摩西尔
Mooncell

USER MANUAL

MC2K | MC4K | MC4K Pro | MC8K | MC8K Pro

MC-M2

MEDIA SERVER SOFTWARE

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1. Overview

1.1 Software Operating Modes

MC-M2 supports two operating modes: All-in-One Mode and Networked Mode.

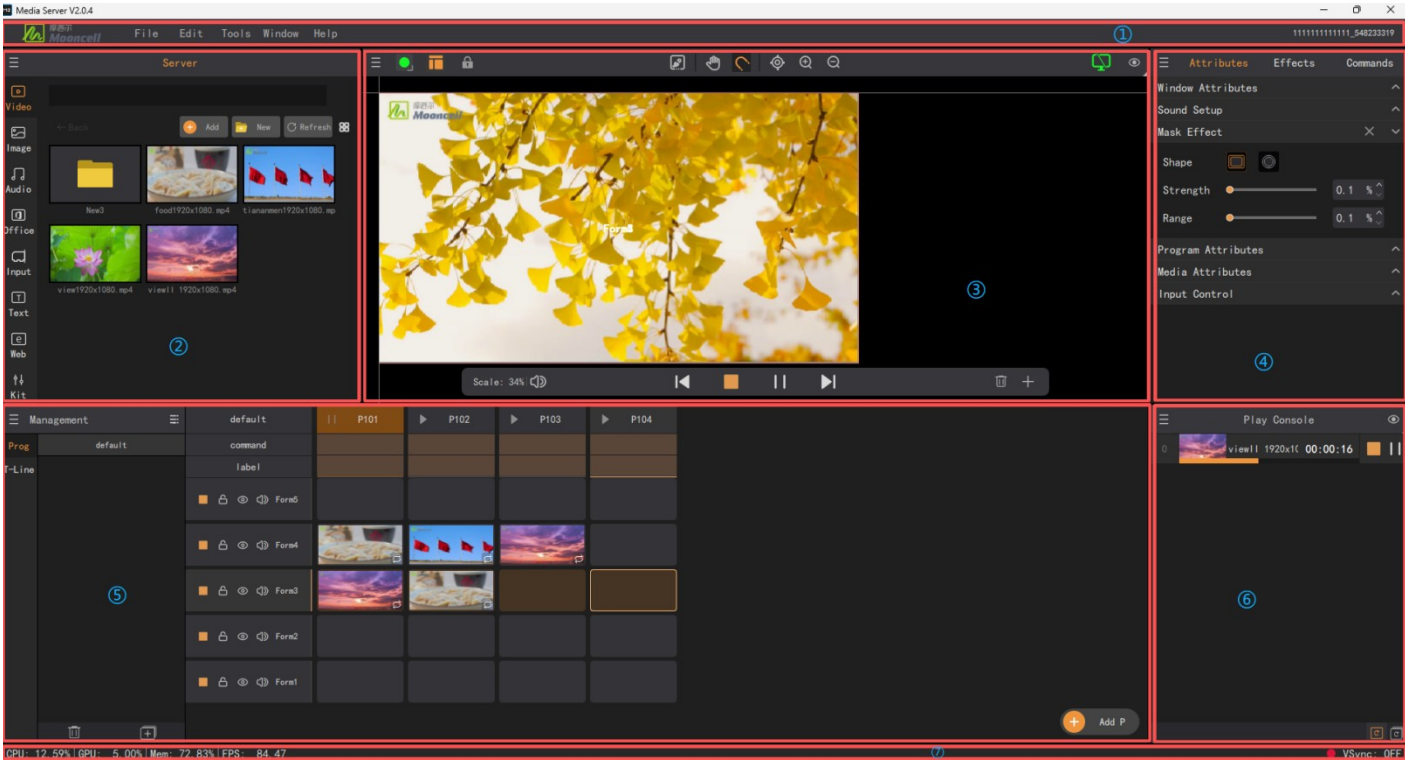
All-in-One Mode

In All-in-One Mode, the user interface, media editing, playback control, rendering, and video output all run on a single media server. Because no inter-server data transfer is required, the system is not affected by network communication errors. Live capture sources can be previewed, edited, rendered, and output in real time. This mode is recommended for projects with a limited number of output channels.

Networked Mode

In Networked Mode, multiple media servers operate as a cluster. A dedicated Control Server runs the user interface, while one or more Display Servers render and output video. Adding Display Servers increases the available GPU output connectors and the number or resolution of displays that the system can drive. This mode is intended for large, high-resolution, multi-display projects.

1.2 User Interface Overview



1. Main Menu: Provides File, Edit, Tools, Window, and Help menus for project management, system settings, software updates, and other common operations.
2. Media Library: Organizes video, image, audio, and other media assets.
3. Stage View: Displays the current program output and provides a real-time preview of each window.
4. Properties, Effects, and Commands Panel

Properties: Configures the name, size, position, and other parameters of the selected window or media item.

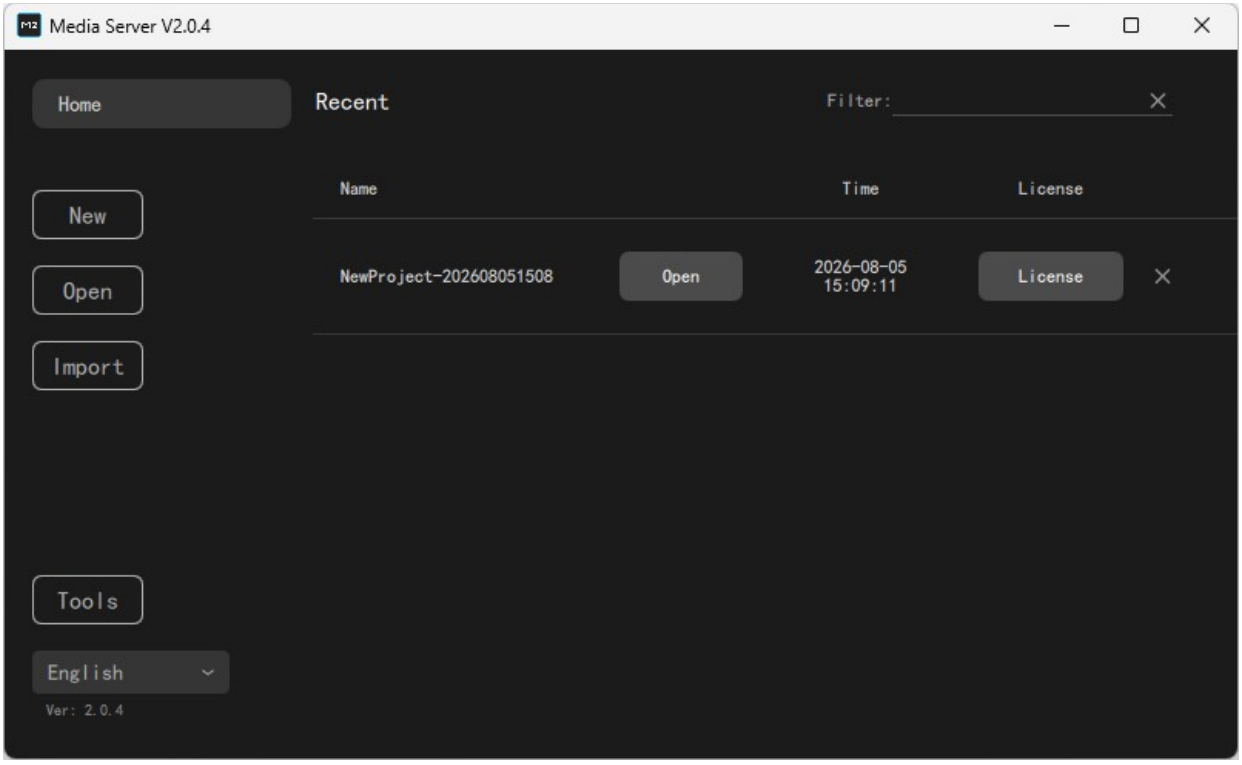
Effects: Adds entrance animations, transitions, CAVE conversion, and other visual effects.

Commands: Configures linked control commands, timing, and other external-control actions.

5. Playback Control Area: Organizes program groups, programs, windows, and media playback.
6. Playback Console: Shows the active program and media status and provides play, pause, seek, preview, and media-location controls.
7. System Status Area: Displays CPU, GPU, memory, output frame rate, and vertical-sync status.

2. Creating a Project

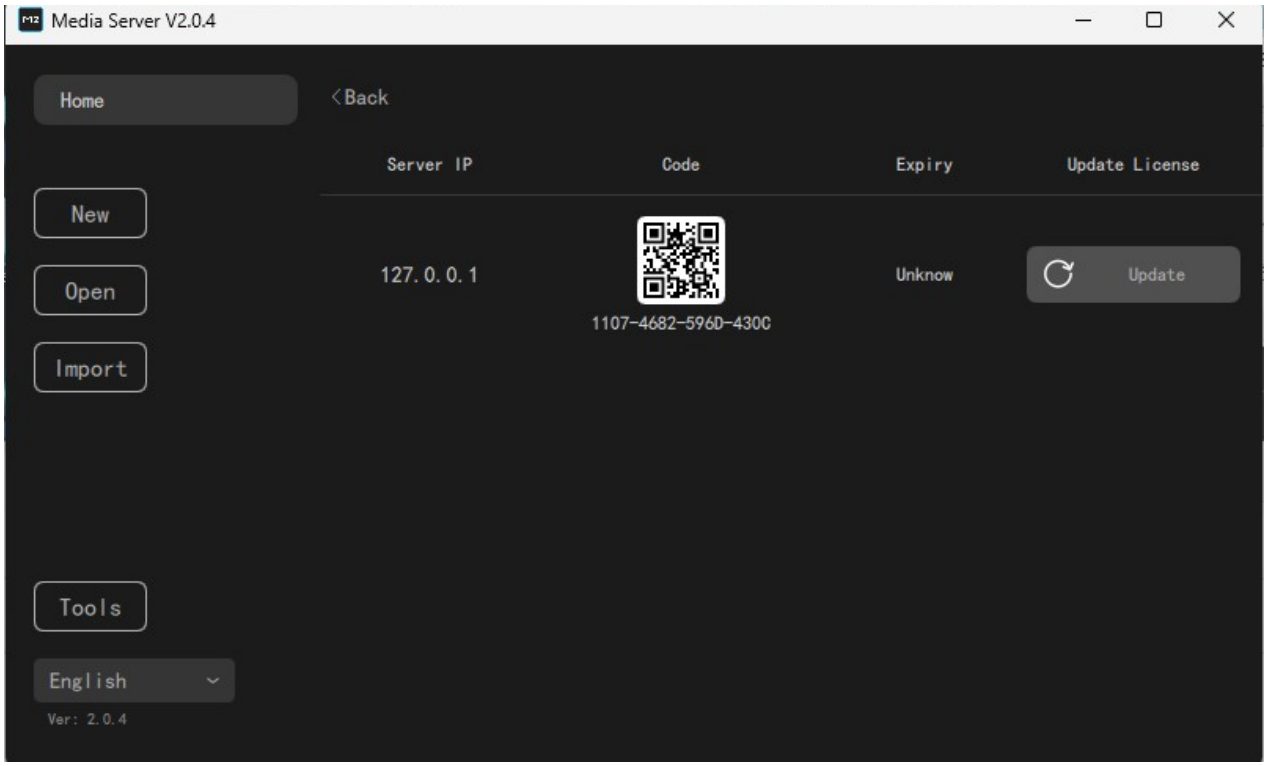
2.1 Starting MC-M2



1. New: Creates a new project.
   Open: Opens a project saved on the local computer.
   Import: Imports project data from an external folder.
2. Recent Projects: Lists recently opened or edited projects. Select License on a project card to review its license.
3. Search: Searches the recent-project list.
4. Language: Switches the MC-M2 interface between Chinese and English.

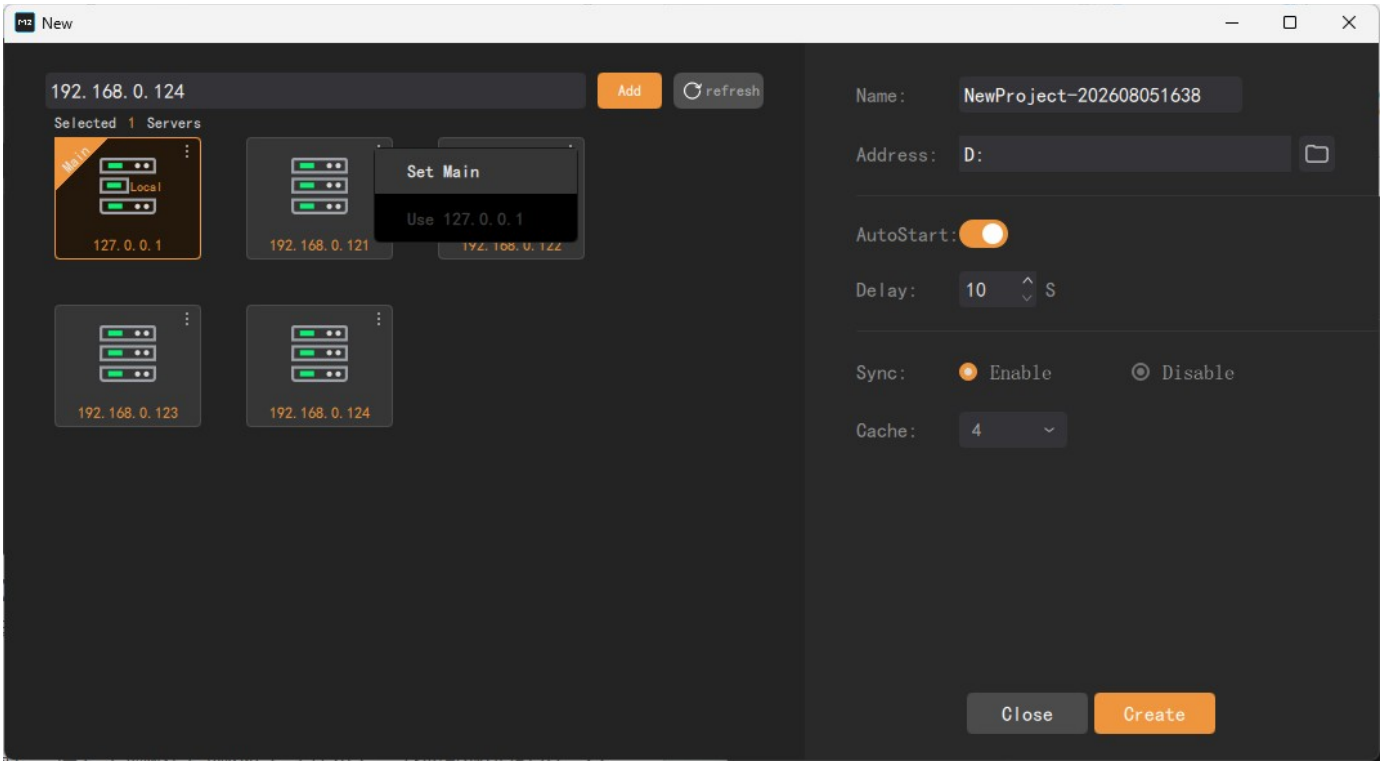
2.2 Updating a License

On the project start page, click License to open the Update License page.



1. License List: Displays the licenses associated with recent projects.
2. Update License: Click Update License and wait for the update to complete.
3. Back: Returns to the previous page.

2.3 Creating a New Project



1. Add Server: Enter the server IP address and click Add to include it in the management list. Click Refresh to retrieve the latest server status and list information.

2. Primary Server: In a multi-server project, designate one server as the Primary Server. All other servers operate as secondary servers.

3. Change the Primary Server: Open the More menu on the required server card and select Set as Primary. The selected server becomes the Primary Server and the previous Primary Server is changed to a secondary role. A project can have only one Primary Server.

4. Linked Server: A highlighted card indicates that the server is linked to the current project. Click a gray server card to link it; the card becomes highlighted.

5. Unlinked Server: A gray card indicates that the server is not linked to the current project. Click a highlighted card to unlink that server. An unlinked server does not participate in project playback or output.

Important: Make sure the Display Server application is running in the background on every server before creating the project.

6. Project Parameters: Enter the project name and storage path, then configure Launch at Startup, startup delay, Frame Sync, and the frame buffer as required.

7. Create: After completing the settings, click Create to generate and open the project.

2.4 Server Connection Status

After a project is created, MC-M2 opens the main workspace automatically.

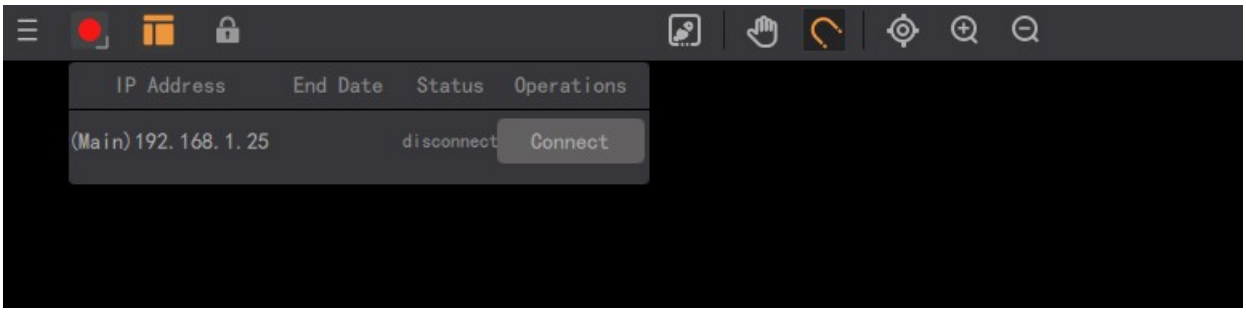
The status indicator in the upper-left corner of the Stage View shows the current server connection state.

Green: All servers are connected.

Red: All servers are disconnected.

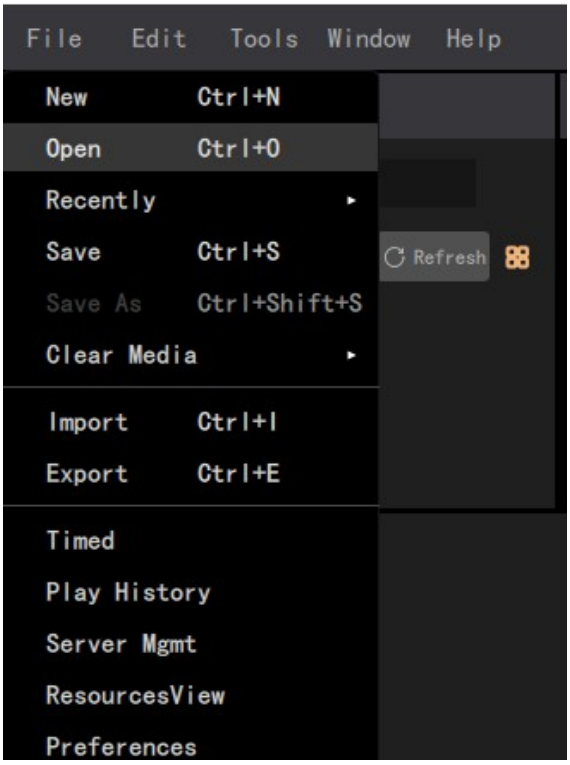
Orange: One or more servers are disconnected.

Click the status indicator to display every server and its connection state. From this menu, you can reconnect an offline server or update the license of a connected server.



3. Main Menu

3.1 File Menu



New: Creates a new project.

Open: Opens a saved project from the local computer.

Recent Projects: Lists recently opened projects for quick access.

Save: Saves all settings and the current project state.

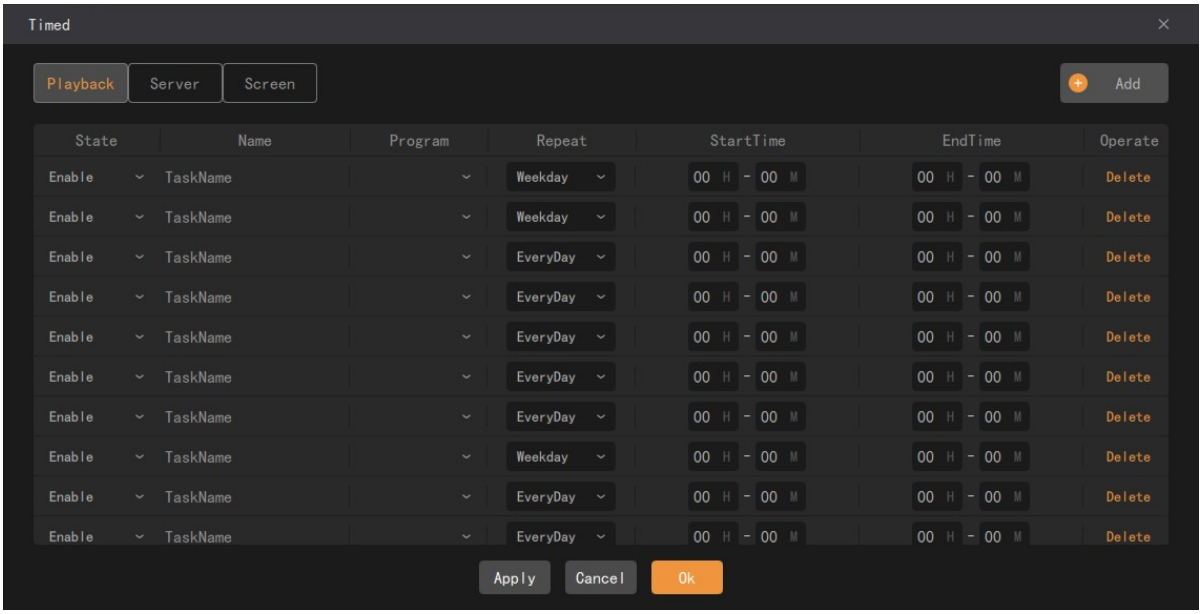
Save As: Saves a copy of the current project. This function is not available in the current release.

Clear Media: Removes unused media or all media. Import/Export transfers project data for backup, migration, or recovery.

3.1.1 Scheduled Tasks

Scheduled Tasks automates media playback, media-server operations, and compatible display or peripheral devices. Devices c an be controlled over the network or through a serial device server.

3.1.1.1 Playback Schedule



1. Select the Playback Control tab to open the playback scheduling page.
2. Click Add to create a schedule entry, then configure the fields below.
3. Status: Enables or disables the schedule entry.

Enabled: The scheduled command is active and can run at the specified time.

Disabled: The command does not run, but its configuration is retained. An entry can be edited in either state.

4. Name: Enter a descriptive name for the schedule entry.
5. Program: Select a program that has already been added to the playback area.
6. Repeat Type

Daily: Runs every day at the configured time.

Weekdays: Runs Monday through Friday.

