 1200W.
- 3. UP-DOWN port maximum power: 300W
- 4. EXTERNAL port maximum power: 1200W. (Acts as a switch, the power does not count towards NMP's total power consumption)



Caution: Electrical Installation Requires Qualified Personnel

The installation and wiring of components such as "DISPLAY", "UP-DWON", and "EXTERNAL" interfaces involve working with high-voltage systems. To ensure safety and compliance with industry standards, these tasks must only be performed by licensed electricians or qualified technical personnel.

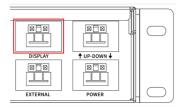


Warning: Power Off During Wiring

To ensure safety during wiring, make sure the NDP is completely powered off, and the power plug is disconnected from the outlet. Only after completing the wiring tasks for the DISPLAY, UP-DOWN, and EXTERNAL interfaces, should you reconnect the power and proceed with testing.

1. DISPLAY

As a WAGO power interface, "DISPLAY" serves different purposes in various scenarios. However, in the NDP100, it connects to a power distribution unit, enabling the functionality of the '<u>Unified Power</u> Switch'" for NDP100.



Connection Steps:

- 1. Replace the device plug with the WAGO connector. Refer to <u>4.1.1 WAGO Connector Installation</u> <u>Guide</u> for Wago connector installation instructions.
- 2. Connect the WAGO connector to the DISPLAY port of the NMP.
- 3. Devices can still be powered on or off by solely connecting to the DISPLAY port.

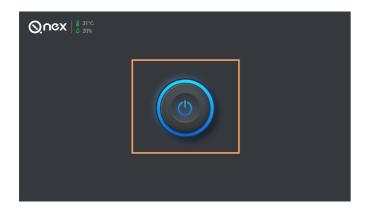
Unified Power Switch



The "Unified Power Switch" is a power switch controlled by the NDP100. It enables one-touch activation or deactivation of devices connected to the Digital Podium such as Built-in PC, Gooseneck microphone, Tabletop power outlets, etc.

- Gooseneck microphone power
- Tabletop power outlet
- Switching Power Supply, which includes:
 - o Interactive Pen Display power
 - Built-in PC (OPS) power
 - Motor power (Interactive Pen Display elevation and descent)

When the main power of the NDP100 is turned on / off, these devices will be automatically powered on / off. It simplifies the operation of controlling NDP100's devices by one-touch control.



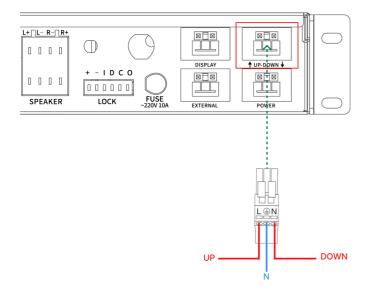
■Note:

- 1. Unified Power Switch with built-in PC (OPS) control
 - Power On: OPS powers on 3 seconds after the Unified Power Switch activates. If not, NMP forces it on.
 - **Power Off**: When the Unified Power Switch is off, a shutdown command is sent to OPS. Power is cut only after OPS completes shutdown.

If OPS fails to shut down within a set time, power will be forcibly cut. The delay is configurable in **Q-NEX > Dashboard > Device Management > Power Settings**.

2. UP-DOWN

The UP-DOWN Wago interface is specifically designed for controlling projection screens. Users can remotely raise or lower the projection screen via the NMP's control options, including the Q-NEX Console, mobile app, or Touch Panel.



Line Type Representation:

Lines	Descriptions		
→	Arrow Direction : The arrowheads indicate the direction of device connection		
	Solid line: Indicate devices connected via wired cables.		
	Dashed line : Indicate devices directly plugged into interfaces (without intermediary cables)		

Connection Steps:

- 1. Replace the plug of the projection screen with the WAGO connector. Refer to <u>3.1.1 WAGO</u> <u>Connector Installation Guide</u> for Wago connector installation instructions.
- 2. Wire Configuration
 - Connect the "UP" wire to the "L" port of the Wago connector.
 - Connect the "DOWN" wire to the "N" port of the Wago connector.
 - Connect the "N" wire to the "G" port of the Wago connector.
- 3. connect to the Up-Down port.
- 4. Connect the other end of the wires to the corresponding terminals on the projection screen curtains.
- **Note**: This wiring configuration is exclusively for use with projection screen curtains.

After completing the required wiring setup, users can perform up and down operations using the Touch Panel, Web Console, or Q-NEX APP.



■Note: about electric curtains control

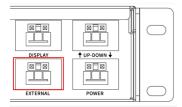
Users should be aware that our product also supports the control of electric curtains for raising and lowering.

However, this connection method can be much more complex, different products and scenarios may require different wiring configurations to achieve control.

Therefore, we recommend consulting our professional consulting team for assistance.

3. EXTERNAL

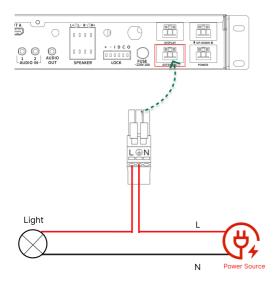
The EXTERNAL interface on the NMP enables flexible lighting control. Users can directly manage lighting or integrate it with an SPDT switch for customized automation and centralized control. Control settings can be adjusted via the Touch Panel and Web Console.



