DWIN Advertising Screen

Development Guide

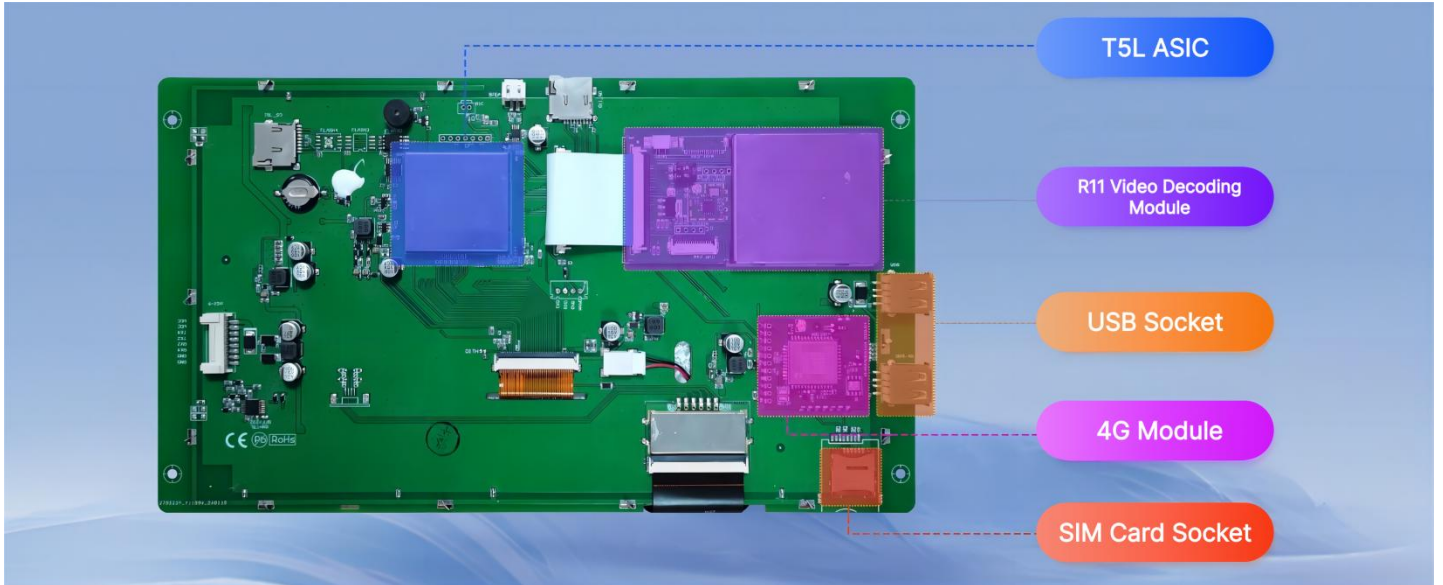# Contents

1. Product Overview

1.1 Application Introduction

The DGUS advertising screen mainly consists of T5L ASIC and R11 video decoding module. The T5L ASIC is the main control chip, and the R11 video decoding module works together as a coprocessor.

Hardware interface diagram

1.2 Product Features

(1) Supports smooth decoding of MP4 videos, making it easy for DGUS screens to have video playback capabilities.

(2) Supports WIFI (2.4G, 5G) and 4G networking functions, enabling remote backend video file updates and setting of advertising video playback rules.

(3) Provide matched cloud management backend, divided into three levels of accounts: device supplier accounts can allocate devices to brand owner accounts; Brand owner accounts can manage videos (remote updates, set playback rules), create video groups, create and activate operators; Operator account can manage the videos.