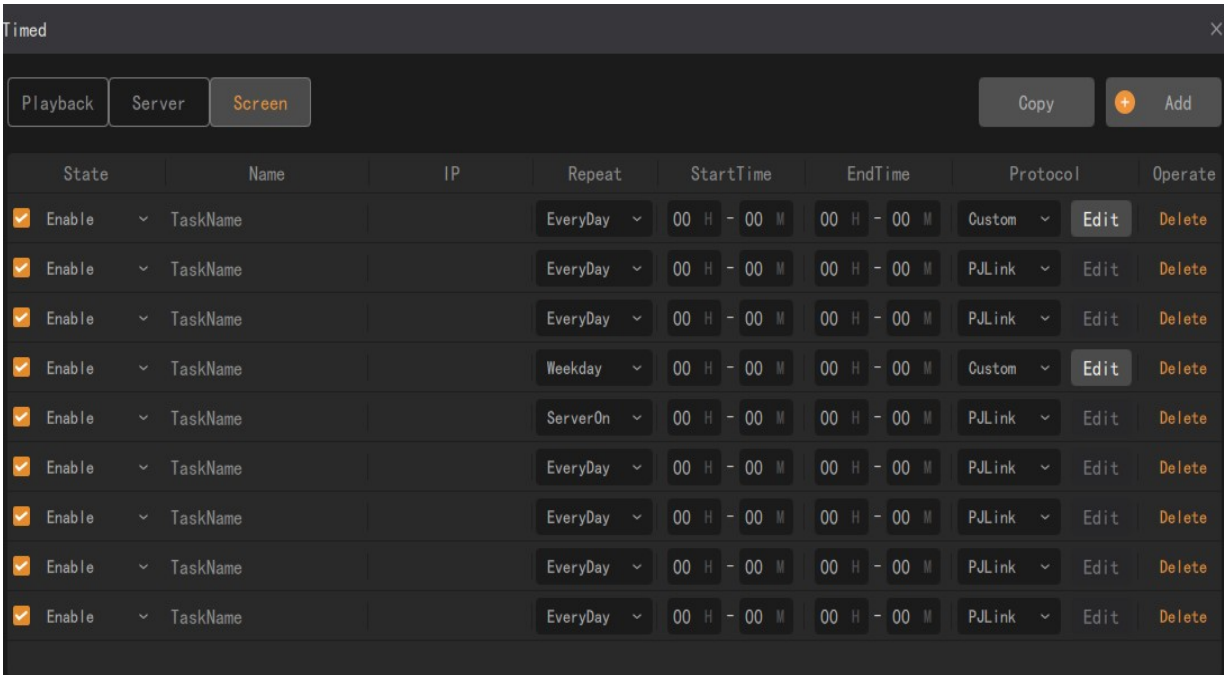
Weekends: Runs Saturday and Sunday.

Custom: Runs on the selected days of the week.

7. Start Time: Sets the time at which the program starts.
8. Stop Time: Sets the time at which playback stops automatically.
9. **Delete: Permanently removes the schedule entry. This action cannot be undone.**
10. Action Buttons

Apply saves the current settings immediately. OK saves the settings and closes the window. Cancel discards unsaved changes and closes the window.

3.1.1.2 Device Schedule



1. Select the Device Control tab to open the device scheduling page.
2. Click Add to create a device-control entry.
3. Copy: Select an entry and click Copy to create an identical entry directly below it.
4. Status: Enables or disables the scheduled device command.

Enabled: The scheduled command is active and can run normally.

Disabled: The command does not run, but its configuration is retained.

Entries can be edited regardless of whether they are enabled or disabled.

5. Name: Enter a clear name for the controlled device.
6. IP Address: Enter the controlled device's IP address. The device and the control network must be reachable from one another.
7. Repeat Type

Daily: Sends the power commands every day.

Weekdays: Sends the commands Monday through Friday.

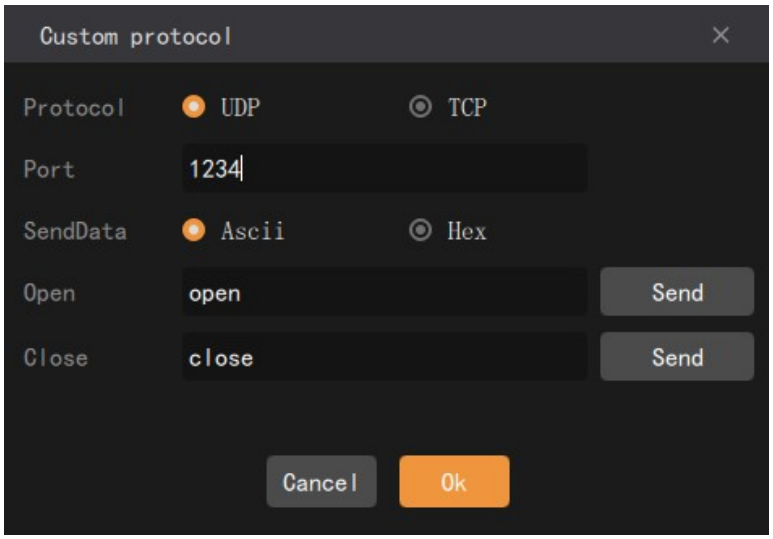
Weekends: Sends the commands on Saturday and Sunday.

Custom: Sends the commands on the selected days of the week.

Run at Startup: Sends the configured startup command when MC-M2 starts and the shutdown command at the specified stop time.

8. Start Time: Sets the time at which the device-control sequence begins.
9. Stop Time: Sets the time at which the sequence ends.
10. Protocol Type: Select the protocol used to control the device.

- PJLink: Uses the standard PJLink protocol to control compatible projectors.
- Custom Protocol: Click Edit to configure a TCP, UDP, or serial command. Serial control requires a separate serial device server.



Communication Protocol: Select TCP or UDP to match the controlled device.

Port: Enter the device's listening port, such as 3011 or 3012. Refer to the relevant external-control protocol document.

Data Format: Select ASCII to enter a text command, or Hex to enter hexadecimal command bytes.

Send Test: After entering the command and port, click Send Test to verify communication.

- A valid device response indicates that the command settings are correct.
- **If no response is received, check the IP address, port, protocol, and command data.**

Click OK to save the entry, or Cancel to discard it.

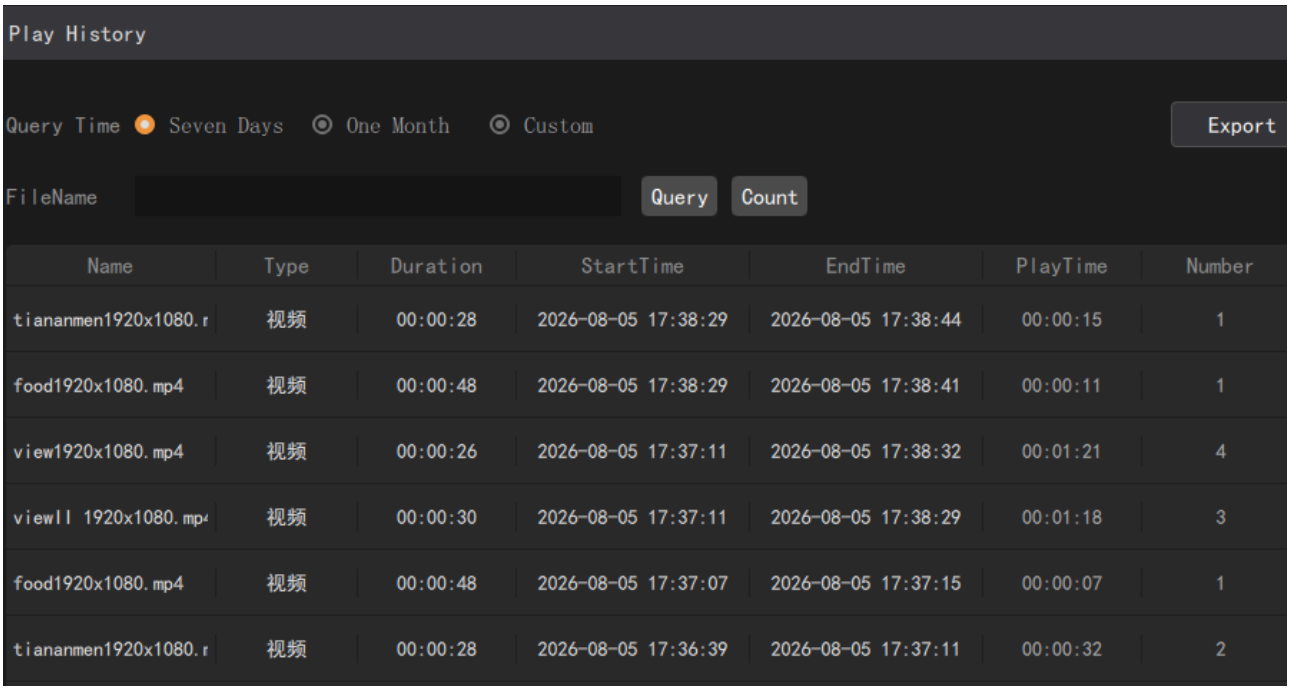
11. Delete: Permanently removes the selected device-control entry.

12. Action Buttons

Apply saves the current settings immediately. OK saves the settings and closes the window. Cancel discards unsaved changes.

3.1.2 Playback Records

Playback Records logs each media item's playback time, duration, and play count. Records can be exported to an Excel file for r eporting and analysis.



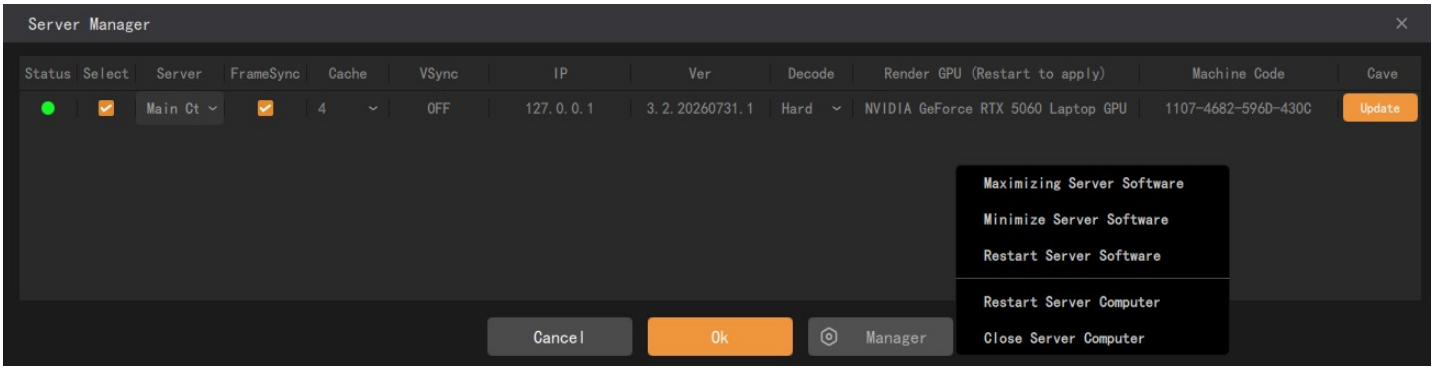
1.Date Range

- Last 7 Days: Shows records from the previous seven days.
- Last 30 Days: Shows records from the previous 30 days.
- Custom: Shows records within a user-defined start and end time.

2.Export: Exports the filtered records to an Excel file.
3.Search: Finds records by media filename.
4.Statistics: Groups records with the same filename and shows the filename, media type, file duration, total playback duration, a nd play count.



3.1.3 Display Server Management



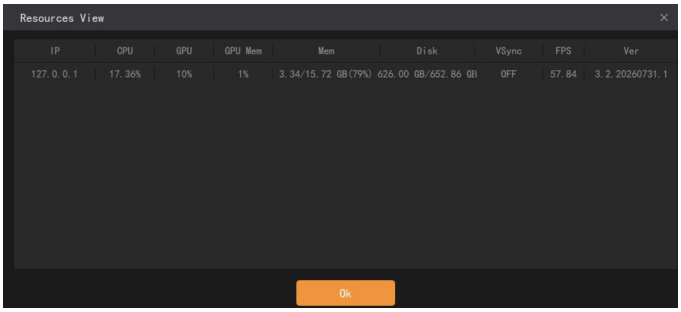
■ **Connection Status**

Green: The Display Server is communicating normally.

Red: The Display Server is disconnected.

- Select: Includes or excludes the Display Server from the current management operation.
- Server Role: Select the Primary or secondary role from the drop-down list. Each project can have only one Primary Server so that playback and output remain centrally coordinated.
- Frame Sync: Keeps output frames aligned across Display Servers and prevents visible tearing or inter-server timing differences.
- Frame Buffer: Specifies the number of frames buffered in advance to improve playback stability.
- Vertical Sync: Shows whether V-Sync is enabled on the Display Server. This setting is changed in the NVIDIA Control Panel, not on this page.
- IP Address: Shows the Display Server's current network address.
- Version: Shows the installed Display Server software version.
- Decode Mode: Software decoding uses the CPU for wider compatibility. Hardware decoding uses an NVIDIA GPU for higher performance.
- Rendering GPU: Selects the GPU used for rendering on a multi-GPU Display Server.
- Machine Code: Displays the server's unique identifier used for license binding and authorization.
- CAVE: Uploads the CAVE configuration file to the Display Server.
- **Action Buttons**
- Cancel: Discards unsaved changes.
- OK: Saves the current settings.
- Management Operations: Select one or more servers, then choose an operation.
  - Restart/Minimize/Maximize Software: Restarts the Display Server application or changes its window state. Minimize the application to access the Windows desktop; maximize it to restore normal output.
  - Shut Down/Restart Server: Shuts down or restarts the selected Display Servers.

3.1.4 Resource Monitor

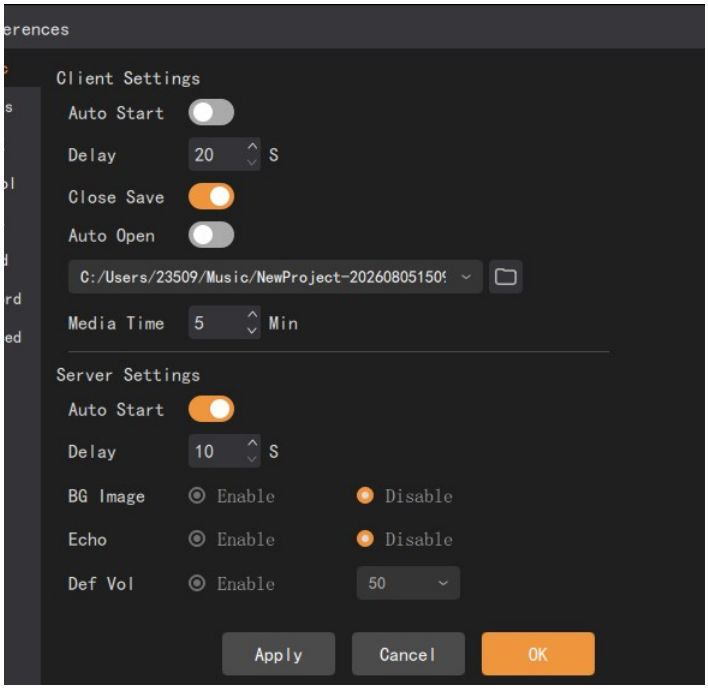


Resource Monitor provides a consolidated real-time view of CPU, GPU, system memory, disk, and GPU-memory usage. It also shows output frame rate, V-Sync status, IP address, and software version for system operation and maintenance.

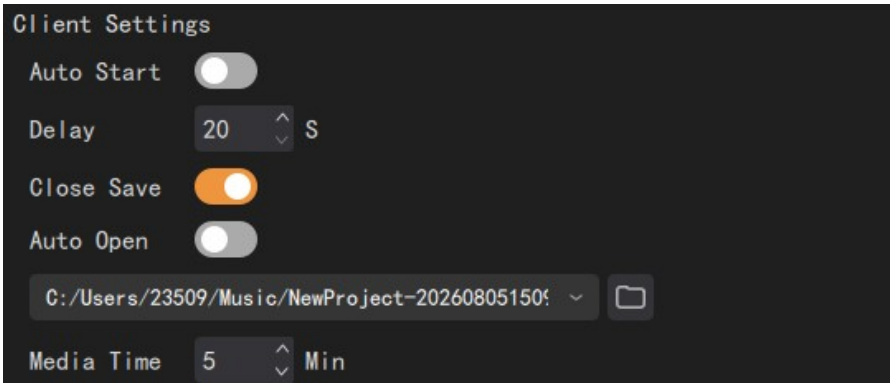
3.1.5 Preferences

Preferences contains the system's user-configurable settings: General, Canvas, CAVE, Control, Synchronization, Audio, and Password.

3.1.5.1 General Settings



3.1.5.1.1 Control Server Settings



- Launch at Startup: Starts the Control Server application automatically when Windows starts.
- Startup Delay: Delays application startup to prevent excessive system load while Windows is initializing.
- Save on Exit: Saves the current project automatically when MC-M2 closes.
- **Open Project Automatically**

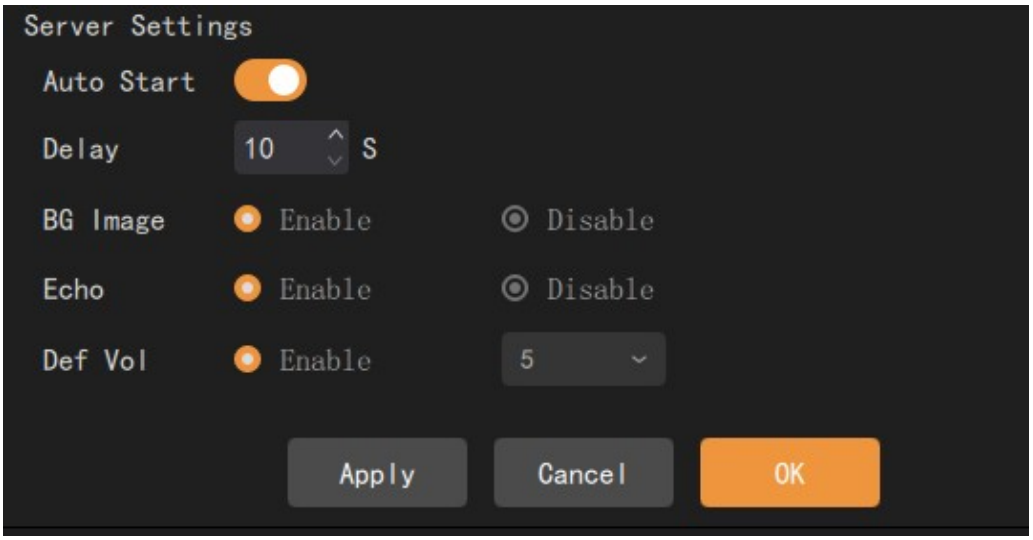
When enabled, select the project to open automatically by using either of the following methods:

- Select a previously opened project from the drop-down list.
- Click Browse and select a local project file.

When disabled, MC-M2 starts without opening a project.

- Default Media Duration: Sets the default playback duration for still images, web pages, and other media without an inherent duration.

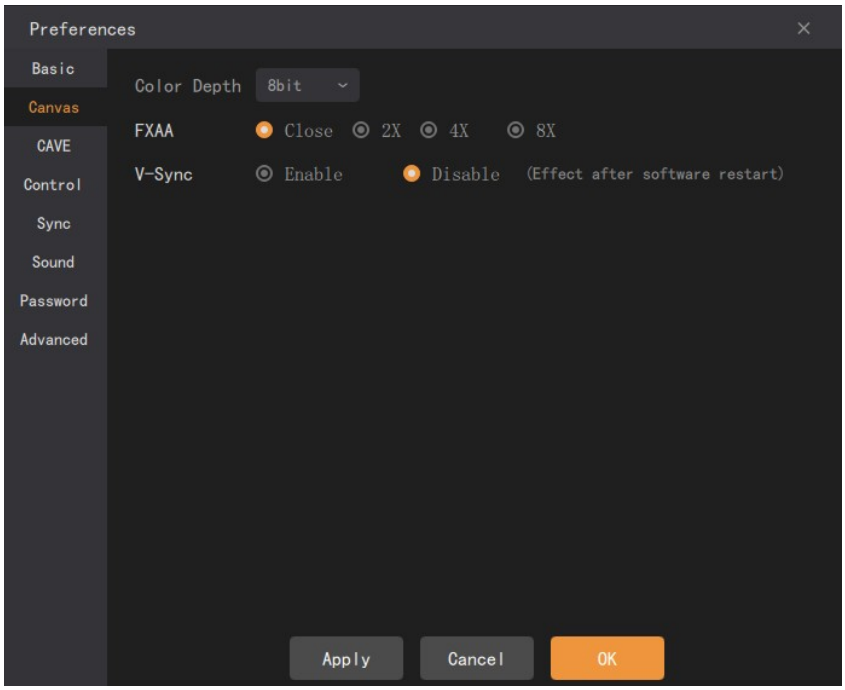
3.1.5.1.2 Display Server Settings



- Launch at Startup: Starts the Display Server application automatically when Windows starts.
- Startup Delay: Delays Display Server startup by the specified number of seconds so that multiple services do not compete f or system resources during boot.
- Background Image: Determines whether the Display Server loads the default background image.
- Return Preview: Mirrors live playback in the main workspace for confidence monitoring.
- Default Volume: Sets the Display Server volume after startup. For example, a value of 50 sets the initial output level to 50%.
- After Sending a Command: Select whether MC-M2 disconnects from the target or keeps the connection open after a command is sent.
- **Window Assignment Mode**

  Manual assigns each window to a specific decoding server. Auto decodes a window only on servers whose slices intersect that window. All decodes the window on every server, whether or not the server displays any part of it.

3.1.5.2 Canvas Settings



- Color Depth: Sets the number of bits used to represent each pixel and therefore the available gradation and color precision.

8-bit: Standard color depth for general applications.

10-bit: Provides smoother gradation for HDR and other high-quality workflows.

12-bit: Provides high-precision color for demanding professional applications.