There are two methods to achieve lighting control with NMP: direct connection and integration with an SPDT switch.

1. Direct Connection to NMP:

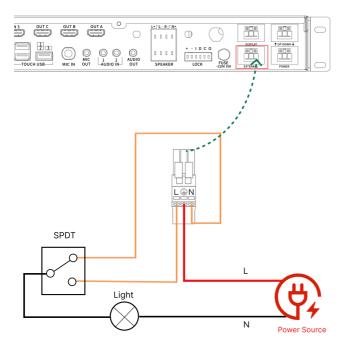
In this mode, the user gains the ability to manage the lighting control by NMP.



■ **Note**: The current-carrying capacity of the "EXTERNAL" should not exceed 1200W

2. Integration with SPDT Switch:

By replacing the existing switch panel with a Single Pole Double Throw (SPDT) switch and connecting it to NMP, both NMP and the switch panel gain control over the light.

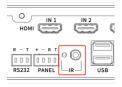


■ Note: The current-carrying capacity of the "EXTERNAL" should not exceed 1200W

After completing the wiring for the external port, you can control it on the Touch Panel and Web-Console.

4.3.2 IR Control

The NMP is equipped with both an IR IN and an IR OUT interface, allowing users to manage IR devices efficiently.



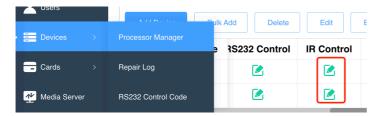
To control IR-enabled devices (e.g., air conditioners, TVs, projectors), NMP supports batch application of infrared control codes, enabling efficient control without repetitive learning.

Here's a simplified guide for using IR functionality with an air conditioning unit:

- 1. Check if your air conditioner brand is in the Q-NEX database. If your air conditioner is recognized in the Q-NEX database, identify the control codes to manage and control it through the Touch Panel or Web-console.
- 2. If not in the database, use IR Learning on the Touch Panel or Web-console for control.

1. Air Conditioner-Identified in the code database

1. Log in to Dashboard -> Devices -> Processor Manager. Choose your NMP device, in the 'IR Control' module, click on the 'Edit' button:



2. Follow these steps:

Step	Screenshot	Instructions	
S1	1F Meeting Room IR Setting ACD Device Remote Control Device V International Control Device W See and acrys by Cancel	In the IR control page, click "Identify New A/C control code"	
52	Identify A/C control Code 1 ② Identify Code Add information Start Analyzing	Click the "Start" button	
S 3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Align the remote control with the IR interface, press the power button, and the system will automatically identify the remote control code.	
S 4	Identify A/C control Code Identify Code Add information Start Identify successfully!	Upon successful identification, it will display " Identify successfully."	
S5	Identify new A/C control code Identify Code Add information A/C Brand 016 A/C Model 015	After identification, enter the air conditioner's brand and category, then click Save.	
S 6	IR Control Setting: AC Control Setting: CANEX AC New AC control code Remote Control Setting: GITV Power GAP-Power Opener AF Power Opener AF Power Opener AF Setting o	You will be redirected to the IR Control Setting page. Select the newly added air conditioner name and click Save.	

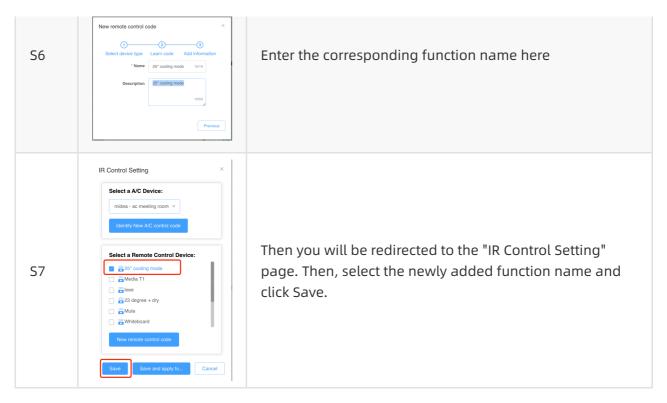
3. After successful saving, control the air conditioner on the Touch Panel or Web-console

2. Air Conditioner-Unable to Identify in the Code Database

IR remote control module is available for unrecognized air conditioners or other devices using infrared remote control. Connect the infrared transmitter to the "IR" port of NMP, aim the transmitter at the device, and ensure there will be no blocks in between the transmitter and the device.

