摩西尔
Mooncell

KM403

Video Linkage Player Series

Specification 4.0

CONTENT

1 Update Records

Document Version	Hardware Version	Release Time	Update Record
V4.0	KM403	August 19(th), 2025	First release

2 Product Introduction

The KM403 features a high-performance octa-core CPU with 4 Cortex-A76 cores and 4 Cortex-A55 NEON cores, operating at a maximum clock speed of 2.4GHz. It incorporates a Mali-G610 GPU, 4GB onboard RAM, and 128GB EMMC internal storage, delivering robust image processing capabilities and hardware decoding for H.264/H.265 high-definition video.

The KM403 supports 1 HDMI input, 3 HDMI 2.0 outputs, and 4K resolution. Designed for entertainment applications like KTV rooms, 5D/6D party rooms, and bars, this multifunctional display controller supports standard DMX512 lighting protocols, audio source detection, and automatic scene switching. It synchronizes lighting, music, and video content to create immersive atmospheres, making KTV room displays smarter and more impressive.

3 Product Characteristics

3.1 Input and Output Interface

- Input Interfaces
  - Supports 1 HDMI IN inputs, capable of overlaying Android screens
- Output Interfaces
  - Supports 3 HDMI 2.0 output, support 4Koutput
  - Supports screen splicing and synchronized playback

3.2 Diversified functions

- Supports high-definition video and image playback, with zoom, picture-in-picture, and picture-out-of-picture functions
- Supports PC connection for web-based management settings, offering flexible and convenient operation
- Compatible with karaoke machines and smart control systems from various manufacturers
- Features panel button scene switching, audio detection, and DMX512 control capabilities
- Embedded hardware architecture ensures stable operation and low power consumption
- Supports multi-window playback with configurable window size and position settings, and supports window overlay functionality.

4 Application Scenarios

KM403 is a KTV video linkage player that serves as the core component of a comprehensive KTV display control system. Supporting the standard DMX512 lighting protocol and enabling automatic scene material switching, it delivers smarter and more dazzling screen displays for KTV rooms.

KM403 switches between corresponding scene modes via wall panel buttons or DMX512 commands, synchronizing video, music, and lighting in each mode to create an immersive audiovisual experience. It offers significant advantages for LED screens in KTV rooms, bars, and nightclubs.

5 Function Introduction

5.1 Features

- Built-in 128GB EMMC internal storage with preloaded multi-scenario assets, auto-launching at startup
- Supports Gigabit Ethernet connectivity
- 3 HDMI ports support independent video output, capable of 4K resolution, and can be seamlessly stitched into a 11520×2160 display.
- Supports HDMI input + foreground + background with multi-layer overlay, featuring picture-in-picture and picture-outside-picture functionality
- External karaoke machine input via HDMI enables picture-in-picture display on screen with source switching support
- WEB-based visual operation allows custom window sizing/positioning and media library management
- Supports arbitrary window combinations with up to 60 playback windows
- Supports 5D slicing for 5D image fusion
- Supports window transparency settings
- Supports text, image, and video overlay playback with seamless video transitions
- Multiple playback modes including loop and command-based playback
- Adjustable screen brightness and RGB color settings
- Video effects: rotation, scaling, strobing, tiling, speed adjustment
- USB drive content updates with three copy modes: overwrite, clear, append
- Supports standard DMX512 lighting protocol for integration with song selection systems, enabling synchronized video, music, and lighting control
- Enables manual switching between various scene modes via mobile app or wall panel

5.2 Format Requirements for signal source

Video Format	MP4
Video Coding	H.264
Video Frame Rate	Recommended：60fps
Video Resolution	Recommended: 3840*2160
Video Bitrate	Maximum bit rate: 30 Mbps
Picture Format	JPG、JPEG、PNG,etc.

