

LNK-378 Series 8-channel Multi-Protocol Lighting Controller Configuration Manual

Ver 521



LINETX Technology Co., Ltd.

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This manual is the technical manual of the LNX-378 series LED controller, applicable to the sub-models of the LNX-378 series, and the software version is V301 and above compatible software versions.

Commonly used LNX-378 sub-models are shown in the table below.

Type	Description	Size (mm)	Software	Hardware
LNX-378DU	1U style 8 DMX512 Ports	430*44.5*153	V515	V210
LNX-378DUE	1U style 8 DMX512 Ports with DMX trigger	430*44.5*153	V515	V210
LNX-378DUR	1U style 8 DMX512 Ports with RS485	430*43*153	V515	V210
LNX-378D	Box style 8 DMX512 Ports	154*114*33	V515	V210
LNX-378DK	Box style 8 DMX512 Ports with KNXNet/IP	154*114*33	V515	V210
LNX-378DE	Box style 8 DMX512 Ports with DMX trigger	154*114*33	V515	V210
LNX-378DEM	Box style 8 DMX512 Ports with DMX trigger and MIC	154*114*33	V515	V210
LNX-378DR	Box style 8 DMX512 Ports with RS485	154*114*33	V515	V210
LNX-378DRM	Box style 8 DMX512 Ports with RS485 and MIC	154*114*33	V515	V210
LNX-378DG	Box style 8 DMX512 Ports with GPS	154*114*33	V515	V210
LNX-378T	Box style 8 TTL Ports	154*114*33	V515	V210
LNX-378TE	Box style 8 TTL Ports with DMX trigger	154*114*33	V515	V210
LNX-378TK	Box style 8 TTL Ports with KNXNet/IP	154*114*33	V515	V210
LNX-378TEM	Box style 8 TTL Ports with DMX trigger and MIC	154*114*33	V515	V210
LNX-378TR	Box style 8 TTL Ports with RS485	154*114*33	V515	V210
LNX-378TRM	Box style 8 TTL Ports with RS485 and MIC	154*114*33	V515	V210
LNX-378TG	Box style 8 TTL Ports with GPS	154*114*33	V515	V210

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The follow-up upgrade of related products may be slightly different from this manual, and the upgrade of the manual may not inform you in time. Please pay attention to the discrepancies between the actual product and the description in this manual.

For more product information, please visit: www.linetc.com

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1. Introduction

1.1. Overview

LNX-378 series LED controller supports ARTNE KNXnet/IP and sACN (E1.31) protocols, and supports any special effects software with ArtNet or sACN functions such as LnxEffect, Madirx, FREESTYLE, etc. LNX-378 has 8 output ports, each port can be configured to contain 1 to 4 consecutive Universe space addresses, calculated with 3 channels of fixtures, each channel supports up to 680 fixtures, and the whole machine supports 5440 fixtures.

LNX-378 can be optionally equipped to support DMX512 isolated signal output or TTL signal output. The new magnetic isolation technology adopted by the DMX512 port enables the DMX512 interface to transmit signals stably and safely in a more complex engineering environment. The TTL interface supports common chips such as WS2811/SM16703/GS1903, and supports Gamma correction.

The DMX512 interface of LNX-378 has a powerful RDM management function, which can search and configure fixtures that support DMX512. The searched fixture list is tabulated and displayed on the WEB page, and the address, mode, channel parameters, etc. of the fixture are configured in real time.

LNX-378 has the function of online recording and broadcasting. The controller has a built-in network data monitoring function, which can intercept and record all ArtNet data streams passing through the controller and save it as a recording file for the next playback. In addition to playing the local data, LNX-378 can also be used as a master to drive other devices to play through the Ethernet network.

LNX-378 has a powerful playlist editing function, supports the creation of multiple playlists, adds playlists to the playlist, and activates one of the playlists for playback. The play files in the playlist can be moved up and down to adjust the play order of the files in the playlist.

The ArtNet Controller mode of LNX-378 can convert DMX into ArtNet data and send it to the remote device through the network.

LNX-378 has a wealth of configuration methods, which can configure the device through the OLED screen menu and 5 navigation keys, or log in to the device through a WEB browser for configuration. The WEB has both Chinese and English languages and supports password login.

LNX-378 has DMX external control, cloud control and sound control functions. DMX external

control can switch the recorded files to be played through the DMX input channel, as well as parameters such as playback speed and brightness. The cloud control function relies on the cloud server of Lingen Technology, which can remotely manage various configurations of the device. The audio control function can analyze the rhythm of music playback, thereby synchronizing the light playback of the controller.

LNK-378 supports various remote commands, sending commands to the device through the network or serial port, and performing various control functions.

LNK-378 can be configured with GPS to synchronize the area of each device, so as to achieve the function of linkage playback, which is suitable for realizing the overall lighting effect between buildings. LNK-378 has two Ethernet ports, which can use Category 5e shielded twisted-pair cables, which can be connected to the next LED controller in turn through the one-in-one-out hand-in-hand connection method, so there is no need to connect a switch separately.

1.2. Device sub-series function table

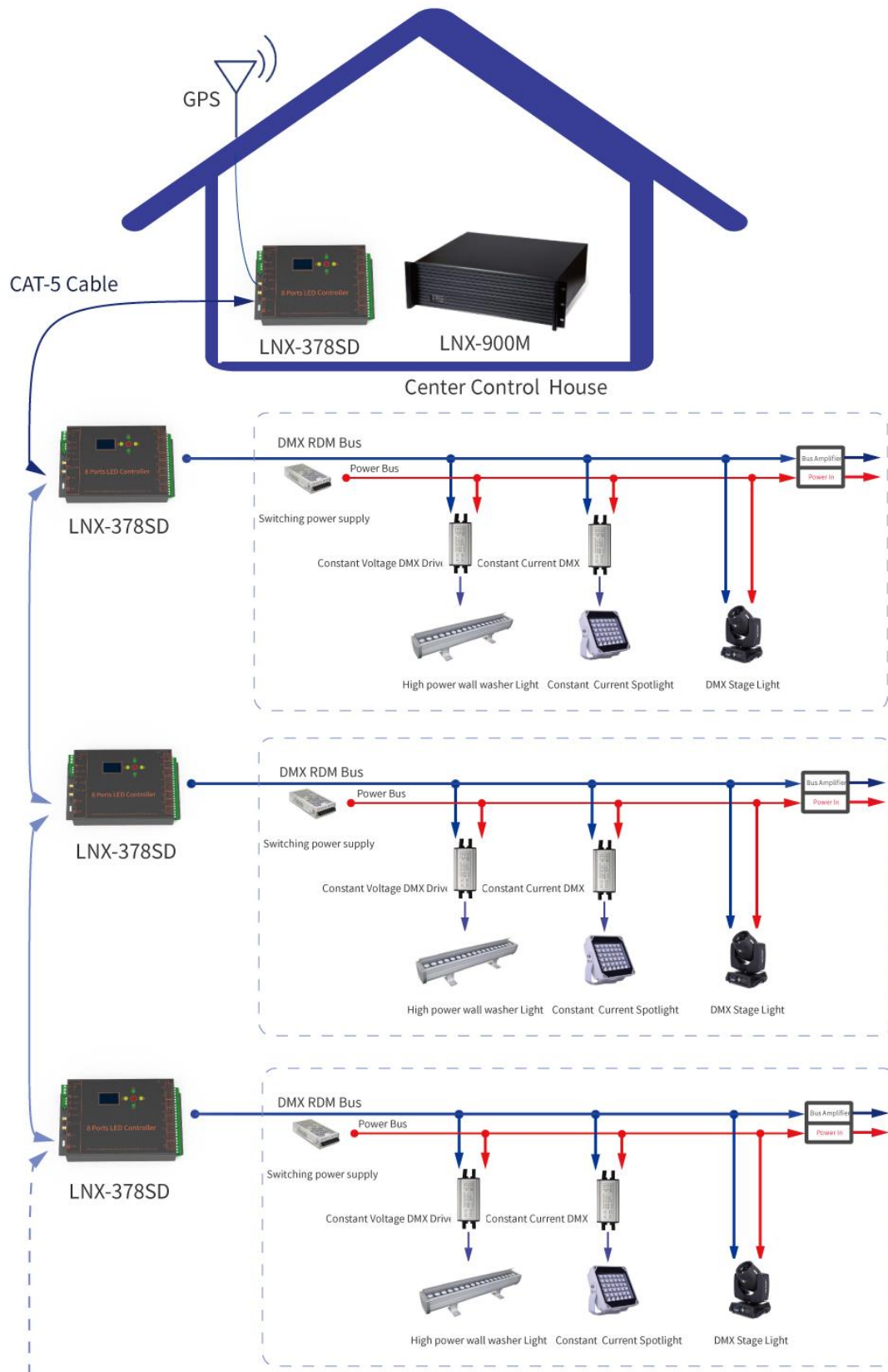
Type	Base Function	Enhanced function
Basic type LNX-378D	✓ 8 DMX fixture interfaces, a total of 8 domains 8192 channels, driving DMX fixtures such as moving head lights, spotlights, point light sources, etc. ✓ Support RDM function, support RDM Over ArtNet function ✓ Fully magnetically isolated DMX512 interface, which effectively enhances the stability and safety of the equipment ✓ Support ArtNet/SCAN protocol, and related software (Freestyler, ArtNet console, Madmapper, etc.) ✓ Support KNXnet/IP protocol, and use ETS5 to config. ✓ Can record ArtNet data, support SD card recording and broadcasting up to 256G ✓ Support DMX512 to ArtNet, convert DMX512 to network ArtNet data and send it out ✓ It can not only play and drive the light strip simultaneously on the multi-machine network, and drive other sub-controllers at the same time, but also can be used as a sub-controller to receive the main control signal ✓ Multi-machine network synchronization playback, multiple devices through the network for SD synchronization playback, to achieve large-scale control ✓ Support cloud control function, through Ling En Cloud platform, use mobile phone to control the device anytime and anywhere (device number is required) ✓ With 3.5mm LINEIN audio interface, realize the synchronization of audio rhythm and lighting ✓ Comes with a clock and calendar, supports time control, and can create multiple play plans as needed ✓ Support firmware upgrade function, and device firmware can be upgraded through the network on Lingen' s LnxManager management platform ✓ Dual network ports, built-in switch, one input and one output, use	✓ NULL

	network cable to connect each device ✓ Equipment engineering lock, lock the equipment according to the needs of the project, after the time is up, you need to provide an unlock password to continue using it ✓ Chinese and English bilingual WEB management system, easy to manage and configure the various functions of the equipment ✓ OLED screen + 5-key navigation configuration function, can operate and configure equipment on site ✓ Provide LnxEffect lighting control software for free, integrated production of lighting effects and management of Lnx equipment	
Base Type LNX-378T	✓ 8 TTL light strip drive interfaces, drive such as WS2811 light strip, a total of 32 domains, 16384 channels ✓ Support ArtNet/SCAN protocol, and related software (Madrix, Freestyler, Madmapper, etc.) ✓ Support KNXnet/IP protocol, and use ETS5 to config. ✓ Can record ArtNet data, support SD card recording and broadcasting up to 256G ✓ Multi-machine network can simultaneously play and drive the light strip while driving other sub-controllers, and can also be used as a sub-controller to receive main control signals ✓ Multi-machine network synchronization playback, multiple devices through the network for SD synchronization playback, to achieve large-scale control ✓ Support cloud control function, through Ling En Cloud platform, use mobile phone to control the device anytime and anywhere (device number is required) ✓ With 3.5mm LINEIN audio interface, realize the synchronization of audio rhythm and lighting ✓ Support GAMMA correction function ✓ Comes with a clock and calendar, supports time control, and can create multiple play plans as needed ✓ Support firmware upgrade function, and device firmware can be upgraded through the network on Lingen' s LnxManager	✓ NULL

	management platform ✓ Dual network ports, built-in switch, one input and one output, use network cable to connect each device ✓ Equipment engineering lock, lock the equipment according to the needs of the project, after the time is up, you need to provide an unlock password to continue using it ✓ Chinese and English bilingual WEB management system, easy to manage and configure the various functions of the equipment ✓ OLED screen + 5-key navigation configuration function, can operate and configure equipment on site ✓ Provide LnxEffect lighting control software for free, integrated production of lighting effects and management of Lnx equipment	
Suffix E	✓ Consistent with the basic type of LNX-378D or LNX-378T	✓ Support external control function, use the DMX512 signal output by the external DMX console, quickly switch the playback of the device's SD card file, adjust the playback speed, adjust the brightness and other parameters
Suffix K	✓ Consistent with the basic type of LNX-378D or LNX-378T	✓ Support KNXNet/IP protocol, join KNX control system using ETS5 to config
Suffix R	✓ Consistent with the basic type of LNX-378D or LNX-378T	✓ Support RS485 control function, use the text command word output by external RS485 to quickly control the operation of the device, including the playback of SD card files, adjust the playback speed, adjust the brightness and other parameters

Suffix M	✓ Consistent with the basic type of LNX-378D or LNX-378T	✓ Built-in microphone pickup function, in addition to the LINEIN interface, you can turn on the built-in microphone to pick up the live music, extract the rhythm, and synchronize the live lights
Suffix G	✓ Consistent with the basic type of LNX-378D or LNX-378T	✓ Support GPS time calibration. After time calibration via GPS satellites, multi-machine equipment in different geographical locations can achieve synchronized lighting effects playback
Suffix W	✓ Consistent with the basic type of LNX-378D or LNX-378T	✓ Support multi-machine wireless simultaneous broadcast function, 15DB high-gain antenna, and open frequency band communication.

1.3. Application



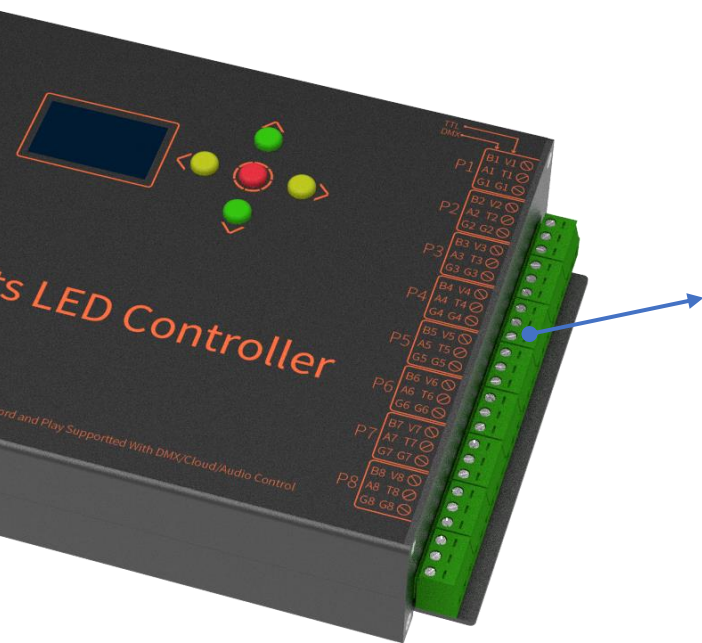
1.4. Features

LNX-378 series LED controller has many functions and features, which can meet different requirement of LED lighting engineering:

- **ArtNet Protocol:** Support the ArtNet-4, support all software and device with ArtNet
- **sACN Protocol:** Support sACN (E1.31) protocol function
- **KNXnet/IP Protocol:** Support KNXnet/IP, can join KNX control system using ETS5 to config
- **UDP/RS485 CMD Protocol:** Support text command to control device remotely
- **8 Drive Port:** Each port has 1-4 Universes, DMX or TTL are supported
- **DMX Isolation Port:** The 8 ports DMX ports are all isolated port to be more safer and stable
- **RDM:** 8 DMX ports all support RDM, and also support RDM Over ArtNet.
- **TTL Port:** 8 TTL ports supports types of LED strip, and support to custom new type of LED chip
- **ArtNet Record:** Support to record the ArtNet data and save it to file using 16G SD card
- **Master or Slave:** Device support to be LED master or slave role as needed
- **ArtNet Playback:** support to playback the SD file which is recorded by device
- **Playlist:** Create multiple playlists and play different files according at different scenarios
- **Fade In/Out:** support fade in/out effect when switch SD effect file
- **GPS Module:** Support sync play using GPS module
- **Free Effect Software:** LINETX's LED effect software is free to use to make effect for LNX-378
- **Live Upgrade:** Support upgrade firmware of device through ethernet using LnxManager
- **WEB Interface:** Support to use WEB to configure the parameter of device
- **HMI:** 5 keys and screen to config device in-place
- **DMX Control:** Use DMX console to trigger the SD file to play or change other parameters
- **Senmatic Lighting:** Support rich Sematic Lighting command to dim the effect of light
- **Cloud Control:** Remotely configure the controller through LINETX Cloud Server;
- **Gamma Correction:** Support gamma correction to adjust the color
- **Dual Ethernet Ports:** No external switch required, easily to connect each device hand in hand
- **Audio Control:** Analyze audio signal to sync the LED lighting and music
- **Factory Reset:** The system parameters can be factory reset if needed

2. Interface of LNX-378

2.1. LED Drive Ports



LNX-378 has 8 LED drive ports, please connect LED Strip or LED fixture according to follow instructions:

1. Each wiring terminal of LED drive port has 3 screwed install holes, it's has different definition apply to DMX or TTL port.
2. Please according to the diagram, where the B/A/G wire terminals are the D-, D+, GND of the DMX port; V/T/G are the power, signal and GND wire terminals of the TTL port (The V terminal's voltage is same as power supply).
3. The type of DMX or TTL is determined at order time, so please confirm the sub-type of LNX-378 when make order.