1. Log in to the "Dashboard -> Devices -> Processor manager". Select your NMP device, and in the "Infrared Control" module, click the "Edit" button. Follow the instructions below:

Step	Screenshot	Instructions	
S 1	1F Meeting Room IR Setting A/C Device Remote Control Device	In the IR control interface, click the "New remote control code." button	
S2	New remote control code Select device type Learn code Add information AC Other devices	Select A/C click "Next".	
S 3	New remote control code Select device type Learn code Add information Start to learn Analyzing Previous	Click "Start to learn"	
S4	100 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 On the remote control, select the desired mode, such as setting the temperature to 25 degrees and choosing the cooling mode. Power off the remote, then aim the remote at NMP's "IR IN" port and press the remote's power button again. The system will start learning the selected air-conditioning mode. To learn the power-off function, aim the remote at the IR port and power off directly. 	
S 5	New remote control code Select device type Learn code Add information Sourcess Previous Next	After successful learning, a "Success" prompt will appear. Then click the "Next" button	



2. After successfully saving, you can operate the device on the Touch Panel or Web Console

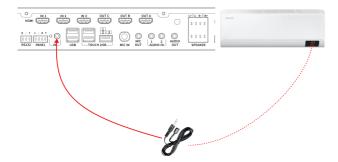
■Note:

To learn additional modes for the air conditioner, follow steps S1 through S7. Additionally, note that the process for learning codes on other infrared devices is similar to the above steps

3. Operating IR-Controlled Devices through Q-NEX Platforms

After learning and saving IR codes, you can control your devices using the Q-NEX APP, Web-Console, or Touch Panel. This section provides a quick guide on how to manage your devices efficiently through these platforms.

1. Connect the infrared emitter to the 'IR' port on NMP, and aim it at the air conditioner, ensuring no obstacles between the emitter and the air conditioner:

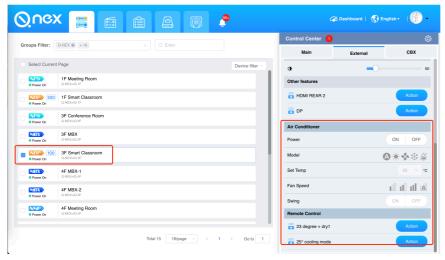


2. Touch Panel: On the Touch Panel, select the air conditioner, then use the displayed controls to adjust the temperature, mode, and other settings as needed.

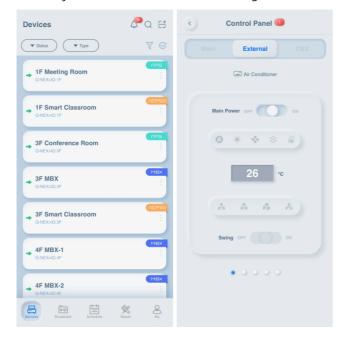


3. **Web-Console**: To control the air conditioner via the Web-Console, log in and select the NDP. On the right side, in the "Control Center," find the "Air Conditioner" section.

Use the available options to adjust settings or activate pre-learned presets with the "Action" button under "Remote Control."



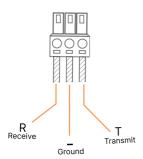
4. **Q-NEX APP**: In the Q-NEX APP, select your device, go to the "Control Panel," switch to "External," and adjust the air conditioner settings as needed.



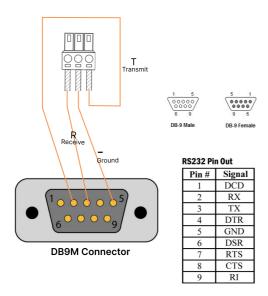
4.3.3 RS232 Control

NMP provides one RS232 interface, enabling control of devices such as IFP, projectors, and PTZ cameras.

1. Prepare cable for RS232 connection



2. If your device uses a DB9 connector (Interactive Flat Panel, for example), connect one end of the cable to the RS232 connector, with the R, G, T pins corresponding to the RS232 connector. Connect the other end to the DB9 connector.

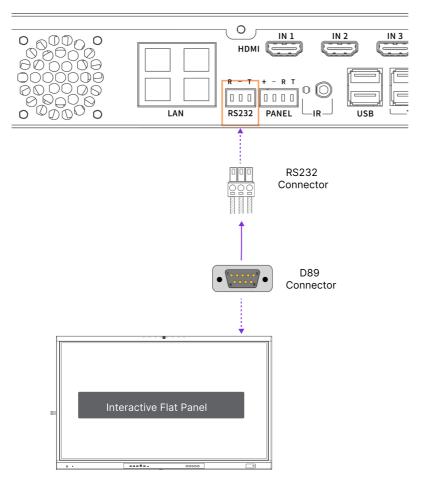


- Connect the RS232 connector's T (transmit) pin to the DB9's RX (Pin 2).
- Connect the RS232 connector's R (receive) pin to the DB9's TX (Pin 3).
- Connect the RS232 connector's G (ground) pin to the DB9's GND (Pin 5).

■ Note:

Our accessory box includes both DB9M (DB9 Male) and DB9F (DB9 Female) connectors. Use the appropriate connector based on your device's requirements.

