

AP21 Cloud-based Media Player

Specification V1.2



Update Log

Document Version	Update time	Update content
V1.2	2025/7/14	Product name and model changed

Foreword

Thank you very much for purchasing our product, please read this specification sheet carefully before use.

All images in this specification are for reference only, please refer to the actual product.

This specification may not correspond exactly to the products or accessories you purchase. Our company reserves the right to modify any information in this specification at any time and will periodically improve or update its content based on product feature enhancements. Updated content will be added to new versions of this specification without prior notice. Thank you for your understanding.

Safety Precautions

To ensure personal and equipment safety, please follow the safety instructions on the equipment and in the manual when installing, operating, and maintaining the equipment to ensure optimal equipment performance and avoid dangerous or illegal situations.

1. Equipment Introduction

The AP21 Cloud-based Media Player is an LED display controller that integrates multimedia playback and video transmission. It can be used for program editing, publishing, and display control through various user terminals such as PCs, phones, tablets and cloud.

The AP21 Cloud-based Media Player can be widely used in LED commercial displays and smart display fields, such as fixed screens, light pole screens, chain store screens, retail store screens, shelf screens, advertising machines, poster screens, storefront screens, vehicle screens, etc.

2. Features

1. Supports multiple outputs

- Loading capacity: Up to 1.3 million pixels. Maximum width or height: 4096 pixels.
- 2 × LED Gigabit Ethernet ports: Designed for LED applications, capable of driving LED displays via compatible receiving cards.
- 1 × HDMI 1.3 output port: Maximum resolution 1920 × 1200@60Hz, supports HDMI Loop;
- 1 × Channel stereo audio output.

2. Supports multiple input methods

- 1 × HDMI 1.3 input port: Synchronous video input port.
- 2 × Sensor interfaces: For brightness, temperature, and humidity sensors.

3. Excellent processing performance

Processing capacity

- CPU: Quad-core ARM Cortex-A55@1.8GHz
- Decoding: H.264, H.265 4K@60Hz
- RAM: 1GB
- ROM: 32GB

Playback performance

- 1 Channel 4K or 2 Channel 1080P or 4 Channel 720P or 5 Channel 480P or 8 Channel 360P

4.Synchronous/Asynchronous Dual-Mode Switching

- Asynchronous mode: Uses an internal video source;
- Synchronous mode: Uses the HDMI input interface as the video source.

5.Multi-screen synchronized playback

Time-sync options: NTP, GPS (with designated 4G module), or RF (with designated RF module), enabling frame-accurate, simultaneous playback across multiple displays.

6.A wide variety of control methods

- 1× USB (Type B) port: Allows connection to a PC for program distribution and display control;
- 1× Gigabit Ethernet port: Allows for direct connection to a PC via Ethernet cable or connection to a local area network for program distribution and display control;
- With a built-in WiFi AP module, PCs, tablets, and mobile phones can log in to the device via wireless network to send programs and control the display screen;
- Remote program sending and display screen control based on the information messaging system cloud platform;
- Remote display screen status monitoring based on the information messaging system cloud platform.

7.WiFi dual-mode switching

Supports WIFI AP and WIFI STA modes. AP for direct terminal connection; STA for connection via router.

8.Redundant backup

LED Gigabit Ethernet ports provide 1+1 redundant failover: User-selectable primary/ Backup pairs for hitless switchover.

9.4G/5G module installation

4G/5G module(Optional) , once installed, provides Internet connectivity and follows the fixed network-priority order: Ethernet first, Wi-Fi second, 4G/5G last.

3. Equipment appearance

The following are schematic diagrams of the front and back panels of the device.The actual product appearance shall prevail.