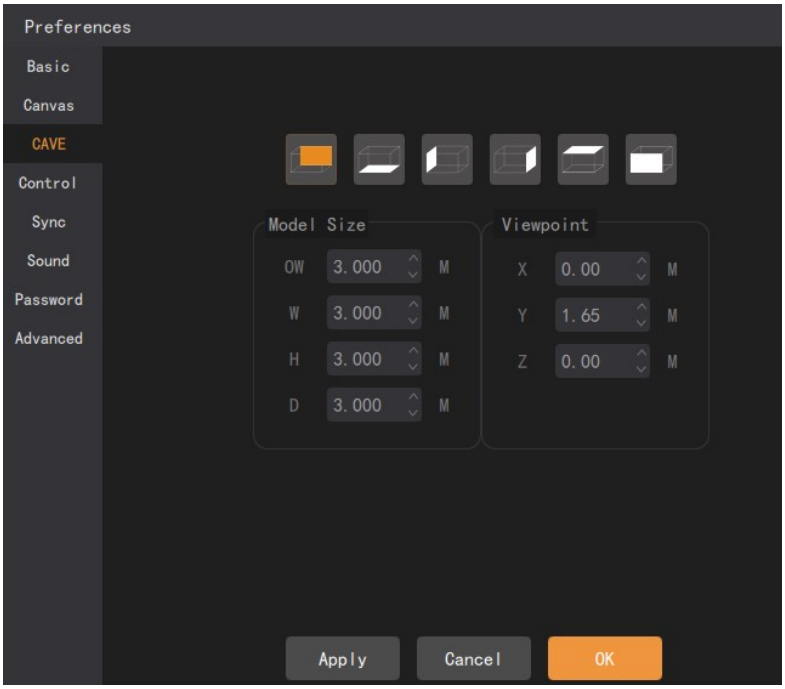
- Anti-Aliasing: Smooths object edges and reduces visible stair-stepping.

Off: Disables anti-aliasing.

2x/4x/8x: Higher values produce smoother edges but require more GPU processing.

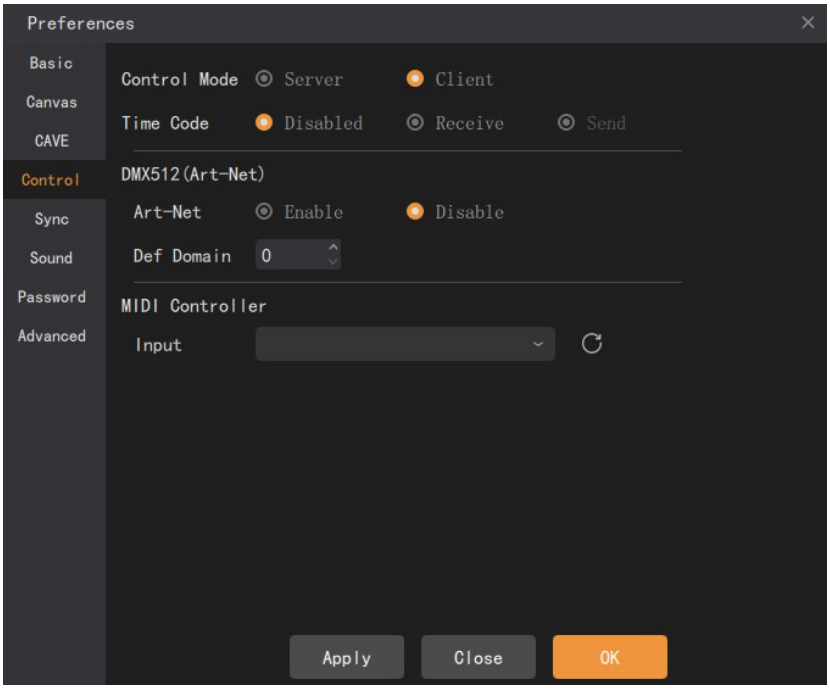
- Vertical Sync: Synchronizes rendering with the display refresh cycle to reduce tearing. Restart MC-M2 after clicking Apply f or this setting to take effect.

3.1.5.3 CAVE Settings



Read Model Information Automatically: After a CAVE file is uploaded, MC-M2 parses the surface count, dimensions (width, height, and depth), and X/Y/Z coordinates and displays them in the corresponding fields.

3.1.5.4 Control Settings



- **Control Mode**

Display Server: Control is processed by the Display Server.

Control Server: Control is processed by the Control Server.

- Timecode: Select the timecode format.

  LTC (Linear Timecode): Encodes timecode as an audio signal so that compatible equipment can decode it for synchronization.

  MTC (MIDI Time Code): Transmits timecode over MIDI to synchronize audio equipment, media playback, lighting controllers, and other show-control devices.

Input: Select the timecode input device. Refresh the device list when required.

TC Time: Shows the timecode currently detected at the selected input.

Frame Rate: Select the timecode frame rate, such as 30 fps.

TC Offset: Applies an offset to adjust the synchronization start point.

- DMX512 (Art-Net)

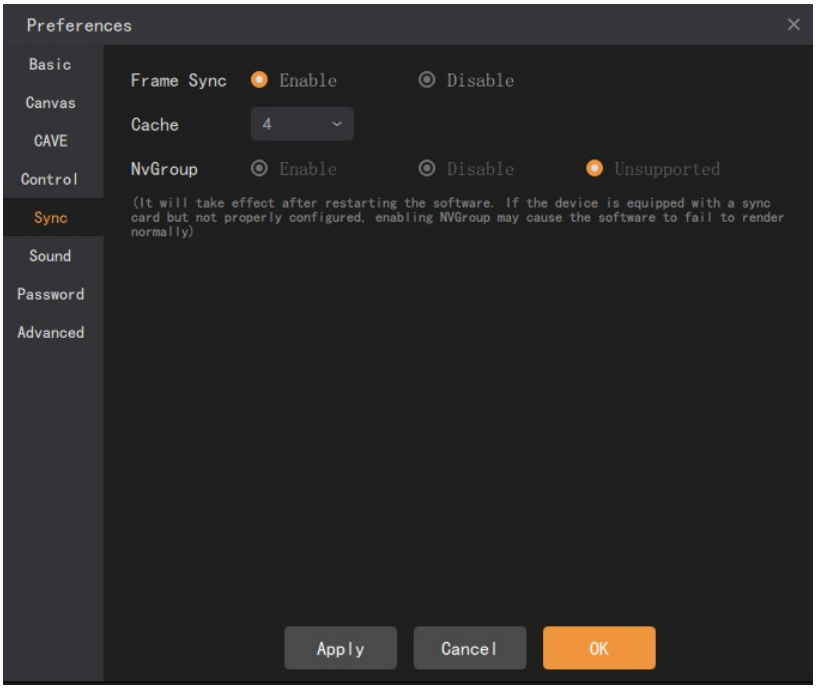
Art-Net: Enable this option to expose the DMX512 (Art-Net) parameters in Program Properties.

Default Universe: Enter the Art-Net universe used by the target devices. Use additional universes when the project exceeds 512 DMX channels or when devices must be separated by area or function.

- MC-M2DI Controller

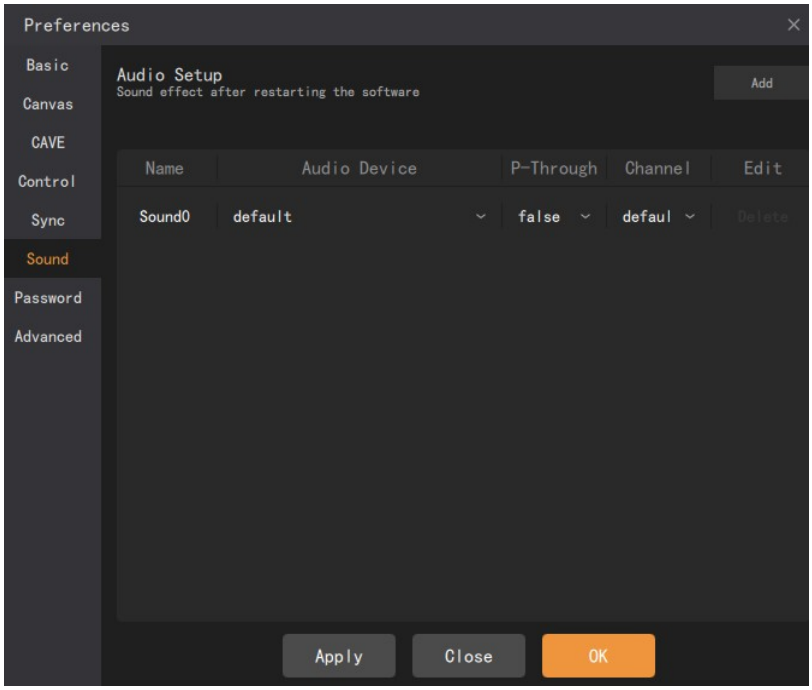
Input: Select the MC-M2DI input device and refresh the list when required. Selecting a device exposes the MC-M2DI parameters in Program Properties.

3.1.5.5 Synchronization Settings



- Frame Sync: Keeps playback output aligned to the same frame across multiple servers.
- Frame Buffer: Specifies the number of frames buffered in advance to improve playback stability.
- NvGroup: Enables NVIDIA frame-lock grouping for large multi-server systems so that all outputs refresh together without tearing.

3.1.5.6 Sound Settings



1. Add Sound Device: Open the Sound tab and click Add. MC-M2 scans the host computer for available audio devices and adds a new output entry to the list.
2. Name: Enter a descriptive name for the audio output.
3. Sound Card: Select the required Windows audio device from the drop-down list.

4. Audio Passthrough: Enable passthrough when a compressed multichannel stream, such as 5.1 audio, is sent directly through a digital audio interface to a compatible amplifier or decoder. When enabled, enter the channel count. When disabled, MC-M2 decodes the audio and outputs uncompressed PCM.

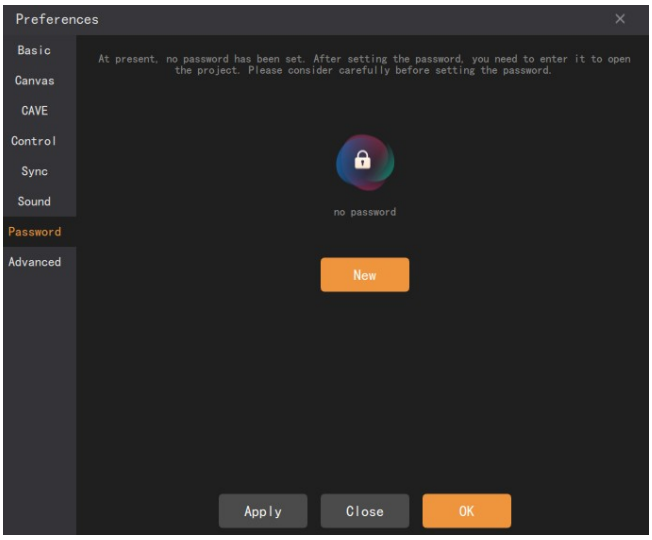
5. Channels: Select the required output configuration, such as Default, Stereo, or Multichannel.

6. Edit: Click Delete to remove the selected audio-device entry.

7. Action Buttons

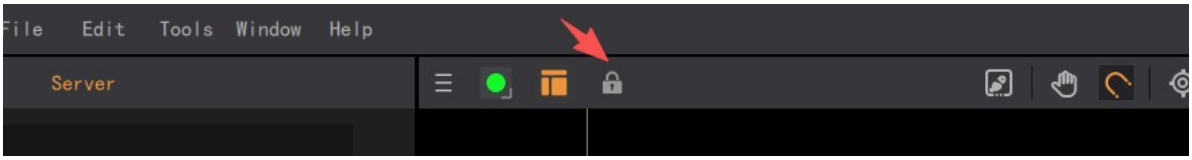
Apply saves the current settings immediately. OK saves the settings and closes the window. Cancel discards unsaved changes.

3.1.5.7 Password Settings

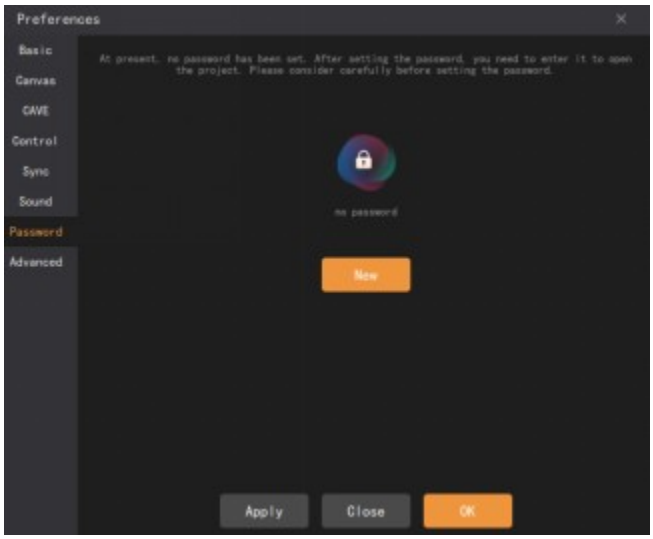


Password protection prevents unauthorized operation and helps keep the project configuration secure. A password can be created, reset, or cleared.

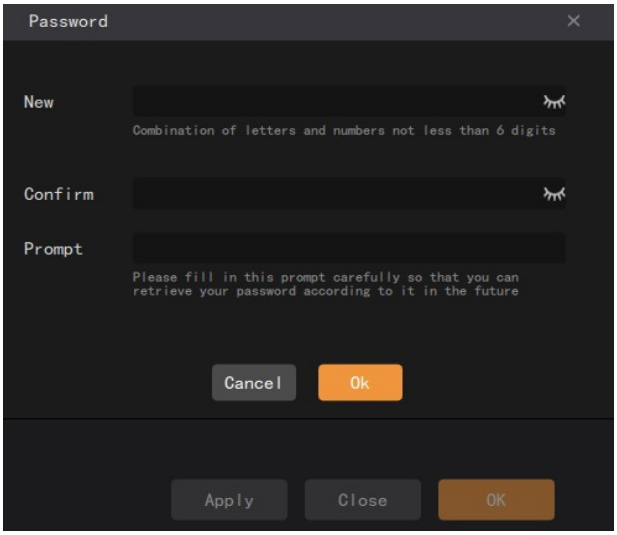
3.1.5.7.1 Creating a Password



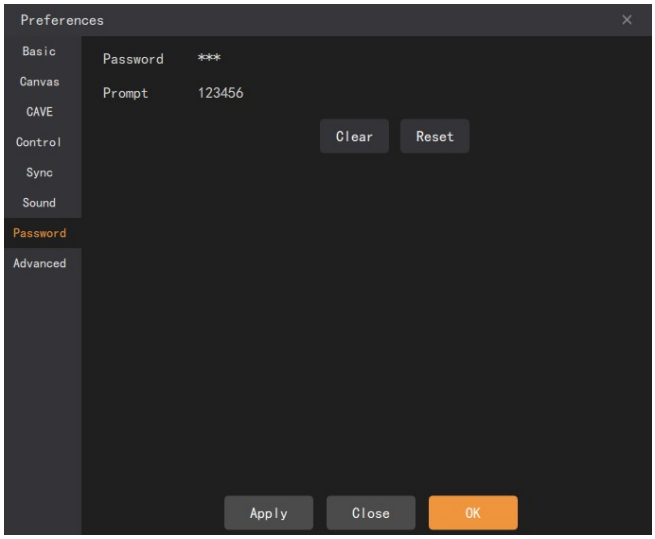
1. If no password has been configured, MC-M2 displays a password reminder on the home page. 



2.Open Preferences > Password Settings and click New Password to open the password dialog.

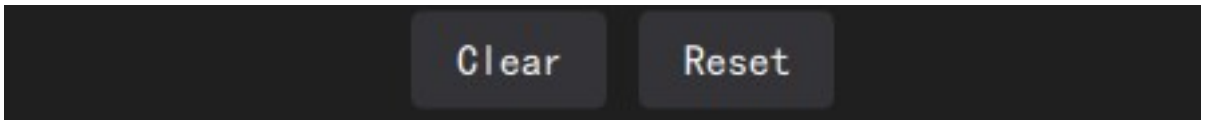


Enter the new password, confirm it, and provide a password hint.
Click OK to save the password, or Cancel to discard the entry.



After the password is created, the Password Settings page shows the password status and password hint.

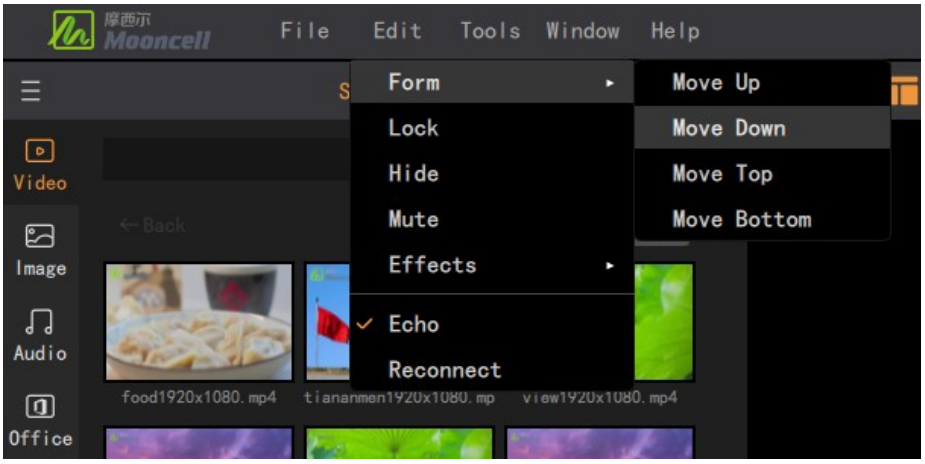
3.1.5.7.2 Clearing or Resetting the Password



Clear Password: Removes password protection. MC-M2 can then open the project without requesting a password.

Reset Password: Click Reset Password and complete the fields in the Password Settings dialog.
Enter the current password, the new password, the new password again, and a password hint.
Click Confirm to update the password, or Cancel to discard the changes.

3.2 Edit Menu



Note: The first five commands apply to a specific program window. Select the required window before using them.
Window Layer: Changes the layer order of the selected window in the Stage View.
Move Up: Exchanges the selected window with the window immediately above it.
Move Down: Exchanges the selected window with the window immediately below it.
Bring to Front: Moves the selected window to the top layer.
Send to Back: Moves the selected window to the bottom layer.
Lock: Controls whether the window and its media can be edited.

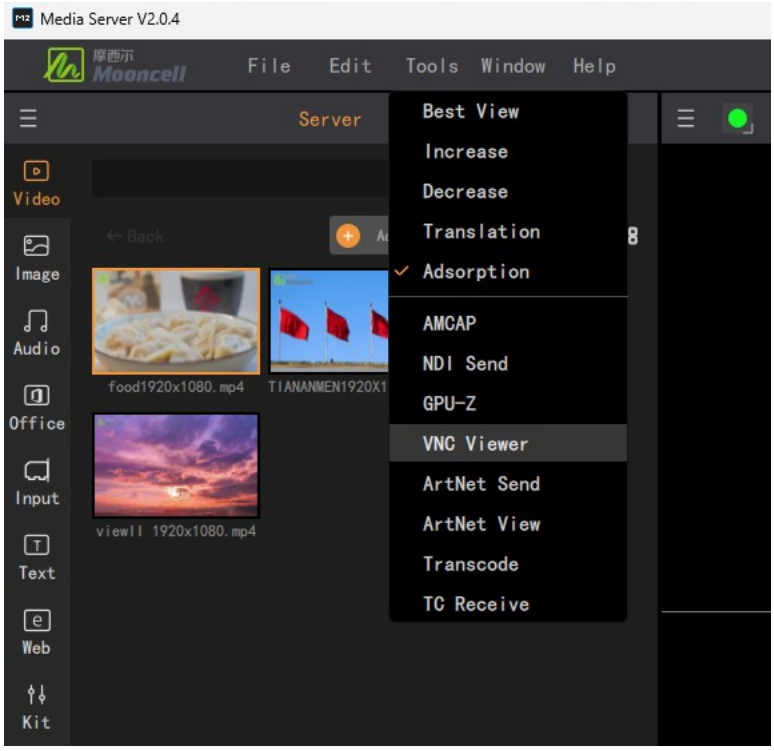
- Yellow status: Fully locks the window and its associated media.
- Green status: Locks the window position and size while allowing media to be added or replaced.
- Cleared status: Restores full editing of the window position, size, and media.

Hide: Select or clear this option to hide or show the selected window's output.
Mute: Mutes all media played in the selected window.
Effects: Opens and enables the effect controls for the selected window.

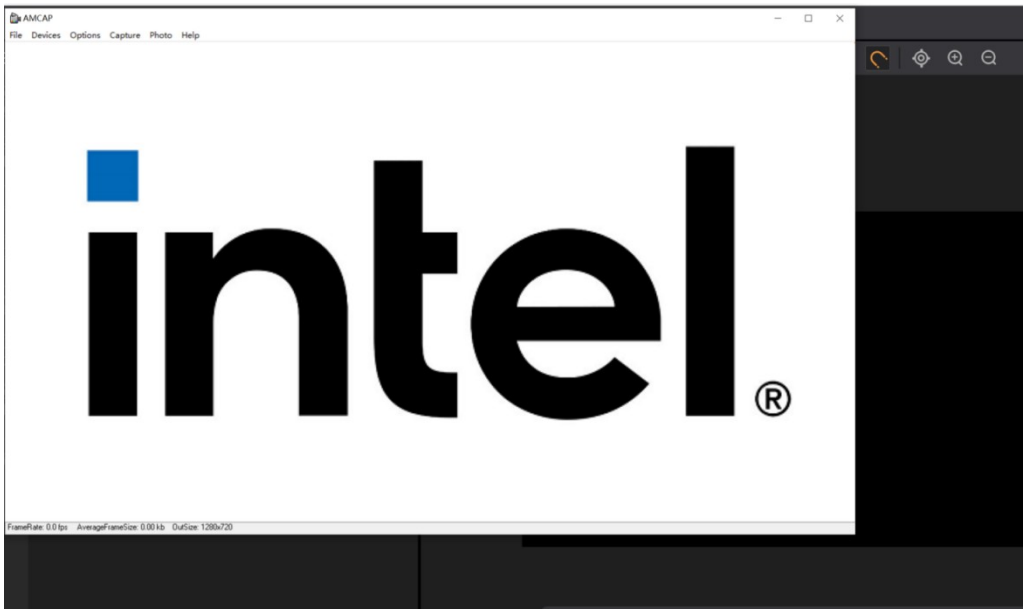
Return Preview: When enabled, MC-M2 returns the live project output to the main workspace for confidence monitoring. When Return Preview is disabled, the Stage View shows a still thumbnail instead of live output.

Reconnect: Reconnects all Display Servers associated with the project. While MC-M2 is rebuilding the connection, a Retrieving Primary Server Data message is displayed. The message closes automatically after connection is restored.

3.3 Tools Menu



- Best Fit: Fits all windows within the visible Stage View.
- Zoom In: Enlarges the Stage View.
- Zoom Out: Reduces the Stage View.
- Pan: Hold the left mouse button and drag to move around the canvas.
- Snap: Aligns nearby window edges automatically for accurate layout.