2.2. Power and Function terminal

Controller's power supply terminal is used to power the device

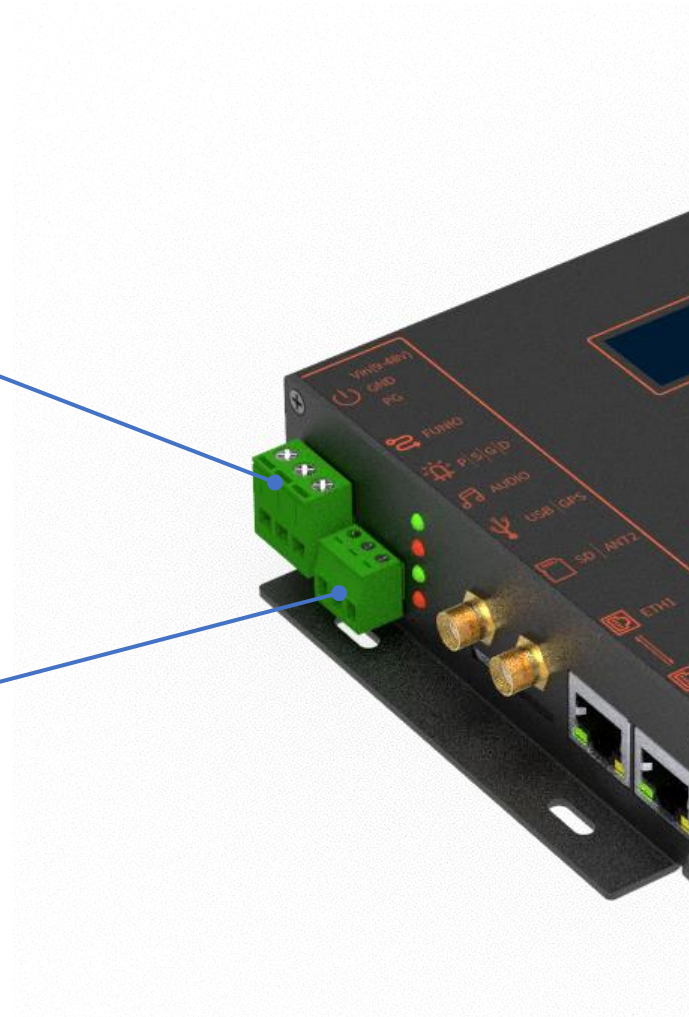
And the function terminal is mainly used for DMX control.

1. This is the power supply wiring terminal, and the voltage range is DC9-55V, please use the power in ranged otherwise It is may damage the controller

While the type of drive port controller is TTL, the V terminal's voltage is same as the power supply source.

2. This is the function wiring terminal. These 3 screwed install holes can connect to external DMX console to control LNX-378.

When DMX Control enabled, the SD file and play speed or brightness can be controlled by external DMX console.



2.3. Audio and SD Card

3.5mm Audio jack is used for sink in music signal to sync the controller

SD Card slot is the place to install SD card.

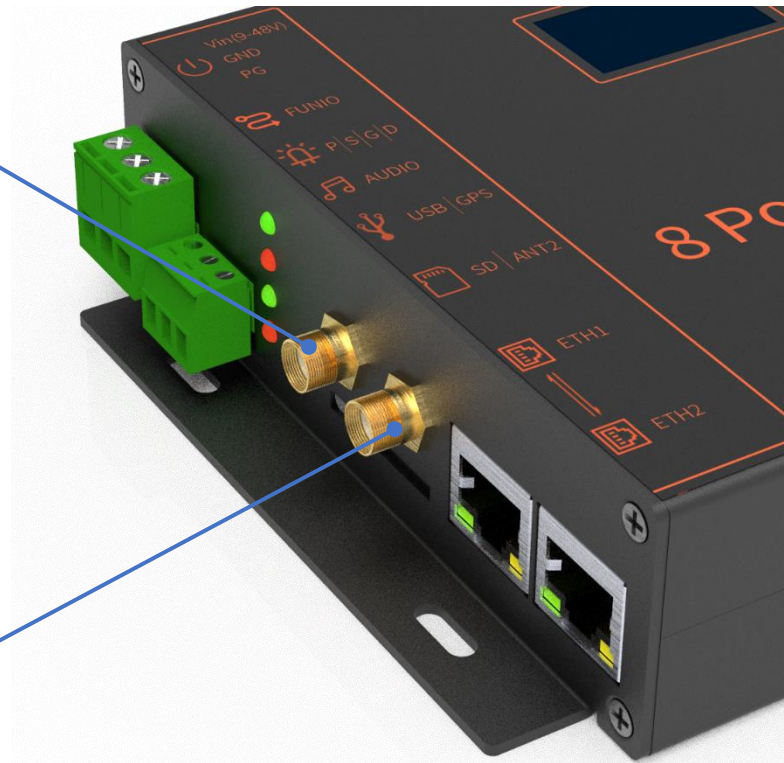
1. This 3.5MM audio jack can be connected to external audio source to sync the controller's LED lighting effect. Kinds of sync method are supported.

2. This is slot for install micro SD card, and the card with capacity range from 128M to 128G can be inserted to recording ArtNet LED lighting effect data in real time, then store it as file. Then could playback the recorded lighting effect file as needed.



2.4. The Antennas

This is SMA type GPS antenna terminal.
When need to use the GPS module,
Choose a suitable internal GPS polarized
antenna connected to it.



This is a Aux ANT2 antenna terminal.
When the controller is controlled by WIFI
or mobile 4G network, it is used as a signal
input antenna.

2.5. Network Ports

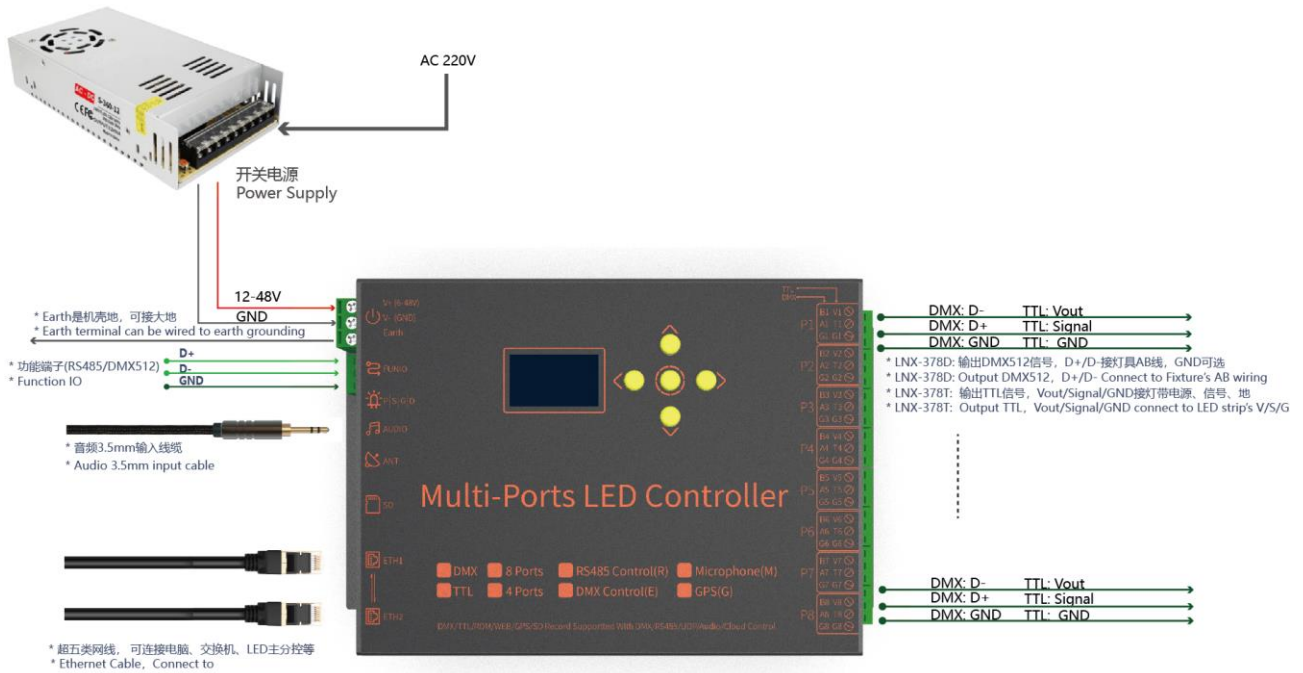


LNX-387SD has two 100M Ethernet network ports, This two ports can be connected to computer or other LED Controller.

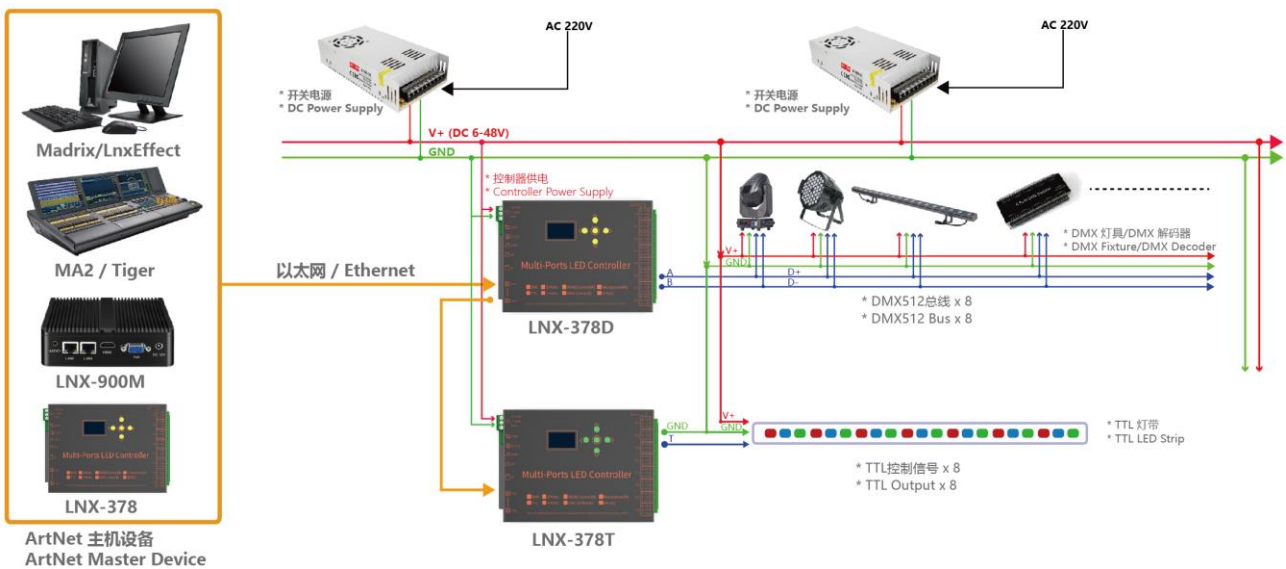
1. The dual network ports of the controller have internal switching function, and use a CAT-5 cable to directly connect each other controllers hand in hand, no external switch needed.
2. When the network connection is successful, the yellow light of the RJ45 port will be turned on, and when there is data transmission and reception, the green light of the RJ45 will blink. If this two indicator LED is off, please check the cable or the connection of network.
3. When the controller works in ArtNet recording state, any ArtNet data passing through this network port will be captured and recorded in real time

3. Connection of LNX-378

3.1. LNX-378 wiring diagram



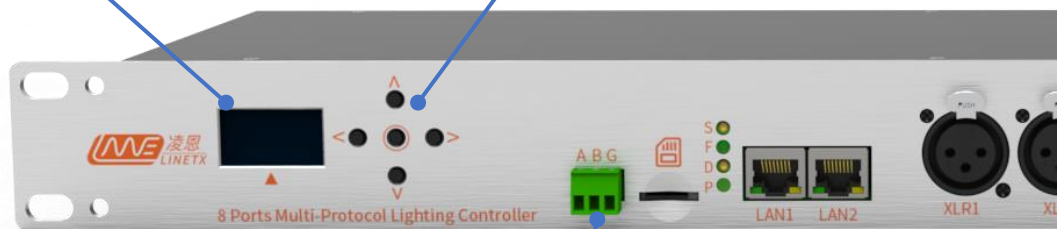
3.2. LNX-378 wiring example



4. 1U Racked LNX-378 Interface

OLED screen to display the configuration menu. The default screen saver time is 30 seconds. When timeout, the screen will automatically turn off. The screen saver time can be set in the menu or WEB browser.

5 operate keys. the center key is the <Enter> for confirm the operation, short press the Enter key to enter the child menu, long press the Enter key to return to the parent menu. And the up/down/left/right keys are direction operate key to flip the menu items.



Function wiring terminal. These 3 screwed install holes can connect to external DMX console to control LNX-378.

When DMX Trigger enabled, the SD file and play speed or brightness can be controlled by external DMX console.

Device Status LED, from top to bottom:
 External Control LED
 External Status LED
 Data LED
 Power LED

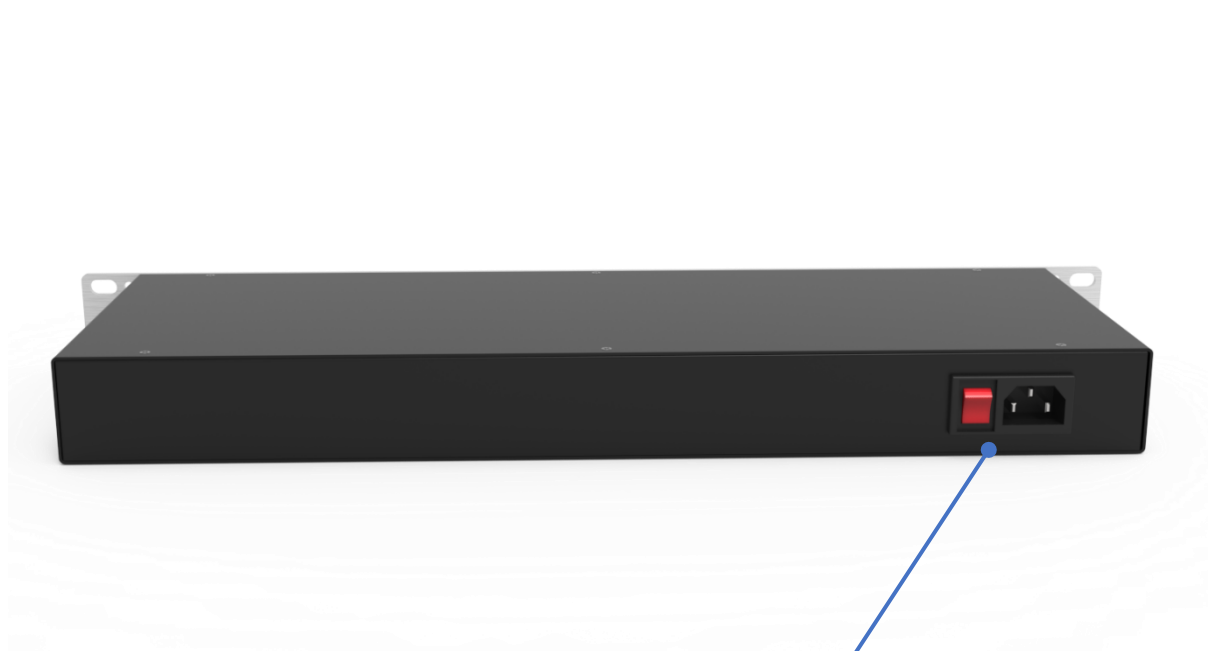
The dual Ethernet ports of the controller have internal switching function, and use a CAT-5 cable to directly connect each other controllers hand in hand, no external switch needed.



8 XLR interface, Pins function:

DMX: DMX XLR: 1.GND 2. D- 3.D+

TTL: TTL XLR: 1.GND 2. TTL 3. V+



AC input plug:

Input: 100-240VAC 0.35A 50/60Hz

5. LNX-378 Wiring precautions

- a. The power supply voltage range of the LNX-378 is DC6-24V, and the maximum withstand voltage shall not exceed DC 48V, otherwise it will cause the equipment to burn out. The power supply terminal has an anti-reverse connection function, but it cannot be in the reverse connection state for a long time.
- b. The voltage output of the V terminal of the LNX-378T series controller is consistent with the power supply voltage of the controller (internal connection). If the V terminal is used to power the light strip, please make sure that the working voltage of the light strip is the same as the power supply voltage of the controller, otherwise the voltage may be too high and burn the light strip. In addition, the total external power supply current of the V terminal must be limited to 3A. If you need to power a light strip with more power, you must use a separate switching power supply to power each light strip at multiple points. In the multi-point power supply method, generally add a switching power supply every 5 meters to power the light strip, and the GND of each switching power supply must be connected to the same ground.
- c. The T terminal of the LNX-378T series controller is a high-speed TTL signal output. The reference ground of each T signal is the G terminal, so the signal and ground of the light strip must be connected to the V and G terminals of the controller in pairs (must be point-to-point, G cannot be connected in other ways), otherwise the light of the light strip will flicker due to inconsistent potential difference.
- d. The wiring length of the T signal and G pair should be kept within 20 meters. It is recommended to use shielded twisted pair or shielded network cable for connection. The shielding layer can be connected to the ground if conditions permit. Pay special attention to the interference caused by the interference source on the site, such as being close to strong electricity, inverter, etc., otherwise it will cause the light of the light strip to flicker abnormally.

