PreviewVideoMonitorPro

User Manual

Version 5.2 | Professional Video Inspection for ComfyUI

Welcome! ■

PreviewVideoMonitorPro transforms how you review AI-generated video and images in ComfyUI.

Whether you're creating videos at home or managing a studio pipeline, this tool gives you frame-accurate playback, technical inspection capabilities, and professional comparison tools—all without leaving your workflow.

This manual is designed for everyone: if you're new, follow the guided walkthrough. If you're an advance/tech/coder user, check the Advanced Notes at the end for details.

Quick Start: Your First Session

We'll be making a video tutorial soon. Check for that link on
https://github.com/NicLandajo/comfyui-preview-video-monitor

Setting Up the Node

Add the Node — In ComfyUI search `PreviewVideoMonitorPro`

Connect Your Input

- Video source (MP4, etc.) to the `video` input
- Image batch to the `images` input (vae decode)
- Image (single) to the `images` input (vae decode or a load image node)

Choose Your Monitor — The `monitor` parameter lets you select which screen displays the viewer (useful for multi-monitor setups)

Power On — Set `power_state` to ON (true). Turn it Off to switch to another physical monitor and then back to On. That's actually the only reason for this button.

Run Your Workflow — Queue your prompt. You'll see a waiting screen. The monitor window opens automatically on your selected display.

That's it! The monitor loads your generation and you're ready to inspect.

Keyboard Reference (Complete)

Key	Action
SPACE	Play/Pause
←	Previous frame (hold for scrubbing)
→	Next frame (hold for scrubbing)
HOME	Jump to first frame

END	Jump to last frame
I	Set IN point
O	Set OUT point
P	Toggle Pong mode
1	Toggle 1:1 mode
2	Width mode
3	Height mode
4	Fit mode
5	Toggle Fullscreen
R	Toggle Red channel
G	Toggle Green channel
B	Toggle Blue channel
W	Exit wipe/SBS mode
Shift+Q	Close monitor window
Mouse Wheel	Zoom in/out
Right-Click + Drag	Pan (when zoomed)
Middle-Click	Reset zoom/pan

Understanding the Monitor Window

The Main Viewing Area — Your video displays here. This is where all the magic happens—playback, inspection, comparison.

The Toolbar (Bottom) — A clean row of controls for everything you need:

- Timeline with frame counter
- Playback controls (IN/OUT markers, play/pause, frame stepping)
- FIT modes (how video scales to screen)
- Vision controls (technical inspection)
- Generations dropdown (manage multiple runs)
- Snapshot (save workflows)
- Clear Cache (manage storage)

Design Philosophy: Everything is one click away. No nested menus, no hunting for features.

Chapter 1: Playback & Navigation

Basic Playback

Play/Pause — Click the ■/▮▮ button or press SPACEBAR. The video plays at the speed you set in the FPS control.

Frame Stepping

- ← `Left Arrow`: Previous frame
- → `Right Arrow`: Next frame
- Hold arrow keys: Smooth 30fps scrubbing through your video

Scrubbing the Timeline — Click and drag anywhere on the timeline bar to jump instantly to any frame. The frame counter updates in real-time.

Setting Your Playback Speed

The FPS Button (grey circle with a dot) — Click it to open the FPS dropup menu.

FPS Presets: 60, 59.94, 50, 48, 30, 29.97, 25, 24, 23.976, 15, 12, 8

Custom FPS (Yellow Box): Click the yellow-outlined field, type your frame rate (e.g., 120), press Enter.

First Frame Number (Blue Box): Sets what number your first frame displays as. Useful for matching frame numbers across departments.

Example: If your video is frame 100-200 of a larger sequence, set this to 100 so the counter shows the correct frame numbers.

Marking IN and OUT Points

Shortcuts: `I` `O` `P`

Set IN Point: Navigate to start frame, click IN button. Red pillar appears.

Set OUT Point: Navigate to end frame, click OUT button. Area between turns yellow.

Playback with Markers: Play starts at IN, stops at OUT, loops back to IN.

Pong Mode: Click Pong for ping-pong playback (forward, then backward, continuously)

Toggle Markers Off: Click IN while at IN point to disable markers.

Chapter 2: Viewing Modes

Understanding FIT Modes

Your video's resolution might not match your screen. FIT modes control how the video scales.

1:1 Mode (Key: 1) — Actual pixels, no scaling. Great for pixel-perfect inspection. Press 1 again to toggle back.