3.1. Front panel



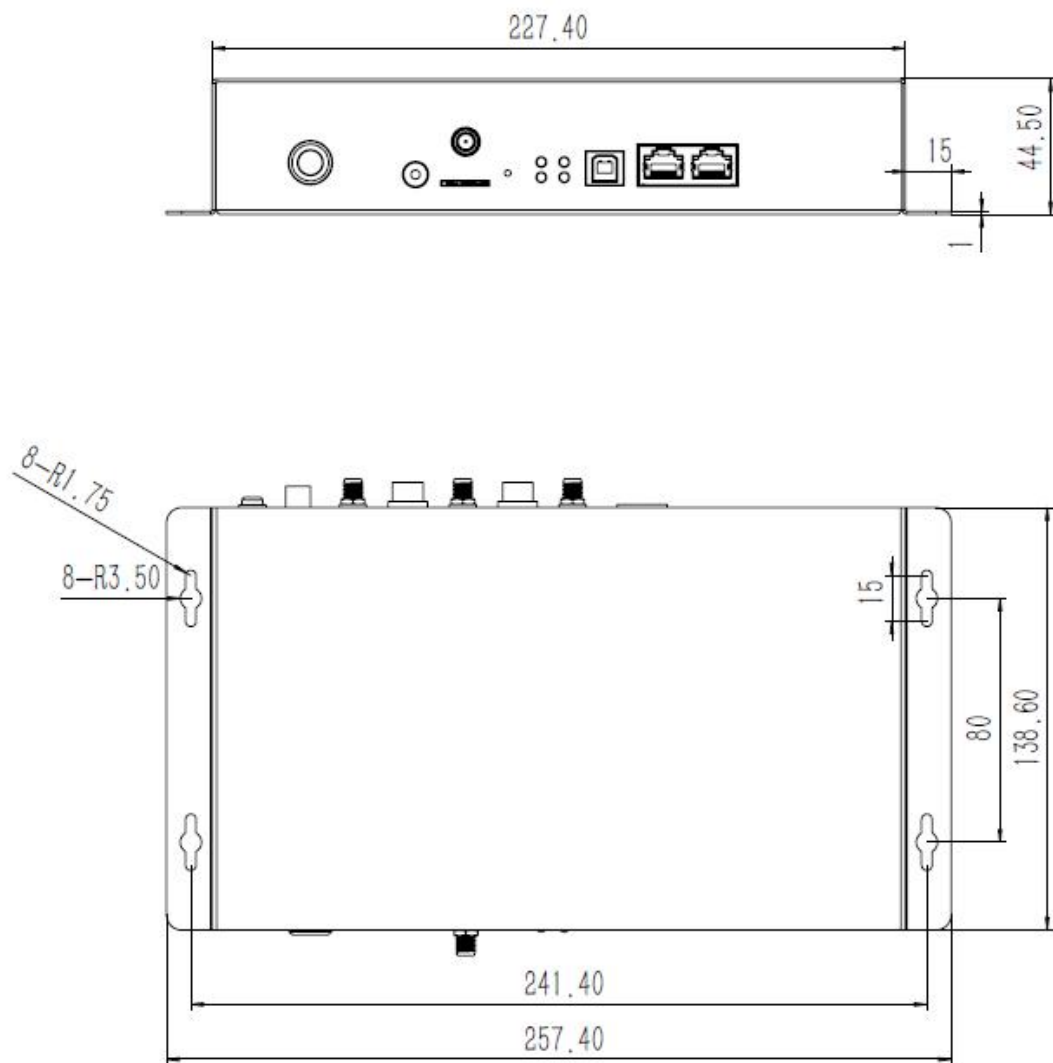
Name	Description
Power Switch	/
SWITCH	The synchronous/asynchronous switching button is always lit up for synchronous mode and off for asynchronous mode.
SIM CARD	SIM card slot,supports reverse insertion prevention.
COM	Reserved antenna interface for RF module;Installation is required when purchasing the RF module separately.
RESET	Press and hold the factory reset button for 5 seconds to activate.
INDICATOR LIGHTS	<p>PWR: Power indicator light,stays on after the device has started up.</p> <p>SYS: System status indicator light.</p> <ul style="list-style-type: none"> Flashes once every 2s: OS runs normally; Constant on/off: OS malfunctions. <p>CLOUD: Cloud status indicator</p> <ul style="list-style-type: none"> Constant on: Internet connected but not cloud; Flashes once every 2s: Cloud connection normal; Flashes once every 1s: OS upgrading; Flashes once every 0.5s: Upgrade package copying. <p>RUN: Running status indicator</p> <ul style="list-style-type: none"> Flashes once every 1s: FPGA runs normally but no video source; Flashes once every 0.5s: FPGA runs normally; Constant on/off: FPGA loading error.
USB	The USB (Type B) interface connects to the host computer to send programs and control the display screen.
LED OUT 1~2	2× RJ45, 2× LED Gigabit output ports: Direct connection to receiving cards.