2. Product Selection

2.1 Advertising Screen Selection Table

Model	Size	Resolution	LCD Type	Touch Type	Color	Operating Temperature(℃)
DT321X190020Z240101C	7.0	800*480	TN	Capacitive touch	24 bit,16.7M	-20~70℃(12V)
DT321X190020Z240101D	8.0	800*600	TN	Capacitive touch	24 bit,16.7M	-20~70℃(12V)
DT321X190020Z240101E	10.1	1024*600	IPS	Capacitive touch	24 bit,16.7M	-20~70℃(12V)
DT321X190020Z240101H	15.6	1920*1080	IPS	Capacitive touch	24 bit,16.7M	-10~60℃(12V)
DT321X190020Z240101I	18.5	1920*1080	IPS	Capacitive touch	24 bit,16.7M	0~50℃(15V)
DT321X190020Z240101J	21.5	1920*1080	IPS	Capacitive touch	24 bit,16.7M	0~50℃(15V)

3. System Variable Interface

The advertising screen can be controlled through the DGUS system variable interface (0x0600). By assigning different key values to the address, various functions of the advertising screen can be achieved. After DGUS processing, the key values will be automatically reset to zero.

3.1 System Variable Interface Definition

3.1.1 0x0600 System Variable Interface Function

Different key values of variable address 0x0600 can implement different playback functions, as shown in the following table.

VP address	Key value	Functional classification	Description
0x0600	0x0013	Video control	Resume playback
	0x0005	Video control	Stop
	0x000d	Video control	Exit
	0x0004	Video control	Pause
	0x000B	Volume control	Volume up
	0x000C	Volume control	Volume down
	0x000A	Volume control	Mute
	0x000F	Volume control	Volume setting, requires address 0x0601
	0x0021	Video playback selection	Select the first one
	0x0022	Video playback selection	Select the second one
	0x0023	Video playback selection	Select the third one
	0x0024	Video playback selection	Select the fourth one
	0x0025	Video playback selection	Select the fifth one
	0x0020	Video list query	Query SD card playlist
	0x002A	Video list query	Query USB disk playlist
	0x0002	Video list query	Flip up playlist
	0x0001	Video list query	Flip down playlist
	0x0026	Video control	Full screen playback
	0x0027	Video control	Normal size playback
	0x0029	Video control	Rotate the video 90° clockwise
	0x0036	Video control	Do not loop playback
	0x0037	Video control	Single loop playback
	0x0038	Video control	All loop playback

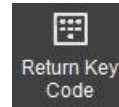# 3.1.2 Application Examples of Other System Variable Interface

The functions of other system variable interfaces on the advertising screen can refer to the table below.

VP address	Description	Note
0x0601	Volume setting address	Range: 0-40
0x0610	The first video in the list	Occupying 32 bytes length
0x0620	The second video in the list	Occupying 32 bytes length
0x0630	The third video in the list	Occupying 32 bytes length
0x0640	The fourth video in the list	Occupying 32 bytes length
0x0650	The fifth video in the list	Occupying 32 bytes length
0x06D0	Volume query address	Range: 0-40
0x06D1	Playback status query address	0: Playback preparation 1: Playing 2: Playback failed 3: Playback completed 4: Playback pause 5: Playback stop
0x06D2	Loop status query address	
0x06D3	Automatic playback status query address	