- e. The power supply of the TTL colorful light strip needs to be powered by a high-quality switching power supply with small ripple. If the power supply quality is not good, it may cause the light of the connected light strip to flicker.
- f. The output ports of the LNX-378 series are all magnetically isolated ports, so theoretically the power supply for the equipment and the power supply for the lamps should be separated.
- g. For the DMX512 output signal of the LNX-378D series controller, it is recommended to use high-quality shielded twisted-pair cables or shielded network cables. If possible, the shield layer can be connected to the ground.
- h. Theoretically, the LNX-378D series controller can connect 256 lamps, but the actual number of lamps that can be connected is related to the input impedance, wire material, and wiring topology of the lamps. When the bus driving lamp capacity is insufficient, a DMX amplifier can be used to relay and amplify the DMX signal. In addition, if the RDM function is required, a two-way DMX relay amplifier that supports RDM must be used.

6. Configuration of LNX-378

6.1. Configure Using HMI

The LNX-378 has 5 keys and OLED screen to configure device, use HMI to configure parameter of controller in-place.

The 5 key are [Up]-[Down]-[Left]-[Right]-[Enter], short press [Enter] to enter the child menu, long press the Enter key for about 1 sec to return to the parent menu, press the up and down keys to select the menu items that need to be configured, and the left/right keys can be used as numeric cursors or keys for specific functions.

6.2. Configure Using WEB Browser

LNX-378 has WEB interface, using browser to configure the controller. The default IP address is 192.168.1.21, subnet mask is 255.255.255.0. The PC need to stay in the same network segment as the controller. After valid the connection between PC and controller, enter the IP address of the LED controller in the browser address bar, the WEB authentication page is opened, as shown in Figure 3-1:

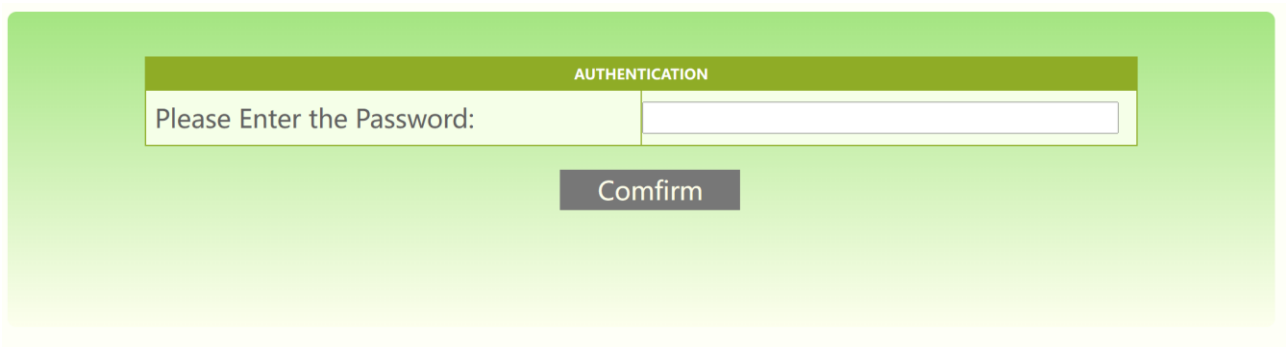
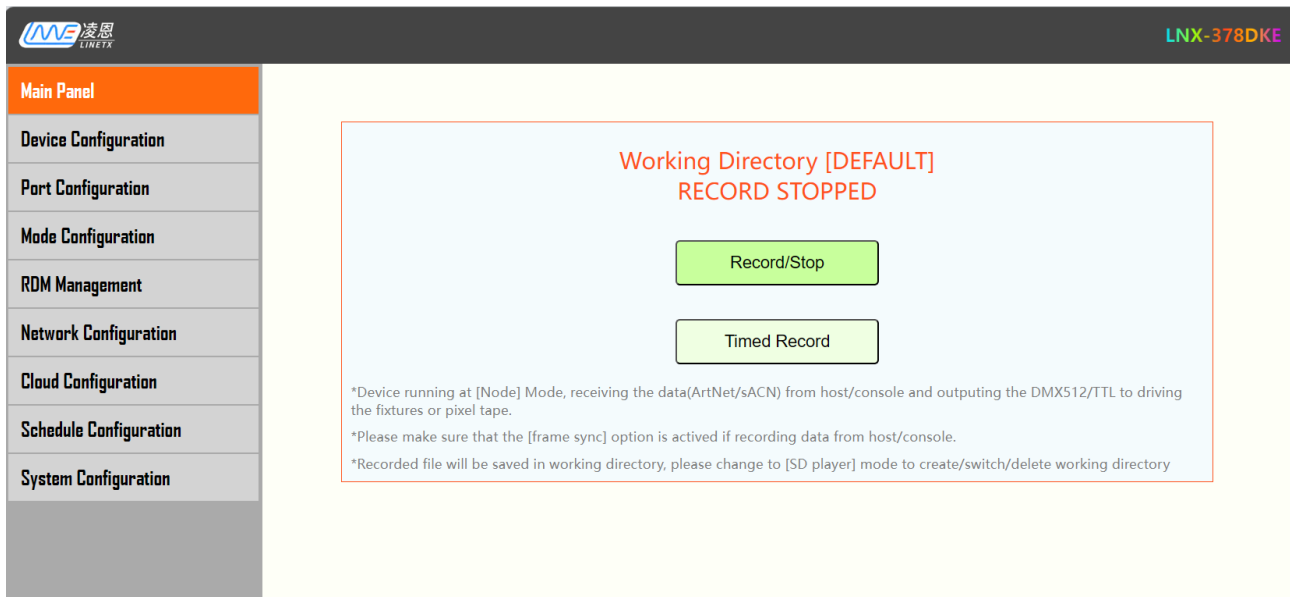


Figure 3-1 WEB authentication page

The default password is “admin” , then enter the password, the main configuration page is showed as follows:



The top right side of the page displays the IP address and the current run mode of the controller. The left side of the configuration page is the navigation bar, and the right side area is the configuration page.



If access WEB failed, Use PING command on PC to test the connectivity.

6.3. Config Device

Configure the run mode of the device, device ID, device name, device description, screen saver time and other information, view SD card storage information, system version information, etc.

On WEB configuration page, click [Configure Device] -> [Device Settings] in the left navigation bar to enter config page, as shown in Figure 3-2:


LNK-378DKE

Main Panel

Device Configuration

Port Configuration

Mode Configuration

RDM Management

Network Configuration

Cloud Configuration

Schedule Configuration

System Configuration

Basic Setting
Config Time
Config KNX
Command Set
Config GPS
Config Password

Config Device

Run Mode:	Node
Device ID:	0
Device Type:	LNK-378DKE
Device Name:	LINETX
Description:	LINETX Multi Protocol LED Controller
Screensaver(sec):	60
SD Card:	Free:14.43GB, Total:14.43GB
Version:	SW:v515, HW:v210, AC:0-0-0, PB:Mar 19 2024

Confirm
Refresh

***Run Mode:**

Node: Receiving the data(ArtNet/sACN/KiNet) from host/console and driving the fixtures/pixel tape.

SD Player: Playback the recorded or generated file stored in SD card.

Semantic Lighting: Receiving the command form host to complete various of functions

Test Light: Generate testing signal at all ports to test the fixtures/pixel tape

Upgrade: Device ready to be upgraded the firmware.

Figure 3-2 Items of device setting

Configurable items are shown in Table 3-1:

Table 3-1 Config Device

ID	Item	Description	HMI Path
1	Run Mode	Configure the run mode of the device, Refer to table 3-2 for details	[Setup] → [Setup Device] → [Run Mode]
2	Device ID	Configure the device ID, Each controller has a unique ID to distinguish it from other device	[Setup] → [Setup Device] → [Device Id]
3	Device Name	The name of the device, keep in 12 characters. The device name will be showed at ArtNet software when scanned it.	Not configurable in HMI
4	Device Description	The description of the device, keep in 64 characters	Not configurable in HMI
5	Language	Configure the language of WEB interface, when language changed, controller need restart to take effect, and also need re-login WEB.	
6	Screensaver	Configure the screensaver time of the device, When the screensaver timeout, the screen will be turned off	[Setup] → [Setup Device] → [Screen Saver]

The description of run mode is shown in Table 3-2:

Table 3-2 Run mode

ID	Item	Description
1	ArtNet Node	In this mode, the ArtNet lighting data is received through the Ethernet port, decoded and controlled to drive the LED fixture. In this mode, could active the recorder to record ArtNet lighting data to the SD card and save it as file for the next playback.
2	ArtNet Controller	In this mode, the drive port receives DMX512 data, converts it to ArtNet data, and sends it to other ArtNet devices through ethernet.
3	SD Player	In this mode, the recorded files stored in the SD card can be played, paused or deleted through the HMI or WEB When DMX Control or Audio Control is enabled, the SD file can be changed by this two module.
4	Test Light	In this mode, controller will test the connected LED fixture/strip through driving a test signal



After change the run mode, the controller will be reset about 3 seconds to take effect.

6.4. Main Panel of Each Run Mode

When the controller is in different run mode, the WEB and HMI present corresponding main panel, and the different operation can be done on main panel.

1) Main panel of ArtNet Node

The main panel of ArtNet Node show the relative configuration including universe address, universe number of ports, etc. and can active the recorder in main panel.

a. The main panel in HMI has 4 tab, which are: [PORT]-[ADDRESS]-[NETWORK]-[RECORD], press the left and right keys to switch the tab:

[PORT]: show the status of the port, and the universe address

[ADDRESS]: show ArtNet Net/Subnet address

[NETWORK]: show network IP, subnet mask, gateway address and other information

[RECORD]: press the up key to start recording ArtNet data, and then display the recording file name, press the up button again to stop recording

b. The main panel of WEB is shown in Figure 3-3:

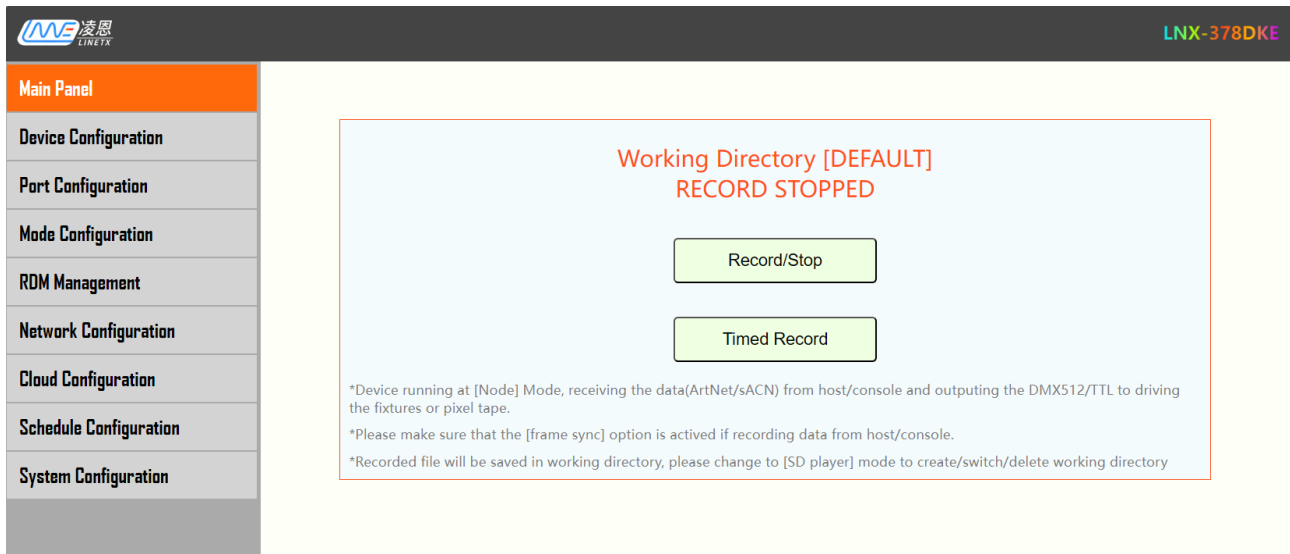


Figure 3-3 Main Panel of ArtNet Node

Click the [Record/Stop] button on the page to start recording the ArtNet data, then the recording file name displayed, click the [Record/Stop] again to stop recording.

Click the [Timed Record] button on the page to active the timed record. Timed record means that perform period of time to record, the recording will automatically stopped. The time of the record can be set in the WEB.

2) Main panel of SD Play

a. The main panel in HMI list all recorded files. Press the up and down button to change the file to be played, press the right key to start or stop playing the recorded file, and press the left key to delete the selected file.

b. The main panel of WEB shown in Figure 3-4:

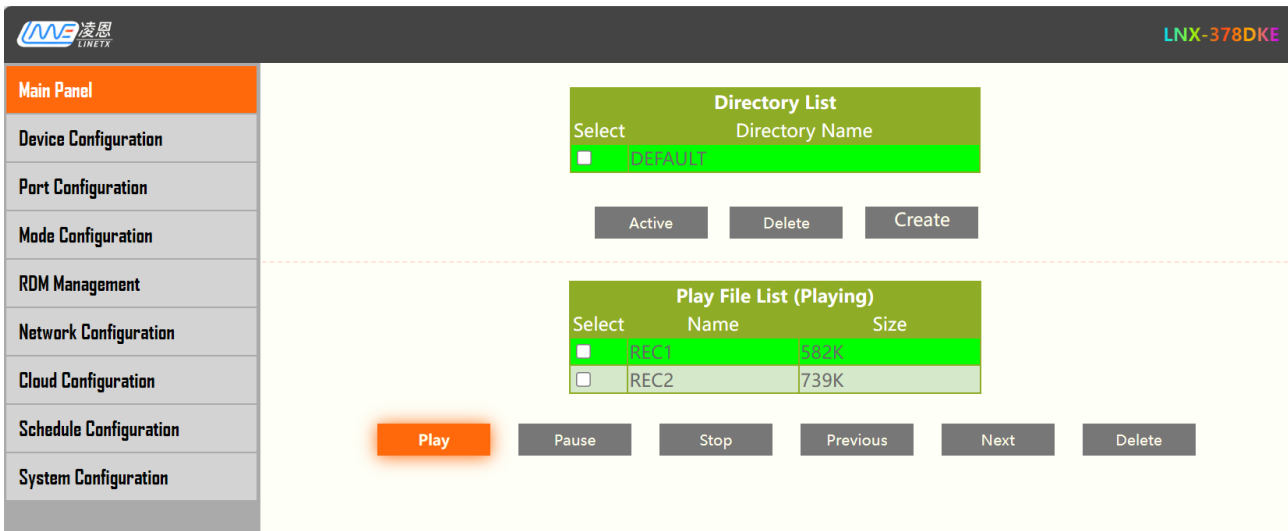


Figure 3-4 Main Panel of SD Play

Select the file, then click the [Play/Pause] button on the page to start or pause the file playing, click the [Previous]/[Next] button to change the file to be played, select the file then click the [Delete] button to delete the file

3) Main panel of Test Light

6.5. Configure Time

Configure the date/time of the device. The function of schedule use time to determine to trigger the action.

Open the WEB page, click [Configure Device] in navigation bar and click [Config Time] to enter the configuration page, as shown below:

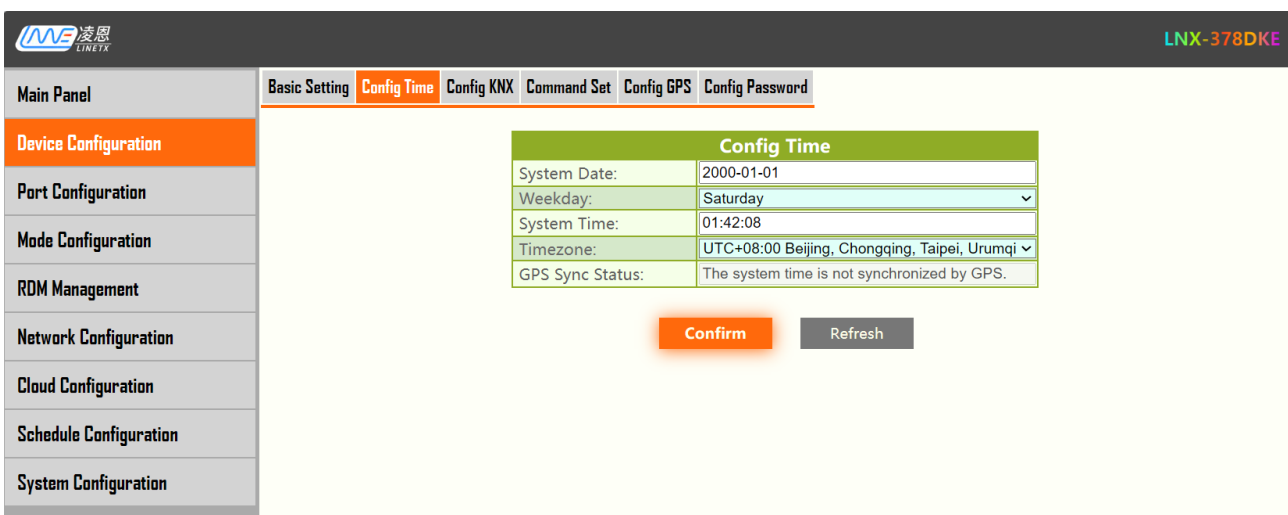


Figure 3-6 Config Time

The configurable items are shown in Table 3-3:

Table 3-3 Configuration items

ID	Item	Description	HMI Path
1	System date	Configure the date of the controller	
2	Weekday	Configure the date of the device	
3	system time	Configure the current time of the device	



If GPS module is enabled and activated, the date and time will be automatically synchronized by GPS

6.6. GPS Setting

Configure to enable/disable GPS, and get the GPS searched star, coordinates, time and other information.