3.2. Rear panel



Name	Description
HDMI IN	<ul style="list-style-type: none"> HDMI 1.3 standard, synchronous mode input video source Maximum resolution: 1920× 1200@60Hz Supports customized resolutions Maximum width: 4096 pixels Maximum height: 4096 pixels
HDMI OUT	<ul style="list-style-type: none"> HDMI 1.3 standard, supports HDMI LOOP Maximum resolution: 1920× 1200@60Hz Supports customized resolutions <ul style="list-style-type: none"> - Maximum width: 4096 pixels; - Maximum height: 4096 pixels.
ETHERNET	The Gigabit Ethernet port can connect to Ethernet (LAN or public network) or directly connect to a control PC for program distribution and display control.
USB 3.0	<p>The USB (Type A) interface supports playback of USB flash drive programs and firmware upgrades.</p> <ul style="list-style-type: none"> USB flash drive file systems supported: Ext 4, FAT32, but not exFAT and FAT16. Image file formats: JPG, JPEG, PNG and BMP Video encoding format: MPEG1/2, MPEG4, H.263, H.264 (AVC1), H.265 (HEVC), DivX, Xvid Audio encoding formats: MPEG1/2 Layer I, MPEG1/2 Layer II, MPEG1/2 Layer III, AC3, PCM
AUDIO OUT	3.5mm audio output interface
SENSOR 1~2	Sensor interface for connecting various sensors such as brightness, temperature, and humidity sensors.
WiFi	WiFi antenna interface, supports AP and STA switching.
COM 1	4G/5G antenna interface
COM 2	4G/5G or GPS antenna interface
12V 2A	DC power adapter input interface

4. Equipment size



5. Equipment Specifications

Specification	Description	
Electrical	Input power	DC12V 2A
	Maximum Power Consumption	18W
Storage Space	RAM	1 GB
	Internal Storage	32GB
Work Environment	Temperature	-20 °C ~ +60 °C
	Humidity	0% RH ~ 80 % RH, non-condensing
Storage Environment	Temperature	-40 °C ~ +80 °C
	Humidity	0% RH ~ 80% RH, non-condensing
Physical Specifications	Size (L×W×H)	Excluding interfaces: 257.4×138.6×44.5 mm
	Net Weight	1.13kg
Accessories	<ul style="list-style-type: none"> • 1× WiFi Omnidirectional Antenna • 1× DC12V power adapter 	<ul style="list-style-type: none"> • 1× Quick Guide • 1× Packing List
Protection Level	IP20, please be aware of water resistance. Avoid water droplets entering the product, and do not wet or rinse the product.	
System Software	Android 11.0 operating system software; Android terminal application software; FPGA firmware program. Note: Installation of third-party applications is not supported.	

6. Multimedia decoding specifications

6.1. Image

Codec	Maximum Size	Format	Remark
JFIF file format 1.02	4096× 2160 pixels	.jpg .jpeg	Progressive-scan only; JPEG: SRGB & Adobe RGB JPEG supported
BMP	4096× 2160 pixels	.bmp	/
GIF	4096× 2160 pixels	.gif	/
PNG	4096× 2160 pixels	.png	/
WEBP	4096× 2160 pixels	.webp	/

6.2 Video

Codec	Resolution Range	Max fps	Max bit-rate	Format	Remark
MPEG-1/2	48× 48 - 1920× 1080	30 fps	80Mbps	.dat .mpg .vob .ts	Support Field Coding
MPEG4	48× 48 - 1920× 1080	30 fps	38.4Mbps	.avi .mkv .mp4 .mov .3gp	v1/v2/v3 & GMC not supported
H.264	48× 48 - 4096× 2304	2304p@ 30fps	80Mbps	.avi .mkv .mp4 .mov .3gp .ts .flv	Support Field Coding & MBAFF
H.264 MVC	48× 48 - 4096× 2304	2304p@ 60fps	100Mbps	.mkv .ts	Support Stereo High Profile only
H.265/HEVC	64× 64 - 4096× 2304	2304p@ 60fps	100Mbps	.mkv .mp4 .mov .ts	Support Main Profile, Tile&Slice
VP8	48× 48 - 1920× 1080	30 fps	38.4Mbps	.webm .mkv	/
VP9	64× 64 - 4096× 2304	60 fps	80Mbps	.webm .mkv	/
H.263	SQCIF(128× 96) QCIF(176× 144) CIF (352× 288) 4CIF(704× 576)	30 fps	38.4Mbps	.3gp .mov .mp4	H.263+ not supported
MJPEG	48× 48 - 1920× 1080	60 fps	60Mbps	.avi	/

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Official website



LinkedIn Account

Official website: www.digibirdtech.com

Phone: (+86) 400-820-8050

Email: sales@digibirdtech.com

China Headquarters: Building D, Tencent WeStart, East Huilongguan Street,
Changping District, Beijing