AVS TECHNOLOGIES // MASTER OPERATING GUIDE

AVS News Studio — Professional Broadcast, DJ Visualizer & Stage Lighting Console

CAM 1/2/3 Media & Browser Tab Capture, Clean 2nd Screen Output, 8 DJ Visualizers, DMX-512/MIDI Lighting & Looping Headline Chyron

AVS TECHNOLOGIES 2026
OUTPUT: 2ND SCREEN ON-AIR (1080p 60FPS)
DMX-512 • WEB MIDI • ART-NET UDP 6454

01 60-SECOND QUICK-START WORKFLOW

STEP 1 • CAM FEEDS
Load Video, Image or Tab
Upload MP4/PNG/JPG or click **Tab / Screen** to capture any open browser tab or window into CAM 1/2/3.

STEP 2 • 2ND SCREEN
Launch Clean On-Air Output
Click **2ND SCREEN ON-AIR** to stream a pristine 1080p 60FPS feed to your 2nd monitor, TV wall, or OBS.

STEP 3 • CHYRON LOOP
Set Branding & Looping News
Set station logo, type breaking alerts in **Lower Third** with automatic In-Hold-Out looping, and run **Ticker**.

STEP 4 • VISUALIZER & DMX
Music Sync & Stage Lighting
Pick an audio-reactive DJ Visualizer, load an MP3 or sync live mic, and drive stage lights via DMX-512/MIDI.

STEP 5 • AI VOICE & REC
AI Presenter & Record
Generate broadcast AI speech, teleprompter voiceover, and record full 1080p broadcast video or snapshots.

02 STUDIO CONTROL ROOM & 7-TAB LAYOUT MAP

A Master Top Control Bar: Project Name • Aspect (16:9 / 9:16 / 1:1) • Theme • ↶ UNDO / ↷ REDO • FETCH NEWS • 2ND SCREEN ON-AIR • Snapshot PNG • REC VIDEO

B 7 Inspector Sidebar Tabs
- **1. Media:** CAM 1/2/3 Video, Image, Webcam, Tab/Screen, 6 Transitions
- **2. Logo & Bug:** Station Logo, Custom PNG/SVG bug, Corner, LIVE Badge
- **3. Lower Third:** Breaking headline, In/Hold/Out Looping, Styles & Colors
- **4. Ticker:** Scrolling bottom news crawl and Live RSS Web Wire scraper
- **5. Trim & Audio:** NLE video trim, A1 music + A2 voice, 6-Channel mixer
- **6. AI Voice:** AI anchor TTS, vocal mastering compressor/EQ, teleprompter
- **7. DMX & MIDI:** 12 DMX channels, Blinder, Blackout, MIDI Learn, Art-Net UDP

[LIVE // MUMBAI] **C** Master Studio Preview Monitor (60 FPS HTML5 Canvas Compositor) [AVS TECHNOLOGIES]

Interactive Canvas Gizmos: Click & drag **Logo**, **PiP Box (CAM 2)**, or **Chyron** • **Full Undo/Redo (Ctrl+Z / Ctrl+Y)**

D 6-Track NLE Timeline: CG Graphics • V3 B-Roll • V2 PiP • V1 Master Video • A1 Music Bed • A2 Voiceover

E Master Transport: Play/Pause • SMPTE Timecode

Hotkeys: [1-6] DSK [T] Trans [L] DMX [B] Blackout [F] Blinder [M] Mute

03 CLEAN 2ND SCREEN OUTPUT & MULTI-OPERATOR LIVE COLLABORATION

Clean 2nd Screen Output (output.html)
DUAL MONITOR

- **Zero-Control Clean Output:** Studio borders, mouse gizmos, safe guides, and editing panels never appear to viewers; only pure 1080p 60 FPS video, chyrons, and graphics render.
- **Opening on Second Monitor:** Click **2ND SCREEN ON-AIR** in the top bar or open `http://localhost:5050/output.html` directly on any secondary display.
- **OBS Studio & LED Walls:** Add as an OBS Browser Source (1920×1080 @ 60 FPS) or send via HDMI to an LED wall/projector and press `F11` or `F` for borderless fullscreen.