3.2 Application Instance

The system variable interface key value can be changed through the DGUS control's "Return Key Code" function or by sending serial port commands.
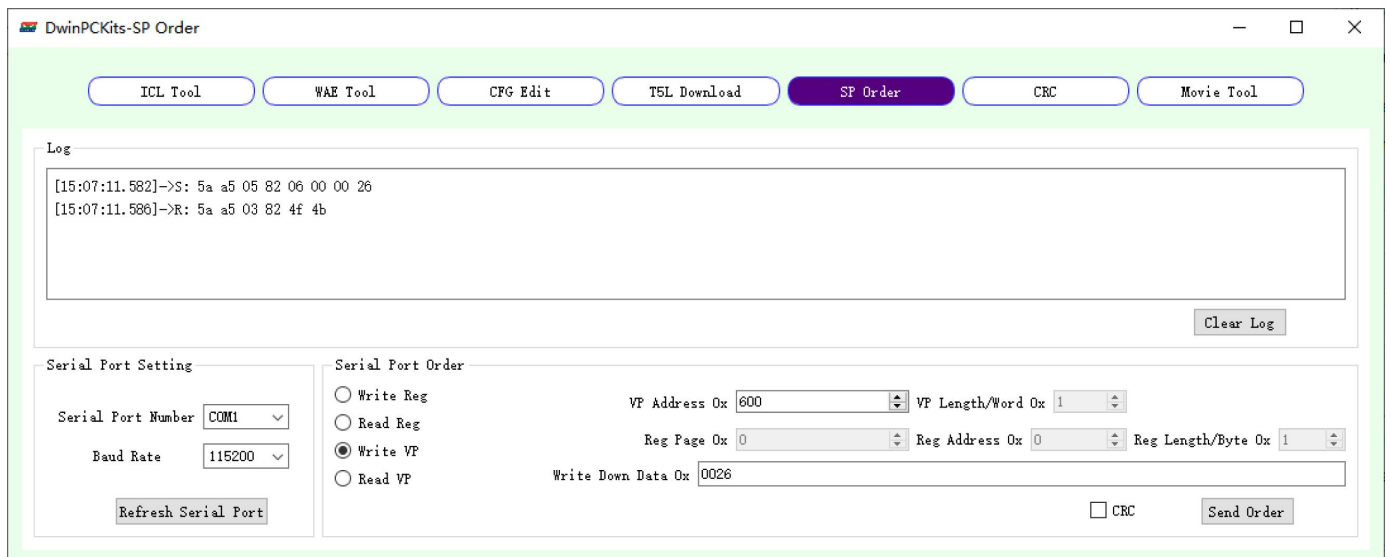
3.2.1 DGUS Return Key Code

When creating a DGUS project, use the "Return Key Code" control and set the corresponding "key values", such as playing, pausing, volume up and volume down.

Playing	Pausing	Volume up	Volume down

3.2.2 Serial Port Command

Send 82/83 protocol commands through the serial port, such as sending serial port commands to achieve full screen playback.

4. Serial Port Protocol

The advertising screen product has reserved two UARTs (UART 2 and UART 4). Among them, UART 2 defaults to using the DWIN 82/83 protocol, which can configure Baud Rate and CRC verification through CFG files. UART 4 allows users to analyze and formulate communication protocols according to their needs.

The default format for UART 2 is 9600, 8N1, which means Baud Rate 9600, 8 data bits, no checksum bit, and 1 stop bit.

4.1 Communication Data Frame

Data block	1	2	3	4	5
Definition	Frame header	Data length	Command	Data	CRC verification (optional)
Data length	2	1	1	N	2
Description	0x5AA5	Including commands, data, and verification	0x82/0x83		
Example (without verification)	0x5AA5	04	83	00 10 04	
Example (with verification)	0x5AA5	06	83	00 10 04	25 A3

4.2 Interface Instruction Description

Command	Data	Description	Response
0x82	Variable space first address (0x0000-0xFFFF)+written data	Write data to variable space at the specified address	None
0x83	Variable space first address (0x0000-0xFFFF)+read data in word length (0x01-0x7D)	Read the specified length data from the address specified in the variable space	Variable space first address+variable data in word length+read variable data

4.3 Commands Instance

1. Stop playing

82 command: 5A A5 05 82 06 00 00 05

Command meaning: Frame Header Instruction length 82 (write variable space) System variable address Instruction content

Description: This command is used for the stop playback function of the advertising screen. After issuing the command, the advertising screen will immediately stop the currently playing advertising content.