GPS is used to automatically synchronize the time of the device. so that each controller can synchronize play the file.

The configuration are shown in Table 3-4:

Table 3-4 Configuration items

ID	Item	Description	HMI Path
1	Enable GPS	Configure whether to turn on the GPS function.	
2	GPS signal	Shows whether the GPS has a signal.	
3	Star Number	Displays the number of satellites found by GPS.	
4	GPS coordinates	Display the coordinates of the current device determined by GPS	[
5	GPS time	Display the UTC time determined by the GPS of the current device. Please set the time zone where the device is located on the [Configure Time] page. This time zone determines the local time of the current device.	

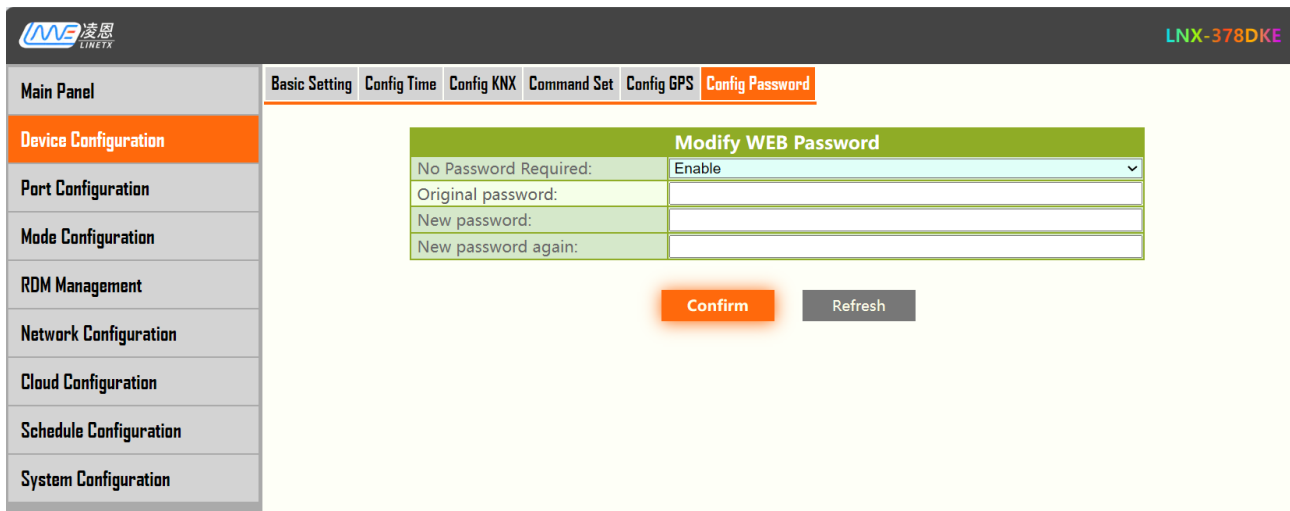


GPS search star speed and quality are largely related to the GPS antenna. Please select a suitable GPS antenna (SMA) to access the device. When GPS received valid signal, it will automatically synchronize the system time of the device according to the time zone.

6.7. Modify WEB password

The initial password of LNX-378 WEB is “admin” . When need to change the default password, Open the WEB configuration page to change it.

Click [Configure Device] -> [Modify Password] in navigation bar to enter the password modification page, as shown in Figure 3-6:



The screenshot shows the LNX-378 WEB configuration interface. The top navigation bar includes 'Basic Setting', 'Config Time', 'Config KNX', 'Command Set', 'Config GPS', and 'Config Password'. The left sidebar lists various configuration categories, with 'Device Configuration' highlighted. The main content area displays the 'Modify WEB Password' form, which includes a dropdown for 'No Password Required' (set to 'Enable'), and three input fields for 'Original password:', 'New password:', and 'New password again:'. Below the form are 'Confirm' and 'Refresh' buttons.

Figure 3-6 Modify web password page

The configurable items are shown in Table 3-5:

Table 3-5 Configuration items

ID	Item	Description	HMI Path
1	Original password:	Enter the original WEB password	
2	New Password	Enter the new WEB password	
3	New Password again	Enter the new WEB password again to modify.	

6.8. Configure Port Type

LNX-378 supports DMX or TTL port type, configure the port type to drive different LED fixture/strip.

Open WEB page, click [Configure Port] -> [Port Setting] in the navigation bar to enter the configuration page, as shown in Figure 3-7:

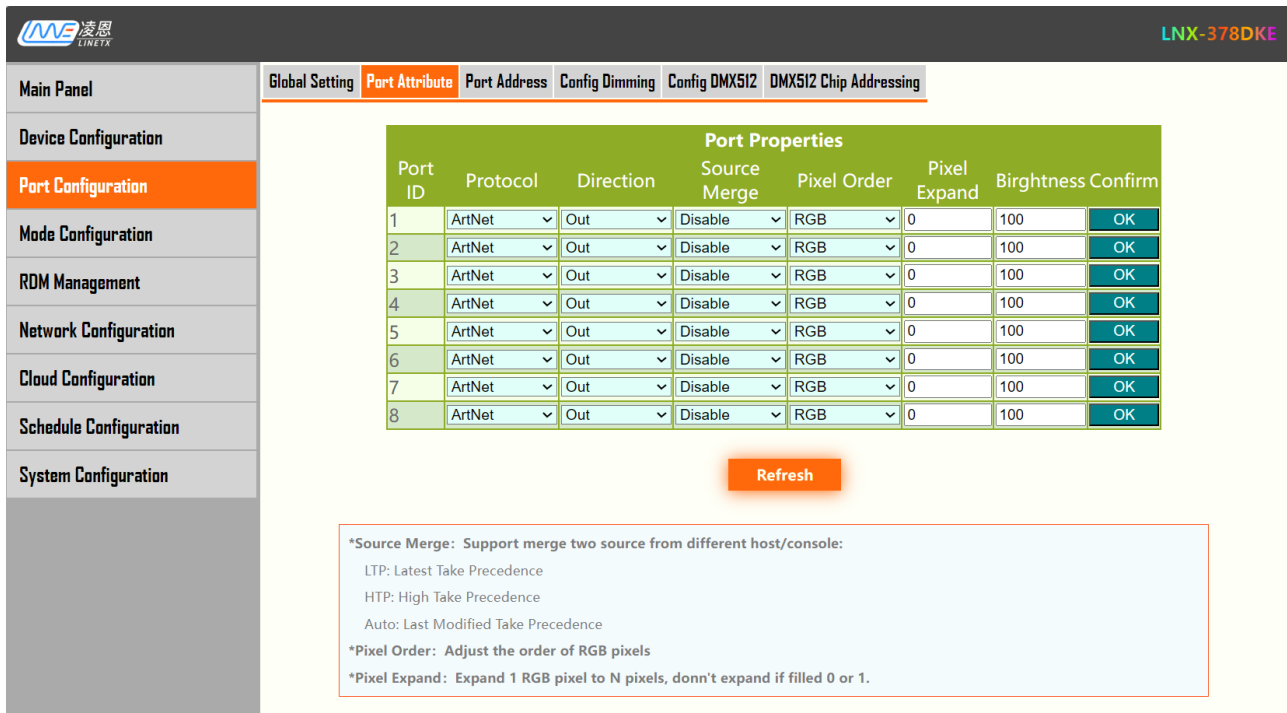


Figure 3-7 Config port type

The configurable items are shown in Table 3-6:

Table 3-6 Configuration Items

ID	Item	Description	HMI Path
1	Protocol	Configure the protocol of port, support ArtNet/sACN now	
2	Direction	Set the direction of DMX port, the data flow can be setted to ArtNet to DMX, or DMX to ArtNet	
3	Source Merge	Support the HTP / LTP to merge multi source of net	
4	Pixel Order	Adjust the pixel order of RGB fixture model	
5	Pixel Expand	Expand the multi-pixel to one	
6	Brightness	Adjust the brightness of fixture	



The TTL port didn't support direction configuration.

6.9. Configure Port Address

Configure to enable/disable each port, the universe number / address, and the order of RGB pixels.

Open WEB page, click [Config Port] -> [Port Address] in the navigation bar to enter the configuration page, as shown in Figure 3-8:

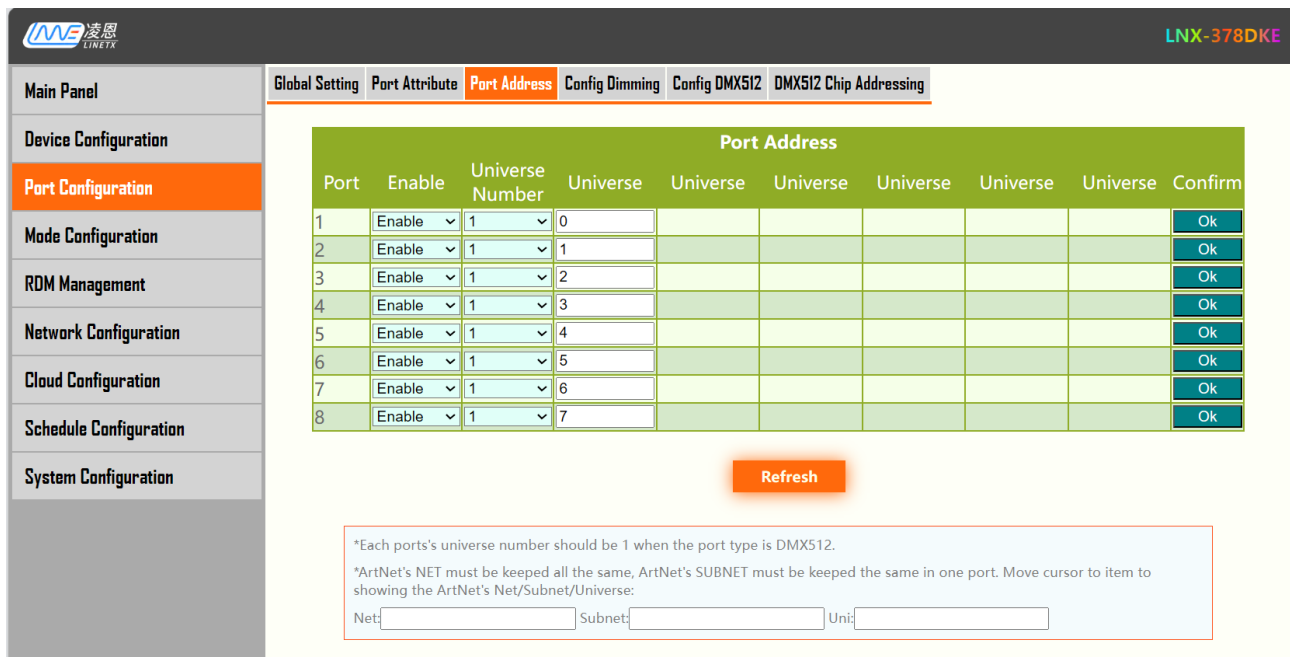


Figure 3-8 Configuration page

The configurable items are shown in Table 3-7:

Table 3-7 Configuration items

ID	Item	Description	HMI Path
1	Enable	Configure to enable/disable each drive port. When the port is disabled, there is no signal will be output, and ArtNet master side will not be able to search out this port.	[Setup] → [Setup Channel] → [Channel] → [Enable]
2	Universe Number	Each port can contain up to 4 universe spaces. The universe number of ports determines the dim length of LED fixture/strip.	[Setup] → [Setup Channel] → [Channel] → [Port Number]
3	Universe	Configure the universe address of the drive port, each drive port contains 6 consecutive universe addresses, so after configuring the port address, the addresses of the following three consecutive universes will be automatically determined.	[Setup] → [Setup Channel] → [Channel] → [Universe]
3	Pixel order	Configure the pixel order of the drive port. The pixel order can be configured as RGB/RBG/BRG/BGR/BRG/BGR. This configuration item is valid only when the port type is configured as Clockless (TTL signal output).	[Setup] → [Setup Channel] → [Channel] → [Pixel Order]

6.10. Configure TTL Strip

The TTL type of drive port support variety of LED strip IC, such as WS2811, WS2812, SM16703, GS1903, UC1903, TM1803, etc. When the strip IC is not in configuration list, you can custom chip parameter to support it.

Open WEB page, click [Configure Port] -> [Config TTL Strip] in the left navigation bar to enter the

configuration page, as shown in Figure 3-9 below:

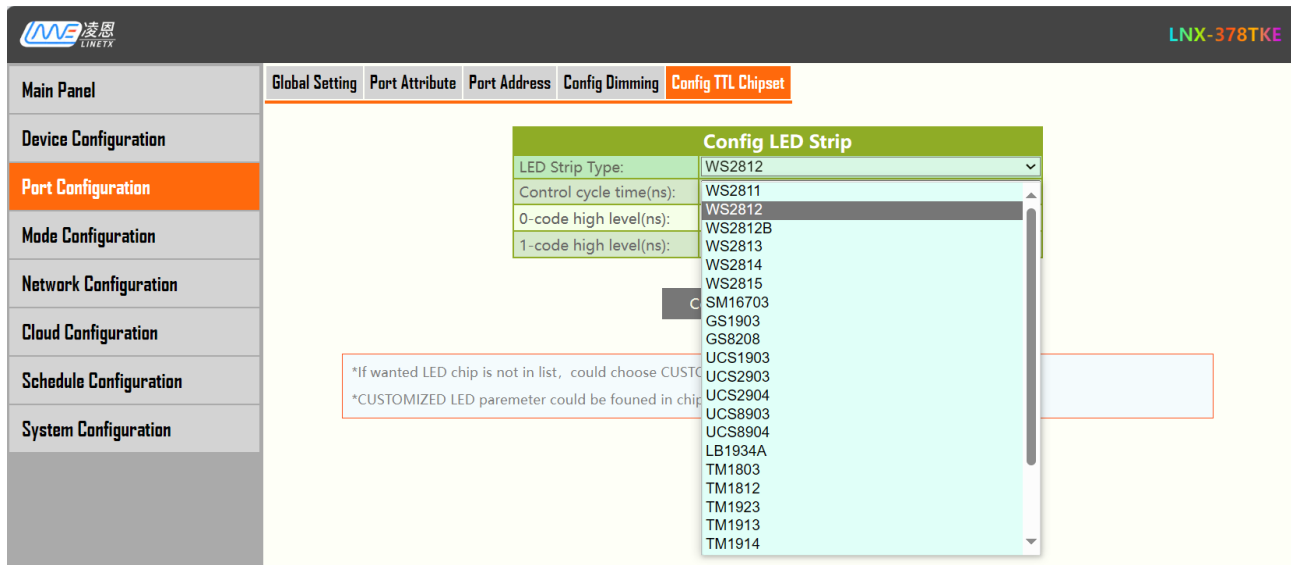


Figure 3-9 Config LED Strip page

The configurable items are shown in Table 3-8:

Table 3-8 Configuration items

ID	Item	Description	HMI Path
1	LED Strip Type	Select the LED chip type supported by the controller. If the LED chip type is not in the list, you can choose CUSTOMIZED.	[Setup] → [Setup Device] → [Setup Chipset]
2	Control cycle time	If the LED strip type is CUSTOMIZED, this value defines the cycle time of control, unit is nanoseconds (ns).	[Setup] → [Setup Device] → [Define Chipset] → [Code Period]
3	0 code high level	If the LED strip type is CUSTOMIZED, this value defines the 0-code high level time of cycle, with nanoseconds as the unit.	[Setup] → [Setup Device] → [Define Chipset] → [Code 0 High]
4	1 code high level	If the LED strip type is CUSTOMIZED, this value defines the 1-code high level time of cycle, with nanoseconds as the unit.	[Setup] → [Setup Device] → [Define Chipset] → [Code 1 High]



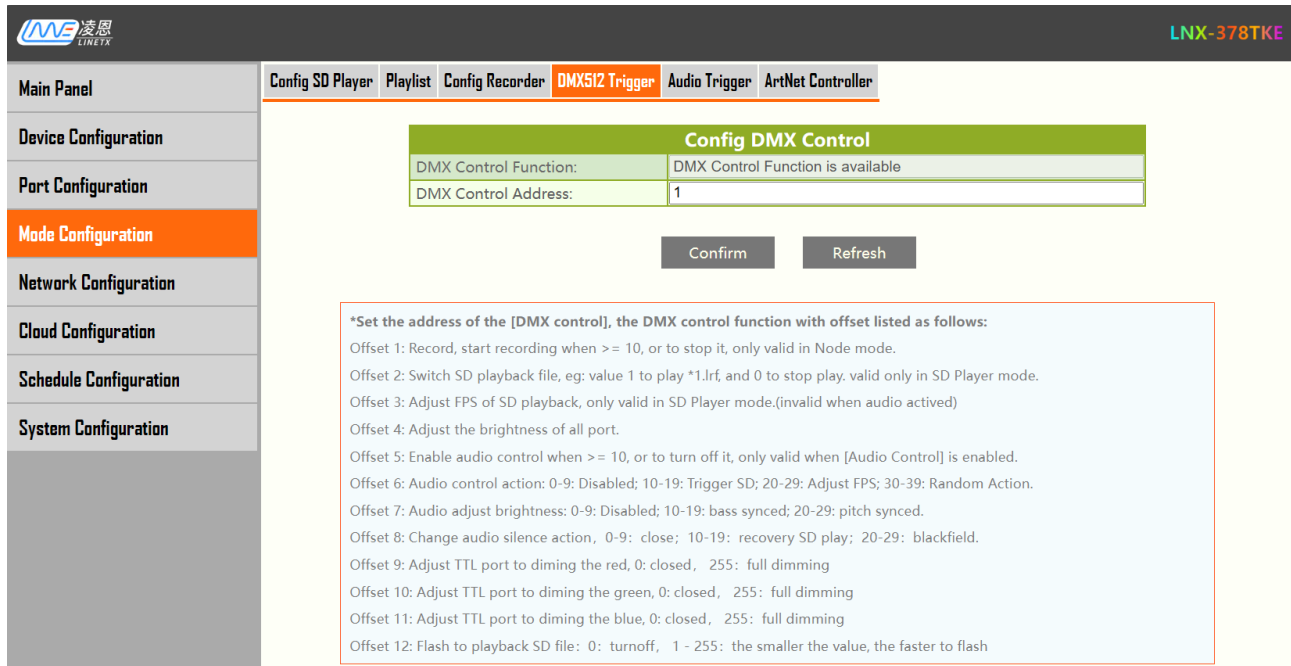
Only when the port type is configured as Clockless, can you enter the LED strip

configuration page.