Multi-Operator Network Collaboration
REAL-TIME SYNC

- **Work Simultaneously from Multiple Laptops:** Connect other laptops, PCs, or iPads on the same WiFi by opening the network URL (e.g. `http://192.168.x.x:5050`).
- **Dedicated Production Roles:** **News Desk** types breaking headlines & tickers; **Vision Mixer** switches cameras & tabs; **Sound & Stage** runs audio & DMX lights.
- **Single Unified Master Output:** All operator changes synchronize instantaneously across the network into the one single program output screen!

04 ANIMATED BREAKING NEWS HEADLINE & LOOPING SUITE

Continuous In/Hold/Out Looping Engine
AUTO LOOP

- **Automated 4-Phase Cycle:** The headline animates onto the screen (**Appear/In 0.7s**), holds stationary for reading (**Hold On-Air 1.5s–15s**), animates off (**Disappear/Out 0.6s**), pauses cleanly (**Standby 0.8s**), and repeats continuously.
- **5 Broadcast In/Out Transitions:** ↑ **Slide (Elevator)** smooth vertical rise and exit, ↔ **Horizontal Wipe** TV news unveil, **Soft Dissolve** cinematic fade, **Zoom Pop** punch-in, and **3D Flip Board** split-flap rotation.
- **Customizable On-Air Duration:** Adjust exactly how many seconds the headline remains visible (Hold slider) and the standby pause before repeating.

Breaking Visuals & 4+ Multi-Headline Playlist
4+ LOOP STACK

- **Breaking Headlines Playlist (4+ Loop Stack):** 4 distinct headline slots provisioned out of the box, expandable via **+ Add Headline**. Each slot features its own uppercase breaking alert, subheadline deck, and **▶ Take** instant-cue button.
- **Live Telemetry & Cueing:** Cards indicate `#X ON AIR` (active red glow) versus `#X QUEUED`. The control room HUD displays live progress: `#1/4 ON AIR (5.0s)`, `#1/4 OUT`, and `NEXT #2/4 (0.8s)`.
- **4 Breaking News Animations & Presets:** Breaking Light Sweep (specular metallic sheen across letters), Urgent Breaking Pulse & Aura, Stinger Starburst Sparkle, and Auto-Scroll Marquee. **4 Presets** button instantly restores default alerts.

05 LIVE FEEDS & MEDIA: TAB/SCREEN CAPTURE, WEBCAMS, IMAGES & VIDEOS

CAMERA LAYER	SUPPORTED MEDIA SOURCES	BROADCAST USE & APPLICATION
V1 // CAM 1 (Master)	**Browser Tab / Screen**, Live Webcam, MP4, WebM, MOV, **PNG, JPG, WebP, GIF, SVG**	**Tab / Screen:** Stream any open Chrome/Edge tab (YouTube, Google Earth, live trading charts, Zoom calls) directly into CAM 1. Fit modes (Cover, Contain, Stretch) & Zoom (50%-200%).
V2 // CAM 2 (PiP Box)	**Browser Tab / Screen**, Live Webcam, MP4, WebM, MOV, **PNG, JPG, WebP, GIF,**	Display a floating Picture-in-Picture window with a remote correspondent's webcam, Google Meet call tab, or document photo. Drag directly on canvas to reposition (Key

CAMERA LAYER	SUPPORTED MEDIA SOURCES	BROADCAST USE & APPLICATION
	SVG	5).
V3 // CAM 3 (B-Roll)	🖥️ **Browser Tab / Screen**, Live Webcam, MP4, WebM, MOV, **PNG, JPG, WebP, GIF, SVG**	Cutaway to full-bleed satellite footage, secondary PiP box, or the third live feed inside a 3-Box Triple News Wall (Key 6).
Multi-Cam Layouts	Single, PiP, Split 50/50, Split 30/70, 3-Box Wall	Combine presenter webcam and browser tab simultaneously in side-by-side split screens or dynamic 3-box TV news arrays.

> **Pro-Tip (🖥️ Live Browser Tab & Screen Sharing):** Click 🖥️ **Tab / Screen** to capture any open browser tab or desktop application (PowerPoint, Zoom, YouTube). Enable "Also share tab audio" to stream remote call or video sound directly into the broadcast mixer!