2. Stop playing

83 command: 5A A5 04 83 06 D2 01

Command meaning: Frame header Instruction length 83 (read variable space) System variable address Read data length (in words)

Description: This command is used to query the current looping status of the advertising screen. After issuing the command, the advertising screen will return the current playback status information. For example, when the return value is 01, it indicates that the advertising screen is in single loop playback mode.
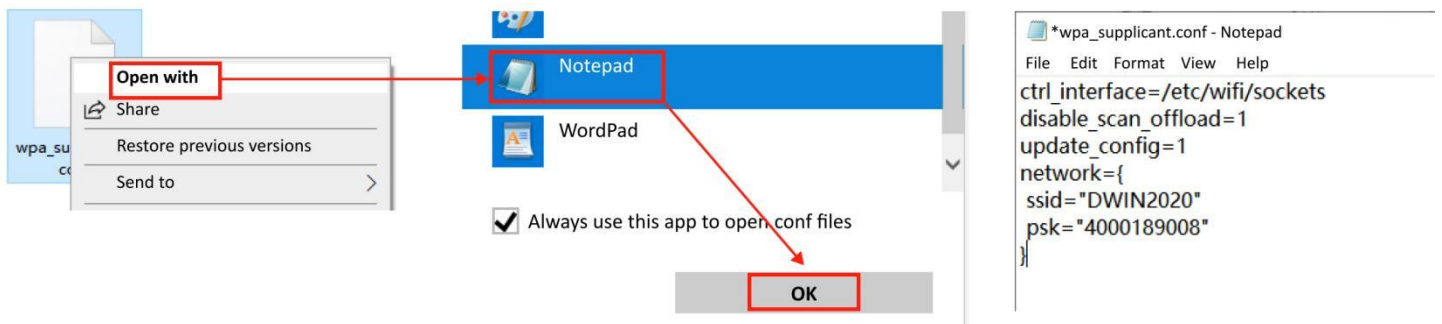
5. Common Questions

1. After clicking on the control, the video list does not appear?

After powering on, the buzzer will emit a "beep" sound, indicating that the module has completed startup. At this time, functions such as video playback can be used normally.