5.3 Device Management

Network Communication	LAN
Program Updating	Network or USB Flash Drive
Terminal Device	PC or other Intelligent Terminal Devices
Software Management	The device comes with a web sever, and the terminal can access the device through a browser

5.4. V3.0 DMX 512 Channels Illustration

V3.0 Channel Table, corresponding to player version 9.3.1.XX

#	Function	Channel Value	Illustration
1	Foreground Folder	1~255	Select the foreground directory, corresponding to 001~255 folders, 0 is empty.Channels 1 and 3 cannot be 0 at the same time, and the 51 directory is to remove the black background.
2	Foreground Folder	0	Randomly play the materials in the folder (no matter what mode the web is set to)
		1~255	Uni cast mode: the specified material is played in a loop Sequential mode: play the material with the specified value first, and then play other materials in sequence Random mode: play the material with the specified value first, and

			then play other materials randomly
3	Background Folder	1~255	Select the foreground directory, corresponding to 001~255 folders, 0 is empty.Channels 1 and 3 cannot be 0 at the same time, and the 51 directory is to remove the black background.
4	Background Material	0	Randomly play the materials in the folder (no matter what mode the web is set to)
		1~255	Uni cast mode: the specified material is played in a loop Sequential mode: play the material with the specified value first, and then play other materials in sequence Random mode: play the material with the specified value first, and then play other materials randomly
5	Background Light Adjustment	0~255	0: turn off the light, 1~255 increases the brightness proportionally, 255: maximum
6	Background Light Adjustment	0~255	0: turn off the light, 1~255 increases the brightness proportionally, 255: maximum
7	Strobe	0~255	0: Off, 1-32 All, 33-64 Foreground, 65-96 Background: Proportionally increase the stroboscopic speed, (the slowest is 1 frame/s, the fastest is 30 frames/s)
8	RED	0~254	Brightness adjustment of red color during playback, 0: no red
		255	The entire led screen is pure red
9	GREEN	0~254	Brightness adjustment of green color during playback, 0: no green
		255	The entire led screen is pure green
10	BLUE	0~254	Brightness adjustment of blue color during playback, 0: no blue

		255	The entire led screen is blue
11	Play Speed	All	0-10: normal, 11-20:2 times speed, 21-30:1.5 times speed, 31-40:0.8 times speed, 41-50:0.5 times speed, 51-60: suspended
		Foreground	0-10: normal, 11-20:2 times speed, 21-30:1.5 times speed, 31-40:0.8 times speed, 41-50:0.5 times speed, 51-60: suspended
		Background	0-10: normal, 11-20:2 times speed, 21-30:1.5 times speed, 31-40:0.8 times speed, 41-50:0.5 times speed, 51-60: suspended
12	PIP	0 21~30	No window
		1~10 41~50	Enable the HDMI window of the HDMI OUT1 port
		11~20 51~60	Enable the HDMI window of the HDMI OUT2 port
		31~40 250~255	Simultaneously enable the HDMI window of the HDMI OUT1/OUT2 port
		61~249	Current Status: Closed
13	Scaling(ZOOM)	0	Original Resolution(scale):(window is not scaled)
		1~50	Enlarged (Zoom IN), 1-10: The image is enlarged to scale, up to 3 times. 11-20: The image is scaled down to a minimum of 1 pixel. 21-30: The video is rolled back to the original window ratio of 1 pixel. The larger the value, the faster the rollback speed. 31-40: After the original scale of the video is enlarged by 3 times, the scale is rolled back. The larger the value, the faster the rollback speed. 41-50: The video is scaled back after 1 pixel is enlarged by 3 times. The larger the value, the faster the rollback speed.

