EEG's HD480 encoder

The closed-caption encoder and VANC inserter helps broadcasters manage active format descriptors.

BY PHILIP MCLAUGHLIN

Active format description (AFD) has become one of the core technologies used by broadcasters to address the challenges of the mixed HD/SD production and home-viewing environment that currently exists. AFD codes, which supply information about intended aspect ratios to downconverters and other equipment (both professional and consumer), are enabling streamlined and economical HD/SD workflows where all material is produced and stored in HD only, and converted to SD on a just-in-time basis as needed for transmission. These workflows, while highly efficient in theory, are often limited by problems propagating the critical AFD data cleanly throughout the signal path.

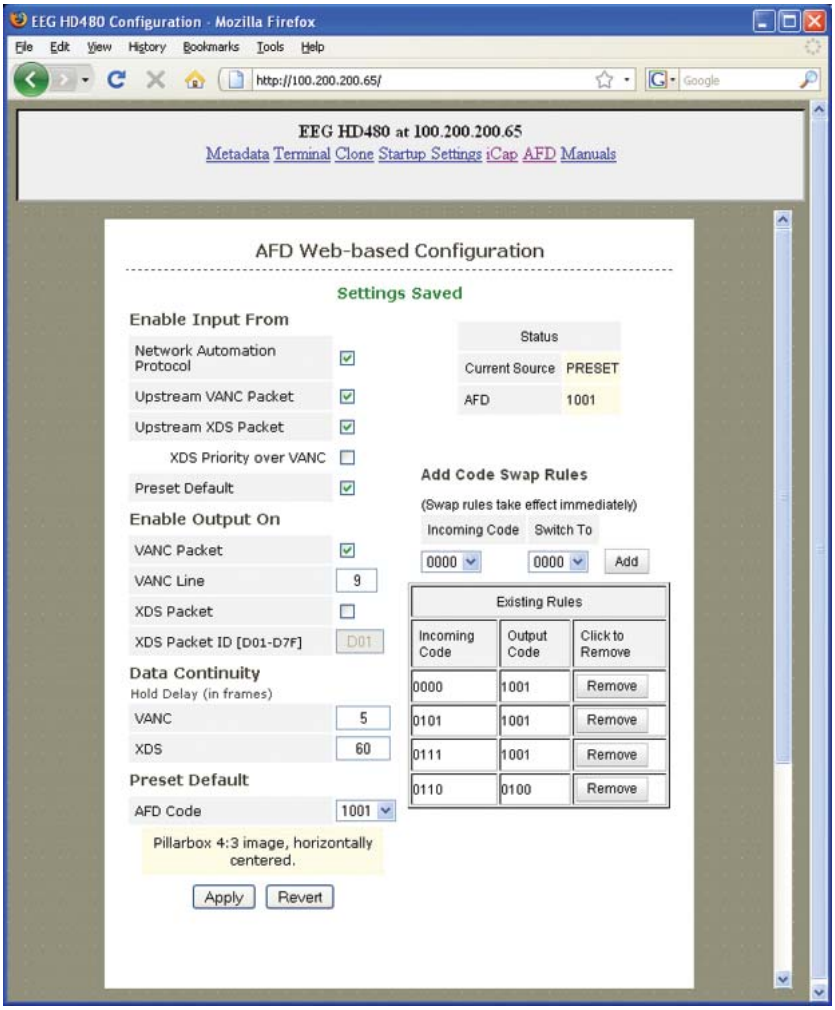
Recent updates to the HD480 closed-caption encoder and VANC inserter from EEG are designed to directly address these challenges, and help make the all-HD workflow leading to high-quality HD and SD delivery a reality.

Inside the HD480

Properly preserving AFD data throughout the signal path can be hazardous, for a number of reasons, including multiple insertion points, equipment that makes undesired changes to upstream AFD data and equipment that does not implement the entire set of defined AFD codes. The latest version of the AFD module for the HD480 addresses almost all of these problems.

Driven by an intuitive Web GUI, the encoder acts as a multipurpose standardizing tool, or legalizer, that can vastly streamline quality control and troubleshooting for the smooth carriage of AFD data. It can recover AFD codes from any line of a video signal, while standardizing to a single packet on a user-selectable VANC line. This eliminates common problems with multiple AFD packets appearing in different locations in the same video frame. Another common problem is small gaps in upstream AFD data, resulting in screen flickers and worse. The HD480 can bridge data over these gaps, holding the last valid code for a configurable number of frames for up to five seconds.

The encoder also provides a unique tool for bridging AFD data around equipment that displays undesired behavior — a custom XDS packet that preserves the core of the AFD packet. This XDS packet is ignored by other equipment, but can be recovered downstream by EEG equipment and reinserted as full standard VANC AFD packets. This is one of the features that gives the unit the flexibility



The EEG HD480 encoder features an intuitive Web graphical user interface that enables broadcast engineers to control and troubleshoot for the smooth carriage of active format description data.

to be placed in a wide variety of configurations within the video stream on the way to distribution.

The core of the encoder's ability to act as an efficient legalizer is an AFD input/output switching matrix. The module accepts inputs from any VANC line in upstream video, the XDS protocol, or a TCP-based automation control protocol, and can also author AFD data based on presets. The unit can output data in standard VANC format, the XDS format, or both. Because there are multiple ways to input AFD, and subsequently multiple ways to output AFD, the system is based on a Web interface that efficiently sets up rules, paths and priorities for the AFD data. For each of these sources, the encoder's switching matrix allows users to set whether they want that data to be used, if present, and what receives priority when there are multiple sources. Regardless of the number of input sources, one consistent AFD packet will appear with each field of the output signal.

The encoder can also set code swap rules that enable dynamic mapping from one AFD code at the input to another at the output. For example, every time the code "0000" comes in, it can be replaced with code "1001." This function is helpful if other equipment in the plant automatically stamps video with undesirable AFD codes, or if ingested material from other content providers similarly arrives with problematic AFD codes. Broadcasters that have problems processing the bar data (which provides information about the locations of any bars on the screen, such as if it is letterbox, etc.) component of the SMPTE-defined AFD packet, and want it removed or normalized, can use the HD480 for this function, as well. These processing filters are run after the input side of the switching matrix, so they will apply for all possible data sources.

The features cover most of the major issues broadcasters experience with AFD workflows today. Multiple codes, code gaps and codes that do not meet ingest specifications are responsible for a wide range of troubling downconversion behavior. Easy automation and multiple prioritized input methods enable the smooth design of complex systems where mixed format data sources are inserted together on the fly. The HD480 has the tools to be used for AFD legalization either prior to server ingest, or after server playout.

The transition to a fully digital broadcast distribution system in 2009 makes management of AFD codes essential to the video stream.

The encoder's ability to act as an efficient legalizer comes from its AFD input/output switching matrix.

The benefit of managing AFD codes

The transition to a fully digital broadcast distribution system in 2009 makes management of AFD codes essential to the video stream. To ensure that legacy SD content and new HD content alike arrives on the home screen with equal usability, broadcasters need an efficient solution that anticipates and deals intelligently with the many AFD variables inherent in the content. The enhanced AFD capabilities of the HD480 aid HD/SD delivery workflow with a flexible architecture and intuitive Web interface. BE

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