STAGE & CONCERT SUITE // AVS TECHNOLOGIES

AVS News Studio — DJ Visualizers, DMX/MIDI Lighting, AI Voice & Hotkeys

Concert Stage Visuals, DMX-512 Console, USB MIDI Hardware Controllers, AI News Anchors & Master Reference

ZERO DEPENDENCY ENGINE
UDP BROADCAST: PORT 6454 (ART-NET)
WEB AUDIO 32-BAND FFT SPECTRUM

06 AUDIO-REACTIVE DJ VISUALIZERS FOR MUSIC EVENTS

🎧 8 Audio-Reactive 60 FPS Visualizers

AUDIO-REACTIVE 60FPS

- **1. 📊 DJ Spectrum Wall (Equalizer):** 32-band 3D audio frequency equalizer towers with kick-drum shockwave ripple rings.
- **2. 🌀 Cyber Warp Tunnel:** Infinite 3D hexagonal hyperspace tunnel accelerating to the track's bass and energy envelope.
- **3. 🔮 360° Radial Orb:** 360-degree radial frequency rays with a pulsating plasma bass orb in the center.
- **4. 🌇 Synthwave Horizon:** 80s retro-futuristic wireframe mountain terrain bouncing to audio rhythm with a neon sun.
- **5. ✨ Galaxy Particle Nebula:** 80+ cosmic particle vortex swirling into a gravitational core and exploding on bass drops.
- **6. 🏟️ Stadium Concert Stage:** Sweeping concert spotlights, bass stroboscopic blinders, and an animated energetic crowd.
- **7. ⚡ EDM Laser Show:** High-power multi-beam aerial laser scans, fan sweeps, and overhead club lighting patterns.
- **8. 🎸 Acoustic Live Session:** Vintage broadcast microphone, warm amber backlighting, and floating golden bokeh embers.

🎵 Music Loading & Live DJ / Mic Sync

MUSIC SYNC

- **Load Song MP3 (🎵 Load Song MP3):** Load any MP3 or WAV music track directly into the studio; visualizers immediately synchronize to the song.
- **Live DJ Mixer / Mic Sync (🎙️ Sync Live Mic/DJ):** Plug in your DJ mixer's Line-In cable or microphone; visualizers dance in real time to the live event audio.
- **Beat Reactive Sensitivity:** Use the sensitivity slider (30%–250%) to dial in the reactivity for acoustic ballads or heavy EDM bass.
- **Real-Time VU Telemetry:** Master VU meter bars animate dynamically to actual frequency energy across bass, mids, and treble bands.

07 DMX-512 & WEB MIDI LIVE STAGE LIGHTING CONSOLE

🎛️ 12-Channel DMX Universe & Quick Punches

DMX-512 CONSOLE

- **12 Universal DMX Channels:** Master Dimmer (CH 1), Strobe/Shutter (CH 2), Red (CH 3), Green (CH 4), Blue (CH 5), Amber (CH 6), Pan 540° (CH 7), Tilt 270° (CH 8), Lasers (CH 9), Fog/Hazer (CH 10), Gobo (CH 11), Color Cycle (CH 12).
- **⚡ BLINDER FLASH (Key F):** Instant high-intensity whiteout blinder punch on all stage fixtures.
- **🔴 BLACKOUT CUT (Key B):** Instant 1-second snap blackout on all lighting fixtures for dramatic scene endings.
- **💨 HAZE BURST:** Triggers a 3.2-second dense atmospheric fog burst to reveal laser beams and moving heads.
- **🎵 SOUND-ACTIVE DMX:** Sound-active engine synchronizes strobes to kick drums, head panning to mids, and lasers to treble.
- **5 Instant Scene Presets:** *EDM Rave, Cyberpunk, Stadium, Acoustic Warm, Breaking News.*

🎹 Web MIDI Hardware & Art-Net UDP Broadcast

HARDWARE MIDI & ART-NET

- **USB MIDI Controller Connectivity:** Plug in Akai, Novation, Pioneer DJ, or Korg MIDI controllers; click 🎹 **Scan MIDI Devices**.
- **Interactive MIDI Learn:** Click 🎛️ **MIDI Learn**, click any on-screen DMX slider, and turn your hardware knob to map instantly!
- **Default MIDI Map:** CC 1-8 controls Dimmer, Strobe, Pan, Tilt, Lasers; Pads C1-G1 switch visualizers; Pad G#1 fires Blinder flash.
- **Art-Net UDP Streaming (Port 6454):** Broadcasts raw 530-byte Art-Net DMX frames over Ethernet/Wi-Fi to physical DMX nodes (Enttec, ESP32, Resolume, QLC+, GrandMA).