Fit Mode (Key: 4) — Scales to fit screen, preserving aspect ratio. Default mode.

Width Mode (Key: 2) — Fills screen width. Height may exceed screen.

Height Mode (Key: 3) — Fills screen height. Width may exceed screen.

Fullscreen Mode (Key: 5) — Hides toolbar, maximizes viewing area. Press 5 again to exit.

Reset Button — Returns to default Fit mode and resets zoom/pan.

Zoom and Pan

Zoom In: Scroll mouse wheel UP (enlarges around cursor position)

Zoom Out: Scroll mouse wheel DOWN

Pan: Right-click and drag (when zoomed). Zoom can go up to 16x!

Return to Fit: Middle mouse click or Reset button

Why Use Zoom: Inspect fine details, check edge artifacts, examine texture quality—essential for technical review.

Chapter 3: The Vision Module ■

Vision transforms your monitor into a technical inspection lab. These aren't creative color grading tools—they're diagnostic controls for analyzing what the AI actually generated.

Opening Vision: Click the Vision button (toolbar). A panel slides up with technical controls.

RGB Channel Isolation

Click R/G/B buttons to isolate individual color channels (displayed as grayscale):

- **R** — Red channel only
- **G** — Green channel only
- **B** — Blue channel only
- **RGB** — Back to full color

Use `R` `G` `B` keyboard keys to cycle channels.

Why Use It: AI artifacts often hide in individual channels. Compression issues, color banding, and encoding problems become visible.

The Vectorscope

A circular display showing color distribution. Each pixel's color is plotted as a dot.

- Center = No color (grayscale)
- Edges = Saturated colors
- Specific Directions = Specific hues (Red at 0°, Yellow at 60°, Green at 120°, etc.)

The 4×4 Dot Grid: Our vectorscope uses vibrant 4×4 pixel dots for clear visibility.

Why Use Vectorscope: Instantly see if your video has color casts, clipping, or unusual color distributions.

Diagnostic Sliders

Gain: Lightens/darkens image. Reveal shadow detail or check highlight clipping.

Gamma: Adjusts midtone brightness without affecting pure blacks/whites.

Saturation: Boosts/reduces color intensity. Crank up to spot subtle color artifacts.

These controls help you evaluate generation quality—they don't produce an output at all.

Chapter 4: Comparison Tools

When you generate multiple versions, you need to compare them side-by-side. PreviewVideoMonitorPro gives you two professional comparison modes.

The Generations Dropup

Click **Generations** to see all cached runs. Also navigate them with up and down arrow keys. Then press END key to display it.

Each generation has:

- A timestamp (when created)
- A prefix (`v_` for video, `i_` for images)
- A comparison button (small square on the right)

Loading: Click generation name to load.

Renaming: Select, press Enter, type, Enter again to confirm.

Deleting: Middle-click over generation, confirm.

Comparison Mode: WIPE ■

Click the small square next to a generation—it turns yellow.

Click and hold to see a clean wipe you can move side to side. Works with zoom and pan. Release to show the yellow divider.

The line has a capture radius of 12 pixels which makes it comfortable to use.

Press `W` to exit wipe mode.

Comparison Mode: SIDE-BY-SIDE ■

Click the yellow square again—it turns blue. Screen splits in half:

- **LEFT half:** Your current video
- **RIGHT half:** Comparison video

SBS Behavior:

- Blue line fixed at center
- Zoom synchronized: both videos zoom equally
- Pan synchronized: both videos pan together

Why This Matters: Point your mouse at a point on the left generation, zoom in—both generations zoom to the same relative position.

Cycling Through Modes: Grey Square → Yellow (Wipe) → Blue (SBS) → Grey (Normal)

Press `W` to exit SBS mode.

Chapter 5: Managing Your Work

Generations and RAM

How Generations Work: Every workflow queue: decodes video → caches frames in RAM → saves to disk as JPEG → registers in dropdown.

Why Cache to RAM: Reading from RAM is 100-1000x faster. Enables instant scrubbing, smooth playback, real-time vision feedback, lag-free comparison.

The Trade-Off: RAM usage! 1000-frame 1080p video ≈ 6GB RAM. 5 generations = 30GB RAM.

Understanding the Cache System

RAM Cache (Fast, Temporary) — Decoded frames in memory for instant playback. Cleared when you close monitor.