6.11. DMX control

LNx-378 controller has DMX external control function. This allowed use DMX console to trigger the SD file to be played, or adjust the playback speed and brightness.

Open WEB page, click [Configure Port] -> [DMX Control] in the left navigation bar to enter the configuration page, as shown in Figure 4-1:



Config DMX Control

DMX Control Function:	DMX Control Function is available
DMX Control Address:	1

Confirm Refresh

***Set the address of the [DMX control], the DMX control function with offset listed as follows:**

Offset 1: Record, start recording when ≥ 10 , or to stop it, only valid in Node mode.

Offset 2: Switch SD playback file, eg: value 1 to play *1.lrf, and 0 to stop play, valid only in SD Player mode.

Offset 3: Adjust FPS of SD playback, only valid in SD Player mode.(invalid when audio activated)

Offset 4: Adjust the brightness of all port.

Offset 5: Enable audio control when ≥ 10 , or to turn off it, only valid when [Audio Control] is enabled.

Offset 6: Audio control action: 0-9: Disabled; 10-19: Trigger SD; 20-29: Adjust FPS; 30-39: Random Action.

Offset 7: Audio adjust brightness: 0-9: Disabled; 10-19: bass synced; 20-29: pitch synced.

Offset 8: Change audio silence action, 0-9: close; 10-19: recovery SD play; 20-29: blackfield.

Offset 9: Adjust TTL port to dimming the red, 0: closed, 255: full dimming

Offset 10: Adjust TTL port to dimming the green, 0: closed, 255: full dimming

Offset 11: Adjust TTL port to dimming the blue, 0: closed, 255: full dimming

Offset 12: Flash to playback SD file: 0: turnoff, 1 - 255: the smaller the value, the faster to flash

Figure 4-1 DMX Control

The configurable items are shown in Table 4-1:

Table 4-1 DMX control settings configuration items

ID	Item	Description	HMI Path
1	Enable DMX Contro	Configure to enable DMX external control function	
2	DMX Control Address:	The address is the beginning offset of each functional control point. Please refer to WEB page for detail description of those functions.	



When the audio control and DMX control are both enabled, the audio control has higher priority to control SD playback.

6.12. Configure RDM

DMX type of LED drive port support RDM (Remote Device Management), and the RDM fixture and can be easily searched, read and set para on the WEB.

Open WEB page, click [Configure RDM] ->[Global Setting] in navigation bar on the left, as shown in Figure 3-10:

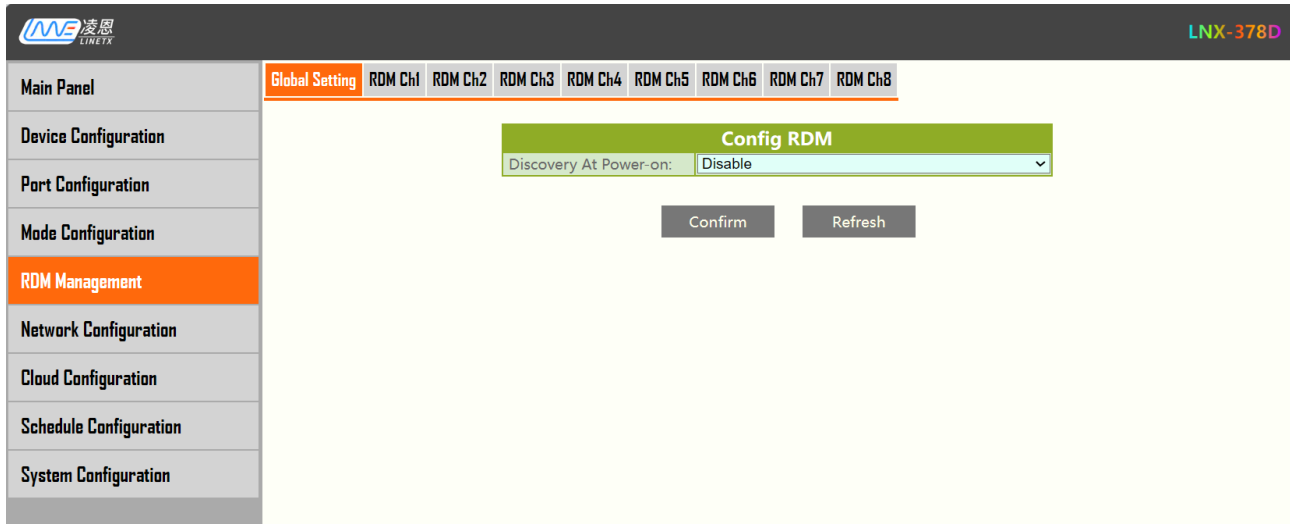


Figure 3-10 Configure RDM

The configurable items are shown in Table 3-9:

Table 3-9 Configuration items

ID	Item	Description	HMI Path
1	Discovery at power on	If enabled, controller will start discovery when power on.	

6.13. Configure RDM Port

List all the RDM fixture searched by the port on the table. In this table, the Footprint, Personality, Start Address of RDM fixture can be read and setted.

Open WEB page, click [Configure RDM] -> [RDM Port 1-8] in the left navigation bar to enter corresponding port configuration page, as shown in Figure 3-11:

LNx-378SD ArtNet LED Controller

IP: 192.168.1.21

Menu

- Main Panel
- Config Device
- Config Port
- Config RDM
 - Global Setting
 - RDM Port1
 - RDM Port2
 - RDM Port3
 - RDM Port4
 - RDM Port5
 - RDM Port6
 - RDM Port7
 - RDM Port8
- Config Mode
- Config Network
- Cloud Control
- Schedule

RDM Discovered Fixtures									
Manufacture	Fixture ID	Footprint	Personality	Start Address	Identify				
0x11D	0x100000B2	1	Set	8	Set	1	Set	On	Off
0x11D	0x100000C0	1	Set	8	Set	7	Set	On	Off
0x11D	0x10000096	1	Set	8	Set	13	Set	On	Off
0x11D	0x10000010	1	Set	8	Set	19	Set	On	Off
0x11D	0x100000A4	1	Set	8	Set	25	Set	On	Off
0x11D	0x10000086	1	Set	8	Set	31	Set	On	Off
0x11D	0x10000094	1	Set	8	Set	37	Set	On	Off
0x11D	0x1000006A	1	Set	8	Set	43	Set	On	Off
0x11D	0x100000A2	1	Set	8	Set	49	Set	On	Off
0x11D	0x10000078	1	Set	8	Set	55	Set	On	Off
0x11D	0x10000041	1	Set	8	Set	61	Set	On	Off
0x11D	0x10000033	1	Set	8	Set	67	Set	On	Off
0x11D	0x10000025	1	Set	8	Set	73	Set	On	Off
0x11D	0x1000004F	1	Set	8	Set	79	Set	On	Off
0x11D	0x10000011	1	Set	8	Set	85	Set	On	Off
0x11D	0x1000000D	1	Set	8	Set	91	Set	On	Off
0x11D	0x1000000C	1	Set	8	Set	97	Set	On	Off
0x11D	0x100000BE	1	Set	8	Set	103	Set	On	Off
0x11D	0x10000023	1	Set	8	Set	109	Set	On	Off
0x11D	0x100000B0	1	Set	8	Set	115	Set	On	Off
0x11D	0x1000001F	1	Set	8	Set	121	Set	On	Off
0x11D	0x10000004	1	Set	8	Set	127	Set	On	Off
0x11D	0x10000005	1	Set	8	Set	133	Set	On	Off

Figure 3-11 Configure RDM Port

6.14. Configure ArtNet Record

When the controller is running in ArtNet Node mode, can active the record function to record ArtNet data to file.

Open WEB page, click [Config Mode] -> [ArtNet Record] in the left navigation bar to enter the configuration page, as shown in Figure 3-12:

LNx-378SD

Main Panel

Device Configuration

Port Configuration

Mode Configuration

RDM Management

Network Configuration

Cloud Configuration

Schedule Configuration

System Configuration

Config SD Player
Playlist
Config Recorder
DMX512 Trigger
Audio Trigger
ArtNet Controller

Config Record

Timed Record(sec):	10
Text RAW Record:	Disable
Text RAW Record Universe:	0
Keep Output When Record:	Disable

Confirm
Refresh

*This page is only valid in [Node] mode

*When device is recording, the ArtNet's frame rate should be 25FPS or lower.

*Timed record: Set the time to automatic stop the recording and save the file.

*Text RAW Record: Enable to record the data and saved it to the text format file.

*Text RAW Record Universe: Specify the universe to record the text file.

Figure 3-12 File recording parameter configuration interface

The configurable items are shown in Table 3-10:

Table 3-10 ArtNet Record

ID	Item	Description	HMI Path
1	Timed record	When use timed record function, record will automatically stopped when reach the time.	[Setup] → [Setup Mode] → [Recorder] → [Timed Record]
2	Text RAW Record	Record the ArtNet to raw text file	
3	Text Raw Record Universe	Config the universe address to record	
4	Keep output when record	Enable to let to port continue to output when recording	

6.15. Configure SD Play

When the controller is running in SD Play mode, it can play the file stored at SD Card. Configure to adjust the playback frame rate, playback mode, and enable/disable the automatic playback.

Open WEB page, click [Config Mode]-> [SD Play] on the left navigation bar to enter the configuration page, as shown in Figure 3-13:

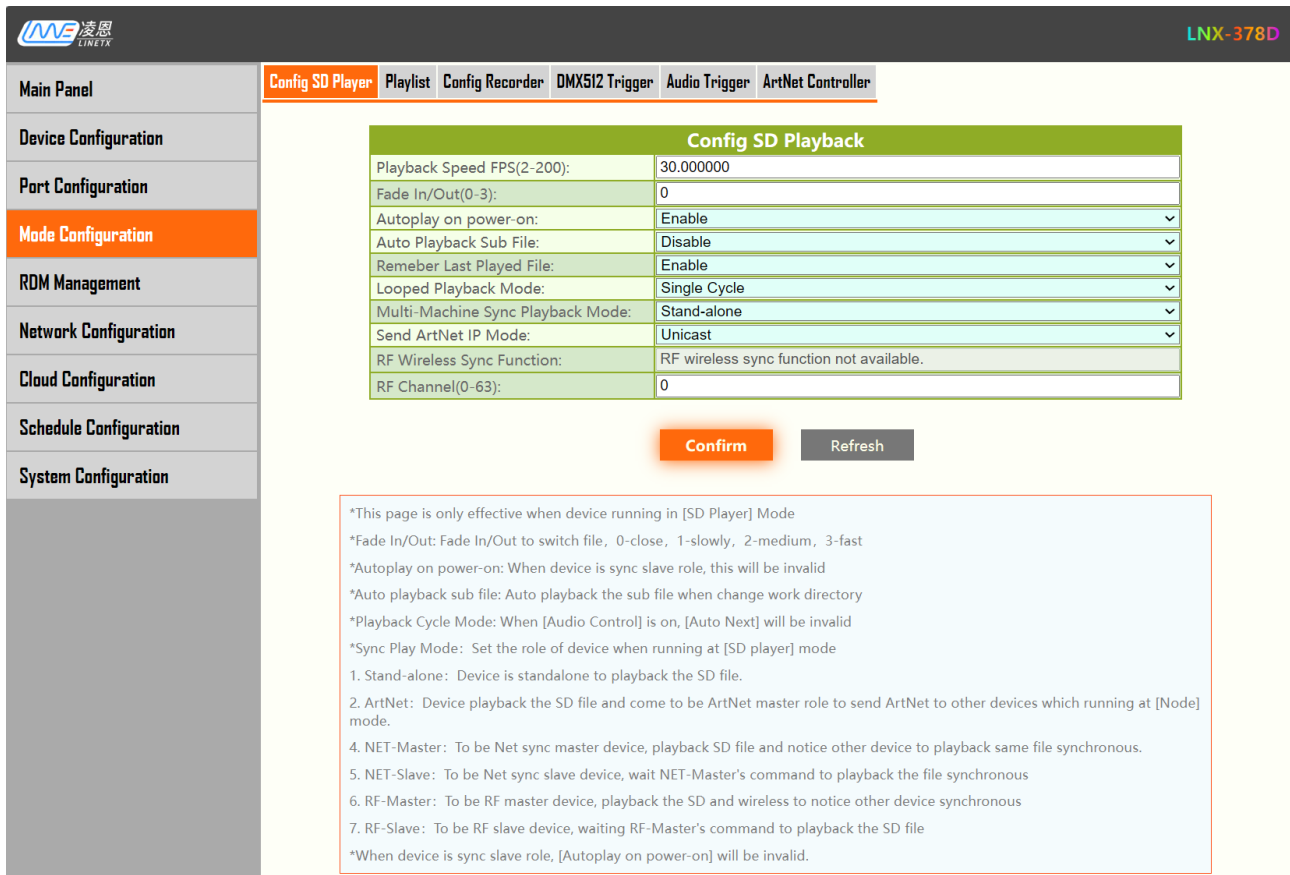


Figure 3-13 Config SD Play

The configurable items are shown in Table 3-11:

Table 3-11 Config SD Play

ID	Item	Description	HMI Path
1	Play Speed	Configure the playing frame rate in FPS.	[Setup] → [Setup Mode] → [SD Player] → [Play Speed]
2	Play mode	Single Cycle: single cycle; Auto Next: automatic next file when complete	[Setup] → [Setup Mode] → [SD Player] → [Play Mode]
3	Auto Play	Configure to automatically play files when power on	[Setup] → [Setup Mode] → [SD Player] → [Auto Play]
4	IP Mode	Select the IP mode to send the data to other controller	

6.16. Configure Audio Control

LNX-378 has 3.5mm audio jack to sink in audio signal. The controller can automatically analyze the rhythms of music, and synchronize with SD playback.

Open WEB page, click [Config Mode] ->[Audio Control] in the left navigation bar to enter the

configuration page, as shown bellow:



LNK-378D

Main Panel

Device Configuration

Port Configuration

Mode Configuration

RDM Management

Network Configuration

Cloud Configuration

Schedule Configuration

System Configuration

Config SD Player
Playlist
Config Recorder
DMX512 Trigger
Audio Trigger
ArtNet Controller

Configure Audio Control

Audio Control:	Disable
Audio Source:	LineIn
Rhythm Action:	Change Main SD File
SD Switching Mode:	Random
Brightness Follow:	Bass
Bass Lower Limit(Hz):	0
Bass Upper Limit(Hz):	100
Audio Sensitivity(0-5000):	30
Rhythm Sensitivity(0-100):	98
Rhythm Gap(ms):	300
Audio Silent Action:	No Action
Audio Silent Timeout(ms):	0
Audio Silent Threshold(1-5000):	0

Confirm
Refresh

*Audio Source:LINEIN: 3.5mm Audio Jack, MIC: Buildin Microphone

*Bass Lower Limit:Set the audio frequency range of the bass , unit is hertz.