2. How to connect to the WIFI network?

Method 1: Use Notepad to open the "wpa_supplicant. conf" file on the USB disk, fill in your written WIFI name (SSID) and password in the following format, save the file, and make sure to place it in the root directory of the USB disk. After the screen is powered on, the file parameters will be automatically read and WIFI configuration will be performed.


```
ctrl_interface=/etc/wifi/sockets
disable_scan_offload=1
update_config=1
network={
 ssid="WIFI name"
 psk="WIFI password"
}
```
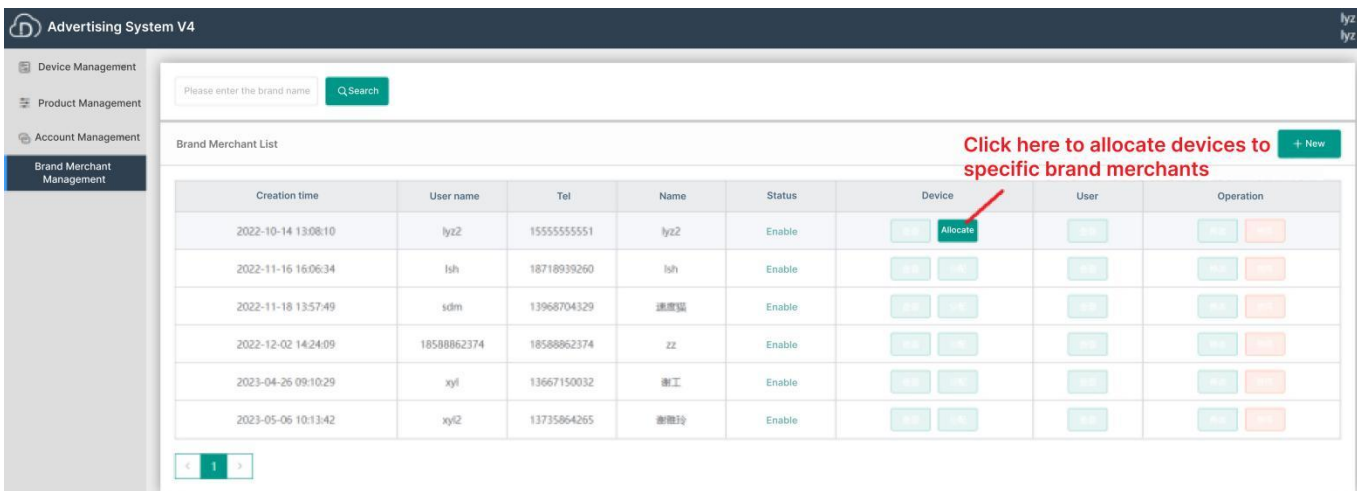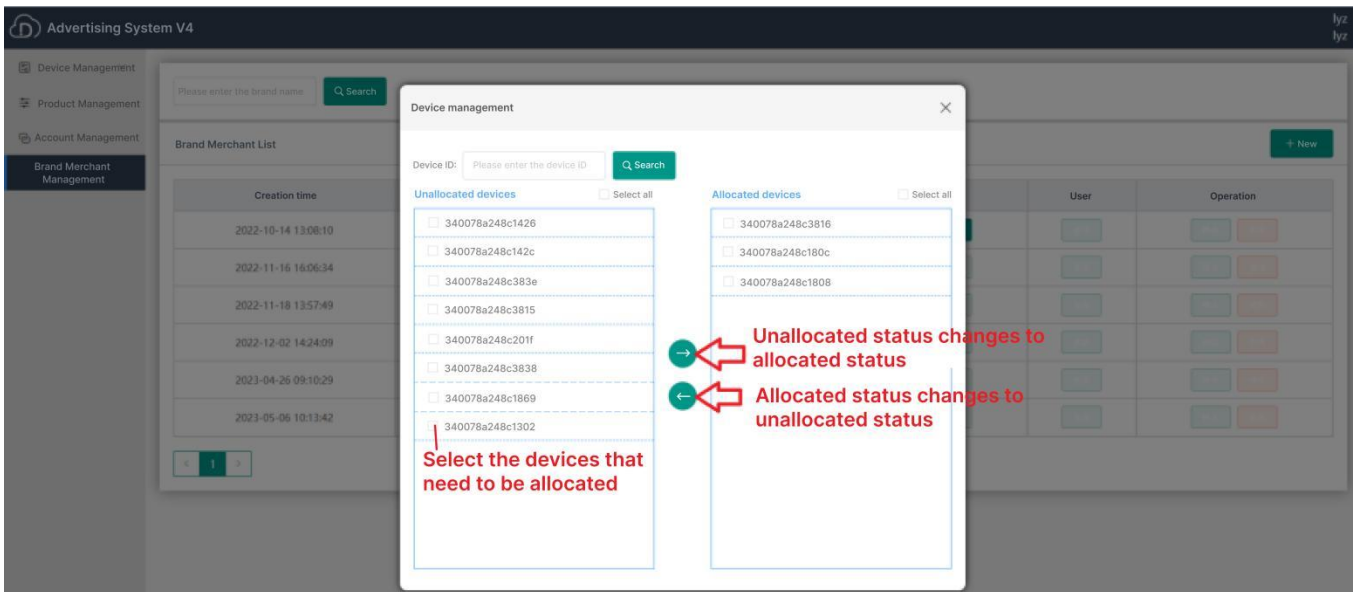
Method 2: Manually search and connect to WIFI through the advertising screen interface, enter the WIFI password, and then connect to the network.

3. How to remotely update videos?

Remote video updates require customers to set up their own cloud platform first with the assistance of DWIN.