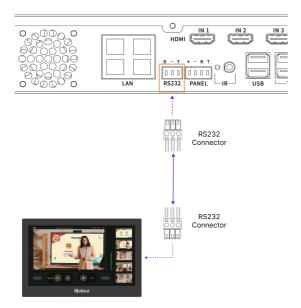
3. Insert the RS232 connector into the RS232 interface on the NMP. Connect the DB9 connector to the corresponding device (e.g., Interactive Flat Panel), as shown in the following diagram:



Line Type Representation:

Lines	Descriptions	
→	Arrow Direction : The arrowheads indicate the direction of device connection	
	Solid line: Indicate devices connected via wired cables.	
	Dashed line : Indicate devices directly plugged into interfaces (without intermediary cables)	

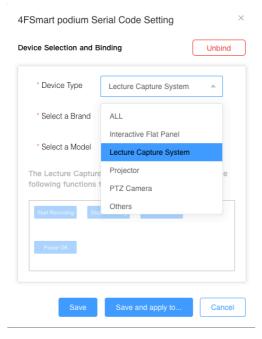
4. If your device requires the RS232 port instead of DB9, follow the same wiring instructions. Connect the RS232 cable between the NMP and the device's RS232 interface. The diagram below uses the IQ LCS710 (Lecture Recoding System) as an example.



Line Type Representation:

Lines	Descriptions	
	Arrow Direction : The arrowheads indicate the direction of device connection	
	Solid line: Indicate devices connected via wired cables.	
	Dashed line: Indicate devices directly plugged into interfaces (without intermediary cables)	

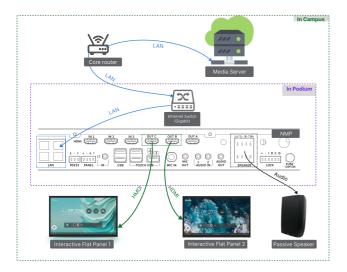
5. Navigate to the Q-NEX Dashboard, select the NDP device under "Dashboard -> Devices -> Processor Manager", and click on the "Serial Control" column. Choose the correct device type, brand, and model, then click "Save".



6. After completing these steps, you can control the device via RS232 through the software platform.

4.4 Broadcasting (Multimedia)

4.4.1 Device Connection Diagram for Broadcasting

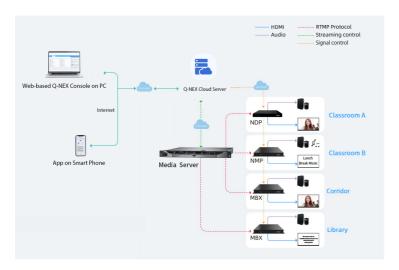


This diagram illustrates the components of the classroom broadcasting system, showing how they are interconnected to enable multimedia delivery.

■Note:

- This section is tailored for formal campus production environments. Therefore, if the school enforces network controls, refer to section <u>6.2 Network Environment Requirement</u> to ensure NDP100's correct access to the campus network.
- For NDP100 Demo Sample Unit, refer to section 6.1 NDP100 Demo Sample Unit Instructions.
- Users can remotely issue broadcast commands over the Internet, while all audio and video resources are pre-stored on the Media Server.

4.4.2 Topology Diagram for Broadcasting

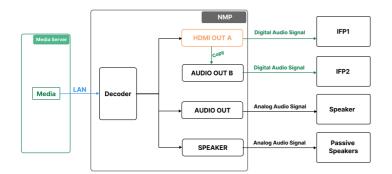


The broadcasting topology diagram illustrates a typical topology for a campus broadcasting system.

■Note:

• For information about the Media Box, please refer to the Media Box documentation or consult our pre-sales team

Audio Topology for Broadcasting



In broadcast mode, the audio signal decoded by the NMP can be directly transmitted to the corresponding audio equipment via the SPEAKER and AUDIO OUT interfaces.

For digital audio signals, they need to be processed through the HDMI OUT A port. During the broadcasting, only the device (IFP, for example) connected to HDMI OUT A will have audio output. IFPs connected to HDMI OUT B and C will not receive audio.

■Note:

Live-streaming audio is handled in the same manner.

4.4.3 Integrating NDP100 into Campus

- 1. Refer to the <u>Device Connection Diagram for Broadcasting</u> provided above to set up the NDP100. Ensure the NDP100 is properly connected to the campus network infrastructure. Connect the necessary display and audio devices in the classroom, such as Interactive Flat Panels and speakers, to the NDP100.
- 2. The Media Server should be directly connected to the school's core router to support campuswide broadcasting.

Below are the recommended **minimum** specifications for the Media Server:

Feature	Specification
Storage type	ECC
Maximum extended memory	64G
RAM	16G
HDD Storage	4T*4 SATA
Drive bays	Up to 4 x 3.5" hot-swap in hybrid drive carrier
Network card	Dual-port Gigabit network card
CPU	6-core 12-thread CPU
System	Windows Server OS

Additionally, remote access to the Media Server is required to allow our development team to perform remote installations and configurations tailored to each server.

3. After completing these setups, please contact the Q-NEX team for further configurations.

The Q-NEX team will remotely access the Media Server to install the media streaming software and adjust essential parameters for broadcasting functionality.