*Audio Sensitivity:Set the minimum value that can detect the audio rhythm

*Rhythm Sensitivity:Set the speed of response,Larger the value to slower response, but more accurate

*Rhythm Gap: The minimum time between the of two rhythms, in milliseconds

*Audio Silent Action: Action when there is no audio signal: Recovery: Recover SD Playback

*Audio Silent Timeout: When the audio silence timeout, take audio silence action

*Audio Silent Threshold: When the background noise is less than the threshold, judged to be silent.

Table 3-12 Audio Control

ID	Item	Description	HMI Path
1	Audio control	Enable or disable the audio control. Only after the audio control function is enabled, the other parameter configuration is effective, and the controller starts to analyze the external audio signal.	
2	Rhythm action	Configure the action when the controller detects the rhythm of the music. Can choose to change the SD file, change the frame rate, or randomize the action.	
3	Brightness follow	Configure whether the brightness of the fixture follows the audio intensity, bass or pitch part of music can be selected.	
4	Lower Bass limit	Configure the controller to analyze the lower limit frequency of the bass	
5	Upper Bass limit	Configure the controller to analyze the upper limit frequency of the bass	
6	Audio sensitivity	Configure the sensitivity of the audio source, the value range is 0-100, the smaller of this value has higher sensitivity	

7	Rhythm sensitivity	Configure the sensitivity of the audio rhythm, the value range is 0-100, the smaller of this value has higher sensitivity	
8	Rhythm Gap	Configure the minimum interval time of the rhythm in milliseconds. When the rhythm time gap is less than this value, the current rhythm will be ignored.	

6.17. Configure DHCP

Configure the DHCP protocol of the controller. DHCP can be used to automatically apply IP address from DHCP server.

Open WEB page, click [Config Network] ->[DHCP] in the left navigation bar to enter the DHCP setting page, as shown in Figure 3-14:

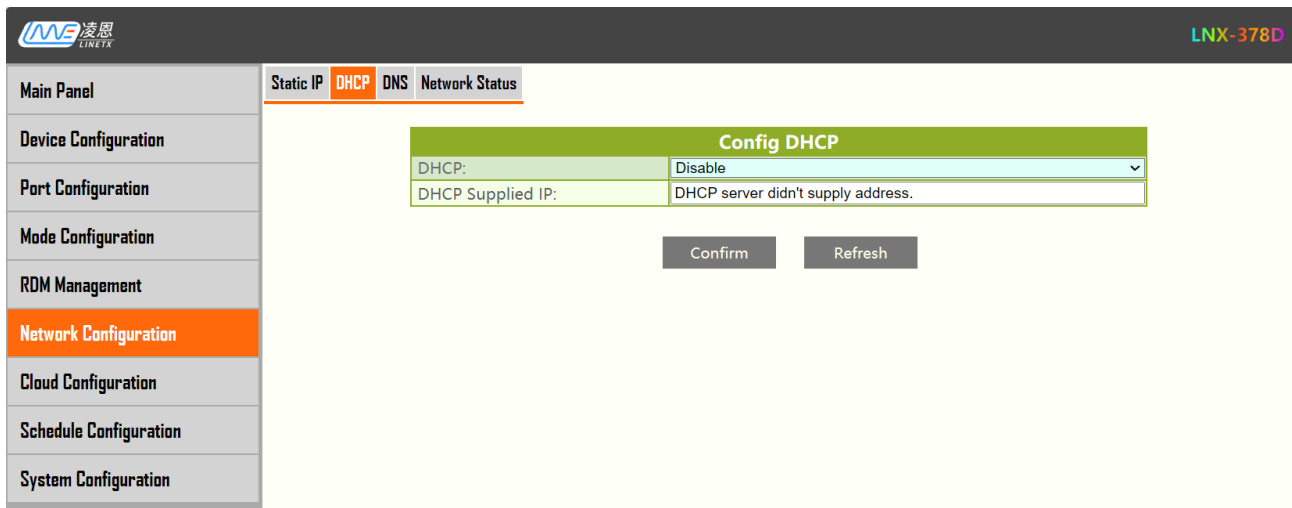


Figure 3-14 Configure DHCP

The configurable items of DHCP are shown in Table 3-12:

Table 3-12 Config DHCP

ID	Item	Description	HMI Path
1	DHCP	Enable or disable the DHCP.	
2	DHCP Supplied IP	Shows information about supplied IP from server.	



When DHCP enabled and successfully applied an IP, this new IP is dynamic and not certain to enter the WEB. In this situation, please refer to the OLED screen to get the supplied IP.

6.18. Configure Static Network Address

Configure the controller's static network IP, subnet mask, gateway and other network parameters.
If controller does not enable DHCP, the configured static IP is the working address

For WEB configuration, click [Configure Network] [Static Network Address] in the left configuration navigation bar to enter the network address setting interface, as shown in Figure 3-15:

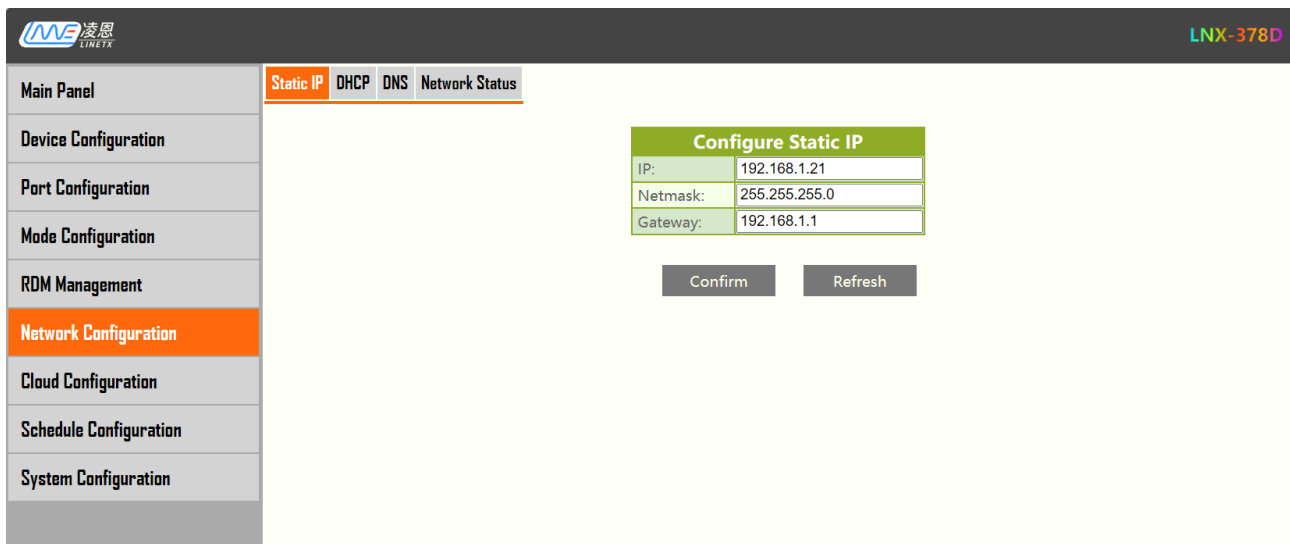


Figure 3-15 Network Static Address Configuration Page

The configurable items are shown in Table 3-13:

Table 3-13 Network parameter configuration items

ID	Item	Description	HMI Path
1	IP address	Configure the IP address of the controller	[Setup] → [Setup Network] → [Setup IpAddress]
2	Netmask	Configure the netmask address of the controller	[Setup] → [Setup Network] → [Setup Netmask]
3	Gateway	Configure the gateway address of the controller	[Setup] → [Setup Network] → [Setup Gateway]



After changing the network address, Can use the PING command on the PC to determine its connectivity.

6.19. Configure DNS

DNS means dynamic domain name resolution, configure the DNS address to connect to LINETX

Cloud.

6.20. Network Diagnosis

Use the network diagnosis function to check whether the network is worked in normal.

Click [Configure Network] -> [Diagnosis] in the left navigation bar to enter the page, as shown in Figure 3-16:

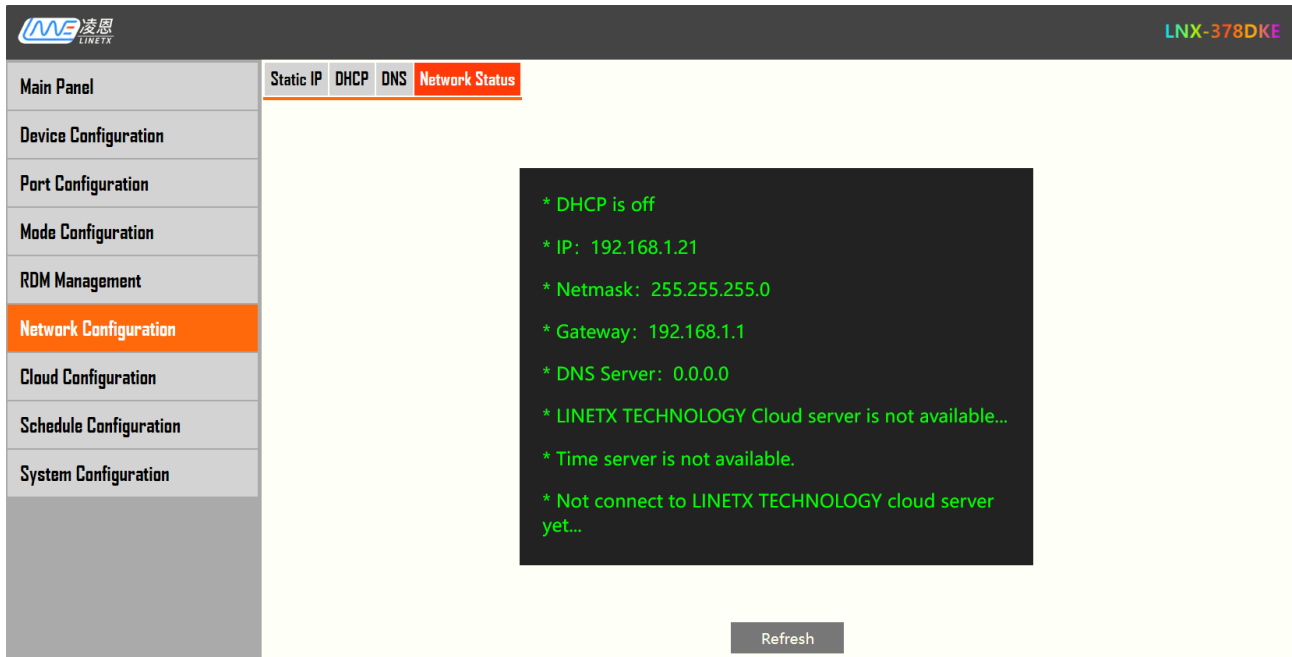
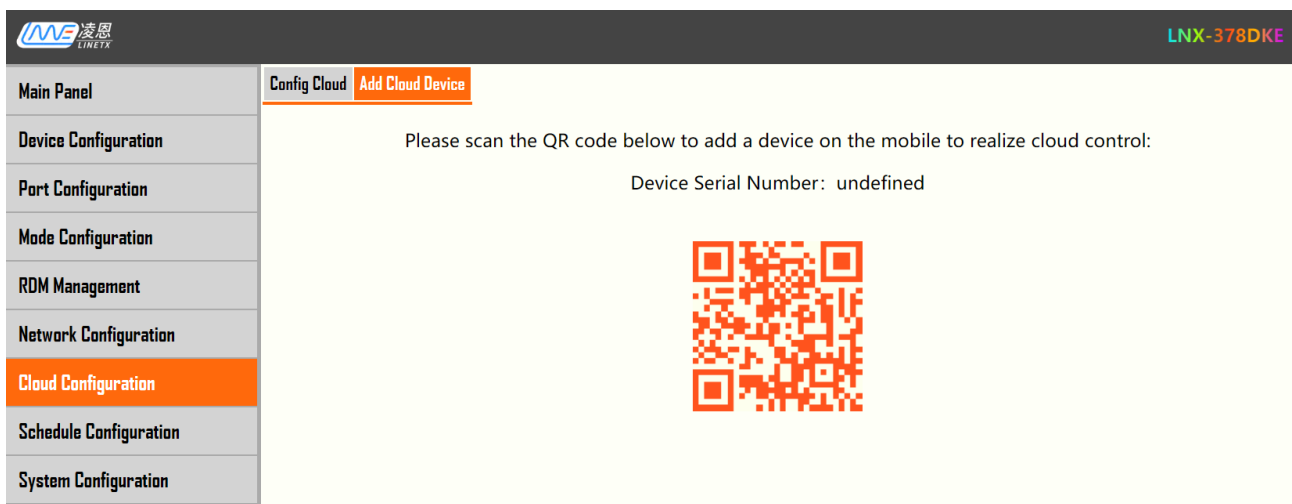


Figure 3-16 Network diagnosis page

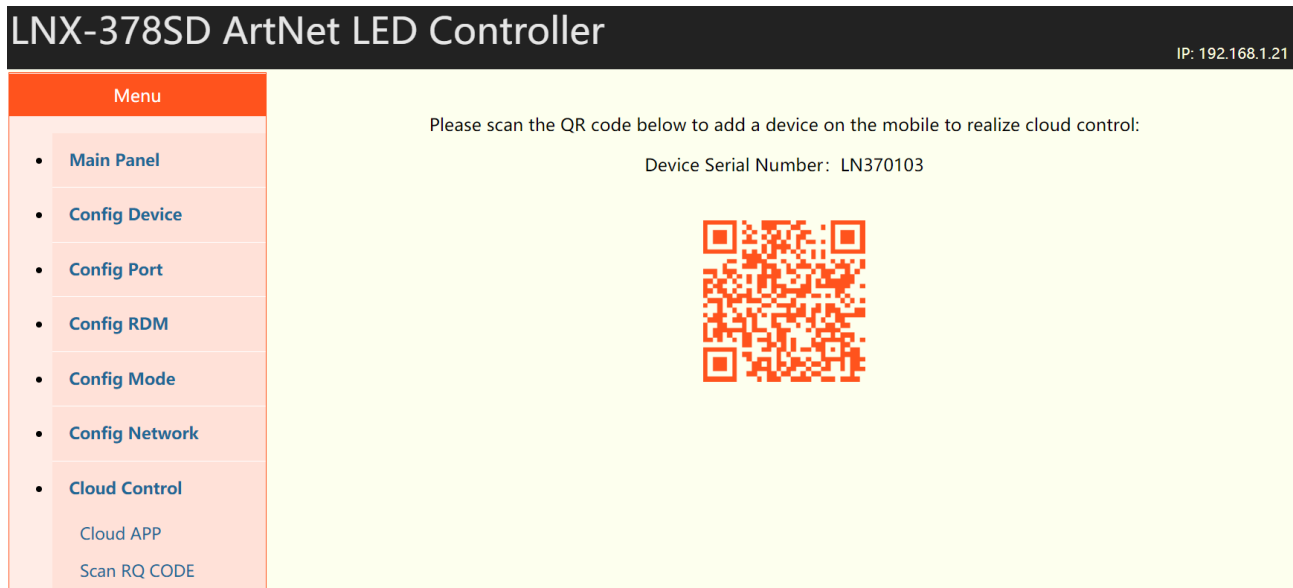
6.21. Configure Cloud Control

The controller supports to access the LINETX cloud, then the LINETX Mobile APP can be used to remotely configure and manage the controller.

LINETX's mobile app supports WeChat applets. You can install LINETX's Smart Control APP by scanning the QR code.



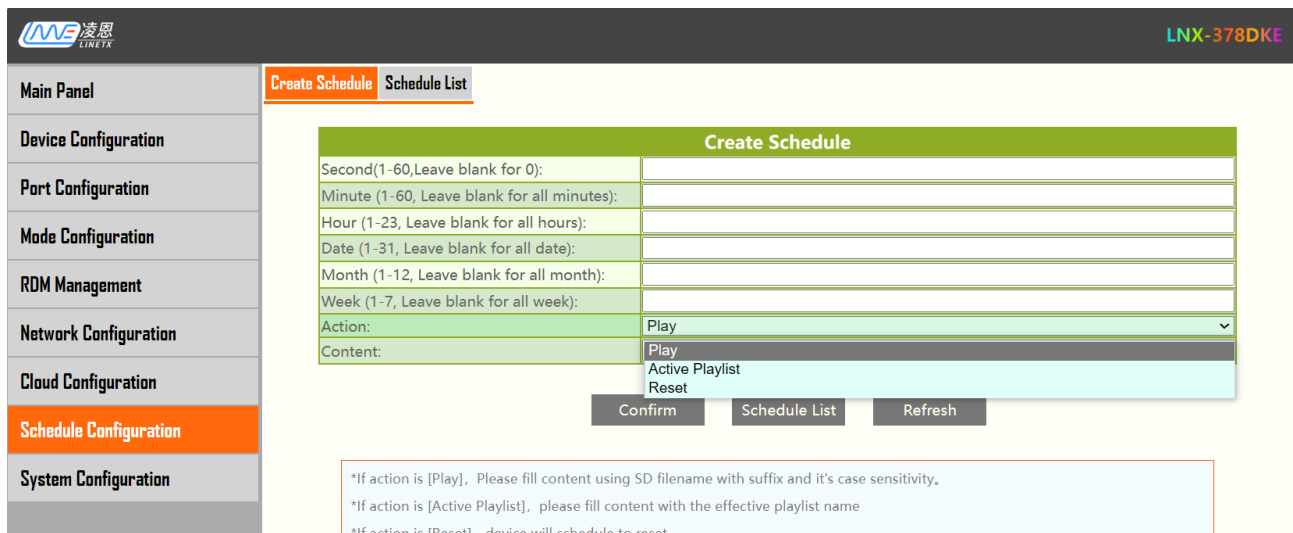
After installing the APP, on the [Scan RQ Code] page, use mobile to scan the QR code to add the device. if the device is successfully connected to LINETX Cloud, then It can be managed by LINETX Smart Control APP in any place has internet:



6.22. Configure Schedule

The controller supports to create schedule to perform specific tasks at a specific time, such as restarting the controller, playing SD file, etc.