		51~100	ZOOM OUT, 51-60: The foreground image is scaled up to 3x. 61-70: The foreground image is scaled down to a minimum of 1 pixel. 71-80: The foreground video is rolled back in a ratio of 1 pixel to the original window. The larger the value, the faster the rollback speed. 81-90: The original scale of the foreground video is rolled back after being enlarged by 3 times. The larger the value, the faster the rollback speed. 91-100: The foreground video is scaled back after 1 pixel is enlarged by 3 times. The larger the value, the faster the rollback speed.
		101~150	Zoom Out dynamically, 101-110: The background image is scaled up to 3x. 110-120: The background image is scaled down to a minimum of 1 pixel. 121-130: The background video is rolled back to the original window ratio of 1 pixel. The larger the value, the faster the rollback speed. 131-140: The original scale of the background video is rolled back after being enlarged by 3 times. The larger the value, the faster the rollback speed. 141-150: The background video is scaled back after 1 pixel is enlarged by 3 times. The larger the value, the faster the rollback speed.
14	Rotation	0	Normal
		1~40	1-10: Rotation from 0 ° to 360 ° (static) 11-20:0 °~ 360 ° rotate clockwise, the larger the value, the faster the speed 21-30:0 °~ 360 ° rotate counterclockwise, the larger the value, the faster the speed 31-40:0 °~ 360 ° Rotate 1 turn clockwise and then 1 turn counterclockwise (repeat), the larger the value, the faster the speed.
		41~90	41-50: No rotation 51-60: Rotation from 0 ° to 360 ° (static) 61-70:0 °~ 360 ° rotates clockwise, the larger the value, the faster the speed. 71-80:0 °~ 360 ° rotate counterclockwise, the larger the value, the faster the speed 81-90:0 °~ 360 ° Rotate 1 turn clockwise and then 1 turn counterclockwise (repeat), the larger the value, the faster the speed.

		91~140	91-100: No rotation 101-110: Rotation from 0 ° to 360 ° (static) 111-120:0 °~ 360 ° rotates clockwise, the larger the value, the faster the speed 121-130:0 °~ 360 ° counterclockwise rotation, the larger the value, the faster the speed 131-140:0 °~ 360 ° rotate 1 turn clockwise and then 1 turn counterclockwise (static), the larger the value, the faster the speed
15	Tiling	1-16	1: Tile matrix 1x2 2: Tile matrix 1x3 3: Tile matrix 1x4 4: Tile matrix 2x1 5: Tile matrix 2x2 6: Tile matrix 2x3 7: Tile matrix 2x4 8: Tile matrix 3x1 9: Tile matrix 3x2 10: Tile matrix 3x3 11: Tile matrix 3x4 12: Tile matrix 4x1 13: Tile Matrix 4x2 14: Tile Matrix 4x3 15: Tile Matrix 4x4 16: Full Off
		17-32	17: Tile matrix 1x2 18: Tile matrix 1x3 19: Tile matrix 1x4 20: Tile matrix 2x1 21: Tile matrix 2x2 22: Tile matrix 2x3 23: Tile matrix 2x4 24: Tile matrix 3x1 25: Tile matrices 3x2 26: Tile matrices 3x3 27: Tile matrices 3x4 28: Tile matrices 4x1 29: Tile Matrix 4x2 30: Tile Matrix 4x3 31: Tile Matrix 4x4 32: Full Off
		33-48	33: Tile matrices 1x2 34: Tile matrices 1x3 35: Tile matrices 1x4 36: Tile matrices 2x1 37: Tile matrices 2x2 38: Tile matrices 2x3 39: Tile matrices 2x4 40: Tile matrices 3x1 41: Tile matrix 3x2 42: Tile matrix 3x3 43: Tile matrix 3x4 44: Tile matrix 4x1 45: Tile Matrix 4x2 46: Tile Matrix 4x3 47: Tile Matrix 4x4 48: Full Off
16	Audio switching	0~255	0: Available wall panel control 1-10: Switch VOD channel 11-20: Switch DJ channel
17	Special	0	closed

	effects	1-20	1-10: From slow to fast, top left to bottom right jitter 11-20: Random jitter from slow to fast 41-50: Slide left to right to enter, slow to fast to enter, and then stop after bouncing 51-60: Slide left to right to enter, slow to fast to enter, bounce and loop
		21-80	21-30: Slide from right to left to enter, slow to fast to enter, and then stop after bouncing 31-40: Slide from right to left to enter, slow to fast to enter, bounce and loop 41-50: Slide left to right to enter, slow to fast to enter, and then stop after bouncing 51-60: Slide left to right to enter, slow to fast to enter, bounce and loop 61-70: Slide from top to bottom to enter, slow to fast to enter, and then stop after bouncing 71-80: Slide from top to bottom to enter, slow to fast to enter, bounce and cycle
		81-120	81-90: Page rotation from left to right center, slow to fast page 360 and then stop 91-100: Turn the page from left to right center, turn the page from slow to fast 360 and cycle 101-110: Page rotation from right to left center, slow to fast page 360 and then stop 111-120: Turn pages from right to left center, turn pages from slow to fast 360 and cycle
18	Screen Running Group	0~100	The higher the number, the faster it is.
19	Screen Slicing	0~50	1-10， 11-20， 21-30， 31-40，41-50， five groups
20	Reserved		