Disk Cache (Slow, Persistent) — JPEG sequences in `runs_cache` folder. Survives closing ComfyUI.

Normal Workflow: Generate → RAM + disk → Review → Close → RAM cleared, disk remains → Reopen → Reload from disk

The Clear Cache System

Click **ClearCache** button. Current option: Clear All Cache (deletes all folders, clears RAM, empties dropdown).

Coming in v5.3: Clear RAM Only, RAM usage display, automatic management.

Snapshots: Saving Your Workflow

Captures your current ComfyUI workflow and saves it alongside your generation in a WebP file. Version control for your prompts and settings.

Enabled by default (`snapshot_workflow: true`). Stored in `snapshots` folder.

EXIT the Preview Video Monitor Window

`Shift+Q`

Close monitor window and exit the tool. Set `power_state` to Off to completely stop and clear RAM.

Advanced Notes

For Technical Directors, Pipeline Managers and Developers

Node Parameters

Parameter	Description
source	"video" or "images"
monitor	"Monitor 0", "Monitor 1", etc. (auto-detects displays)
power_state	Boolean (true = on, false = off)
target_resolution	"1920x1080" or "3840x2160" (UI resolution)
generations_name	String (prefix for generation folders)
snapshot_workflow	Boolean (auto-save workflows)
snapshot_path	"smart" (auto) or custom directory path

Cache Architecture

Storage: `ComfyUI/custom_nodes/PreviewVideoMonitorPro/runs_cache/`

Naming: `{prefix}_{generations_name}_{timestamp}_{uuid}`

- Prefix: `v_` (video) or `i_` (images)
- Timestamp: HH-MM-SS (filesystem safe)
- UUID: 8-char unique identifier

Metadata System

File: `generations_metadata.json`

Contains: folder_path, display_name, timestamp, runs_name, source_type, total_size, frame_count, format

Duplicate Detection

Before registering a new generation, checks for existing entries with identical `total_size` and `frame_count`.

If duplicate found: deletes new folder, loads existing generation, logs 'Duplicate content detected'.

RAM Management

Memory per frame: width × height × 3 bytes. Example: 1920×1080×3 ≈ 6MB. 1000 frames = 6GB.

v5.2: All frames loaded into RAM. No lazy loading or LRU eviction.

Planned (v5.3+): Lazy loading, LRU eviction, manual RAM clear, compressed RAM cache.

GPU Acceleration

If `opencv-contrib-python` with CUDA is installed, frame resizing uses `cv2.cuda.resize()`.

Resolution	Improvement
1080p	Negligible (PCIe overhead > benefit)
4K	~10-20% faster
6K/8K	~50-70% faster

Known Performance Considerations

Zoom Slowdown (v5.2): At high zoom (5x+), rendering slows due to pygame blitting large surfaces.

Planned Fix (v5.3): Crop visible portion before scaling for consistent performance.

Threading Model

Main Thread: Pygame event loop, rendering, UI

Worker Thread: Video decoding, frame caching

Synchronization: cache_lock, new_content_ready event, running flag

Extension Points

Custom Vision Filters: Add to `_apply_vision_to_frame()`. Input/Output: RGB numpy array.

Custom Comparison Modes: Follow wipe/SBS pattern in `_draw_wipe_overlay()` and `_draw_sbs_overlay()`.

Custom Metadata: Extend `generations_metadata` structure in `_register_new_generation()`.

Environment Variables

Not currently used but could be added:

- `PVMP_CACHE_DIR`: Override cache location
- `PVMP_MAX_RAM_GB`: Set RAM limit
- `PVMP_JPEG_QUALITY`: Adjust disk cache quality

Troubleshooting

Monitor window doesn't open:

- Check power_state is ON (true)
- Verify all dependencies are installed
- Check ComfyUI console for error messages

Performance issues:

- Close other applications using RAM
- Reduce number of cached generations
- For 6K/8K, install opencv-contrib-python with CUDA

Can't see comparison video:

- Ensure comparison generation has same frame count
- Check that both videos loaded successfully
- Try exiting comparison (press W) and re-entering

Keyboard shortcuts not working:

- Click the monitor window to give it focus
- Check if you're editing text (shortcuts disabled during text entry)

Thank you for using PreviewVideoMonitorPro!

We're committed to making video review in ComfyUI fast, intuitive, and professional. Happy creating! ■■

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