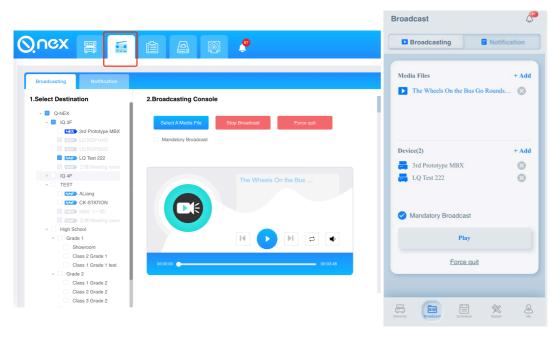
This configuration is a one-time setup, enabling integration of broadcasting functionality for future NDP100(s) deployments at the school.

4.4.4 Broadcasting Process

The broadcasting feature enables streaming of various audio and video formats, providing educators with access to a wide range of multimedia resources stored on the school's media server.

These resources can be utilized not only for teaching purposes but also for activities such as examinations, promotions, and other related applications.

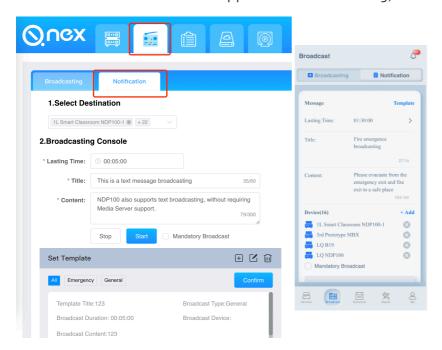
- 1. Administrators can pre-publish the content on the media server.
- 2. Users can issue broadcasting commands via various terminals such as the Q-NEX APP and Web-Console over the Internet.



- 3. Upon receiving the broadcasting command, the Media Server begins encoding the specified content into a streaming media and pushes the stream to the NMP.
- 4. The NMP decodes the streaming media and delivers the content to the IFP for display, while the audio is played through the speakers.

■Note:

Please note that NDP100 also supports text broadcasting, without requiring Media Server support



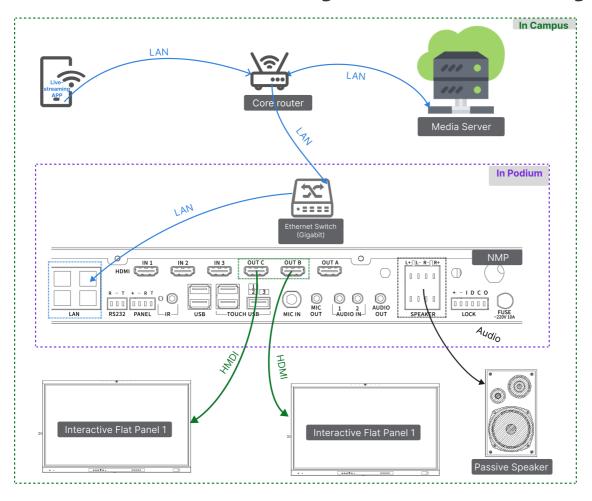
4.4.5 Campus-wide Broadcasting Solutions with NDP100

The NDP100 extends its broadcasting capabilities beyond individual classrooms, enabling collaboration with other NDP(s) units and NMP(S) devices to establish campus-wide broadcasting solutions.

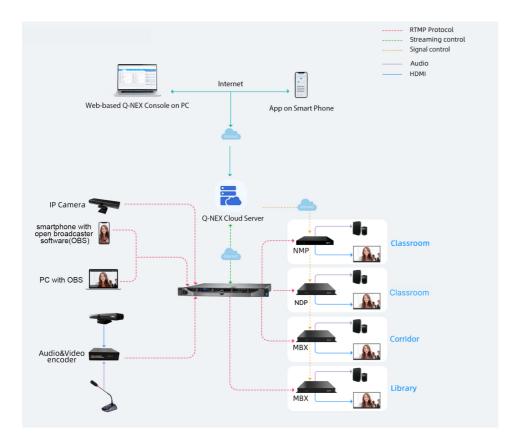
Implementing a campus-wide broadcasting solution involves intricate configuration and necessitates consultation with our professional pre-sales team.

4.5 Live-streaming

4.5.1 Device Connection Diagram for Live-streaming

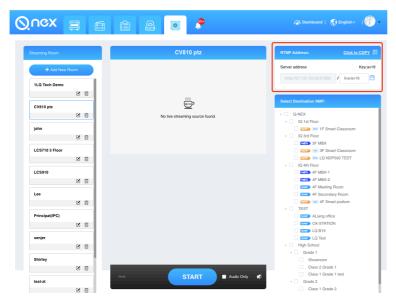


4.5.2 Topology Diagram for Live-streaming

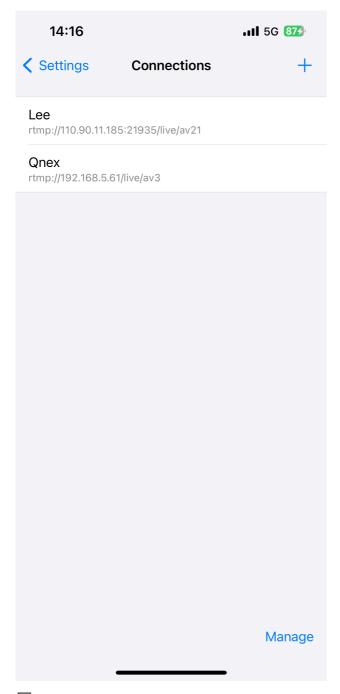


4.4.3 Live Streaming Setup and Operation Steps

1. **Create Streaming Room**: Log in to the Web Console, navigate to the Streaming module, and create a new streaming room. Generate and save the room address and key.