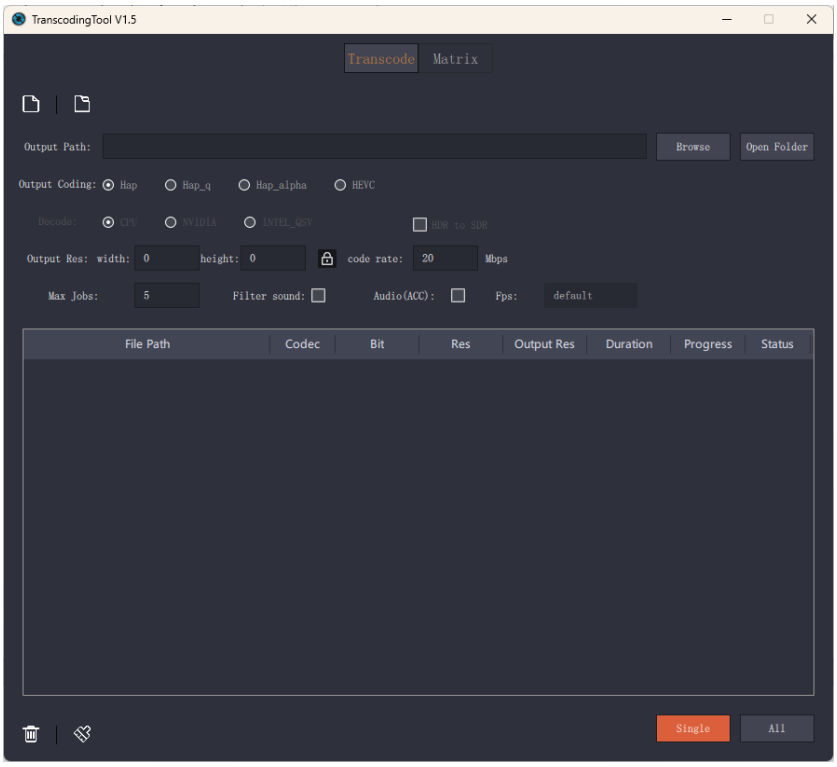
- AMCap: Opens the AMCap video-capture utility for previewing and testing compatible capture devices.
- NDI Output: Sends high-quality, low-latency, frame-accurate video, audio, and metadata over an IP network using the Network Device Interface standard.
- GPU-Z: Opens the GPU-Z diagnostic utility to identify the installed graphics adapters and monitor GPU parameters and utilization in real time.
- VNC Viewer: Opens the VNC remote-desktop client.

● Art-Net Send/Receive: Transports DMX data over the local network for long-distance, multi-node lighting control without dedicated DMX cabling.

● Video Transcoder: Converts media to another codec, format, resolution, or bitrate for playback compatibility, storage efficiency, post-production, or delivery.

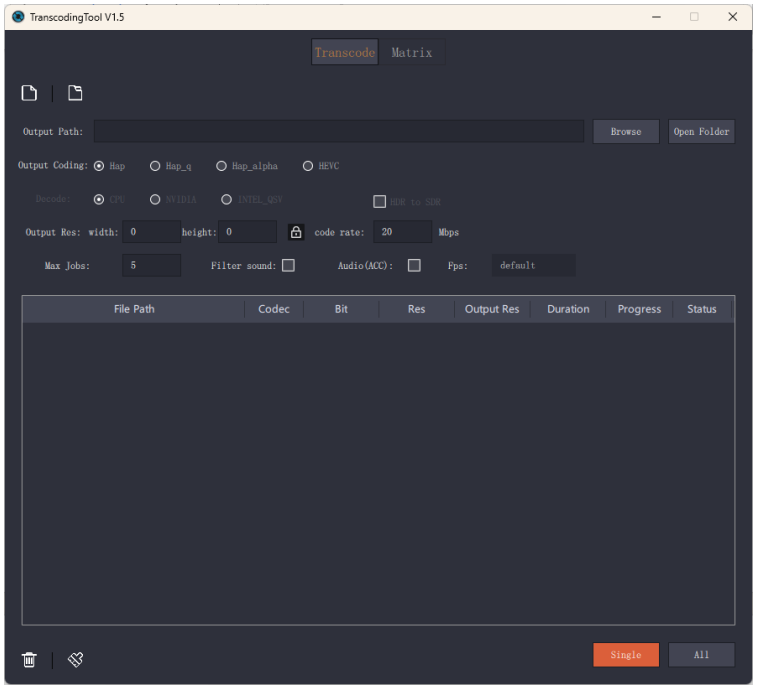
● Timecode Receiver: Converts timecode from audio or timeline equipment into network timecode, including Art-Net timecode, for synchronized operation of lighting, LED displays, media servers, effects, and audio/video playback.

3.3.1 Video Transcoder Overview



1. Add Video/File Folder: Imports individual videos or an entire folder into the transcode queue.
2. Output Path: Selects the folder in which converted files are saved.
3. Transcode Settings: Configures the output codec, resolution, bitrate, frame rate, HDR conversion, and related parameters.
4. Task List: Shows every video currently queued for transcoding.
5. Start Transcoding: Starts the configured transcode jobs.
6. Delete Task: Removes the selected item from the queue.

3.3.2 Adding Videos to the Queue



Click the File icon to add an individual video file.

Click the Folder icon to add all supported videos in a folder as a batch.

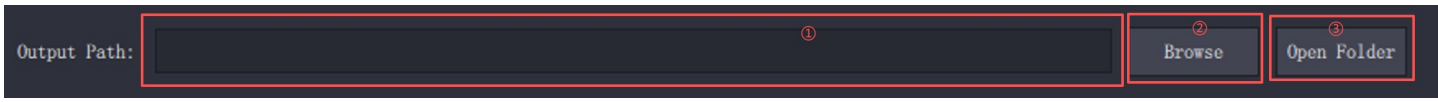
3.3.3 Removing Videos from the Queue

Delete: Select an item and click Delete to remove it from the queue.

Clear: Removes every item from the queue.

3.3.4 Output Settings

Output Path



1. Path Field: Shows the current destination folder.
2. Browse: Selects a local destination folder.
3. Open: Opens the selected destination folder in Windows Explorer.



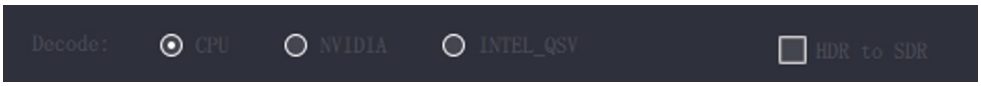
Output Codec

Hap: Optimized for fast decoding, real-time playback, and multi-channel output. Files are large but playback performance is high.

Hap Q: Higher-quality Hap variant that retains more image detail.

Hap Alpha: Hap variant with an alpha channel for compositing and visual effects.

HEVC (H.265): High-efficiency compression for storage and transmission. Decoding requirements are higher than Hap.



Encoding Engine (HEVC only)

CPU: Widely compatible but slower and more CPU intensive.

NVIDIA: Uses NVENC hardware encoding for high speed. Recommended when a supported NVIDIA GPU is installed.

Intel QSV: Uses Intel Quick Sync Video hardware acceleration for good performance with low CPU usage.

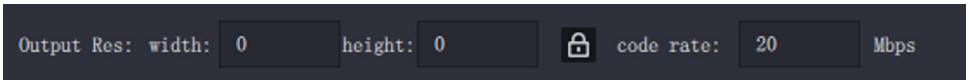
Recommendation: Select NVIDIA when supported to reduce export time substantially.

HDR to SDR: Converts high-dynamic-range content to standard dynamic range for displays or workflows that do not support HDR.

Enable HDR to SDR when the destination display does not support HDR.

Leave HDR to SDR disabled when the destination supports HDR and the HDR appearance must be preserved.

Video Output Parameters



Resolution: Sets the output width and height. Enable the aspect-ratio lock to scale both values proportionally.

Bitrate: Sets the video data rate in Mbps. Higher bitrates normally increase quality and file size.

Frame Rate: Select Default, 25, 30, 50, or 60 fps as required.

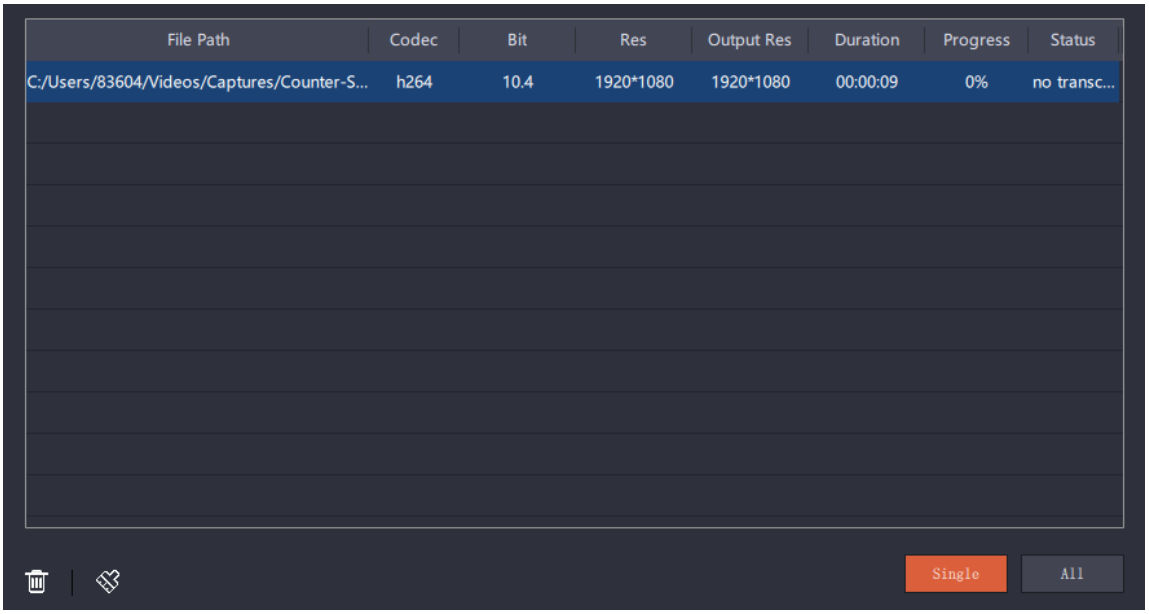


Concurrent Jobs (1-5): Sets the number of videos transcoded at the same time.

Remove Audio: Removes the audio track from the output file.

Transcode Audio (AAC): Converts the audio track to AAC.

3.3.5 Transcode Queue



The queue lists videos awaiting conversion, currently being converted, or already completed.

File Path: Location of the source file.

Codec: Source-video codec, such as H.264 or HEVC.

Bitrate (Mbps): Source-video data rate.

Resolution: Source-video width and height.

Output Resolution: Resolution configured for the converted file.

Duration: Total duration of the source video.

Progress: Current conversion percentage.

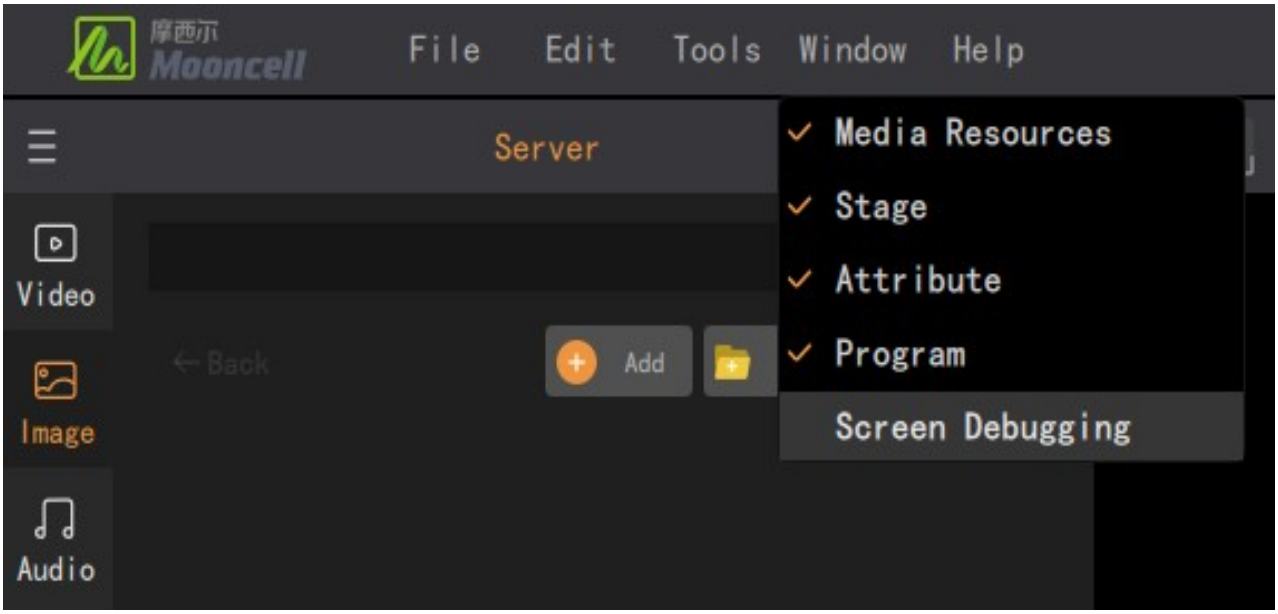
Status: Not Transcoded, Transcoding, or Completed.

3.3.6 Starting a Transcode Job

Batch Transcode: Converts multiple files simultaneously according to the configured Concurrent Jobs value.

Single Transcode: Select one queue item and click Single to convert only that file.

3.4 Window Menu



Media Library

- Select Media Library to show the media-management panel for browsing, importing, and deleting assets.
- Clear the option to hide the Media Library panel.

Canvas

- Select Canvas to show the Stage View for configuring the overall playback layout.
- Clear the option to hide the Canvas panel.

Properties

- Select Properties to show detailed settings for windows, media, timelines, and other objects.
- Clear the option to hide the Properties panel.

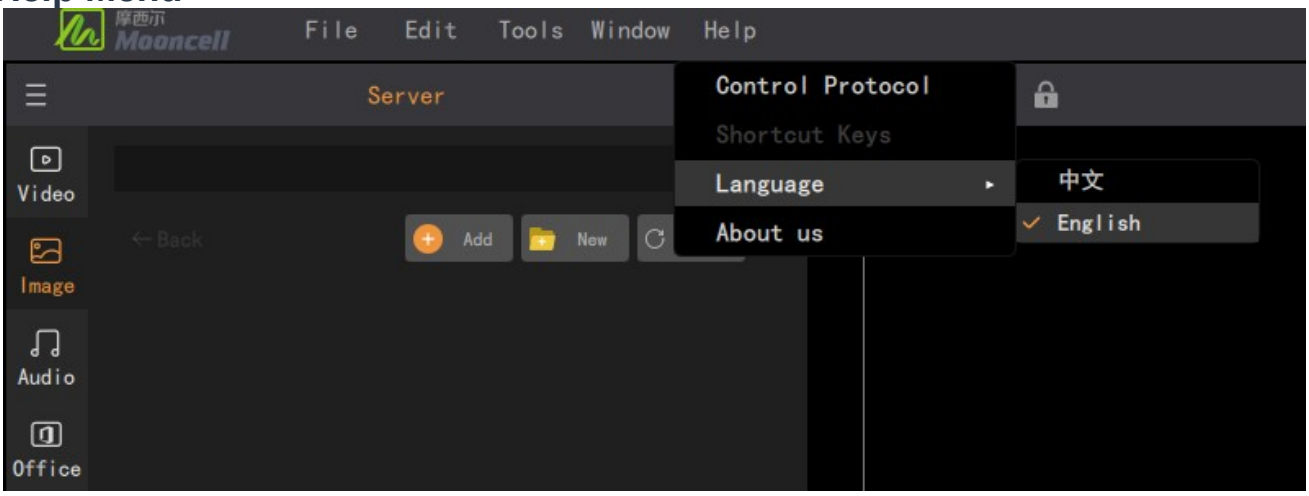
Program Panel

- Select Program Panel to show program organization and playback controls.
- Clear the option to hide the Program panel.

Screen Debugging

- Select Screen Debugging to open the screen commissioning workspace for geometry, brightness, color, and other output adjustments.

3.5 Help Menu

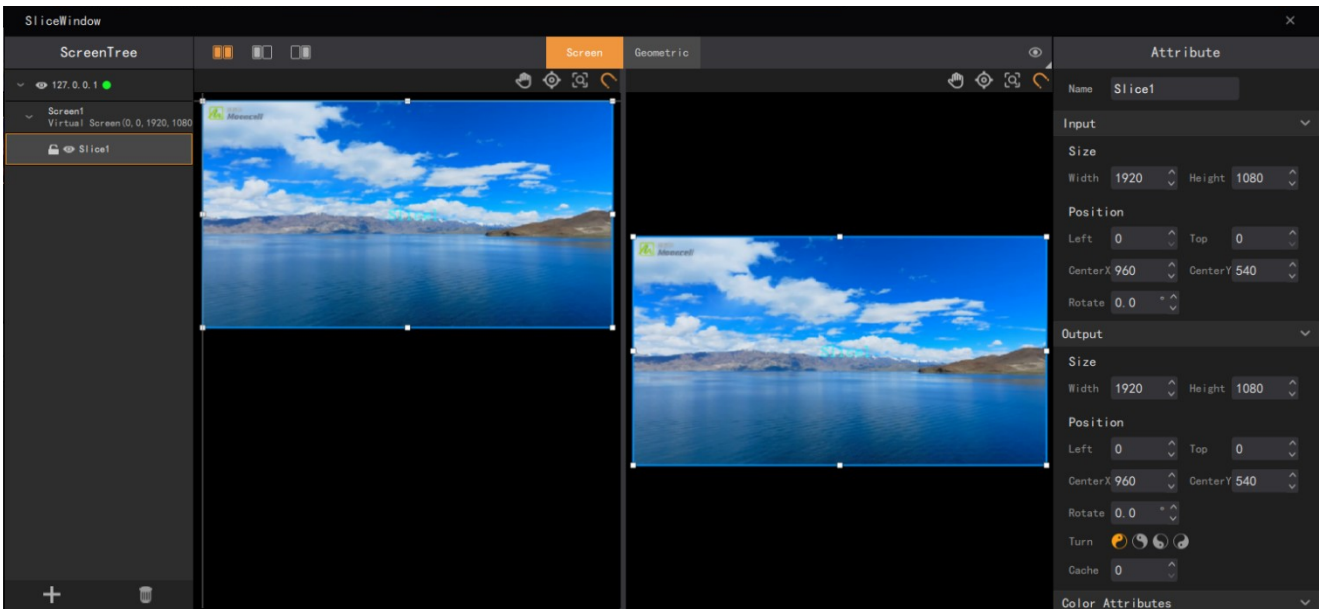


Playback Control Protocol: Opens the third-party control protocol reference.
Keyboard Shortcuts: Reserved for a future software release.
Language: Switches the interface between Chinese and English.
About: Shows the MC-M2 software version and product information.

4. Screen Setup and Commissioning

4.1 Workspace Overview

4.1.1 Purpose



Screen Debugging is the core commissioning workspace for calibrating, mapping, warping, and blending multi-display projects. It is designed to deliver a visually continuous and consistent final image.

Core functions include:

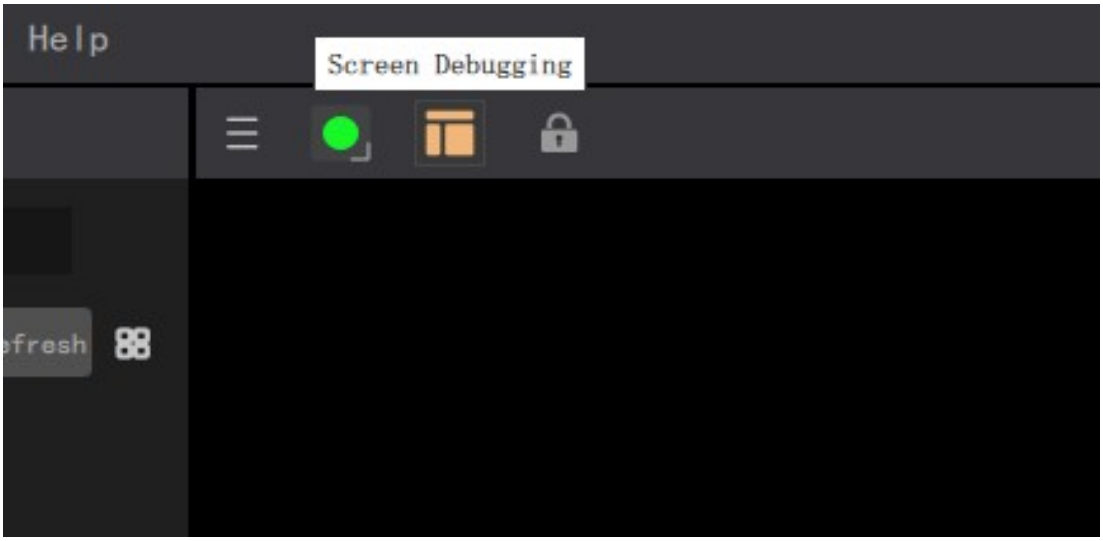
Geometric Correction: Corrects deformation and alignment errors caused by tiled or irregular display geometry.

Edge Blending and Color Matching: Creates a smooth transition between adjacent outputs and minimizes visible seams.

Frame-Level Synchronization: Keeps multi-server playback aligned without visible timing differences or tearing.

MC-M2 uses a Screen > Slice hierarchy. Each visible output region is managed as a structured node, making large multi-screen layouts easier to build and commission.