08 AI VOICE / TTS STUDIO & LIVE WEB NEWS WIRE

🎙️ AI Presenter Studio & Vocal Mastering

AI ANCHOR & TTS

- **4 Presenter Personas:** *Breaking Flash (1.15x pace), Evening Prime (1.0x authoritative), Field Reporter (1.1x dynamic), Market Desk (1.12x clarity).*
- **🎙️ Studio Vocal Mastering:** Multi-band compression and warm bottom-end EQ process synthesized speech into authentic network television sound.
- **Teleprompter & Track A2 Sync:** Click 🎙️ **ASSIGN TO TRACK A2** to lock voiceover audio directly to the NLE timeline video playback.
- **OpenAI & ElevenLabs API Support:** Plug in your personal API key to unlock ultra-realistic neural speech with natural breathing.

📡 Live Web News Wire (RSS Auto-Scraping)

AUTO-SCRAPING

- **1-Click Fresh News Wire:** Click 📡 **FETCH NEWS** to retrieve real-time stories across Marathi, National, World, Business, Sports, and Tech feeds.
- **1-Click Story Routing:** Click **+ Ticker** to queue onto the crawl, 📺 **Chyron** to load onto the lower third, or 🎙️ **Voice** to read via AI anchor.
- **Paste Web Text:** Paste articles directly from any website; the parser automatically splits sentences and routes them into the broadcast ticker.

09 MASTER KEYBOARD SHORTCUTS REFERENCE

SHORTCUT KEY	ON-SCREEN FUNCTION	LIVE BROADCAST OPERATION & ACTION
`Space`	Play / Pause Master	Starts or halts composite video playback, ticker crawl, audio tracks, and DMX automation.
`1` • `2` • `3`	Toggle DSK Overlays	**[1]** Station Logo Bug • **[2]** Top-Left LIVE / Location Bug • **[3]** Lower Third Breaking News Chyron.
`4` • `5` • `6`	Toggle Video Layers	**[4]** Scrolling Bottom Ticker Crawl • **[5]** CAM 2 Picture-in-Picture Box • **[6]** V3 B-Roll Cutaway Layer.
`T`	Trigger Transition	Executes active video transition (Cut, Mix/Dissolve, Wipe Left/Right, Push Left, Slide Up) between feeds.
`F`	Blinder Flash / Fullscreen	In Studio: Triggers ⚡ **DMX Blinder Flash** • On 2nd Screen Output: Toggles borderless Fullscreen.
`B`	Stage Blackout Cut	Instant snap blackout on all 12 DMX stage lighting channels.
`L`	Toggle DMX / MIDI Tab	Instantly switches left sidebar to the DMX Stage Lighting & MIDI Controller Console.
`M`	Master Audio Mute	Instantly mutes or unmutes all 6 audio mixer channels and output stream sound.

SHORTCUT KEY	ON-SCREEN FUNCTION	LIVE BROADCAST OPERATION & ACTION
`C`	Output Fit Mode	On 2nd Screen (`output.html`): Cycles canvas scaling between Cover (fill) and Contain (aspect match).
`Ctrl` + `Z` / `Y`	Undo / Redo	Steps backward or forward through all parameter modifications, position tweaks, and color changes (50-state stack).
`Esc`	Close Windows & Deselect	Closes modal popups, color pickers, and deselects interactive canvas dragging targets.

Running on Production Machines: Launch node `news-server.js` on your machine or cloud VPS. Connect your main studio display to `http://localhost:5050` and your secondary TV/LED wall to `http://localhost:5050/output.html`. No external software, build steps, or cloud dependencies required!