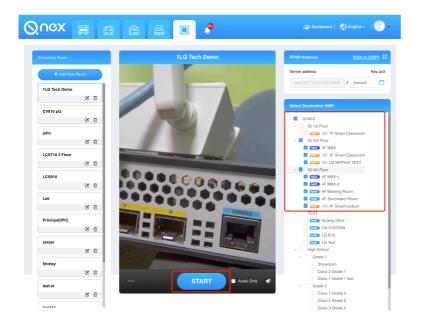
2. **Configure Mobile Streaming**: Copy the generated address and key, and input them into your mobile streaming software. Start streaming from your mobile device to send the video feed to the designated room.



■Note:

For iPhone users, consider using third-party streaming tools like Larix, OBS Camera, or RTMP Live. Android users can utilize the Q-NEX APP, which already includes an integrated streaming module.

3. **Preview and Distribute Stream**: In the Web Console, preview the incoming video feed in the created room. Select the target NDP/NMP devices to distribute the stream and click the "START" button. Once deployed, these devices will decode the stream and display it on their connected screens.



5. Expanded Control and Connectivity

This section covers additional components and functionalities that expand the control and connectivity capabilities of the NDP100, including:

- Control Box (CBX): Exploring the features and setup of the Control Box, which extends NDP100 wireless control ability.
- **Media Box:** Understanding the Media Box, a component that enhances multimedia capabilities and connectivity options.

5.1 Control Box

The Control Box (CBX) wirelessly connects to NDP100(NMP) using Wi-Fi 2.4G. Placed near devices like air conditioners, displays, lights, or smart curtains, the CBX acts as a bridge, enabling wired control of these devices without extensive cabling.

■Note:

For convenience, we will refer to the Control Box as CBX throughout this manual.

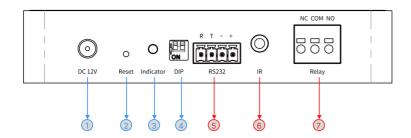
The CBX features three interfaces: IR, Relay, and RS232. These interfaces allow the CBX to receive commands wirelessly from the NMP and then relay them to connected devices using different control methods, such as infrared signals (IR), relay switches, or RS232 communication.

■Note:

Each CBX can control only one type of device at a time. For example, if you need to control both an air conditioner(via IR) and lights(via Relay), you must use two separate CBX units, each dedicated to a specific device type, CBX cannot manage multiple device types simultaneously.

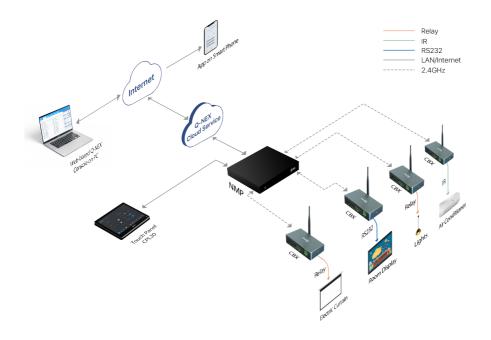
With the CBX, device management is efficient and tidy, eliminating the need for extensive wiring or modifications. The CBX can be easily wall-mounted, allowing for quick and convenient installation.

5.1.1 Interface View



No.	Interface	Description
1	Power Supply (DC)	12V,1A
2	Reset Button	Resets the CBX to its default factory settings
3	Link Indicator	Displays the connection status between the CBX and the NMP
4	DIP Switch	Used for configuration settings and adjustments of the CBX
5	RS232	Allows wired communication and control with RS232-compatible devices.
6	IR	Enables IR communication for controlling devices with infrared signals.
7	Relay	Provides control over devices using relay switches for on/off functions.

5.1.2 Topology Diagram



5.1.3 CBX Paring

1. DIP Switch Configuration

Each CBX has a DIP switch with 2 toggle buttons. These buttons can be set to either the UP (OFF) or DOWN (ON) positions, creating a unique DIP switch combination.

■Note:

One NMP can pair with up to 4 CBX units simultaneously.

Each combination represents a unique CBX ID as shown in the table below.

ID	Switch 1	Switch 2	Illustration
1	UP (OFF)	UP (OFF)	1 2
2	DOWN (ON)	UP (OFF)	1 2
3	UP (OFF)	DOWN (ON)	1 2
4	DOWN (ON)	DOWN (ON	1 2

This ID is crucial for communication between the NMP and CBX. Once set, the DIP switch combination should not be changed to avoid communication failure.