On the [Schedule]->[New Schedule] page, create a new schedule:



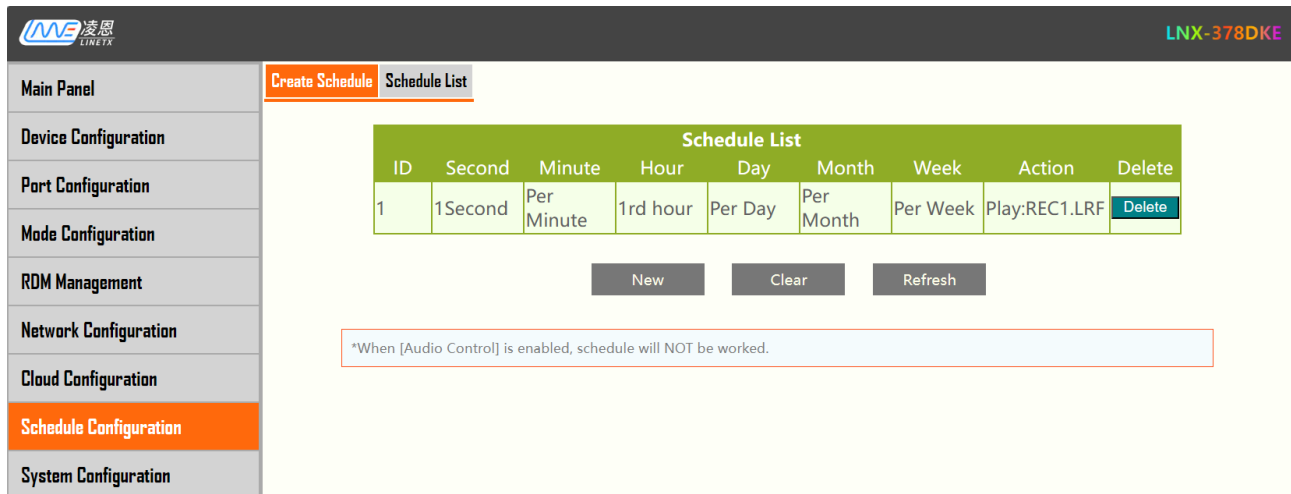
The configurable items are shown in Table 3-14:

Table 3-14 New Schedule

ID	Item	Description	HMI Path
1	minute	Configure what minutes to execute command. If this item is not filled in, it means that the command will be executed every minute.	

2	hour	Configure what hour to execute command. If this item is not filled, it means that the command will be executed every hour.	
3	date	Configure what date to execute command. If this item is not filled in, it means that the execution of the command will be triggered every day.	
4	Month	Configure what month to execute command. If this item is not filled, it means that the execution of the command will be triggered every month.	
5	Week	Configure what week to execute command. If this item is not filled, it means that the execution of the command will be triggered every week.	
6	Action	Action to execute command when the condition reached, currently supports restart the controller and playing SD file.	
7	Content	The command content to be executed. When restart the controller is selected, this item can be left blank. When choosing to play SD file, fill in the name of the file in this item.	

In the [Schedule List], all created schedule showed. On this page, can choose to delete each item, or clear all the schedule:



Schedule List

ID	Second	Minute	Hour	Day	Month	Week	Action	Delete
1	1Second	Per Minute	1rd hour	Per Day	Per Month	Per Week	Play:REC1.LRF	Delete

New Clear Refresh

*When [Audio Control] is enabled, schedule will NOT be worked.

6.23. Restore

Restart the controller, reformat the SD card, and restore the parameters.

Open WEB page, click [Restore] in the left navigation bar to enter configuration page, as shown in Figure 3-17:

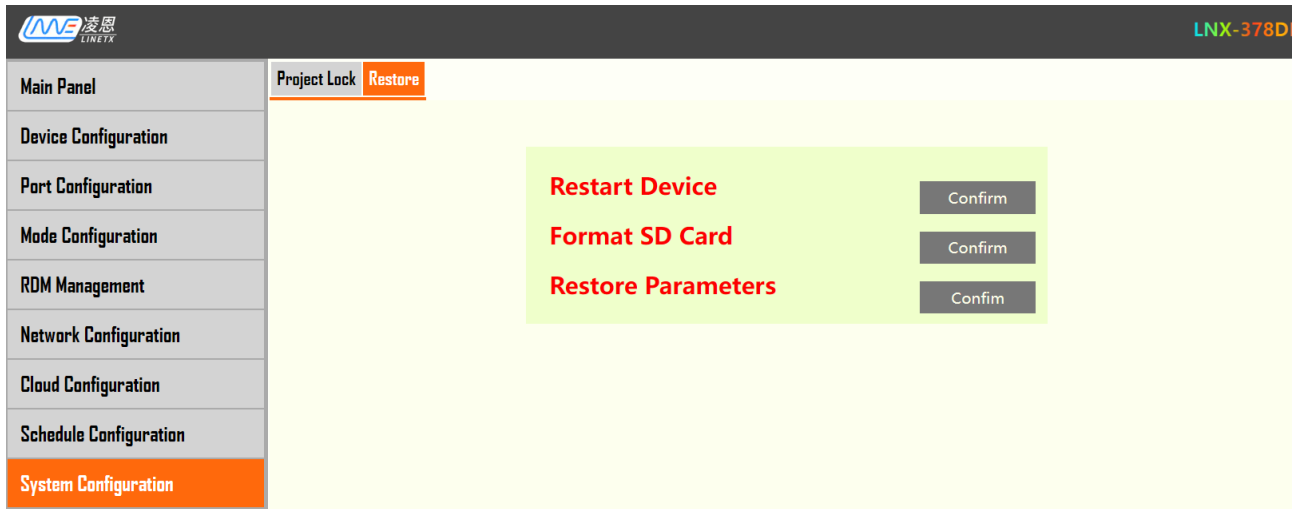


Figure 3-17 Restore Page

The configurable items are shown in Table 3-15:

Table 3-15 Reset system configuration items

ID	Item	Description	HMI Path
1	Restart LED Controller	Click the Confirm button to restart the controller.	Not available in the device menu
2	Format SD Card	Click the Confirm button to format the SD card. This operation will delete all files and is irreversible. Please back up the relevant files before do it.	[Setup] → [System Reset] → [SD Format]
3	Restore device Parameters	Click the Confirm button to restore the device parameters and restore the controller parameters to the factory settings.	[Setup] → [System Reset] → [Factory Reset]

7. LNX378 Control Interface

7.1. Introduction

LNX-378 supports various remote control interfaces to control the device, including UDP local area network control interface, RS485 control interface, or DMX512 channel call interface, Lingen Cloud platform cloud control interface, the content of this chapter is for UDP/RS485 control interface command words Detailed introduction.

7.2. UDP Control Interface

The IP address of the UDP control interface of LNX-378 is: [Local IP address]: [Port 18378], the command word is in ASCII text format, the control host sends the command word to the controller, and the controller will execute the corresponding action. The result is fed back to the control host.

7.3. RS485 Control Interface

LNX-378 R series equipment supports the use of RS485 interface, sending and receiving control command words to control the equipment, the serial port configuration parameters are [115200/8N1]: baud rate 115200, stop bit 1, data bit 8, parity none. The RS485 control command word must end with LF (0xA). The following figure shows the command word sent by the serial debugging assistant and the feedback result of executing the command:



7.4. Command List

The [host] field is the host name, and the host can use a unique name to identify itself, and the character length should not exceed 10 bytes.

CMD	Send command word (Host side)	Feedback command word (Execution succeed)	(Execution failed)
Poll Device	[host]REQ=PollDevice Need Broadcast this command	[host]ACK=PollDevice &SerialNum={xxx}&DevName={xxx}&DevType={xxx}&DevDesp={xxx} &IP={xxx}&MAC={xxx}	NULL
Get Information	[host]REQ=GetInfo	[host]ACK=GetInfo &SerialNum={xxx}&DevName={xxx} &DevType={xxx}&DevDesp={xxx}&IP={xxx}&RunMode={xxx}	[host]ACK=GetInfo &EXEC=Fail &Reason={xxx}
Get Lighting Port	[host]REQ=GetLightingPort	[host]ACK= GetLightingPort &PortNum={xxx}&Port1={chid },{enabled},{segNumber}, {universe},{universe},{universe},{universe},{channelPixelOrder}	[host]ACK=GetLightingPort&EXEC=Fail &Reason={xxx}
Switch Mode	[host]REQ=SwitchMode&RunMode={ArtNet Node ArtNet Controller SD Player Semantic Lighting Test Light }	[host]ACK= SwitchMode &EXEC=OK	[host]ACK=SwitchMode&EXEC=Fail &Reason={xxx}
Get Effect File List	[host]REQ=GetEffectFileList	[host]ACK=GetEffectFileList&FileList={Filelist}	[host]ACK=GetEffectFileList&EXEC=Fail &Reason={xxx}
Play Effect File	[host]REQ=PlayEffectFile&Filename={Filename}&Action={Play Stop Pause Resume}	[host]ACK=PlayEffectFile&FileList={Filelist} Filelist with-P, present that is playing	[host]ACK=PlayEffectFile&EXEC=Fail &Reason={xxx}
Delete Effect File	[host]REQ=DeleteEffectFile&Filename={Filename}	[host]ACK=DeleteEffectFile&FileList={Filelist}	[host]ACK=DeleteEffectFile&EXEC=Fail &Reason={xxx}
Get Record Status	[host]REQ=RecordStatus	[host]ACK=RecordStatus&Status={status}&File={Filename}	[host]ACK=RecordStatus&EXEC=Fail&Reason={xxx}
Record Action	[host]REQ=RecordPB	[host]ACK= RecordPB &Status={status}&File={Filename}	[host]ACK=RecordPB&EXEC=Fail&Reason={xxx}
Get Brightness	[host]REQ=GetBrightness	[host]ACK=GetBrightness&Brightness={Brightness}	[host]ACK=GetBrightness&EXEC=Fail&Reason={xxx}
Set Brightness	[host]REQ=SetBrightness&Brightness={Brightness val}	[host]ACK=SetBrightness&Brightness={ Brightness }	[host]ACK=SetBrightness&EXEC=Fail&Reason={xxx}
Get Play FPS	[host]REQ=GetPlayFPS	[host]ACK=GetPlayFPS&FPS={FPS}	Same as above
Set Play FPS	[host]REQ=SetPlayFPS&FPS={FPS}	[host]ACK=SetPlayFPS&FPS={FPS}	[host]ACK=SetPlayFPS&EXEC=Fail&Reason={xxx}
Set Play Cycle	[host]REQ=SetPlayCycleMode&PlayCycleMode={Single Cycle Single End Auto Next}	[host]ACK= SetPlayCycleMode &EXEC=Ok	Same as above
Get Schedule List	[host]REQ=GetScheduleList	[host]ACK= GetScheduleList &ScheduleList={list}	Same as above

New Schedule	[host]REQ=NewSchedule&Month=* &Dow=1&Day=* &Hour=3&Minute=* &Second=* &Action=Play&Content=REC1.LRF	[host]ACK= NewSchedule &ScheduleList={list}	[host]ACK=NewSchedule&EXEC=Fail&Reason={xxx}
Delete Schedule	[host]REQ=DeleteSchedule&ScheduleId={schedule ID}	[host]ACK= DeleteSchedule &ScheduleList={list}	[host]ACK=DeleteSchedule&EXEC=Fail&Reason={xxx}
Get Play List	[host]REQ=GetPlaylist	[host]ACK=GetPlaylist&Playlist=[["list1","active"],["list2","disactive"],["list3","disactive"]]	Same as above
New Play List	[host]REQ=NewPlaylist&PlaylistName=list1	[host]ACK=NewPlaylist&Playlist=[["list1","active"],["list2","disactive"],["list3","disactive"]]	Same as above
Delete Play List	[host]REQ=DeletePlaylist&PlaylistName=list1	[host]ACK=DeletePlaylist&Playlist=[["list2","disactive"],["list3","disactive"]]	Same as above
Active Playlist	[host]REQ=ActivePlaylist&PlaylistName=list1	[host]ACK=ActivePlaylist&Playlist=[["list1","active"],["list2","disactive"],["list3","disactive"]]	Same as above
Get Play List Files	[host]REQ=GetPlaylistFiles	[host]ACK=GetPlaylistFiles&PlaylistName=list1	Same as above
New Playlist File	[host]REQ=NewPListFile&PlaylistName=list1&Filename=3.LRF	[host]ACK=NewPListFile&PlaylistFiles=["1.LRF", "2.LRF", "3.LRF"]	Same as above
Delete Playlist	[host]REQ=DeletePlaylist&PlaylistName=list1&Filename=1.LRF	[host]ACK=DeletePListFile&PlaylistFiles=["1.LRF", "2.LRF"]	Same as above
Move Playlist File	[host]REQ=MovePListFile&PlaylistName=list1&Filename=1.LRF&Direction=down	[host]ACK=MovePListFile&PlaylistFiles=["1.LRF", "2.LRF"]	Same as above
Sematic Lighting	[host]REQ=SemanticLighting	[host]ACK= SemanticLighting &EXEC=Ok	Same as above
Reset Device	[host]REQ=ResetDevice	[host]ACK=ResetDevice&EXEC=Ok	NULL
Get work directory	[host]REQ=GetWorkDirectory	[host]ACK=GetWorkDirectory&WorkDirectory=[["DEFAULT","active"],["XF","disactive"]]	Same as above
Set Work Directory	[host]REQ=SetWorkDirectory&WorkDirectory=xxx&Action=[Create Delete Active]	[host]ACK=SetWorkDirectory&WorkDirectory=[["DEFAULT","disactive"],["XF","active"]]	Same as above
Set DMX CH value	[]REQ=SetPortDMXVal&Port=1&Value=2:4@32,12-53@76	[host]ACK= ClearPortDMXValue &EXEC=OK	Same as above
Clear DMX Ch Value	[]REQ=ClearPortDMXVal&Port=1	[host]ACK= ClearPortDMXValue &EXEC=OK	Same as above

Example:

[host]REQ=PlayEffectFile&Filename=REC1&Action=Play

Play REC1

[host]REQ=PlayEffectFile&Filename=REC1&Action=Stop

Stop play REC1

[host]REQ=DeleteEffectFile&Filename=REC1

Delete REC1

[host]REQ=SetPlayFPS&FPS=50

Set play speed FPS to 50

[host]REQ=SetBrightness&Brightness==90

Set brightness to 90

[host]REQ=NewPlaylist&PlaylistName=list1

Create playlist named list1

[host]REQ=NewPListFile&PlaylistName=list1&Filename=3.LRF

Add 3.LRF to playlist list1

[host]REQ=MovePListFile&PlaylistName=list1&Filename=1.LRF&Direction=down"

Move down 1.LRF of playlist list1

[host]REQ=ResetDevice

Reset device

7.5. Semantic Lighting sub-command

Semantic light control refers to the use of semantic commands to request the device to dimming the fixtures connected to it in various modes. This mode is often used in situations such as warehouse fixture indications, smart shelves, and industrial lighting indications. The command request word for semantic lighting control is SemanticLighting. Under this request word, there are many parameter combinations to control the dimming of different modes.