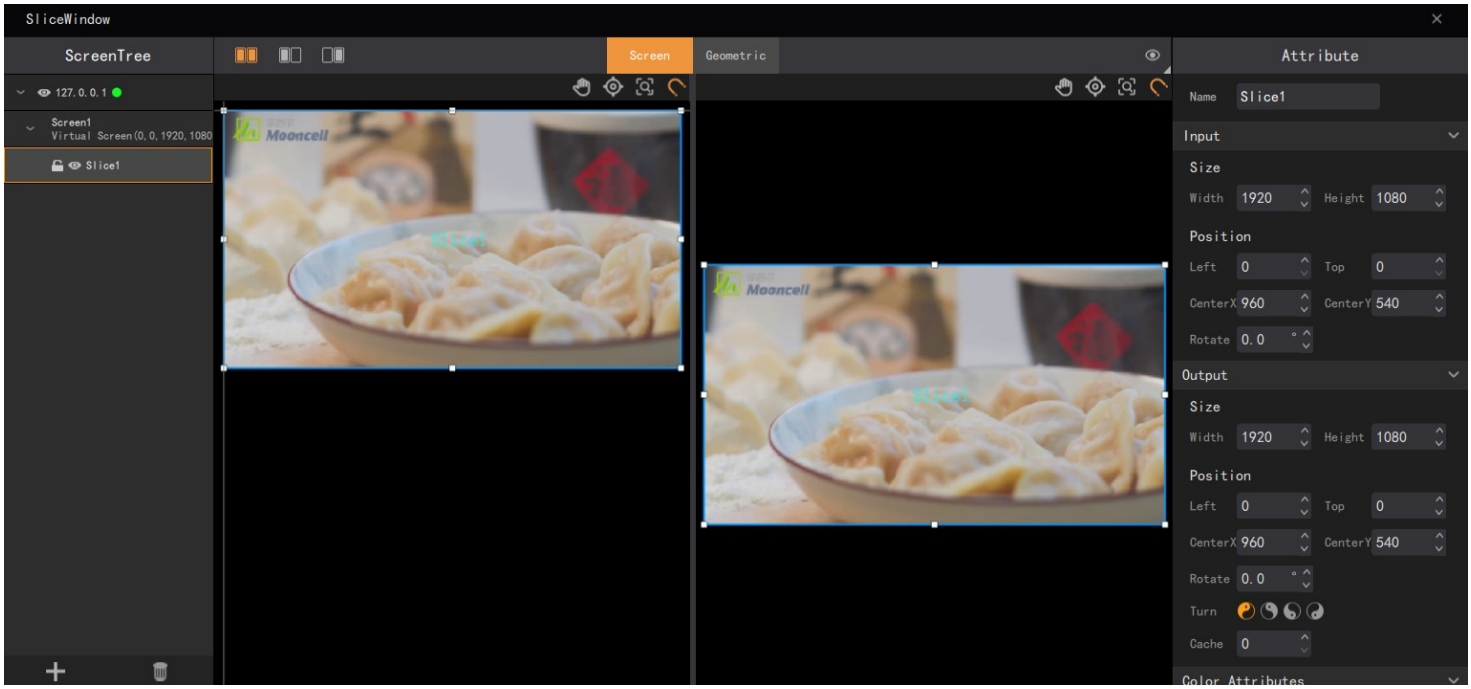
4.1.2 Opening Screen Debugging



1.Click Screen Debugging in the main workspace to open the commissioning window.

2.Alternatively, select Window > Screen Debugging from the main menu.

4.1.3 Screen Debugging Workspace

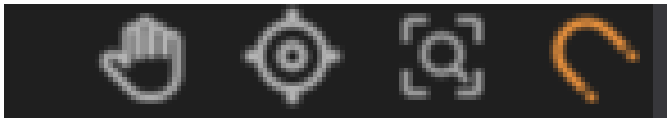


① Display Server Selector: Selects the server IP whose screens and slices will be edited.
② Screen Tree: Shows the hierarchy of screens and slices.

③ Bottom Toolbar: Adds or deletes screens and slices. 

View Tabs: Switch between Input, Output, and Geometry views.

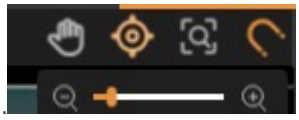
Workspace: Displays the selected Input, Output, or Geometry view for layout and correction.

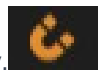


Commissioning Toolbar: Provides Pan, Best Fit, Zoom, and Snap tools.

Pan: Select the tool, then hold the left mouse button and drag the workspace.

Best Fit: Fits the complete layout within the visible workspace.

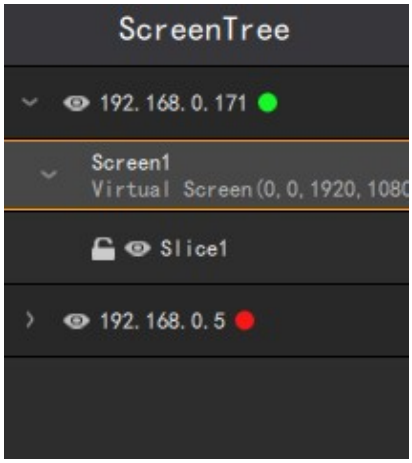
Zoom: Drag the zoom slider to enlarge or reduce the workspace.

Snap: Aligns nearby slice edges automatically.

Properties Panel: Shows editable parameters for the selected screen or slice, including size, position, rotation, and color.

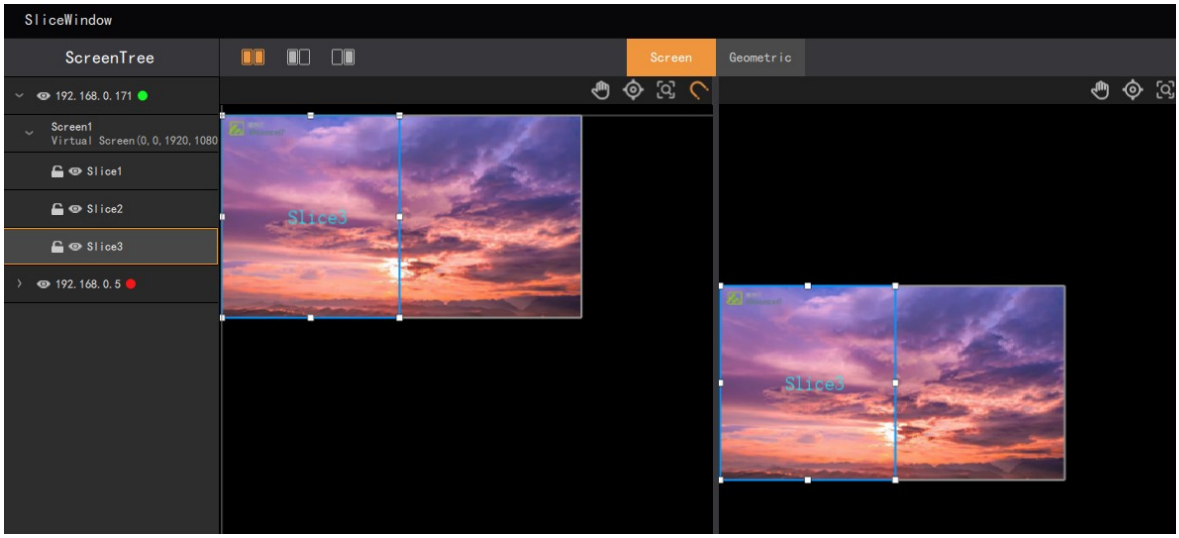
4.2 Managing the Screen Tree

4.2.1 Screen and Slice Hierarchy



- Screen Node: A label such as DISPLAY_2 (-3840, 0, 3840, 2160) identifies the bound GPU output, its desktop position, and its resolution. A label such as Virtual Screen (0, 0, 1920, 1080) identifies a simulated screen with no physical output.
- Slice Node: Defines the position and area in which media is mapped within a screen output.

4.2.2 Slice States



Selected: The slice is highlighted in the workspace.

Hidden: The slice is not shown in the workspace.

Locked: The slice cannot be edited.

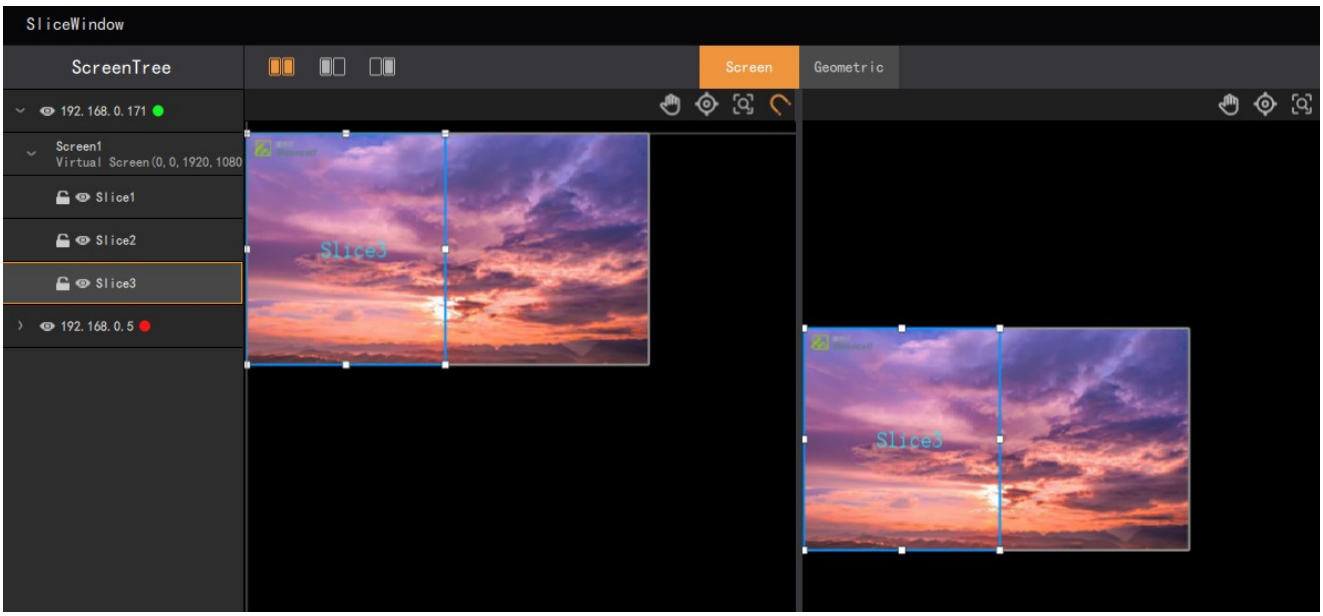
Normal: The slice remains visible and editable.

4.3 Screen Nodes

A screen node establishes the relationship between the logical input canvas and a physical or virtual output.

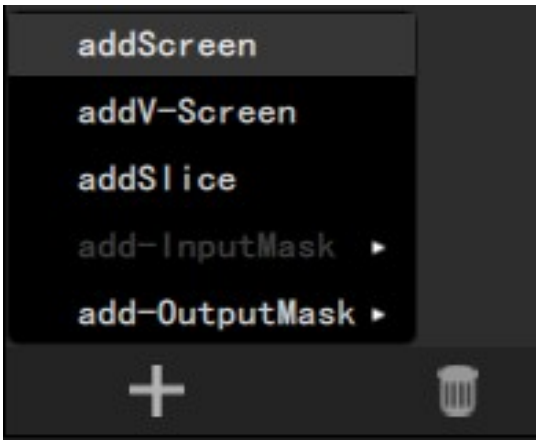
Input Screen Node: A logical canvas that contains source content. Its resolution defines the input canvas and is not bound directly to a physical display.

Output Screen Node: Represents a physical display output. Its resolution must match the actual output format, for example 1920 x 1080.



Select a screen node to unlock the controls used to edit its associated slices.

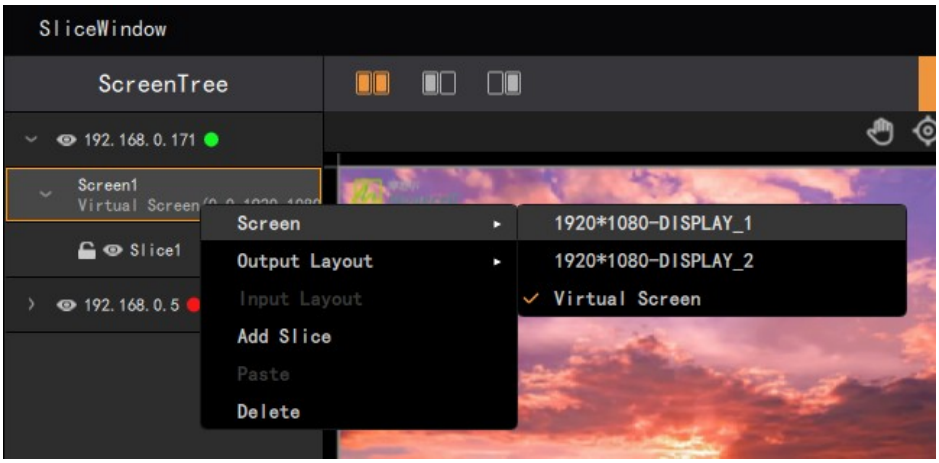
4.3.1 Adding a Screen Node



Click Add in the lower-left corner and select Add Screen. 

4.3.2 Changing the Assigned Output

Right-click the required screen node, select Output Screen, and choose an available output from the list. The screen background updates after the new output is assigned.

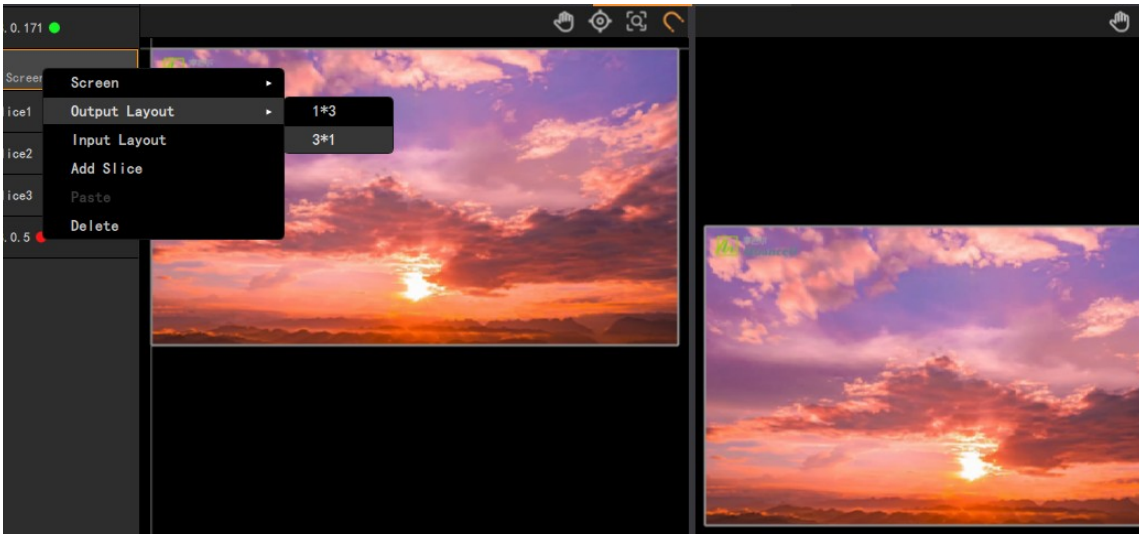


Two output types are available:

- Physical Output: A connected display output, such as 1920 x 1080 - DISPLAY_2.
- Virtual Screen: A simulated output used for testing or layout preparation without connected hardware.

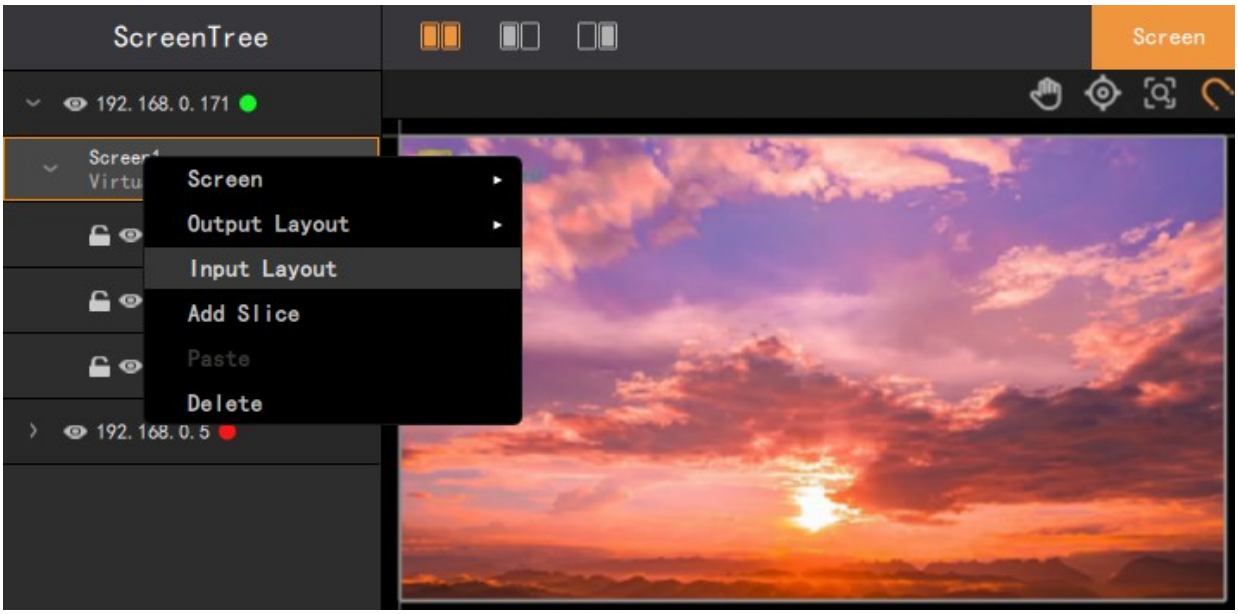
4.3.3 Output Array Layout

Output Array Layout distributes multiple output slices evenly within a defined area and reduces repetitive slice configuration.

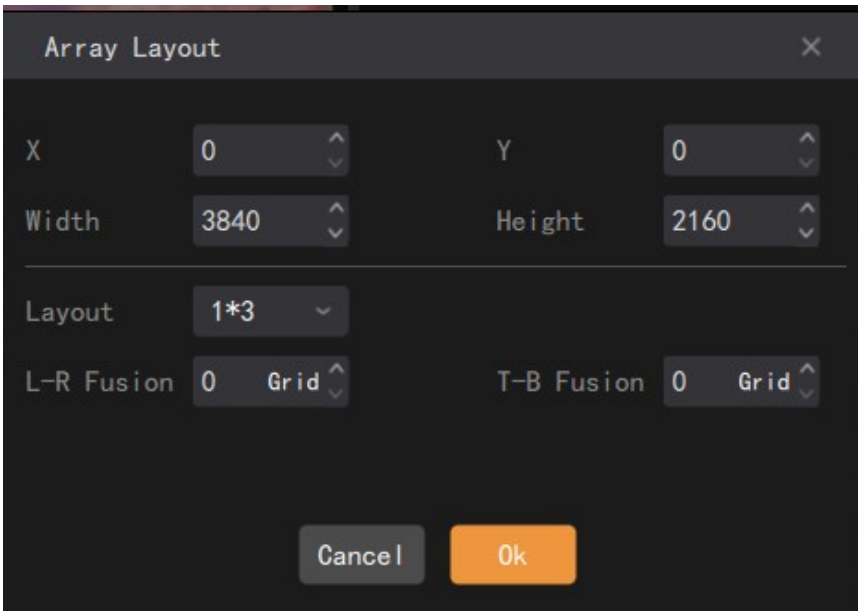


4.3.4 Input Array Layout

Input Array Layout distributes multiple input slices evenly within a defined area.



Configure the input origin, resolution, slice arrangement, and number of blend cells in the Array Layout window.

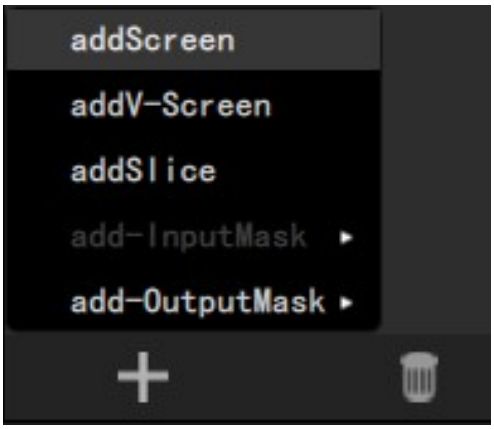


4.4 Slice Management

4.4.1 Overview

A slice defines the media-server playback region on the input canvas and output screen, including its pixel dimensions and X/Y position. Slices provide flexible mapping for tiled and multi-view display layouts.

4.4.2 Adding or Deleting a Slice

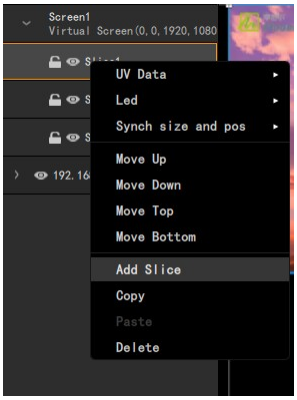


There are two ways to add a slice.

Method 1 - Select the screen to which the slice will be added.

Click Add in the lower-left corner and select Add Slice. MC-M2 creates a new slice that fills the selected screen. 
The new slice appears below the screen in the Screen Tree.

Method 2

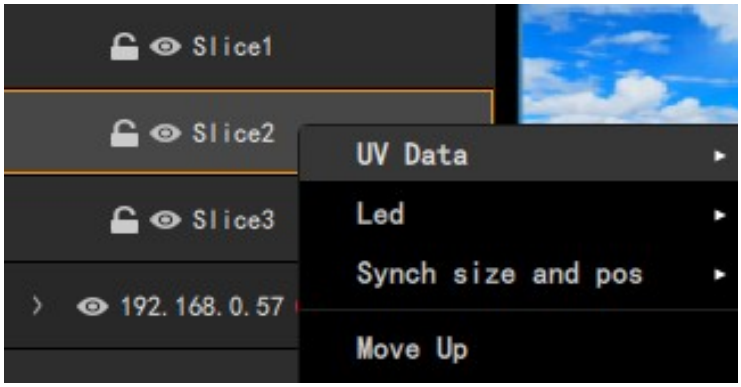


Right-click any existing slice under the required screen and select Add Slice.

To delete a slice, select it and click Delete. Confirm the operation when prompted. 

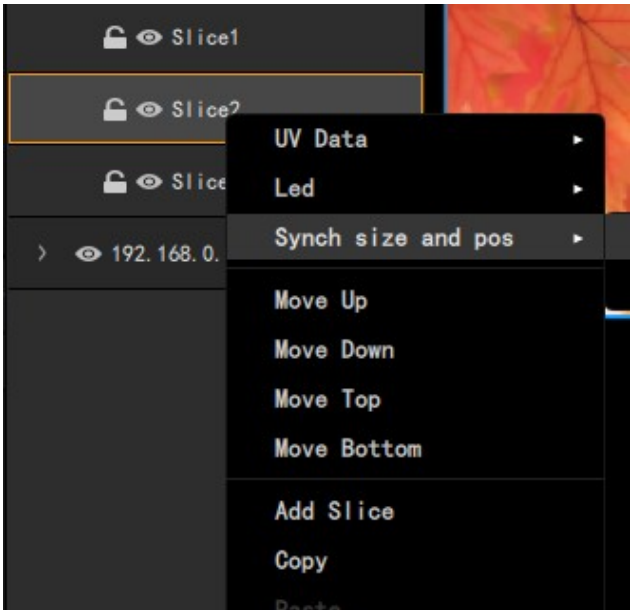
4.4.3 Synchronizing Slices

4.4.3.1 Importing External Reference Data

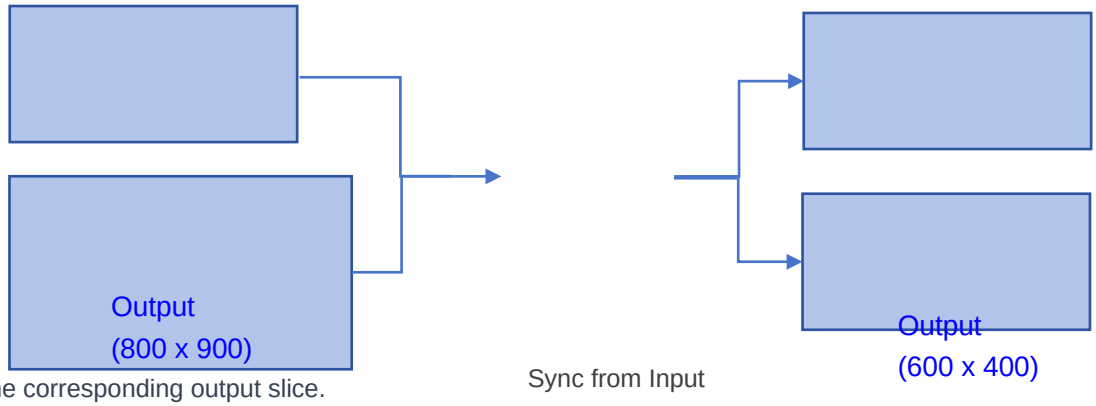


Import UV data in MUV format, an LED layout bitmap in BMP format, or a blend reference image in JPG, PNG, or BMP format. MC-M2 creates the input and output slice geometry from the imported resolution data.