5.5 Using the USB Flash Drive to Import the Materials

Create a third-level folder in the root directory of the USB Flash Drive：

1、MBBox/ktv/XXX

2、MBBox/ktv_add/XXX

3、MBBox/ktv_clear/XXX

Note: Ktv、ktv_add、ktv_clear folders,among them only one of three can be chosen，and they cannot exist at the same time. The XXX folder name is 001~255, copy the material files into the corresponding XXX folder

3 ways to import:

ktv (overwrite copy): the material in the USB Flash Drive directory will overwrite the same material in the corresponding directory of KM403

ktv_clear (clear copy): If there is XXX directory in the USB Flash Drive, clear the corresponding directory of KM403, and then copy the material

ktv_add (add copy): If there is a YY file in the XXX directory in the USB Flash Drive, and there is a file with the same name in the corresponding directory of KM403, a number will be added in front of the same file name in the USB Flash Drive, and then copied, without affecting the original material

6 Product Appearance

Front Panel

*Product images are for reference only. The actual product shall prevail upon purchase.

Name	Illustration
Power	Power Switch
Button	Press button to switch scenes
AUDIO	AUDIO OUT/AUDIO IN：Audio Input/
USB	USB2.0×2、USB3.0×1；Supports external USB drives, mice, and other devices.

Rear Panel

*Product images are for reference only. The actual product shall prevail upon purchase.

Name	Illustration
100-220V AC Power	Input Power Interface: AC 100-220V, 50/60Hz
LAN	Gigabit Ethernet Network Access
WIFI	Wi-Fi Antenna, Boosts Wireless Signal
COM	Currently no function
DC12V	Input Power Connector 12V
HDMI IN	1 HDMI Inputs
HDMI OUT	3 HDMI Output, support 4K output, 4K-1、4K-2、4K-3
DMX512 Interface	2*RJ45 ports (568B standard) for direct connection to KTV smart control systems, enabling audio-visual synchronization
RS485 Interface	2*RJ45 ports (568B standard) for connecting to wall panels to switch scenes
TTL Interface	1*RJ45 port (568B standard) for connecting to wall panels to switch scenes
Audio Input/Output	2 sets of audio input/output interfaces: Set 1: VOD audio input: RCA, audio output: RCA Set 2: DJ audio input: RCA, audio output: RCA Shared RCA output connects to smart control audio interface for real-time audio monitoring, enabling audio-visual synchronization.

6.2Front Panel Button

Name	Indicator Light Explanation
Add	Increase Value
Subtract	Decrease Value
Menu	Function Selection Key
OK	After selecting a function and setting value, press the confirmation key to save
ESC	Exit Function Selection

Menu 1: dmx512 address

Control the start address of the dmx512 channel by addition and subtraction

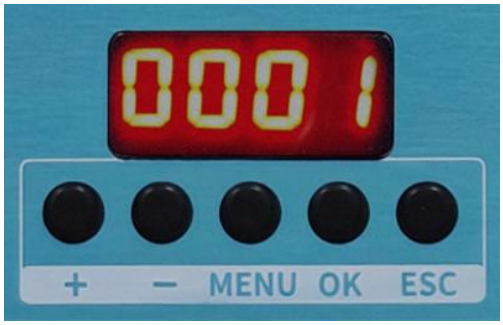
Menu 2: Filter Frame Number

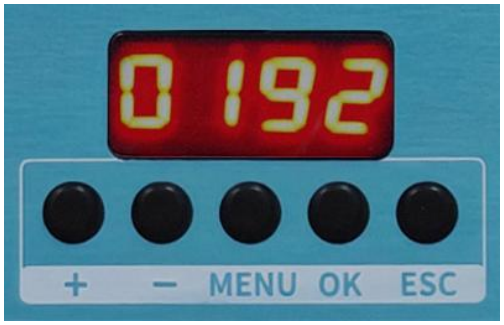
Set dmx512 filter frame data, the default is 3.

