Grass Valley

DATASHEET

HITOMI MATCHBOX FOR AMPP

See your sync slip before the audience does.

Your whole chain measured to millisecond-precision accuracy.
One view of lip-sync and latency from lens to distribution, now in AMPP.

Solution Summary

Hitomi MatchBox for AMPP® delivers precision timing measurement inside Grass Valley's AMPP production platform. Hitomi Broadcast provides two native AMPP applications: the MatchBox Probe and MatchBox Renderer applications, which when combined with MatchBox Panorama and optional external Probes offers the ability to process timing data across the complete production and within the platform. Due to AMPP's distributed architecture, timing can easily be measured across a remote production, whether run in the cloud, hybrid or on-premises. Engineers can measure latency and lip-sync at up to 15 points across the broadcast chain with millisecond accuracy, from a centralized web interface, with no signal conversion and no external routing of the program signal.

Maintaining precise timing and synchronization is one of broadcasters' primary concerns when migrating to software-based production. Traditional workflows using hardware analyzers require video to be routed out of the software environment and converted back to SDI for analysis — adding complexity and introducing the very timing errors being measured. Hitomi and Grass Valley® remove the round trip: MatchBox measurement runs in-situ, inside the software infrastructure itself, adding to the comprehensive overview of your production.

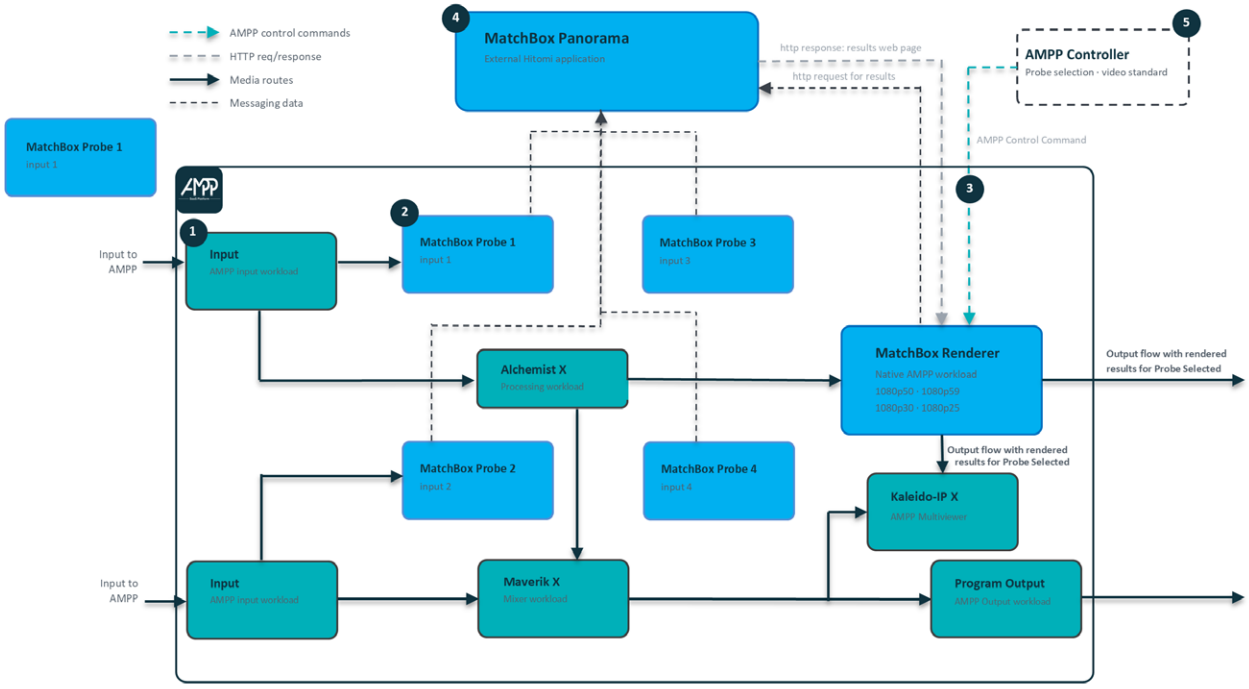
Key Features & Benefits

- **In-situ measurement —** probes live inside the software infrastructure — no conversion back to SDI, no external routing, and none of the timing errors those round trips introduce
- **End-to-end visibility —** up to 15 probe points across the chain, monitored from one centralized web interface
- **Millisecond accuracy —** the precision broadcasters trust from MatchBox hardware, maintained in software
- **Straightforward and scalable —** applications integrate directly into existing broadcast workflows with no external dependencies
- **Complete chain coverage —** MatchBox hardware spans SDI and SMPTE ST 2110, the Glass app measures from camera positions, and MatchBox Software covers the virtualized core — one measurement family, end to end
- **Unified view —** MatchBox Panorama brings every Probe and measurement together in one place, from glass to glass via AMPP

Joint Architecture

MatchBox Probe, Renderer & Panorama

This diagram shows how MatchBox Suite operates natively inside AMPP workflows.