4.4.3.2 Synchronizing Internal Data

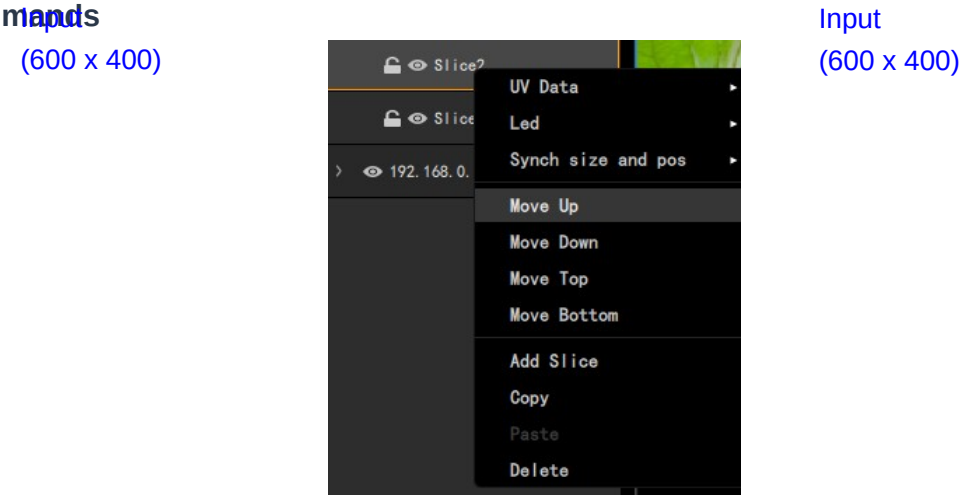


Right-click a slice, select Sync Size and Position, and then select Sync from Input. MC-M2 copies the input slice size and position to the corresponding output slice.



Select Sync from Output to copy the output slice geometry to the input side.

4.4.4 Slice Commands



Move Up/Down: Changes the selected slice's layer priority by one level.

Bring to Front/Send to Back: Moves the selected slice to the highest or lowest layer.

Add Slice: Creates a default slice below the selected item.

Copy: Copies the selected slice and its parameters.

Paste: Creates an identical slice under the selected screen and displays it in both the Input and Output views.

Delete: Removes the selected slice after confirmation.

4.5 Slice Setup - Screen Mode

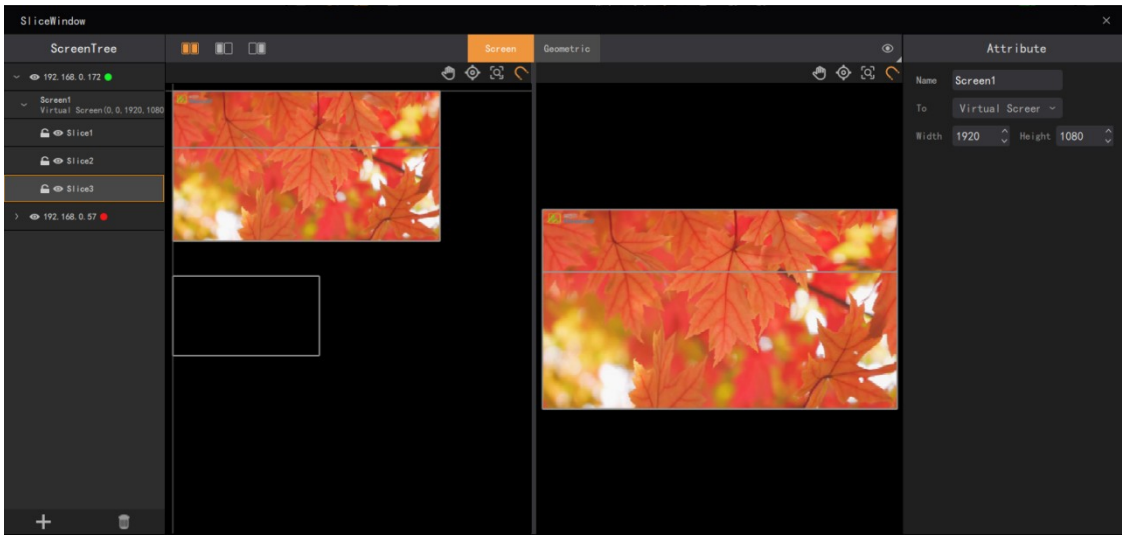
4.5.1 Overview

Screen Mode provides pixel-accurate mapping and color correction between source media, the input canvas, and the physical outputs.

In Screen Mode, you can:

- Add slices.
- Set slice size, position, rotation, and layer order.
- Create multi-slice arrays.
- Exchange displayed content between slices.
- Adjust other display-mapping parameters.

4.5.2 Editing Slice Information



Use the Properties panel or drag the slice directly in the workspace.

Name: Use descriptive names that identify the corresponding display area.

Position, Center, and Rotation

Input View: Changes affect only the source-media UV mapping. They do not change the physical output region or output dimensions.

Output View: Changes affect only the physical output region, output dimensions, rotation, and frame-buffer assignment. They do not modify the source-media UV mapping.

Workspace Editing: Drag a slice to change its size, position, or rotation visually.

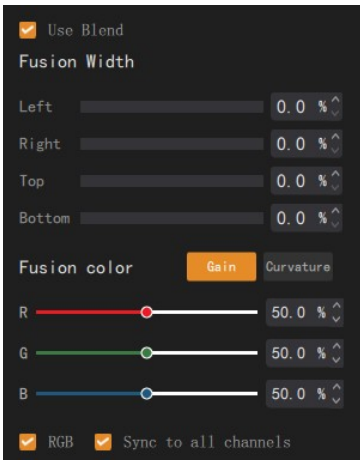
4.5.3 Output Color Adjustment



Output color controls adjust the image sent to the final device, such as an LED processor or projector, so that the displayed result matches the required appearance.

Link RGB: When enabled, the R, G, and B channels change together. Disable it to adjust each channel independently.

4.5.4 Edge-Blend Adjustment



- When Use Blend is disabled, Blend Width and Blend Color controls are unavailable.
- Enable Use Blend to unlock the edge-blend controls.

Blend Width: Sets the width of the horizontal and vertical overlap regions.

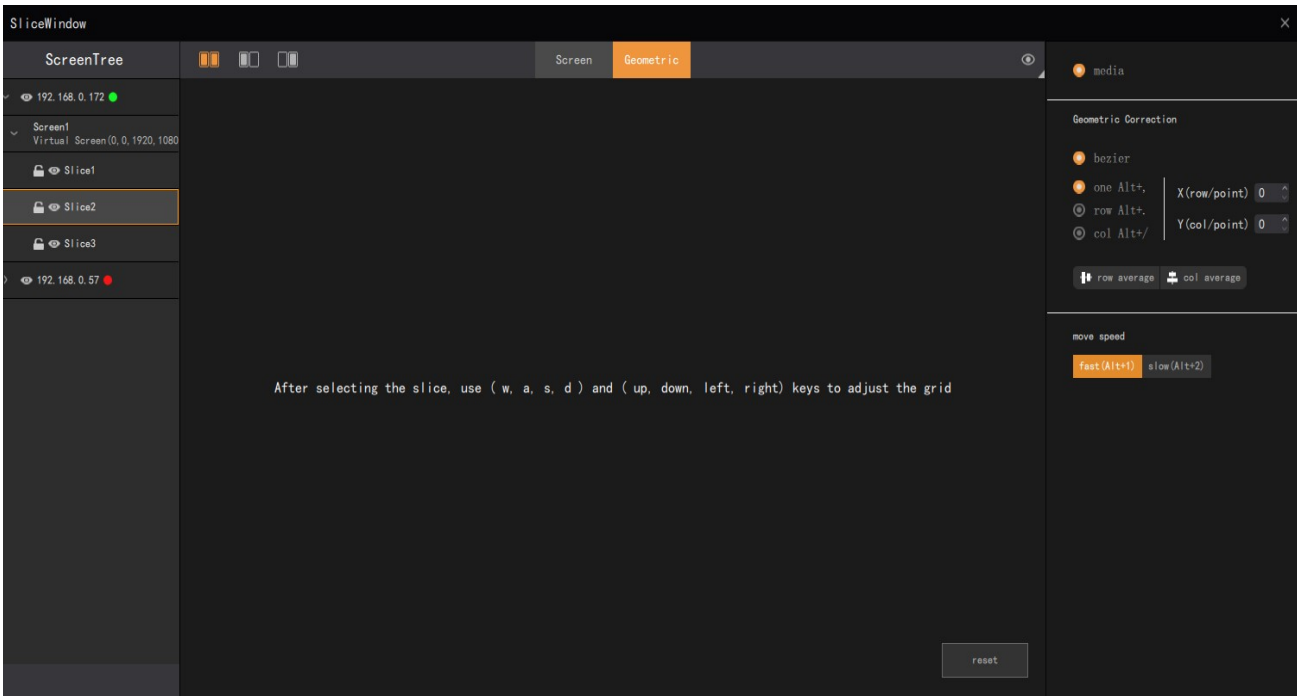
Blend Color: Adjusts the red, green, and blue levels within the overlap region.

Link RGB: Adjusts all three color channels together. Disable it for independent channel correction.

Sync to All Slices: Applies the current blend width and color settings to every slice on the same screen. When disabled, changes apply only to the selected slice.

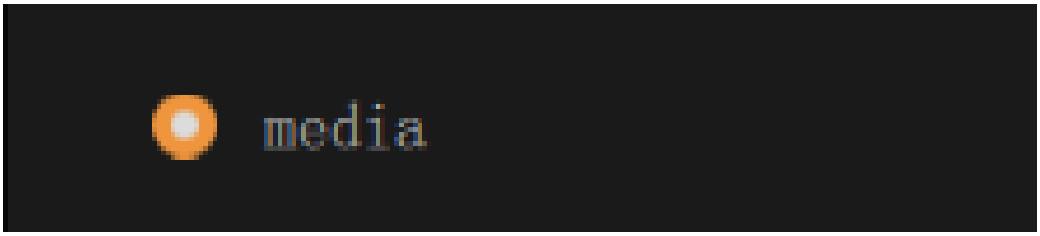
4.6 Slice Setup - Geometry Mode

Use Geometry Mode for output warping and irregular-display correction.



Geometry correction deforms the output mesh to match curved, irregular, or non-planar display surfaces so that the physical image appears geometrically correct.

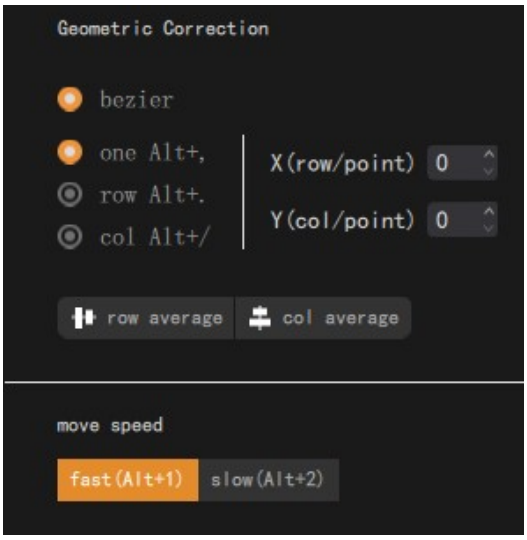
4.6.1 Geometry Background



Media cleared: Uses the default grid background for evaluating mesh deformation and alignment.

Media selected: Uses the current media as the background for checking the corrected result against the intended content.

4.6.2 Control-Point Editing



Curve disabled: Uses a straight-line mesh for regular, controlled warping. Curve enabled: Uses a Bezier mesh for smoother and more flexible deformation.

Single Point: Enable Single, use W/A/S/D to select a control point, and use the arrow keys to move it.

Single Row: Enable Row, use W/S to select a complete row, and use the arrow keys to move it.

Single Column: Enable Column, use A/D to select a complete column, and use the arrow keys to move it.

Grid Density

- X (points per row): Sets the number of control points in each row.
- Y (points per column): Sets the number of control points in each column.

Control-Point Distribution

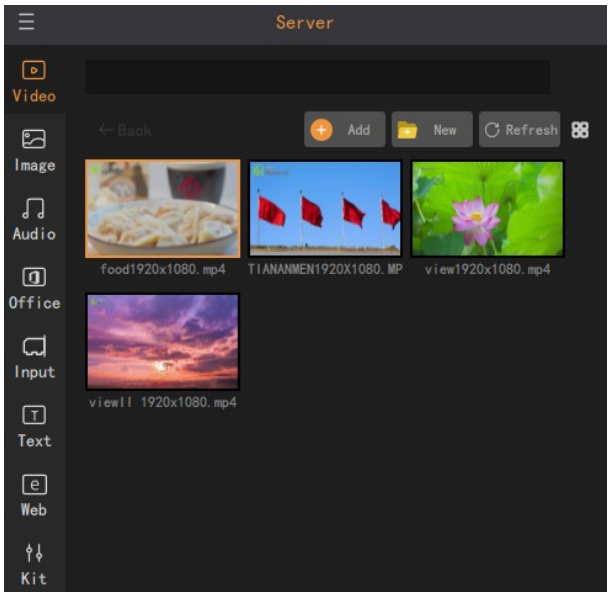
- Average Rows: Distributes the selected points at equal horizontal intervals.
- Average Columns: Distributes the selected points at equal vertical intervals.

Move Speed: Use Fast for coarse adjustment and Slow for fine positioning.

5. Media Library and Asset Management

5.1 Media Library Overview

The Media Library manages video, image, audio, and other assets in one place. Category filters, thumbnail and list views, path navigation, search, and context-menu commands make assets easier to organize and reuse.



1. Category Navigation

- Standard categories include Video, Image, and Audio.
- Extended categories include Office documents, network streams, capture sources, text, and plug-ins.

2. Asset Preview: Displays available assets as thumbnails or list entries.

3. Context Menu: Right-click an asset to view Media Information or delete the asset.

4. Toolbar Controls

Upload new media.

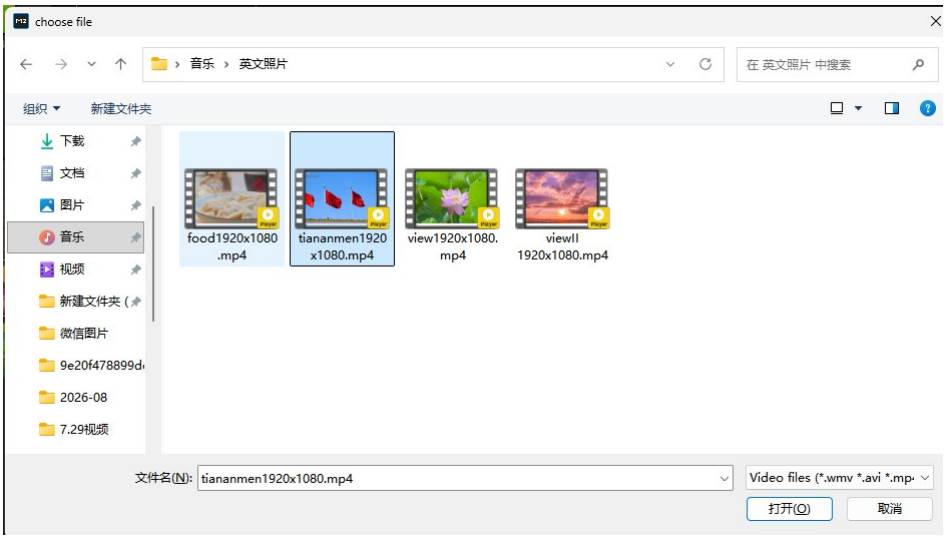
View the upload history.

Refresh the current list.

Switch between List and Grid views.

5.2 Managing Media Assets

5.2.1 Adding Media



Click Add to open the file-selection dialog.

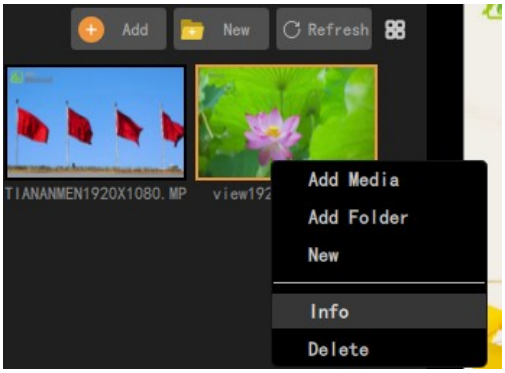
Open: Selects and imports the chosen local media file.

Cancel: Closes the dialog without importing a file.

- Supported file types are listed below.

Video	MP4	MOV	AVI
Image	JPG	PNG	
Audio	WAV		
Other	PDF	PPTX	Network stream URL

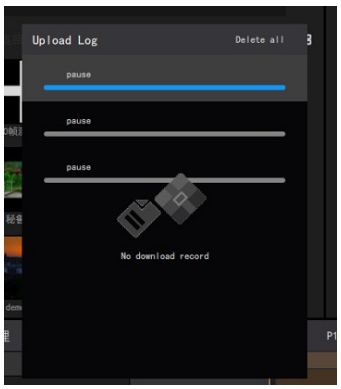
5.2.2 Viewing Information or Deleting Media



Media Information: Right-click the required asset and select Media Information to view its file and media properties.

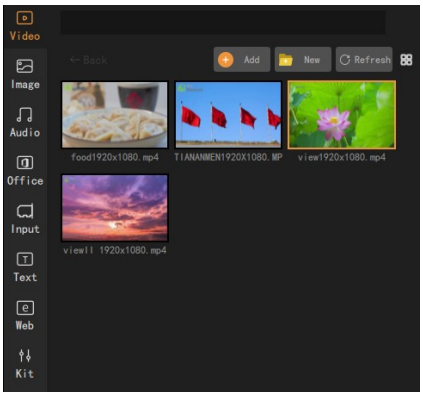
Delete: Right-click a file or folder and select Delete. Deleted media cannot be restored through MC-M2, so verify the selection before confirming.

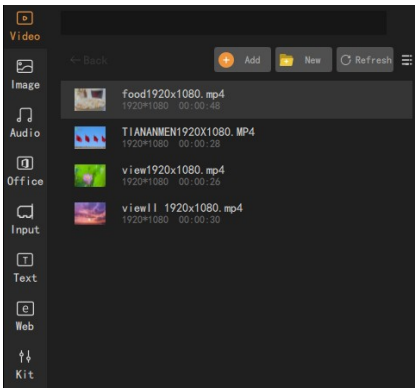
5.2.3 Upload History



Click History to open the Upload History window. Select an item in the history to locate it quickly in the Media Library.

5.2.4 List and Grid Views





Use the view button to switch the Media Library between List and Grid display modes.

6. Program and Playback Management

6.1 Overview

MC-M2 provides centralized media playback, program organization, playlists, windows, and output control.

A project can contain multiple Program Groups, and each group can contain multiple Programs. A Program is made up of one or more output windows and their assigned media. Windows can overlap or form a tiled layout for multi-screen and zoned-playback applications.

The Playback Control area supports multi-group, multi-program scheduling and operation for complex projects with different content regions and playback periods.

6.1.1 Grid View

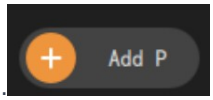


1. Program Group List: Shows every Program Group. Select a group to display its Programs.

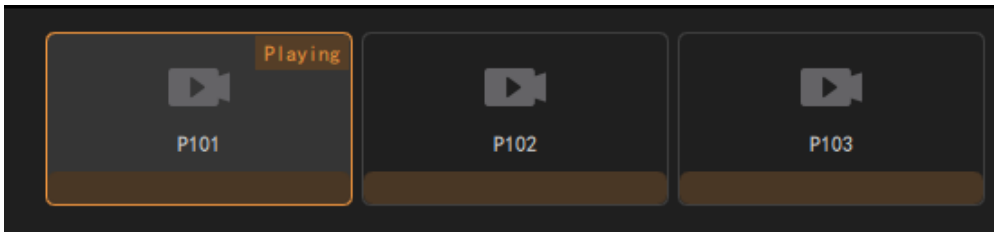
2. Program Preview Area: Displays Programs as preview cards.

3. Add Program Group. 

4. Delete Program Group. 

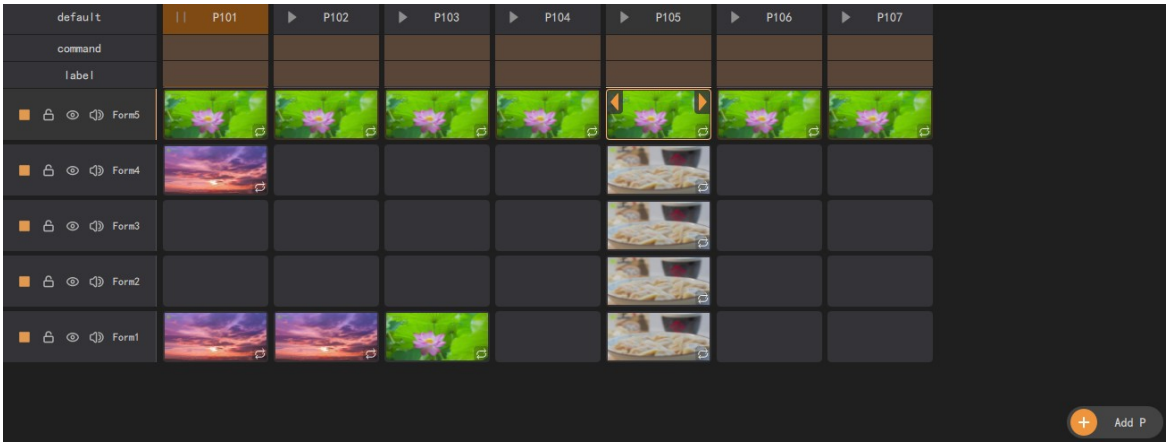
5. Add Program. 

