# IQUAV00

## Universal Audio Video Module with Synchronizer

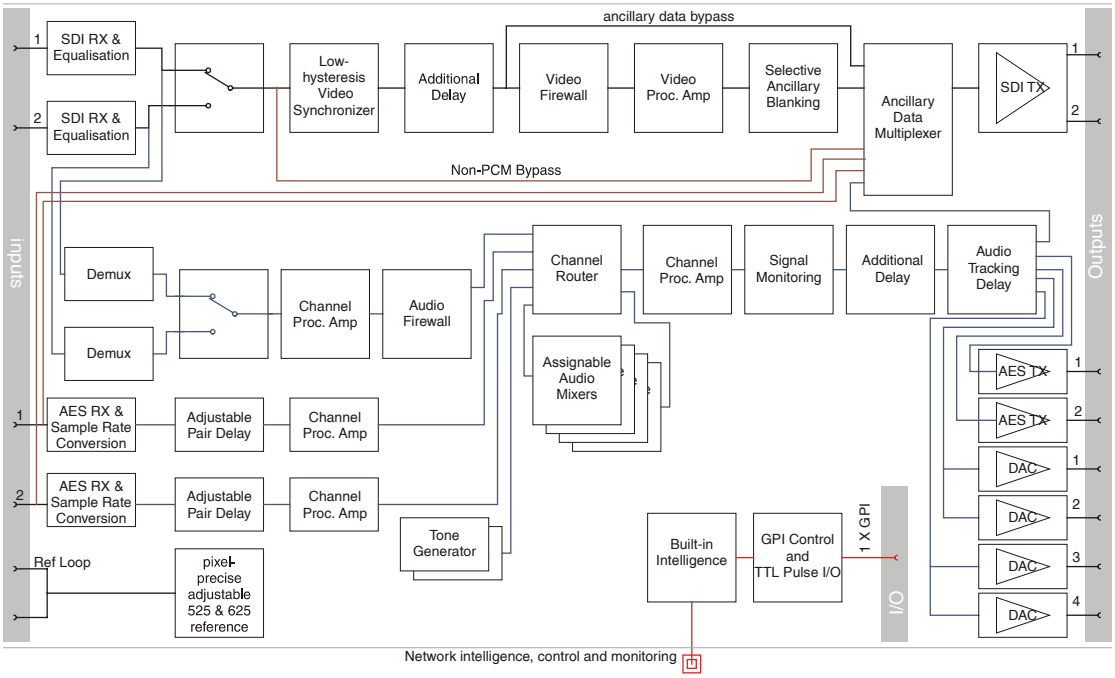
The ultimate audio and video synchronizer in a single module, the IQUAV00/01 handles SDI video and two streams of AES as well as providing analog audio outputs. This single module handles AES, embedded and analog audio. It can take its audio input on a channel-by-channel basis from either the dual AES, the embedded sources or a combination of both. At the heart of this module is a comprehensive processing block that provides a powerful audio manipulation solution. The processed audio is embedded into the SDI output as well as being fed to the AES and analog feeds. Each audio output can be fed with a separate audio combination as necessary. At its heart a powerful SDI synchronizer is used to bring signals in line with house reference. This synchronizer has a very low hysteresis making it suitable for all synchronization tasks. The audio can be tracked to this or an external source as required. Both the video and the audio sources are protected by a firewall that ensures breaks in the incoming signal do not effect the output. Video proc. amp. control and a video delay of up to two frames, in addition to the synchronization, or three frames in delay mode make this a powerful solution for the video stream. Comprehensive audio control compliments these functions making this the most complete modular synchronizing solution. These include fixed and tracking delays, channel-level shuffling, proc. amp controls and assignable four-input mixers for combining audio sources. The user can choose to combine audio channels from any of the input sources - embedded streams and AES inputs. Bypass paths allow for the passing of non-PCM audio such as Dolby E.