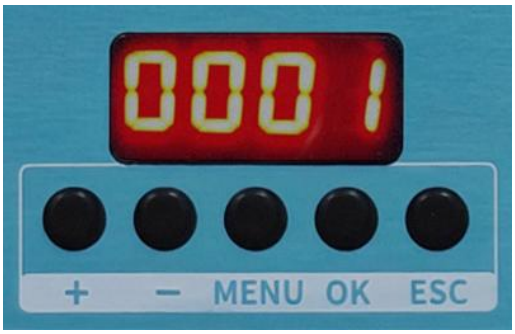
Menu 3: DHCP Settings

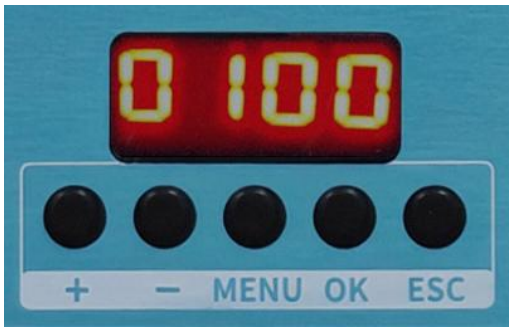
Entering the menu will automatically cycle the ip display (the ip obtained when powered on needs to be re-acquired if there is an update). The first data 01 represents static, and 00 represents dynamic.

The following figure shows the static IP 192.168.1.100









Enter the settings interface through addition and subtraction

0: Open DHCP； 1: Disable DHCP ； 2: Get the IP.

Menu 4: Log Save Settings

1 is not saved，0 to save

Menu 5: HDMI IN Selection and Status

1. Press the F menu to display 1, which means that HDMI IN 1 is currently plugged in. If it displays 2, it means that HDMI IN 2 is currently plugged in.

2. When the HDMI IN of the device is only plugged into one signal, the device will automatically select the one with the signal to display. When both HDMI IN channels of the device are plugged in, you need to select 1 or 2 through the menu and then press Confirm to select.

Menu Six: G Menu Drum Coefficient

Set drum source data coefficient, 6 by default

Menu 7: H Menu Drum Data

H menu drum data minimum, default 40

Menu 8: I Menu Drum Data

I menu drum data maximum, default 140

Menu 9: J Menu Drum Data

J menu MCU status Displays the status code according to different configurations, and does not need to be adjusted

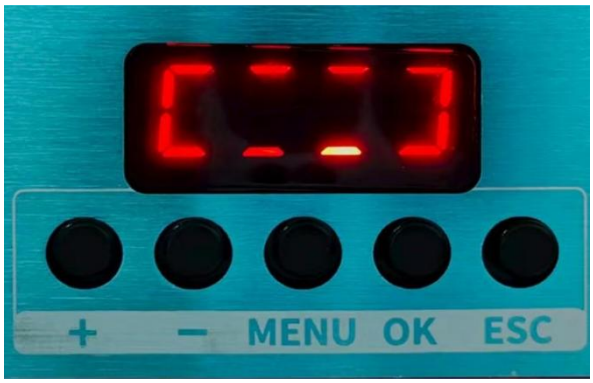
Menu 10: K Menu DB Settings

K menu db setting value sets to smaller or negative, the default is 3.

6.3 Special Front Panel Conditions

Status 1: Flashing: The LED display flashes when receiving DMX512 data.