6. Playback Status and Quick Indicators. 



- Playback Status: The icon in the upper-right corner of a Program card shows its current state.
- Program Name: The name appears at the bottom of the Program card.

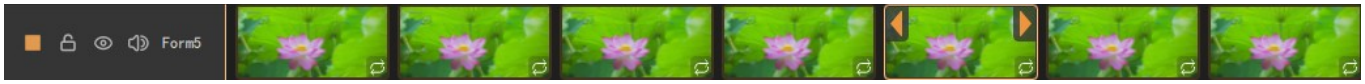
6.1.2 List View



1. Playback Control - List View: Displays Programs and their windows as a structured list.

2. Program: A playback composition containing one or more output windows.

3. Window List



Controls media playback for the corresponding window.

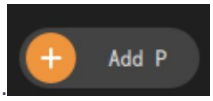
**Controls the window lock state.**

- Fully Editable: The window geometry and its media can both be edited.
- Window Locked: Window geometry cannot be edited, but media can still be added or changed.
- Fully Locked: Neither the window nor its media can be edited.

Controls whether the window is visible in the Stage View and output.

Controls audio mute for media in the window.

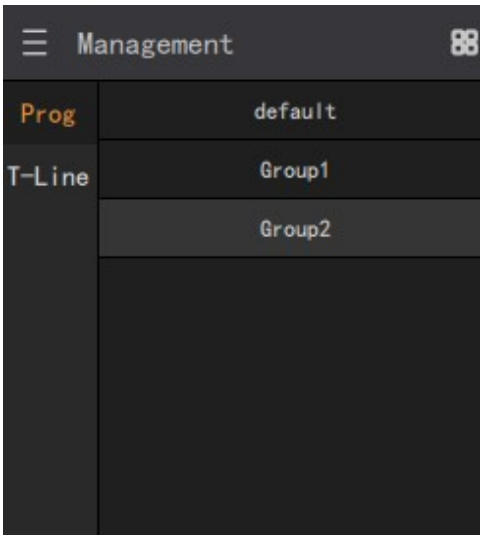
4. Media Preview Card: Shows the thumbnail and playback state of media assigned to the window.

5. Add Program. 

6.2 Playback Control

Playback Control uses a two-level Program Group > Program structure for efficient content organization and operation.

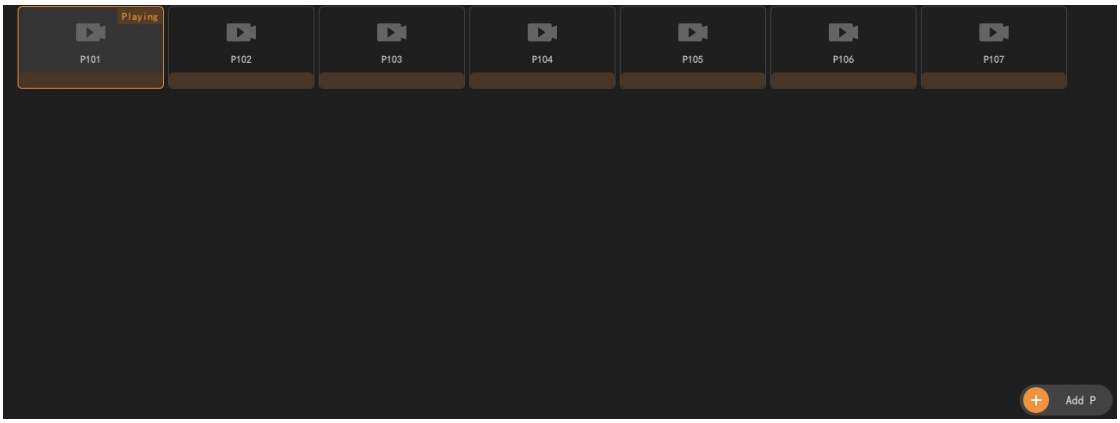
6.2.1 Adding or Deleting a Program Group



Click Add Program Group at the bottom of the group list to create a group.

Select a group and click Delete Program Group to remove it. Deleting a group cannot be undone.

6.2.2 Adding or Deleting a Program



Add a Program

Click Add Program in the lower-right corner to add a Program to the selected group.

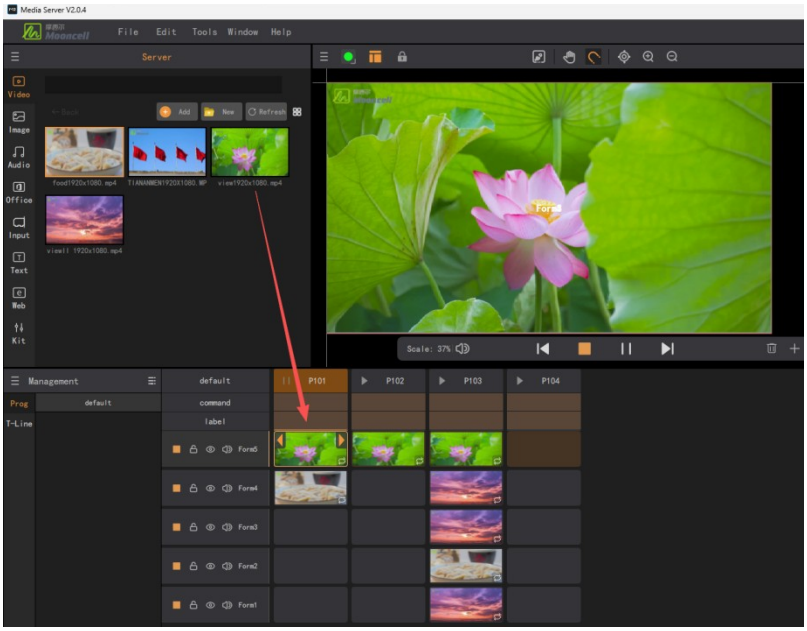
Alternatively, right-click in the Playback Control area and select Add Program.

Delete a Program: Right-click the required Program and select Delete. This action cannot be undone.

6.2.3 Adding or Removing Playback Media

Switch Playback Control to List View.

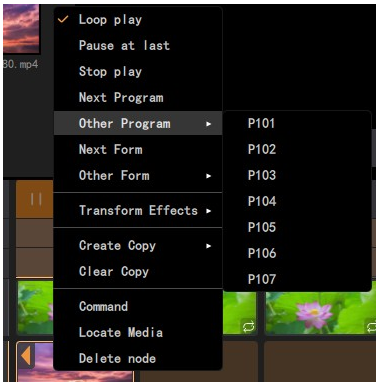
Drag an asset from the Media Library to the required media preview slot. For example, drop the asset into the second media slot of Window 2 in Program Group 1.



When playback reaches the corresponding Program, MC-M2 assigns that media to Window 2 and plays it in the defined output r egion.

To remove media, right-click its preview card and select Delete. This action cannot be undone.

6.2.4 Playback Sequence



Right-click a media preview card and select a playback behavior. The selected behavior is indicated by an icon on the card.

Available behaviors include:

Play Next: Plays the next media item after the current item finishes.

Hold Last Frame: Stops on the final frame of the current media item.

Loop All: Repeats all media items in sequence.

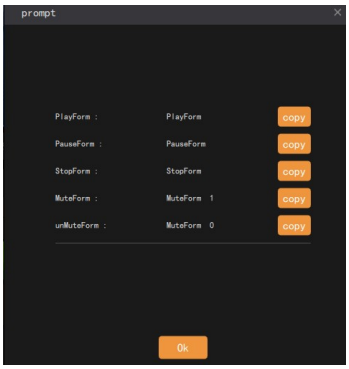
Jump To: Jumps to a specified media item after the current item finishes.

Stop and Rewind: Stops immediately and returns the current media item to its first frame.

Clear a selected behavior to disable it; its icon is removed from the preview card.

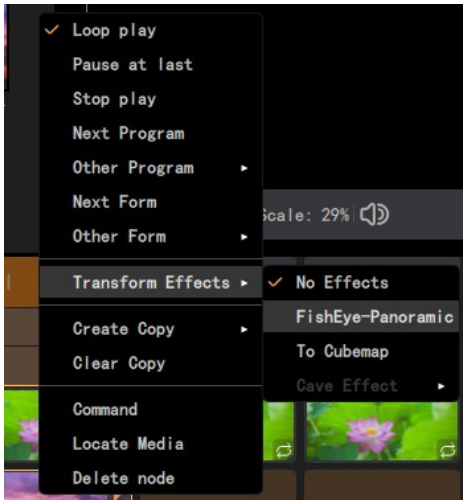
6.2.5 Getting an External-Control Command

Right-click the required media item in the Commands area and select Get Control Command. MC-M2 displays the command that an external control system can use to trigger that media item.



6.2.6 Adding or Replacing a Transform Effect

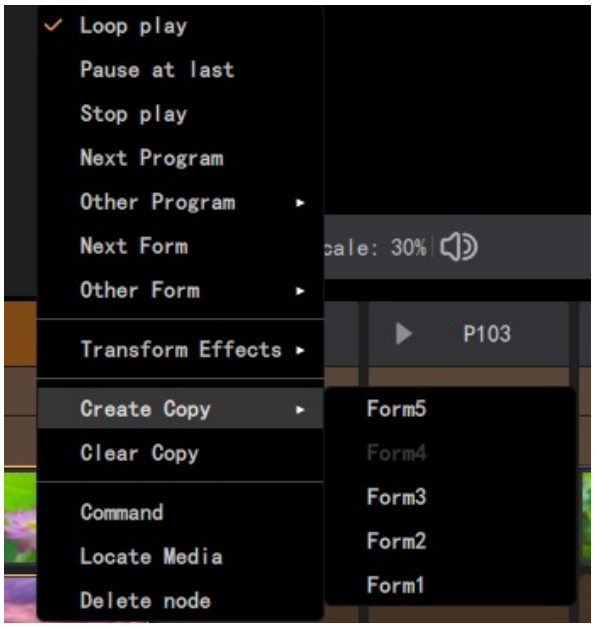
Right-click a media item and select Transform Effect to add an effect or replace the currently assigned effect.



6.2.7 Creating a Window-Media Copy

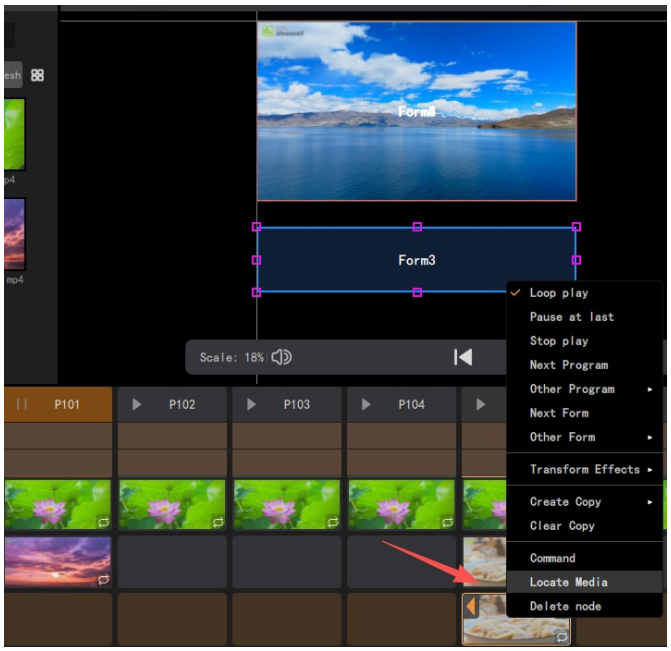
Create Copy: Right-click a media item and select Create Copy to reuse it in another window within the same Program without decoding and rendering the same source repeatedly.

Clear Copy: Removes copies associated with the selected source media.



6.2.8 Locating an Asset

Right-click a media item and select Locate Media. MC-M2 highlights the corresponding asset in the Media Library so that it can be verified or replaced quickly.



6.3 Stage View

The Stage View is the main canvas for arranging and previewing video, images, text, and other media windows. It also provides playback, position, layer, and effect controls.

6.3.1 Stage View Tools



Auto Connect: Connects every project window to its assigned server when the project opens.

Pan: Hold the left mouse button and drag, or select the Pan tool and then drag the canvas.

Snap: Aligns nearby window edges automatically.

Center View: Returns the Stage View to its center position.

Zoom: Uses the Zoom In and Zoom Out buttons to change the canvas magnification.

Blackout: Sends a full black output from all Display Servers.

Display Server Controls: Minimize, maximize, or restart the Display Server application; show or hide window names and slices; or shut down and restart the selected server.

6.3.2 Playback Controls



Previous/Next: Moves to the previous or next media item.

Pause/Play: Pauses or resumes playback.

Stop: Stops playback and returns the current media item to its first frame.

Volume: Opens the volume slider. Drag the orange handle or enter a value to set the output level.

Delete Window: Removes the selected window from every Program.

Add Window: Adds an empty window to every Program.

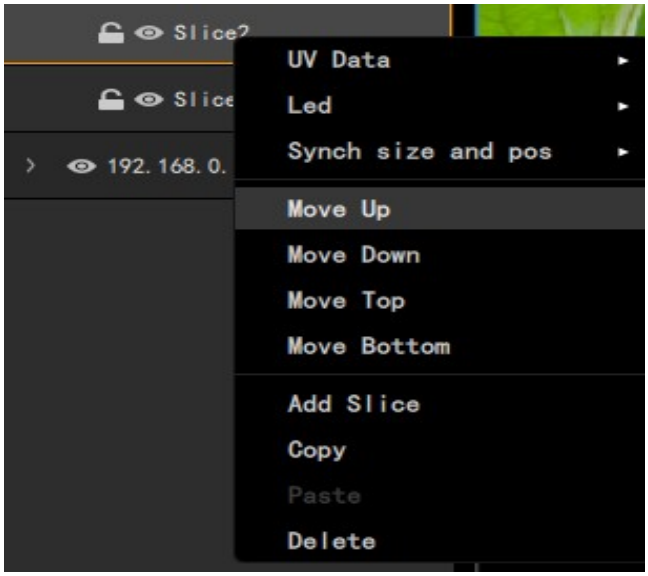
6.3.3 Window Selection



The selected window is highlighted in blue with purple control handles. Unselected windows use a gray outline.

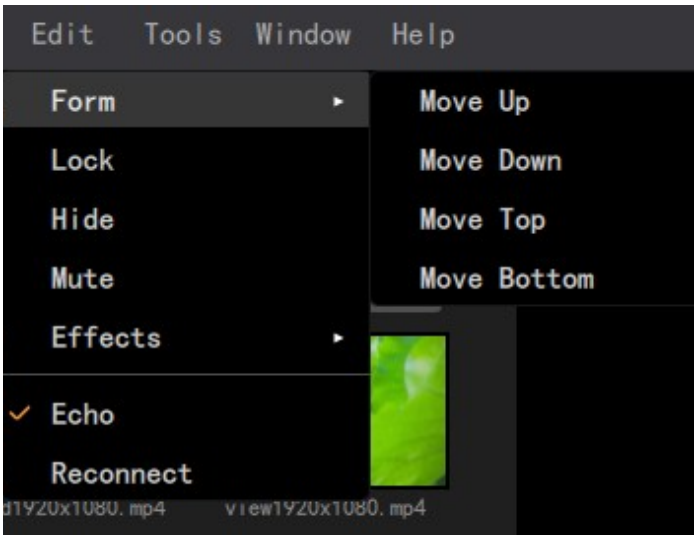
6.3.4 Changing the Layer Order

Window layers can be reordered from either the Stage View context menu or the main Window menu.
Move Up: Exchanges the selected window with the window immediately above it.
Move Down: Exchanges the selected window with the window immediately below it.
Bring to Front: Moves the selected window above all other windows.
Send to Back: Moves the selected window below all other windows.
Stage View: Right-click the required window and select Move Up, Move Down, Bring to Front, or Send to Back.



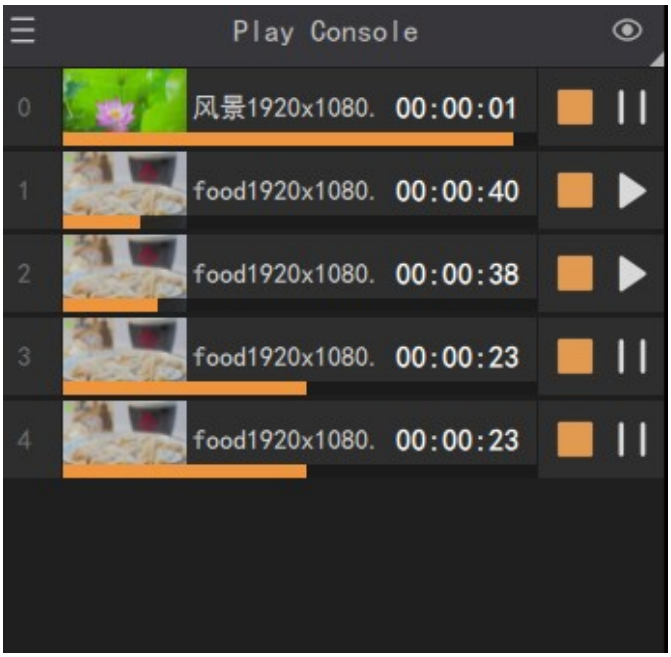
Main Menu

Select Window, then choose the required layer command.



6.4 Playback Console

The Playback Console shows the media assigned to the active window and provides playlist and transport controls.



1. Playlist: Lists all media items in the current Program and window.

2. Transport Controls: Play/Pause and Stop. 

3. Time Display: Switches between two timing modes. 

- Count Up: Shows elapsed time from the beginning of the media.
- Count Down: Shows remaining time to the end of the media.

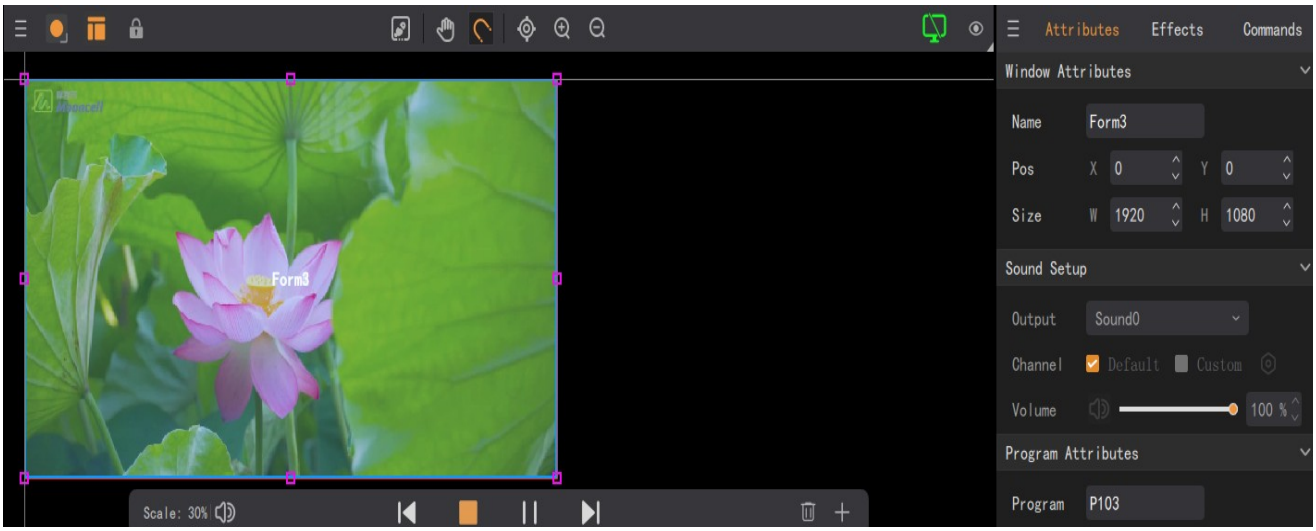
4. Loop Mode: Selects one of two playback-loop behaviors.

Loop Playlist: Repeats all media items in sequence.

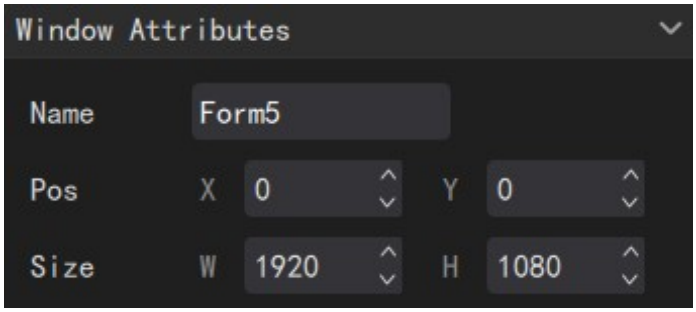
Loop Current: Repeats the current media item after it finishes.

7. Editing Windows and Media

7.1 Properties



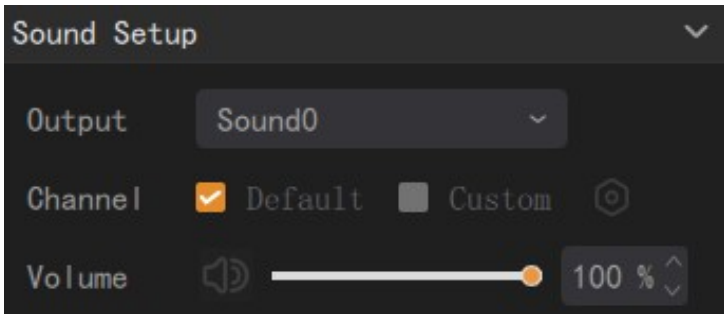
7.1.1 Window Properties



Select a window and edit the following parameters in Window Properties:
Window Name: Enter a descriptive window name.
Window Size: Set the window width and height.
Window Position: Set the X and Y coordinates on the canvas.