The following is an example of using an internal testing platform to illustrate how to use this function:

When you get a new advertising screen, you need to notify the device supplier account to assign the device to your own account.There are three levels of account rating.
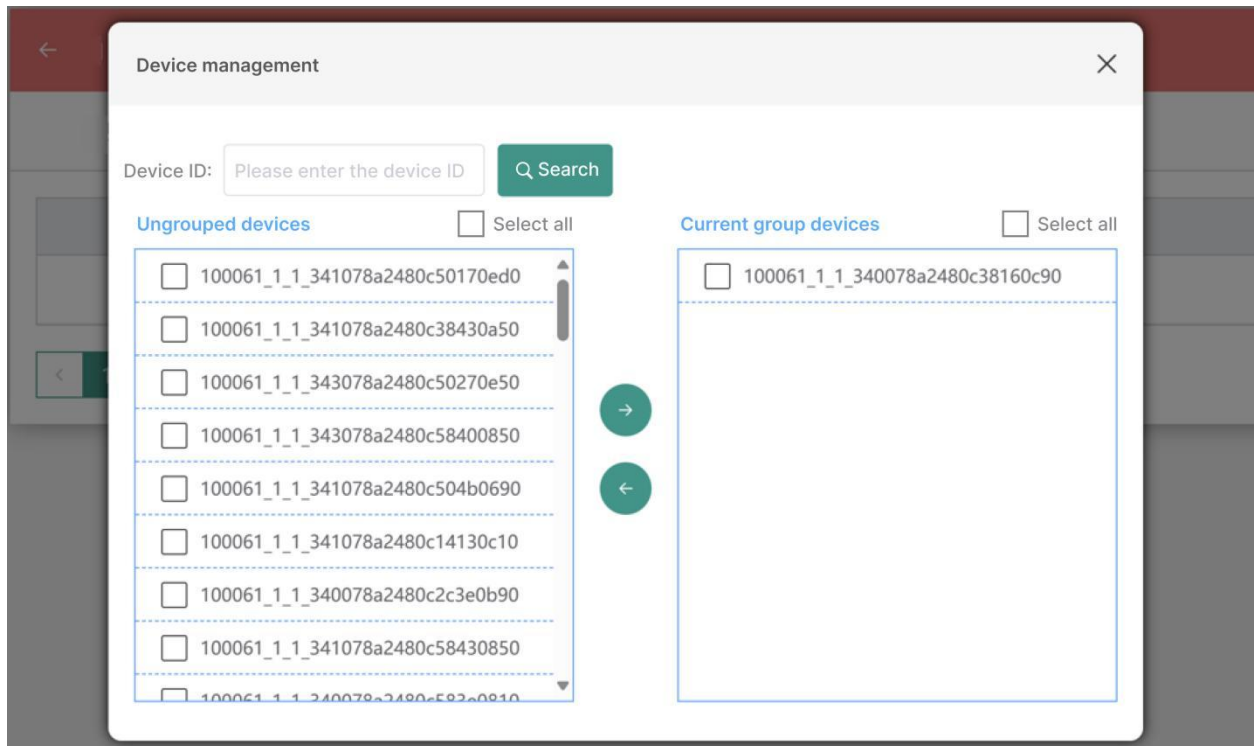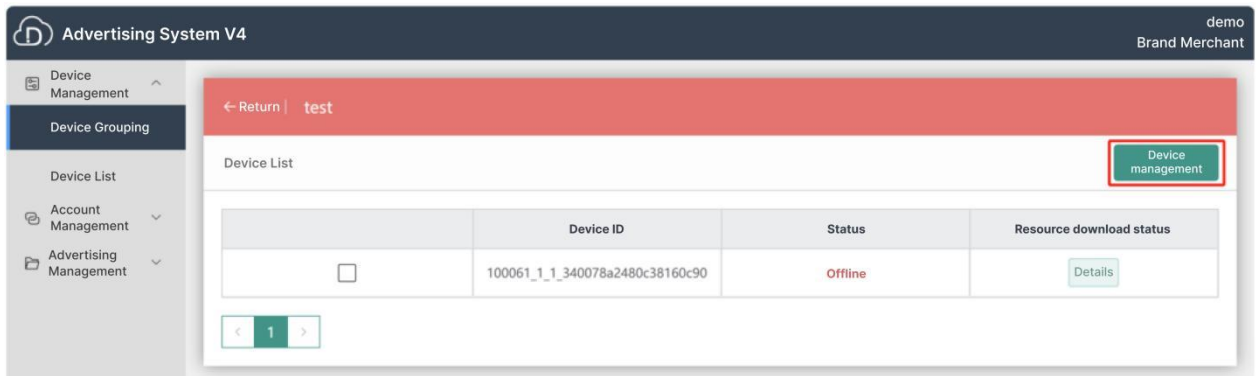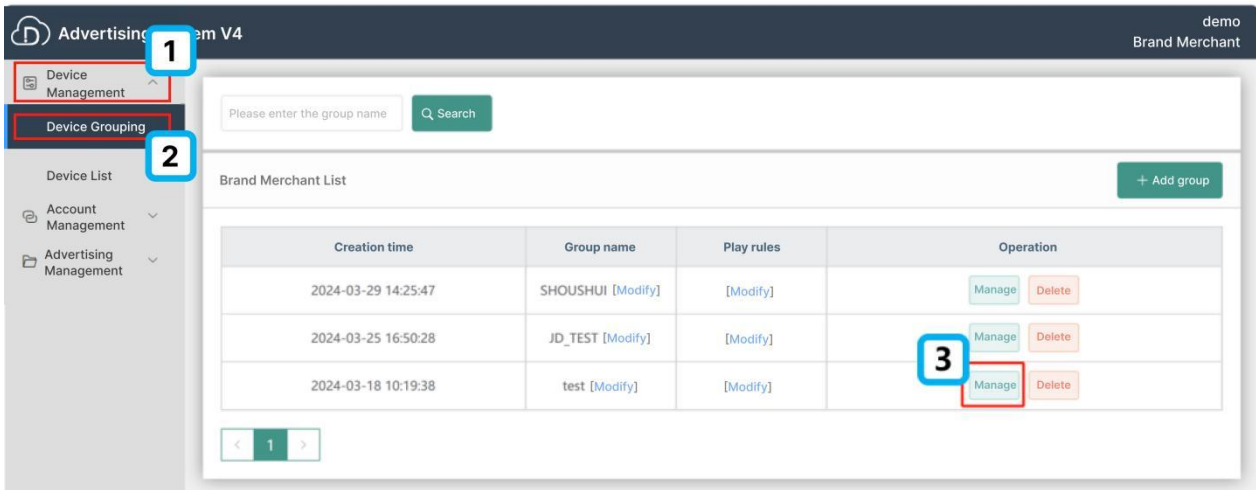
- Device supplier: Each hardware model corresponds to one device supplier, so there is usually only one.
- Brand owner: Can manage video playback, grouping, and can also create and activate operators.
- Operator: Can only manage video playback.There are as many devices that can be managed as the higher-level brand owners.