To ensure successful pairing and control between the NMP and CBX units, please follow the instructions below:

- 1. When connecting the first CBX to the NMP, set the DIP switches to UP (OFF) + UP (OFF), corresponding to ID 1.
- 2. For subsequent CBX units, use different combinations from the table above to assign unique IDs (2,3, and 4).

■Note:

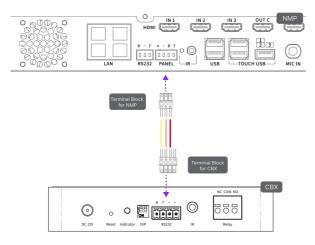
Once a DIP switch combination is set and the CBX is paired with the NMP, do not alter the DIP switch positions. Changes will disrupt communication between the NMP and the CBX.

2. Pairing and Setup

1. Connect CBX and NMP, and Power On CBX

Connect the antenna to the front of the CBX before starting the pairing process. The antenna port is located on the front of the CBX.

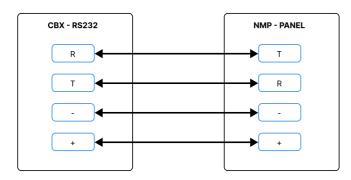
Ensure the CBX is connected to the NMP as illustrated in the diagram below. Make sure the power supply is connected to the CBX.



Line Type Representation:

Lines	Descriptions	
→	Arrow Direction : The arrowheads indicate the direction of device connection	
	Solid line: Indicate devices connected via wired cables.	
188888888	Dashed line: Indicate devices directly plugged into interfaces (without intermediary cables)	

Interface Wiring Illustration for CBX-RS223 and NMP-PANEL:



The diagram above illustrates the wiring sequence for connecting CBX-RS232 and NMP-PANEL. Each terminal on the CBX is connected to the corresponding terminal on the NMP PANEL, ensuring proper wiring of the cables.

2. Initiate Paring Mode

Press and hold the reset button for 4-5 seconds until the indicator light turns red, then the CBX will automatically enter pairing mode with the NMP, indicated by a flashing green light.

Once paired successfully, the green light will remain steady.

Indicator Light States:

Indicator Light	Status
Green Flashing	Pairing Mode
Green Steady	Connected to NMP
Red Steady	Not Connected to NMP

3. Post-Pairing Connections

After successfully pairing and removing the connection cable between the CBX and NMP, connect the devices to be controlled to the appropriate CBX interfaces based on their type.

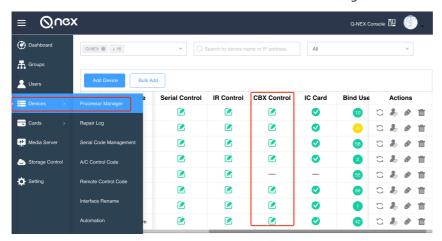
For example, use the RELAY interface for controlling the power switch of lighting devices, the RS232 interface for display devices like IFPs and projectors, and the IR interface for devices with infrared remote controls, such as air conditioners, TVs, and electric curtains.

■Note:

Each CBX can control only one type of device at a time. For instance, to control both an air conditioner (via IR) and light (via RELAY), two separate CBX units are required, each dedicated to a specific device type. A single CBX cannot manage multiple device types simultaneously.

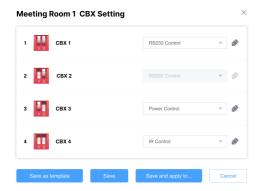
4. Configure CBX in the Dashboard

- Log in to the NMP/NDP management system Dashboard, and navigate to Devices > Device
 Management.
- Select the NDP and click the CBX edit button to configure.



5. Set Control Method According to the Controlled Device

Based on the DIP switch sequence, select the control method. (Power Control, RS232 Control, or IR Control)

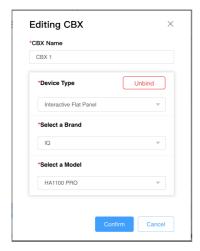


■Note:

A CBX in a disabled state indicates that no device is currently connected to the NMP via Wi-Fi.

If you are certain that the CBX has been successfully paired and connected previously, please check its current network status and ensure that it is properly powered.

• For RS232-connected devices, set the device brand and model.



• For IR-connected devices, select the air conditioner and control options.



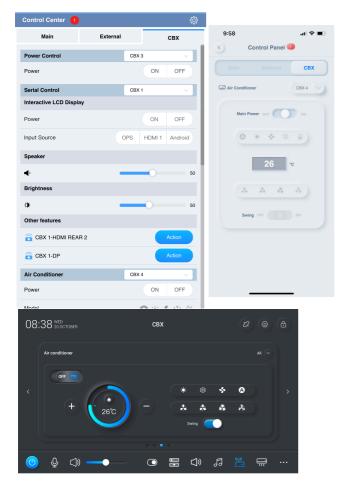
■Note:

1. If the NMP/NDP is being replaced, re-pairing is required. Follow the instructions in the section "Paring and Setup" from the first step to repair.

5.1.4 CBX Device Control

Once the CBX configuration is complete, users can control the connected devices through IR, RELAY, RS232 on CBX.

Refer to the corresponding screenshots for guidance.