How the components link together:

Two applications run natively within AMPP — MatchBox Probe and MatchBox Renderer — with MatchBox Panorama processing their data as an external application alongside the platform.

Source MATCHBOX GLASS

A free iOS app, downloadable from the app store. Hold the device in front of a camera, and Panaroma can analyze the results to determine latency and sync. Available from iOS app store.

Probe MATCHBOX PROBE

A silent monitoring agent deployed at chosen points throughout AMPP workflows. Probes sit in-situ within platform, so measurement happens where the signal actually flows. Provided via AMPP.

Analyze & visualize MATCHBOX PANORAMA

MatchBox Panorama processes timing data from every Probe point simultaneously — up to 15 across complex, multi-layered productions — with millisecond accuracy, and unifies every measurement in one view of the whole production network. It runs as an external application alongside AMPP, not as an AMPP app. Provided by Hitomi.

Render MATCHBOX RENDERER

Displays results on monitoring walls or web interfaces, giving engineering a centralized view of timing across the deployment. Provided via AMPP.

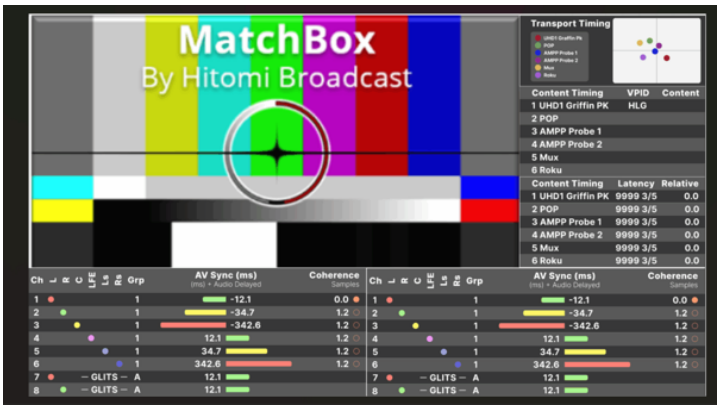
Platform GRASS VALLEY AMPP

The MatchBox Software applications operate entirely within AMPP's virtualized infrastructure and integrate directly into existing broadcast workflows providing greater confidence of your signal. Provided by Grass Valley.

The Hitomi Product Suite

MatchBox Analyser

MatchBox Analyser looks for the pattern sent by MatchBox Generator or Glass and calculates the time of flight and the difference between what it knows should be there and what it actually receives. Accurate measurements are then provided of the video latency and the delay between the arrival of the sound and associated vision.



MatchBox Glass

MatchBox Glass enables engineers to verify that whatever is in front of the camera looks and sounds like it should on screen by providing accurate timing measurements for precise audio-visual alignment.

Making the measurement is simple and fast. The user holds an iPhone or iPad running the free iOS app in front of up to four cameras. At the other end, the MatchBox Analyser, which has four inputs, when enabled with the license for Glass, can exactly measure video and audio timing differences, if any, across all four cameras.

MatchBox Panorama

Remote timing measurement across the whole production workflow, in one view.

MatchBox provides precise point-to-point timing measurement. MatchBox Panorama takes that measurement further, bringing timing and latency data from across the production workflow together on one screen.

From in front of the camera, through the production chain, to the point of hand-off, Panorama shows how timing changes at different stages. Users can compare points and identify where latency is being introduced.

Security

Rest assured, AMPP is designed with security as a foundational priority. Certified to SOC 2 standards, AMPP ensures that your workflows meet the most rigorous security, availability and confidentiality benchmarks. Its robust architecture conforms to best practices in IT security, utilizing a representational state transfer (REST) framework to protect every aspect of your production environment:

- All REST operations are executed over HTTPS for secure communication
- All REST operations rely on JSON Web Tokens (JWT) for authorization

IP streaming in AMPP is encrypted when applicable (SRT (AES), RIST (AES), RTMPS (TLS/SSL), WebRTC (DTLS/SRTP), AMPP Streaming (DTLS/SRTP)).