After configuring WIFI and connecting the device to the cloud platform, the device ID will be notified to the device supplier account, and the device supplier account can assign the ID of this device.

(1) Log in to the brand owner account or operator account to control video playback.

Device grouping: Assign devices that need to play the same video to the same group.
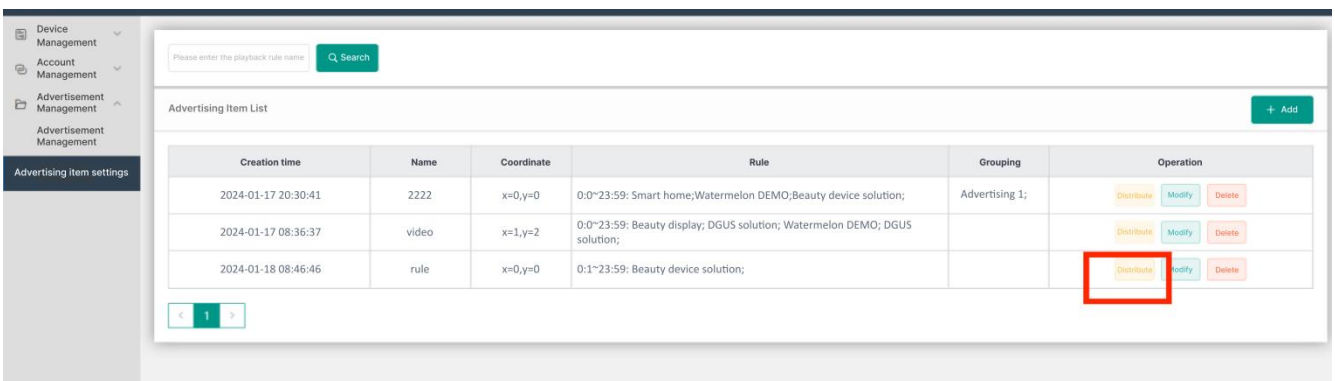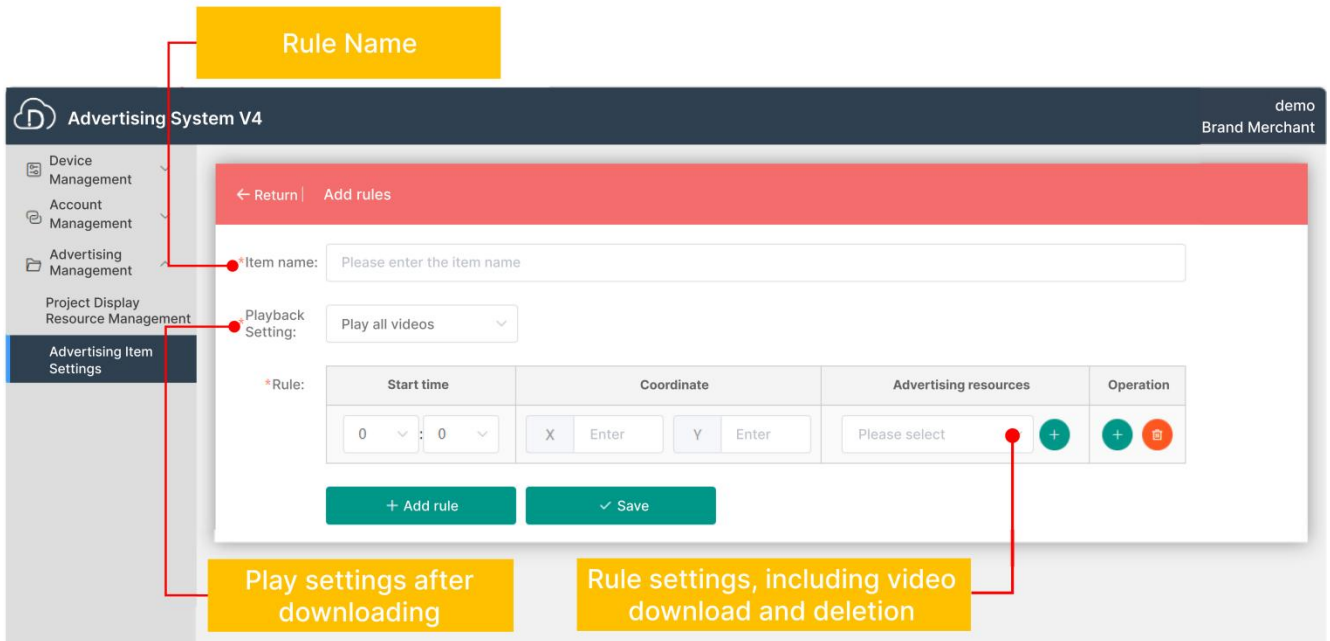

Check the device ID on the left, and click the right arrow to assign the device to the specified group

(2) Advertising management: advertising item setting and remote video update.

The video playback is determined by the rules in the advertising items. After modifying the video settings, click on "Distribute" to distribute the modified video rules to the groups bound by the rules. If there is no grouping, there will be a prompt to select a grouping during distributing.

Note: The "Distribute" key is only effective after modifying the rules.

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6. Revision Records

Version	Revise Date	Content	Editor
1.0	2024-06-18	First Edition	Xu Ying

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