CMD	Send command word (Host side)	Detail
Set DMX value	Single Range: [host]REQ=SemanticLighting&Action=SetDMXVal&Port=1&Begin=1&End=30&Hold={true false}&Value=3 Multi Range: [host]REQ=SemanticLighting&Action=SetDMXVal&Port=1&Ranges=2:4,5:7,10:13&Hold={true false}&Value=3	Action=SetDMXVal is to set the DMX channel value of the port, Port is the port number (1-8), Begin is the start channel, End is the end channel, and Value is the DMX value to be set
Dim Color	Single Range: [host]REQ=SemanticLighting&Action=DimColor&Port=1&Begin=1&End=30&Hold={true false}&FixtureModel={RGB RGBW}&Color=#000001 Multi Range: [host]REQ=SemanticLighting&Action=DimColor&Port=1&Ranges=2:4,5:7,10:13&Hold={true false}&FixtureModel={RGB RGBW}&Color=#000001	Action=DimColor can adjust the color of the fixture, Begin is the start number of the fixture, End is the end number of the fixture, and Color is the dimming color. (By default, RGB channel fixtures are used for dimming)
Toggle Color	Single Range: [host]REQ=SemanticLighting&Action=ToggleColor&Port=1&Begin=1&End=30&Active=on&Color=#000001&Speed=80 [host]REQ=SemanticLighting&Action=ToggleColor&Port=1&Begin=1&End=30&Active=off Single Range: [host]REQ=SemanticLighting&Action=ToggleColor&Port=1&Ranges=2:4,5:7,10:13&Active={on off}&Color=#000001&Speed=80 [host]REQ=SemanticLighting&Action=ToggleColor&Port=1&Ranges=2:4,5:7,10:13&Active=off	Action=ToggleColor means dimming lightst o be flash, Port (1-8, 0 represents all ports), Begin is the light start number, End is the light end number, Color is the dimming color, Speed is the flash speed, Active=on is the active flash, Active=off to stop flash You can use Ranges to specify multiple ranges. For example, Ranges=2:4,5:7,10:13 specifies the range of light numbers from 2 to 4, 5 to 7, and 10 to 13.
Dim Effect	[host]REQ=SemanticLighting&Action=DimEffect&Port=1&Begin=1&End=30&EffectName=xx&EffectType=Blink&Speed=80&FixtureModel={RGB RGBW}&Color=#WWRRGGBB	Action=DimEffect can make the fixture show the lighting effect. You need to specify the name of the lighting effect, EffectName, and then specify the lighting effect type EffectType. Currently, 4 lighting effect types are supported: [Blink Rainbow Flash Indicate], if EffectType=Delete, it will be deleted The lighting effect of the name. Then you can specify the parameters such as Speed, Color, etc. (If FixtureModel is not specified, RGB model will be used for dimming by default)

Fixture Blackfield	[host]REQ=SemanticLighting&Action=Blackfield&Port=1	Action=Blackfield can make all or part of the fixture blackout. If Port is specified, the changed port will be blackfield (if there is an Effect, it will be deleted), if no Port is specified, all ports will be blackfield.
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Example:

[host]REQ=SemanticLighting&Action=SetDMXVal&Port=1&Begin=1&End=30&Value=3

Set port1' s channel 1-30 DMX channel value to 3

[host]REQ=SemanticLighting&Action=DimColor&Port=1&Begin=1&End=30&Color=#000001

Set port1' s 1-30 fixture color to #000001

[host]REQ=SemanticLighting&Action=DimEffect&Port=1&Begin=1&End=30&EffectName=xx&EffectType=Blink&Speed=80&Color=#0000ff00

Set the RGB fixture 1-30 of port 1, a flashing effect named xx, speed 80, color #0000ff00

[host]REQ=SemanticLighting&Action=DimEffect&Port=1&Begin=1&End=10&EffectName=xx&EffectType=Rainbow&Speed=3&Width=10

Set the RGB fixture 1-10 of port 1, a rainbow effect named xx, speed 3, width 10

[host]REQ=SemanticLighting&Action=DimEffect&Port=1&Begin=1&End=10&EffectName=xx&EffectType=Flash&FixtureModel=RGBW&Color=#8A000200

Set the RGBW fixtures 1-10 of port 1, a random flashing effect named xx, the color is #8A000200

[host]REQ=SemanticLighting&Action=DimEffect&Port=1&Begin=1&End=3&EffectName=xx&EffectType=Indicate&Speed=90&Direction=forward&FixtureModel=RGBW&Color=#8A000200

Set the RGBW fixtures 1-3 of port 1, a light indicating effect named xx, the speed is 90, and the direction is positive, color is #8A000200

[host]REQ=SemanticLighting&Action=DimEffect&EffectName=xx&EffectType=Delete

Delete the lighting effect named xx

[host]REQ=SemanticLighting&Action=Blackfield&Port=1

Port 1 blackfield

8. KNXNet/IP Protocol

8.1. KNXNet/IP Introduction

KNX protocol is currently the most mainstream smart home building integrated control bus protocol. At present, LNX-378 supports KNXnet/IP protocol with Ethernet known as IP interface. Through using the ETS5 to configuration and download, LNX-378 can be integrated into the IP network of KNX control bus.

8.2. Group Object

As to V515 firmware version now, LNX-378 support following Group Object, divided into 3 categories according to function:

a. The control includes the running mode, SD card file trigger, audio synchronization mode .etc

	Number ▲	Name	Object Function	Length
■	1	RunMode	Change The Run Mode	1 byte
■	2	RunModeStatus	The Run Mode status	1 byte
■	3	PlayEffectFile	Play the SD effect file	1 byte
■	4	PlayEffectFileStatus	Play SD effect file status	1 byte
■	5	AudioMode	Change The Audio Mode	1 byte
■	6	AudioModeStatus	The Audio Mode Status	1 byte

b. Each port control, 1-6 ports can be full control of its switch, brightness adjustment, dimming the color of RGB / RGBW fixture

7	Port1	Switch	1 bit
8	Port1	Status Switch	1 bit
9	Port1	Brightness value	1 byte
10	Port1	Status Brightness value	1 byte
11	Port1	Set RGB value combined 3 bytes)	3 bytes
12	Port1	Set RGB(W) value combined 6 bytes)	6 bytes
13	Port2	Switch	1 bit
14	Port2	Status Switch	1 bit
15	Port2	Brightness value	1 byte
16	Port2	Status Brightness value	1 byte
17	Port2	Set RGB value combined 3 bytes)	3 bytes
18	Port2	Set RGB(W) value combined 6 bytes)	6 bytes
19	Port3	Switch	1 bit
20	Port3	Status Switch	1 bit
21	Port3	Brightness value	1 byte
22	Port3	Status Brightness value	1 byte
23	Port3	Set RGB value combined 3 bytes)	3 bytes
24	Port3	Set RGB(W) value combined 6 bytes)	6 bytes
25	Port4	Switch	1 bit
26	Port4	Status Switch	1 bit
27	Port4	Brightness value	1 byte
28	Port4	Status Brightness value	1 byte
29	Port4	Set RGB value combined 3 bytes)	3 bytes
30	Port4	Set RGB(W) value combined 6 bytes)	6 bytes
31	Port5	Switch	1 bit
32	Port5	Status Switch	1 bit
33	Port5	Brightness value	1 byte
34	Port5	Status Brightness value	1 byte
35	Port5	Set RGB value combined 3 bytes)	3 bytes
36	Port5	Set RGB(W) value combined 6 bytes)	6 bytes
37	Port6	Switch	1 bit
38	Port6	Status Switch	1 bit
39	Port6	Brightness value	1 byte
40	Port6	Status Brightness value	1 byte
41	Port6	Set RGB value combined 3 bytes)	3 bytes
42	Port6	Set RGB(W) value combined 6 bytes)	6 bytes

c. The 7th and 8th extended ports, in addition to the control objects with 1-6 ports, can also set the DMX channel values and switches of 1 to 40 channels separately. The following is an example of the 7th port:

43	Port7	Switch	1 bit
44	Port7	Status Switch	1 bit
45	Port7	Brightness value	1 byte
46	Port7	Status Brightness value	1 byte
47	Port7	Set RGB value combined 3 bytes)	3 bytes
48	Port7	Set RGB(W) value combined 6 bytes)	6 bytes
49	Port7	Set DMX512 Channel1 value	1 byte
50	Port7	Set DMX512 Channel2 value	1 byte
51	Port7	Set DMX512 Channel3 value	1 byte
52	Port7	Set DMX512 Channel4 value	1 byte
53	Port7	Set DMX512 Channel5 value	1 byte
54	Port7	Set DMX512 Channel6 value	1 byte
55	Port7	Set DMX512 Channel7 value	1 byte
56	Port7	Set DMX512 Channel8 value	1 byte
57	Port7	Set DMX512 Channel9 value	1 byte
58	Port7	Set DMX512 Channel10 value	1 byte
59	Port7	Set DMX512 Channel11 value	1 byte
60	Port7	Set DMX512 Channel12 value	1 byte
61	Port7	Set DMX512 Channel13 value	1 byte
62	Port7	Set DMX512 Channel14 value	1 byte
63	Port7	Set DMX512 Channel15 value	1 byte
64	Port7	Set DMX512 Channel16 value	1 byte
65	Port7	Set DMX512 Channel17 value	1 byte
66	Port7	Set DMX512 Channel18 value	1 byte
67	Port7	Set DMX512 Channel19 value	1 byte
68	Port7	Set DMX512 Channel20 value	1 byte
69	Port7	Set DMX512 Channel21 value	1 byte
70	Port7	Set DMX512 Channel22 value	1 byte
71	Port7	Set DMX512 Channel23 value	1 byte
72	Port7	Set DMX512 Channel24 value	1 byte
73	Port7	Set DMX512 Channel25 value	1 byte
74	Port7	Set DMX512 Channel26 value	1 byte
75	Port7	Set DMX512 Channel27 value	1 byte
76	Port7	Set DMX512 Channel28 value	1 byte
77	Port7	Set DMX512 Channel29 value	1 byte
78	Port7	Set DMX512 Channel30 value	1 byte
79	Port7	Set DMX512 Channel31 value	1 byte
80	Port7	Set DMX512 Channel32 value	1 byte
81	Port7	Set DMX512 Channel33 value	1 byte
82	Port7	Set DMX512 Channel34 value	1 byte
83	Port7	Set DMX512 Channel35 value	1 byte
84	Port7	Set DMX512 Channel36 value	1 byte
85	Port7	Set DMX512 Channel37 value	1 byte
86	Port7	Set DMX512 Channel38 value	1 byte
87	Port7	Set DMX512 Channel39 value	1 byte
88	Port7	Set DMX512 Channel40 value	1 byte
89	Port7	Switch Channel1	1 bit
90	Port7	Switch Channel2	1 bit
91	Port7	Switch Channel3	1 bit
92	Port7	Switch Channel4	1 bit
93	Port7	Switch Channel5	1 bit
94	Port7	Switch Channel6	1 bit
95	Port7	Switch Channel7	1 bit

95	Port7	Switch Channel7	1 bit
96	Port7	Switch Channel8	1 bit
97	Port7	Switch Channel9	1 bit
98	Port7	Switch Channel10	1 bit
99	Port7	Switch Channel11	1 bit
100	Port7	Switch Channel12	1 bit
101	Port7	Switch Channel13	1 bit
102	Port7	Switch Channel14	1 bit
103	Port7	Switch Channel15	1 bit
104	Port7	Switch Channel16	1 bit
105	Port7	Switch Channel17	1 bit
106	Port7	Switch Channel18	1 bit
107	Port7	Switch Channel19	1 bit
108	Port7	Switch Channel20	1 bit
109	Port7	Switch Channel21	1 bit
110	Port7	Switch Channel22	1 bit
111	Port7	Switch Channel23	1 bit
112	Port7	Switch Channel24	1 bit
113	Port7	Switch Channel25	1 bit
114	Port7	Switch Channel26	1 bit
115	Port7	Switch Channel27	1 bit
116	Port7	Switch Channel28	1 bit
117	Port7	Switch Channel29	1 bit
118	Port7	Switch Channel30	1 bit
119	Port7	Switch Channel31	1 bit
120	Port7	Switch Channel32	1 bit
121	Port7	Switch Channel33	1 bit
122	Port7	Switch Channel34	1 bit
123	Port7	Switch Channel35	1 bit
124	Port7	Switch Channel36	1 bit
125	Port7	Switch Channel37	1 bit
126	Port7	Switch Channel38	1 bit
127	Port7	Switch Channel39	1 bit
128	Port7	Switch Channel40	1 bit

Devices can be upgraded through the firmware network to support more control functions in the future.

8.3. KNX config steps

Step 1: Turn on the KNXnet/IP protocol of LNX-378. The KNXnet/IP protocol is turned off by default on the LNX-378. It needs to be turned on in its WEB background:


LNK-378DKE

- Main Panel
- Device Configuration**
- Port Configuration
- Mode Configuration
- RDM Management
- Network Configuration
- Cloud Configuration
- Schedule Configuration
- System Configuration

Basic Setting
Config Time
Config KNX
Command Set
Config GPS
Config Password

Config KNX

KNX Feature:	KNX is available
Enable KNXnet/IP:	Enable ▼
KNX Phy Address:	15.15.255
KNX Config Status:	Application not been loaded
KNX Prog Mode:	Enable ▼

Confirm
Refresh
Download knxprod

*KNXnet/IP is disabled by default, turn on it to management device using KNXnet/IP protocol.

*Click to download the knxprod file and import the device in the ETS5 at device catalog.

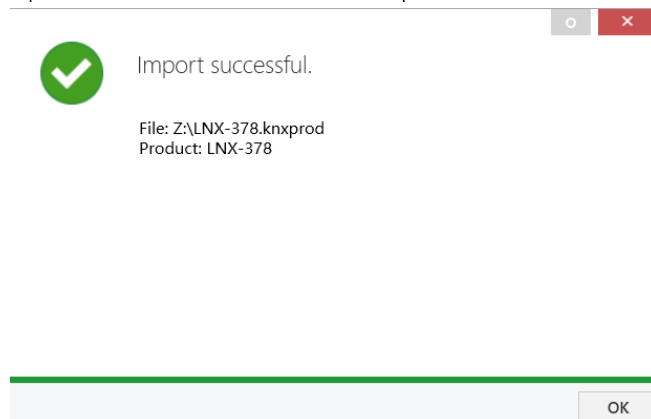
*Before using ETS5 to download/config the device (physical address, application, etc.), need active [KNX Prog mode] first.

*For respond DimChannel command, the device need to be configured in Semantic Lighting run mode.

*If the firmware of device has been upgraded, it needs to be reconfigured.

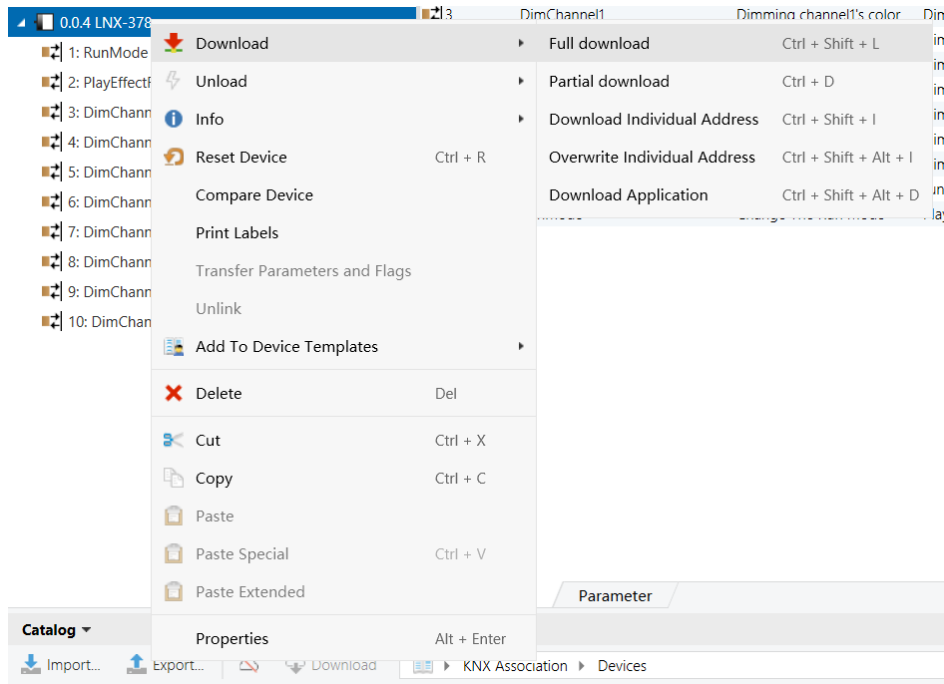
After the Knxnet/IP protocol is enabled, the physical address and configuration status of KNX are unconfigured. then the physical address is 15.15.255, and the configuration status of KNX is [application configuration not loaded]. Configure and download the application of KNX address and group address.

Step 2: Use ETS5 to import the device. On the KNX setting page, click [Download knxprod] to download the LNK-378.knxprod file of the device, and import the file into the ETS5 product directory:



The imported LNK-378 can be found in the directory KNX Association->Devices->LNK-378, which can be added and configured in the framework of the next KNX project.

Step 3: Use ETS5 to configure and download the device. Configure operating parameters, configure physical address and group address, etc., and download its application. Before downloading, make sure that LNK-378 is in programming mode, and open KNX programming mode in the WEB background. When [KNX programming mode] is green, the download action can be started in ETS5:



Step 4: After the ETS configuration is completed, it is put into use in the KNX bus IP network. After the application of LNX-378 is downloaded, it can respond to the configured group address operation command.

9. Specification

Item	Specification
Protocol	ARTNET、sACN、KNX
Interface	DMX/TTL
Communication	2 RJ45
Com Distance	UTP: 100m / Fiber: 20KM
MTBF	10000 hours
Power input	DC6-48V 1A
Power	3-5W
Temperture	-10~55℃
Working humidity	5%~90%
Storage temperature	-40~70℃
Storage humidity	5%~90% no condensation
Size	154mm(L)*114mm(W)*33mm(H)
Weight	250g