Specifications

Standards & Formats

Measurement

End-to-end latency and lip-sync (audio/video alignment), millisecond accuracy

Software environments

Grass Valley AMPP virtualized workflows

Hardware environments

SDI and SMPTE ST 2110

Supported video

525i29, 625i25, 720p 23 to 60, 1080i 25/29/30, 1080p 23 to 60

Supported audio

Grass Valley internal formats at 48 kHz sampling rate

Renderer output

1080p50, 1080p59, 1080p30, 1080p25

Integration

Probes

MatchBox Probes positioned throughout the chain inside AMPP — no signal conversion, no external routing of the program signal

Analysis

Up to 15 Probe points processed simultaneously by MatchBox Panorama (external application)

Visualization

MatchBox Renderer to monitoring walls and web interfaces, Panorama's unified view across every measurement

Chain coverage

Software Probes in the virtualized core, MatchBox hardware and Glass at the edges

Requirements

Operating system

Linux-based AMPP Node. Ubuntu 2404 LTS preferred

Dependencies

MatchBox Panorama 0.7 of later (see Documents on AMPP for latest)

Frequently Asked Questions

? *Why not keep using hardware analyzers?*

In software-based production, a hardware analyzer needs the signal routed out and converted back to SDI — a round trip that adds complexity and can introduce the very timing errors being measured. MatchBox Software measures in-situ, inside the infrastructure itself.

? *How many points can we measure at once?*

Up to 15 Probe points simultaneously, processed by MatchBox Panorama and viewed from one centralized web interface.

? *Does this replace our MatchBox hardware?*

No, it extends it. Hardware MatchBox covers SDI and SMPTE ST 2110, the Glass app covers camera positions, and MatchBox Software covers the virtualized core: one measurement family across the whole chain.

? *How accurate is software-based measurement?*

Millisecond accuracy, the same precision live broadcasting demands and the standard MatchBox hardware set.

? *What is lip sync?*

The alignment of audio and video — when it drifts, mouths and words no longer match. MatchBox measures the offset precisely so it can be corrected before the audience ever sees it.

? *What is latency in this context?*

The time a signal takes to travel through each stage of the production chain. Distributed and cloud workflows add variable latency at many points, which is why measuring it at multiple points matters.

? *What is a Probe?*

A lightweight software agent placed at a chosen point in the workflow that silently observes the signal and reports timing data — measurement without interrupting or converting the signal.

? *Which parts run inside AMPP?*

MatchBox Probe and MatchBox Renderer run as native AMPP applications.

? *What does in-situ measurement mean?*

Measuring the signal where it actually flows — inside the software infrastructure — rather than extracting it to an external instrument.

? *What are the three MatchBox programs and how do we get them?*

MatchBox Probe, MatchBox Renderer and MatchBox Panorama, replacing Matchbox Software Analyser. MatchBox Probe and Renderer applications are loaded from AMPP app store. MatchBox Panorma is an application purchased via Hitomi. There is also a hardware MatchBox Generator that can create the test pattern.

? *What is the difference between MatchBox Software Analyser and MatchBox Enterprise Software Analyser?*

MatchBox Software Analyser is for lip sync and latency, requires an internet connected environment and can manage up to 5 Probes in a seven day period. MatchBox Enterprise Software Analyser has Workflow and Probe views, can manage up to 15 Probes simultaneously in any seven day period, does not require an internet connected environment and requires monthly log reports to be sent to Hitomi.

? *Why do I need MatchBox Panorama?*

Broadcasters need to analyze lip sync and or latency. To do this you needed to use multiple MatchBoxes and MatchBox Probes. MatchBox Panorama provides greater scalability, flexibility and speed as it can access multiple MatchBoxes from a single user interface. With site licensing it is easier to deploy across larger and distributed production environments. Giving you the ability to dynamically manage many sources and flexibility to quickly set up, run and scale broadcast analysis measurements. It also enables you to graphically setup, view and analyze your existing broadcast workflow lip sync and latency.

About Hitomi Broadcast

Hitomi specializes in precision timing measurement for broadcast and professional AV environments. Our flagship product, MatchBox, measures latency, lip synchronization and audio coherence across software workflows and traditional hardware infrastructure.

Our solutions are integrated into systems globally and trusted by the highest profile major live events and productions in the world. Designed specifically for live production workflows, our unique measurement methods save precious time as well as providing reassurance and proof of quality..

Headquartered in the UK, Hitomi serves broadcasters worldwide who demand reliable timing verification — from major sporting events to reality television productions. www.hitomi.tv

About Grass Valley

Grass Valley drives the future of media production with seamless, scalable solutions that empower top content creators. Its integrated ecosystem — featuring industry-leading hardware, the AMPP Media Operating System, and a robust Alliance Partner network — enables efficient content production, management and distribution.

From live global events to browser-based independent projects, Grass Valley maximizes content value, streamlines workflows, and future-proofs media operations.

With over 65 years of innovation and a commitment to open, agile solutions, Grass Valley is leading the media revolution and shaping the future of storytelling.

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