7.1.2 Audio and Channel Mapping

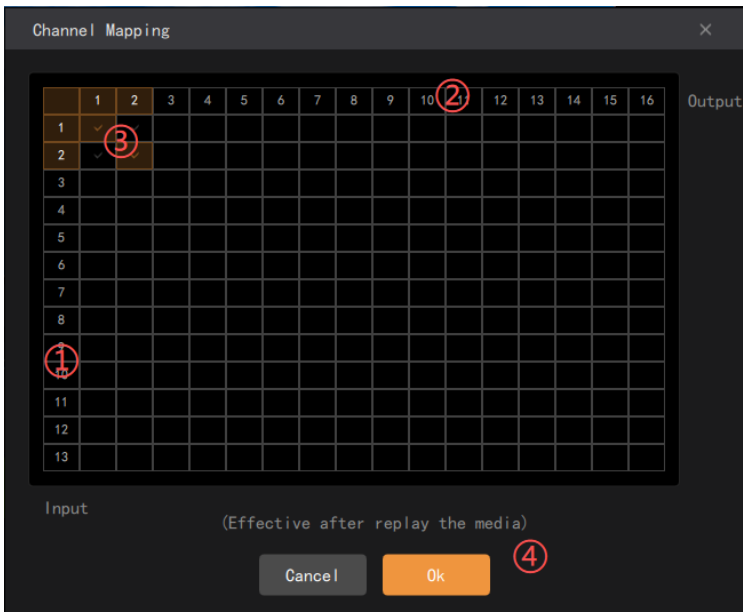
- Add the required sound card under Preferences > Sound Settings. See Section 3.1.5.6.
- In the main workspace, open Properties > Sound Setup.



Output: Select a sound card that has already been configured in Preferences.

Channel Mapping

- Default: Uses the original channel mapping.
- Custom: Click the settings icon to open the Channel Mapping matrix.



1. Input Channels: Rows on the left represent the source-audio channels.
2. Output Channels: Columns across the top represent the destination output channels.
3. Mapping Cells: Select a matrix cell to route an input channel to an output channel.
4. Action Buttons: Click OK to save the mapping or Cancel to discard it.

Use the matrix to route any input channel to one or more output channels for:

Multichannel output assignment.

Mixing and channel redirection.

Application-specific routing, for example input channel 1 to output channel 2.

Volume: Drag the slider or enter a value to set the Program's output level.

7.1.3 Program Properties



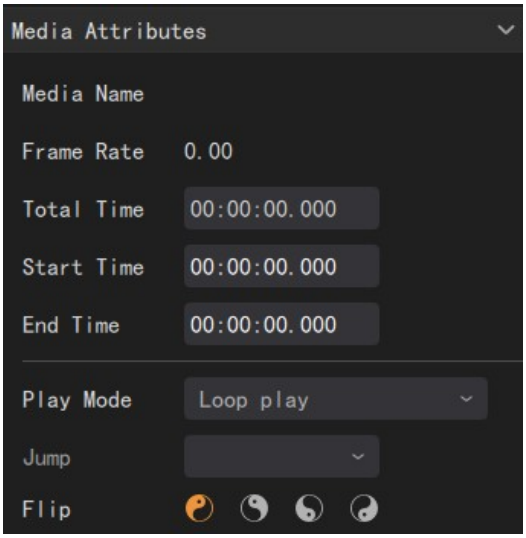
Select the required Program in Playback Control, then edit the following fields in the Properties panel:

Program Name: Changes the Program's display name.

Fade In/Fade Out: Sets the transition duration in seconds at the beginning and end of the Program.

Load at Startup: Loads this Program automatically when the project opens. If more than one Program is configured, the designated startup Program is loaded first.

7.1.4 Media Properties



Media Name: Displays the filename read from the Media Library.

Frame Rate: Displays the source-media frame rate.

Duration: Displays the total media duration in seconds.

Start Time: Sets the in point. It cannot exceed the total media duration.

End Time: Sets the out point. It must be greater than or equal to the Start Time and cannot exceed the total duration.

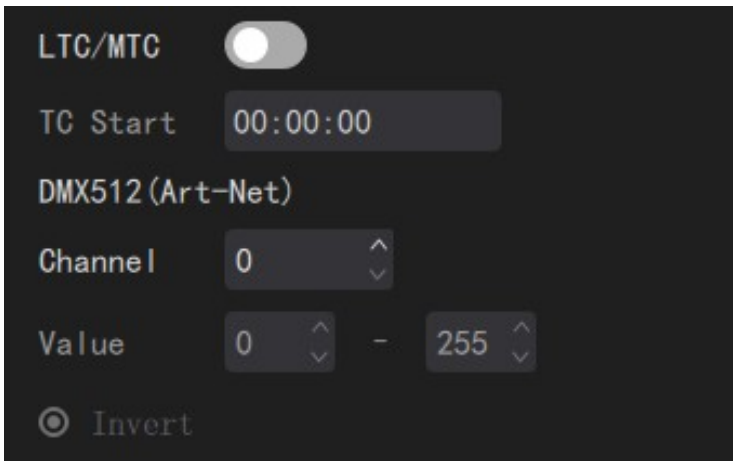
Playback Mode: Selects what MC-M2 does after the media item finishes.

Crop: Defines the portion of the source image displayed in the window.

Flip: Cycles through horizontal and vertical flip orientations as provided by the interface.

7.1.5 External Input Control

7.1.5.1 Enabling LTC or MTC



Step 1: Open Preferences > Control Settings and enable LTC or MTC. See Section 3.1.5.4.

Step 2: Return to the main workspace. The LTC/MTC parameters become available in Program Properties.

Step 3: Set the Trigger Time for the Program to synchronize it to the incoming timecode.

7.1.5.2 DMX512 (Art-Net)

DMX512 over Art-Net is widely used to integrate media playback with lighting consoles, luminaires, dimmers, and show-control systems.

- Universe: Uses the universe configured under Control Settings.
- Channel: Sets the DMX channel from 1 to 512.
- Value: Sets the current channel value from 0 to 255.
- Invert: Reverses the control-value response.
- 16-bit: Combines two DMX channels for higher-resolution control of position, size, color fades, and similar parameters. Clear the option for standard 8-bit switching or lower-resolution control.

7.1.5.3 MIDI Control

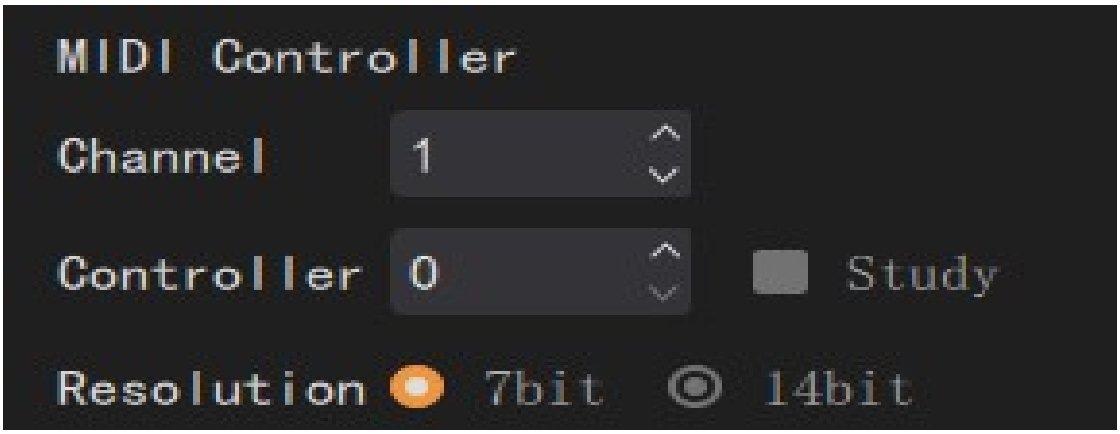
1. Connect the MIDI controller to the Control Server computer before starting MC-M2.
2. Modern controllers normally support a direct USB connection.
3. A controller with a 5-pin DIN connector requires a MIDI-to-USB adapter or another Windows-compatible MIDI interface.

Common Devices    MC-M2DI 

- **Important: Connect and power on the MIDI interface before starting MC-M2.**

- **MIDI Controller Input**
- When a MIDI input is selected under Preferences > Control Settings, MC-M2 can learn and respond to knobs, faders, keys, or software-generated MIDI messages. These messages are commonly called:
- CC (Continuous Controller)
- Control Change
- Continuous controller messages.

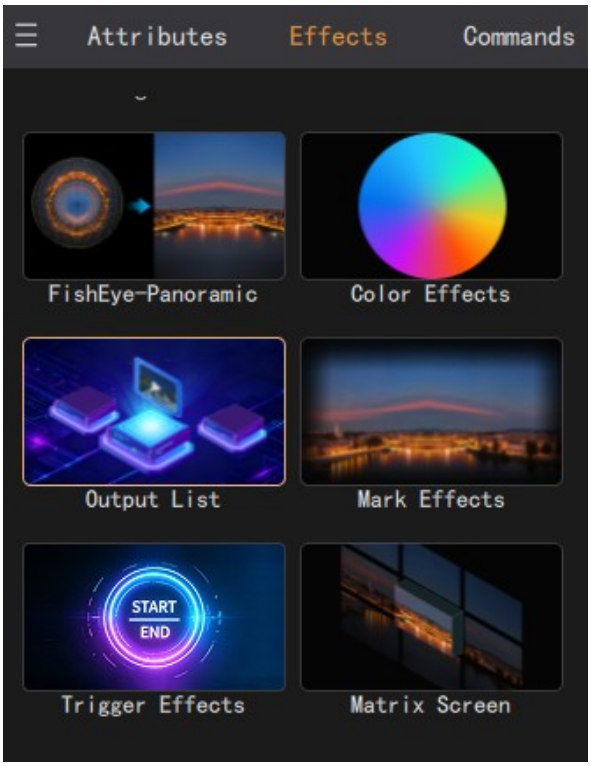
CC messages can control volume, fade duration, Program selection, opacity, and other parameters in live and automated playback workflows.



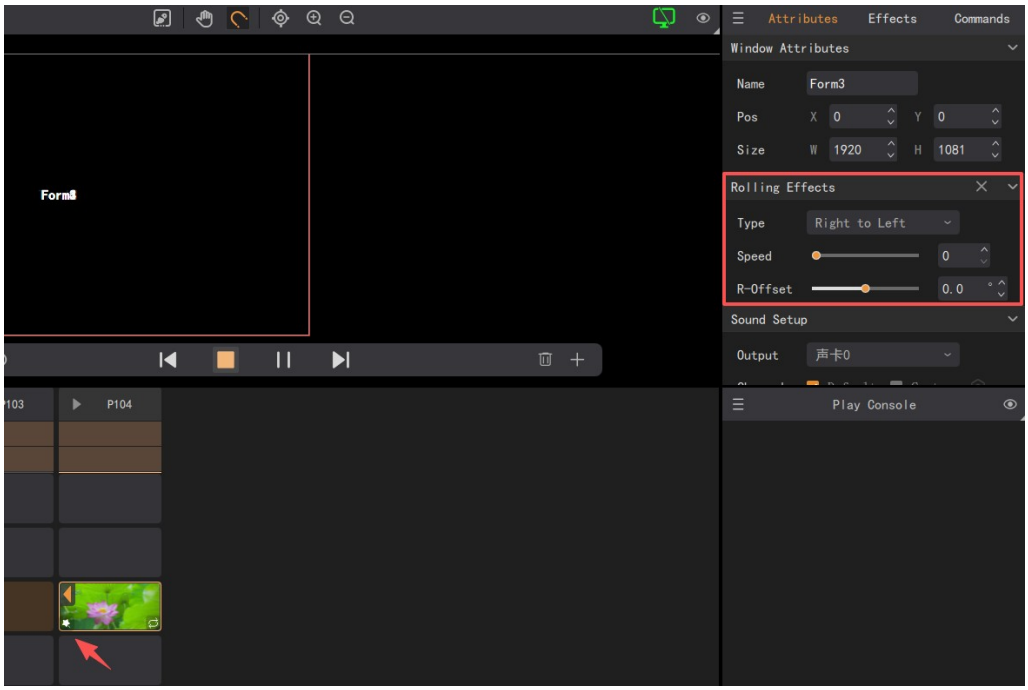
- Channel: MIDI channel carried by the message.
- Controller: MIDI CC number.
- Learn: Enable Learn and move the required control. MC-M2 detects its MIDI channel and CC number automatically.
- Resolution: Data resolution of the controller, normally 7-bit.

◆ Note: A MIDI CC number may differ from the number printed next to a physical knob or fader. Many devices allow their CC assignments to be programmed; check the controller configuration when necessary.

7.2 Adding Effects

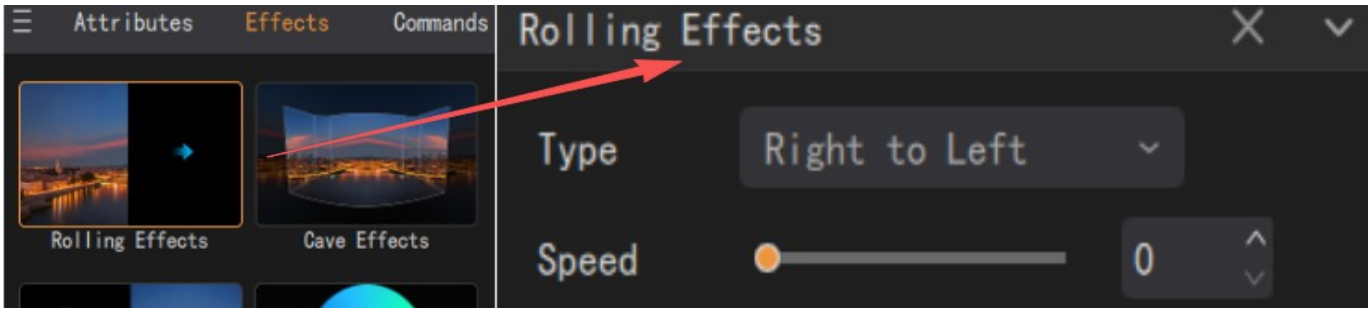


Select the media window, open the Effects panel, and choose the required effect.



A star in the lower-left corner identifies a window with an assigned effect. Select the media preview card and open Properties to edit the effect parameters.

7.2.1 Scroll Effect

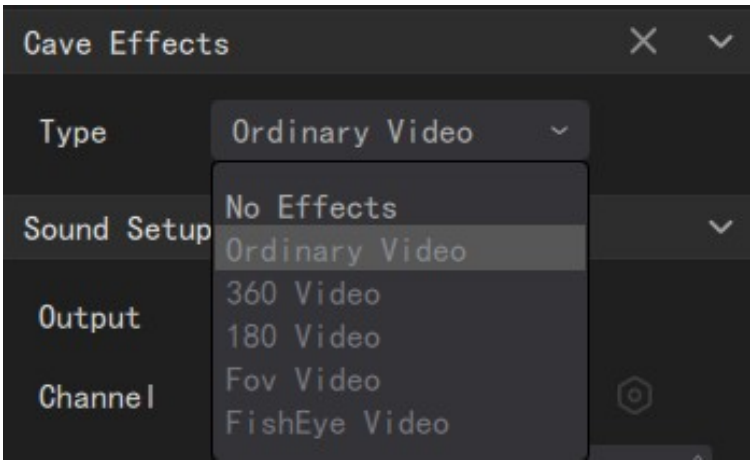


- Direction: Selects the movement direction, such as top to bottom or left to right.
- Speed: Drag the slider or enter a percentage to set the animation speed.

A higher value produces faster movement.

A lower value produces slower movement.

7.2.2 CAVE Conversion Effects



After adding a CAVE effect, select the conversion type that matches the source content and the target CAVE geometry.

Standard Video to CAVE

360-degree Panorama to CAVE

180-degree Video to CAVE

Field-of-View (FOV) Conversion to CAVE

Fisheye to CAVE

Select the conversion according to the source format and application to map content efficiently to the immersive display environment.

7.2.3 Fisheye-to-Panorama Conversion



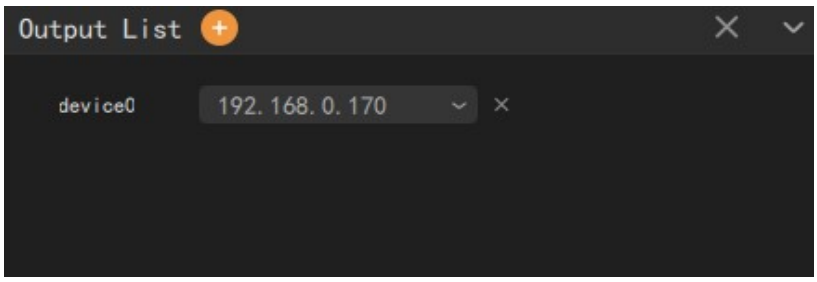
Drag FishEye-Panoramic from the Effects panel to the required media preview card. MC-M2 applies the conversion automatically; no additional parameters are required.

7.2.4 Color Effect



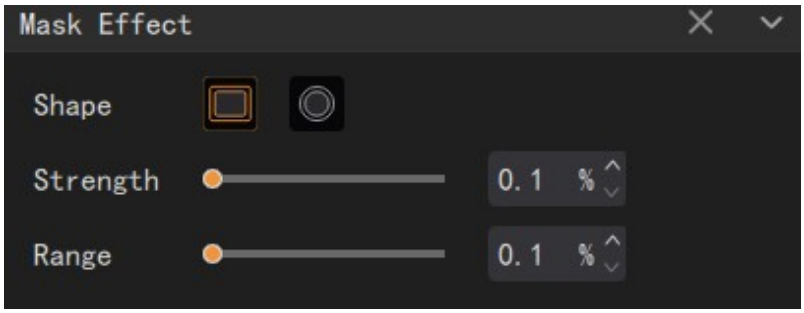
Channel Adjustment: Use the Brightness, R, G, B, and Opacity sliders or percentage fields to correct color balance and transparency.

7.2.5 Output Device



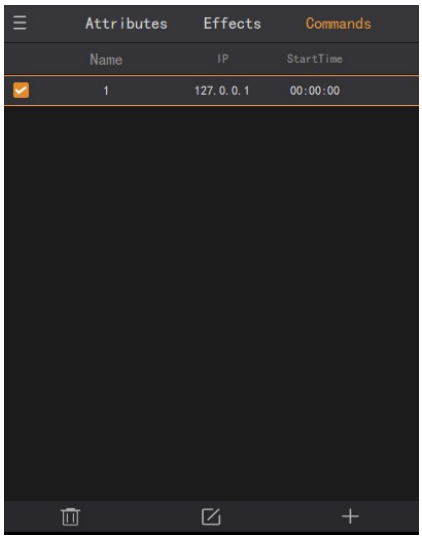
Add the Output Device effect to a media preview card, then select the card to display its output-routing parameters.
All Devices: Routes the media item to every linked output device and hides the individual device list.
Selected Devices: Shows a device list for routing the media item only to specified outputs.
Click Add Device and enter the target device IP address.
Click Delete beside an entry to remove that device from the list.

7.2.6 Mask Effect



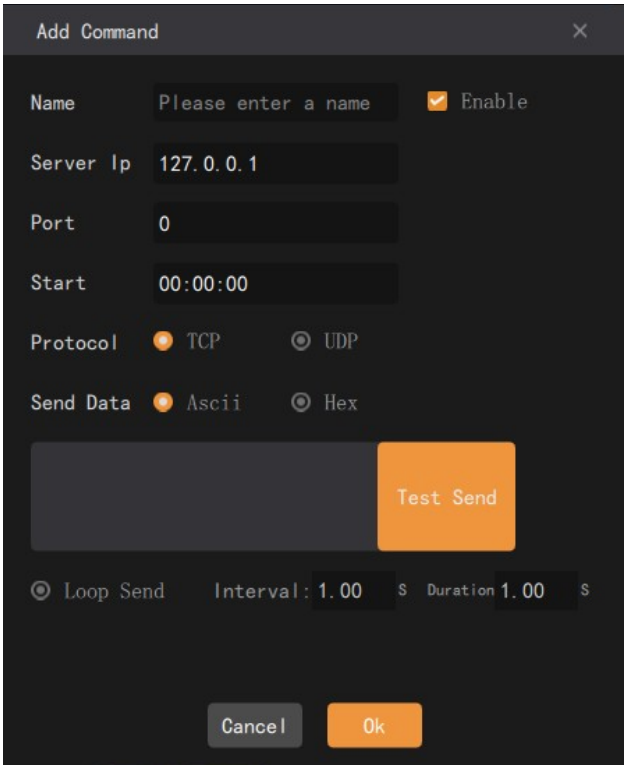
The Mask effect feathers the edges of the selected window.
Shape: Selects a rectangular or circular mask boundary.
Intensity: Sets the softness of the feathered edge.
Range: Sets the width of the feathered area.

7.3 Commands



7.3.1 Adding a Command

Click Add Command to open the command-configuration panel.



Name: Enter a descriptive command name.

Display Server IP: Enter the IP address of the Display Server that will send the command.

Port: Enter the target device's listening port, such as 8000 or 5000. Refer to the controlled device's documentation.

Start Time: Sets the point at which the command is sent.

Protocol: Select TCP for connection-oriented reliable delivery or UDP for low-overhead datagrams, according to the target device's requirements.

Data Format: Select Hex or Character/String to match the command format specified by the device manufacturer.

Send Test: After completing the name, Display Server IP, port, start time, protocol, and command data, click Send Test.

- A valid response indicates that the command is configured correctly.
- **If no response is received, verify the IP address, port, protocol, and command data.**

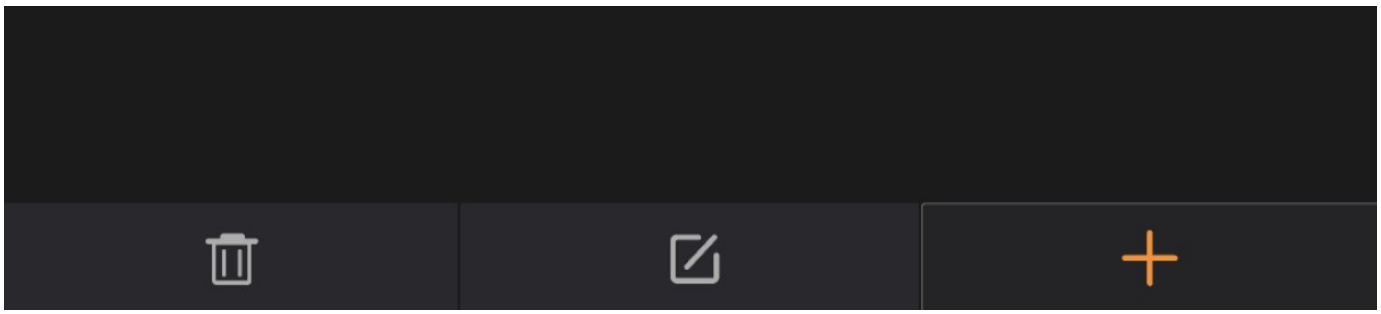
Repeat Send

Enable Repeat Send, then enter the repeat count and interval.

Disable Repeat Send to hide and ignore the repeat-count and interval settings.

Click OK to save the command or Cancel to discard it.

7.3.2 Editing or Deleting a Command



Edit: Select a command and click Edit. Change the fields as described in Section 7.3.1.

Delete: Select a command and click Delete. The command is removed permanently.

Mooncell WeChat

Address: Mooncell Building, Bao'an District, Shenzhen, China
Tel: +86 755 2397 5634
Website: www.mooncell.com.cn