6. Appendix

6.1 NDP100 Demo Sample Unit

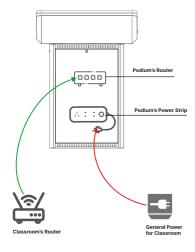
6.1.1 Introduction to Demo Sample Unit

The demo sample unit (demo unit) is a specially configured version of the NDP100, designed to simplify initial setup and demonstrate basic functionality. It is equipped with a built-in router and a Lite Media Server (referred to as LMS), primarily utilized for demonstrating video broadcasting and live streaming capabilities.

■Note:

Note that in a production environment, the use of LMS is not permitted, and it must be upgraded to a formal Media Server for proper operation.

6.1.2 Connecting the Demo Sample Unit



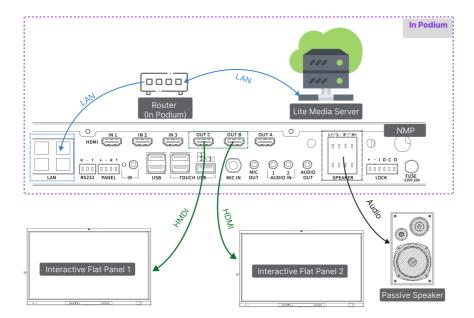
To connect the demo sample unit, follow these steps:

- 1. Prepare a network cable with sufficient length;
- 2. Connect one end of the network cable to the router of the NDP100.
- 3. Connect the other end of the network cable to the router in the classroom.

6.1.3 Local Control

In LAN mode, users can perform local control operations such as AV matrix switching and volume control directly through the demo sample unit.

6.1.4 Remote Control and Broadcasting



■Note:

• Users can remotely issue broadcast commands over the Internet, while all audio and video resources are pre-stored on the Media Server.

To enable advanced remote control capabilities and access internet-based features, the demo sample unit requires permission to access the internet.

If the school network implements network control measures, the router of the demo sample unit must be configured to allow access based on MAC and IP address filtering.

Once configured, users can utilize the Q-NEX APP, Web-Console, and Touch Panel to access higher-level remote device control functionalities, including AV broadcasting.

6.1.5 Upgrading to Production Environment

If customers wish to incorporate the Demo Sample Unit into the entire campus network as part of the NNP/NDP campus solution, the following steps are required:

- 1. Remove the router from within the NDP100 and connect the classroom router to the NDP100 switch. (The router provided with the demo sample unit only offers basic routing functionality and supports only 100Mbps bandwidth.)
- 2. Remove the Lite Media Server and replace it with an enterprise-grade media server. (Schools must possess an enterprise-grade media server to utilize broadcasting and live streaming functionalities properly.)
- 3. Utilize configuration tools to set the NMP IP address of the NDP100 to an IP address within the campus network.
- 4. If the school implements network control measures, contact the network administrator and refer to section <u>6.2 Network Environment Requirement</u> for network configuration guidance.

6.2 Network Environment Requirement

To ensure optimal integration, the school network needs to meet specific requirements tailored to the NDP.

- 1. The school should allow NDP to access the Internet.
- 2. Whitelist Network Control Requirements:

If the school employs whitelist network control, the following domains should be added to the whitelist:

- "https://qnextech.com/" (Primary Domain)
- "https://mg.qnextech.com/" (Secondary Domain).
- 3. IP Address and Port Requirements:

The school network should allow access to the following addresses:

- 110.90.11.185:80 (HTTP)
- o 110.90.11.185:443 (HTTPS)
- 110.90.11.185:12573 (NDP Communication Service)
- o 110.90.11.185:12583 (NDP Upgrade Service)
- 4. MAC Address Control Requirements:

If the school implements MAC address control, the MAC addresses of the following devices should be added to the allowed access list:

- NDP
- Touch Panel
- o Built-in PC (OPS).
- 5. NDP Network Configuration:
 - NDP must be connected to the **router** via a **wired connection**; NDP does not support wireless network connection.
 - NDP and Touch Panel should be on the same LAN.
 - If there is a Media Server (broadcast and live streaming), ensure that the Media Server, NDP, and Touch Panel are on the same LAN.
 - The firewall should open the following ports for the Media Server:
 - 12570 (Broadcast Port)
 - 1935 (Streaming Port)
 - **80**
 - **443**
- 6. NMP IP Address Setting:
 - To prevent issues caused by NMP IP changes, it is recommended that the NMP IP address be set as static.

• Ensure that before the initial use of NDP, the Touch Panel successfully connects to NDP using this IP.

7. VLAN:

NDP does not support VLAN. NDP, Touch Panel, and Media Server should be connected to the campus network as described above but should not be on VLAN.

7. Contact Us

Q-NEX (https://qnextech.com/) is a subsidiary of Returnstar Interactive Technology Group Co, Ltd, a company that has been dedicated to the education industry since 2006.

Q-NEX is focused on delivering a Smart Campus Solution that converges AV and loT control across all campus facilities. Q-NEX offers deeply customized options that assist school IT administrators in managing all electronic facilities and allow teachers to simplify the operations of a multimedia classroom.