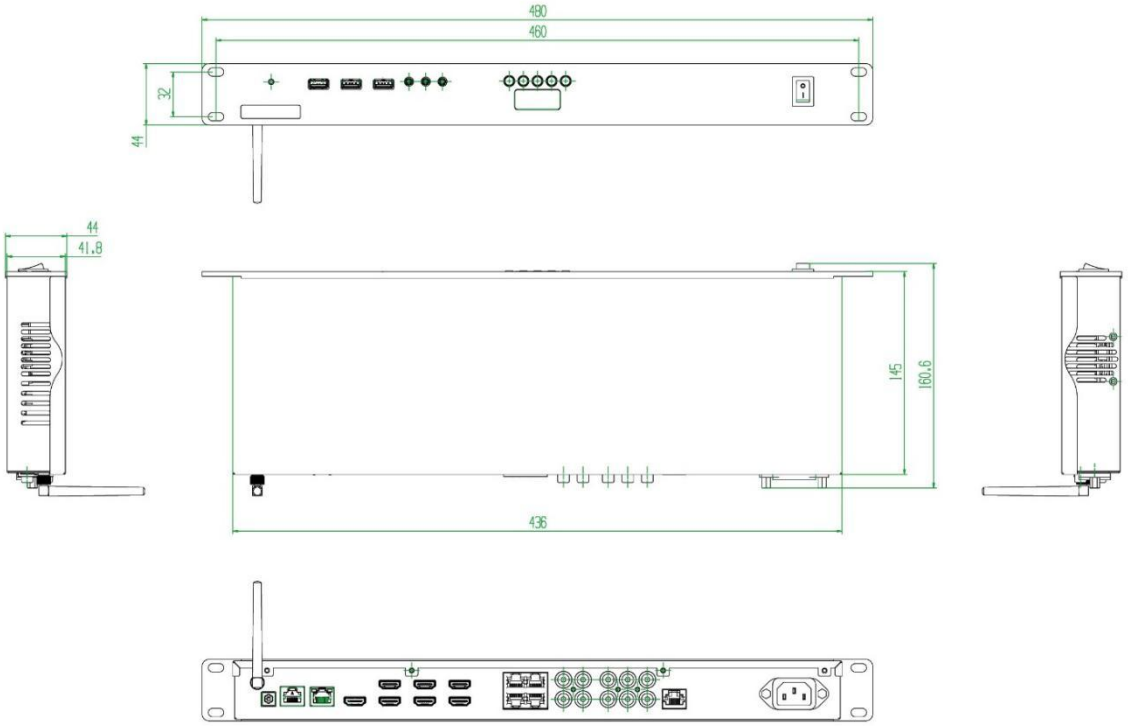
Status 2: Copy Interface: When copying files from a USB drive, the digital display enters the copy interface. Upon completion, it returns to the 512 directory interface.



Status 2: Copy Interface: When copying files to the USB drive, the digital display enters the copy interface.Upon completion, it returns to the 512 directory interface.

6.4 Dimensions

Unit :MM



Tolerance：±0.3　　Unit：mm

7 Product Parameters

7.1Basic Parameters

Performance Parameters	High-performance CPU + GPU RAM: 4GB DDR3 high-speed memory Internal storage: 64GB eMMC high-speed storage
Network Access Method	Gigabit Ethernet
Video Interface	1×HDMI inputs, 3×HDMI2.0 output
Supported Sending Card	Standard HDMI output, compatible with sending cards from various manufacturers

7.2 Specification

Electric Parameters	Rated Voltage	AC-100-240V-50/60HZ
	Rated Power	15W
Working Environment	Working Temperature	-20℃ - 65℃
	Working Humidity	10%RH-90%RH No solidification
Dimensions	Unit Dimensions：480mm x 160mm x 44mm	
Net Weight	1.9 Kg	
Packing Information	Accessory	1×HDMI cable, 1×power cord, 1×network cable, 1×certificate of conformity
	Packing Box	515×222×120mm
	Gross weight	2.7kg
	Packing method	3 PCS/box

8 Precautions

- High voltage hazard: This product operates at AC 100V~240V.
- Do not allow liquids or metal fragments and other conductive materials to enter the device, to prevent safety accidents.
- Please use the device in a dry and clean environment.

National after-sales services hotline: 400-881-3531

Official website: www.mooncell.com.cn

Address: Mooncell Building, Third Industrial Zone, Baoshi South Road, Shiyan Street, Baoan District, Shenzhen