### Does this module suit your application?

- SDI synchronizer with tracking audio delay
- Combine AES and embedded source channels
- Produce embedded, AES and analog audio outputs
- Handles 2 AES streams or any eight embedded input channels to total eight output channels
- Handles up to 24 bit embedded audio present on the incoming SDI stream, and embeds/de-embeds to 20 bits
- Channel-level (Sub-frame) routing for selected sources
- 4 off 4 channel assignable audio mixers
- Flexible audio delay including per pair fixed delay, common fixed delay and tracking delay
- Up to 3 frames of video delay in delay mode
- Firewall for video and processed PCM audio to provide a continuous output
- RollCall control and monitoring compatible

### Why should you choose this module?

- Provides a complete synchronizing solution for SDI video and AES audio
- Analog outputs can extend classic synchronization and incoming lines role with audio monitoring
- Allows the use of mixed AES and embedded audio where both must be accommodated or combinations may be required
- A complete AV solution for incoming lines with firewall, proc. amp, audio shuffling and delay
- Can be used to break out embedded audio for AES processing and then return the audio to the embedded domain, with analog monitoring




Block diagram for IQUAV0006-2A shown

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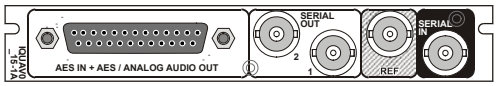
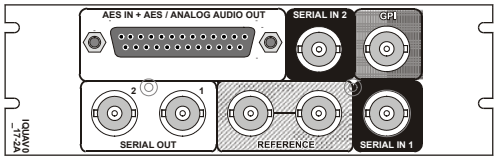
Universal Audio Video Module with Synchronizer

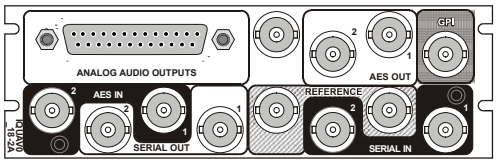
## Order codes for IQH3A enclosures




IQUAV0115-1A Universal Audio Video Module with Synchronizer. Balanced audio connection. 1 SDI input, 2 AES inputs, 2 SDI outputs, 2 AES outputs, 4 analog audio outputs. analog reference

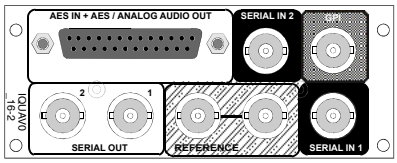



IQUAV0117-2A Universal Audio Video Module with Synchronizer. Balanced audio connection. 2 SDI inputs, 2 AES inputs, 2 SDI outputs, 2 AES outputs, 4 analog audio outputs. analog reference loop-through




IQUAV0018-2A Universal Audio Video Module with Synchronizer. Unbalanced audio connection. 2 SDI inputs, 2 AES inputs, 2 SDI outputs, 2 AES outputs, 4 analog audio outputs. analog reference loop-through

## Order codes for other enclosures




IQUAV0116-2 Universal Audio Video Module with Synchronizer. Balanced audio connection. 2 SDI inputs, 2 AES inputs, 2 SDI outputs, 2 AES outputs, 4 analog audio outputs. analog reference loop-through

**For more details on enclosure types please refer to the Frames/Enclosures section**

## Inputs & Outputs

### Signal Inputs

Digital Video ..... 2 x SDI (BNC)

Video Reference..... Composite video (BNC)

Unbalanced digital audio ..... 2 x AES/EBU, AC3, Dolby E (BNC)

Balanced digital audio ..... 2 x AES/EBU, AC3, Dolby E (25 Way D-Type)

### Signal Outputs

Digital Video ..... SDI x 2

Unbalanced digital audio ..... 2 x AES/EBU, AC3, Dolby E (BNC)

Balanced digital audio ..... 2 x AES/EBU, AC3, Dolby E (25 Way D-Type)

Balanced analog audio ..... 4 channels (25 Way D-Type)

### Control Interface

GPI..... 1x Closing contact I/O interface (BNC)

## Controls

### Card Edge Controls

NONE

### Card Edge Indicators

SDI Input Loss .....Loss = Off, Good = Green

SDI Input Error .....Yellow = Unused input not at current operating standard

AES Input Present.....1 x LED per pair

Reference Loss

CPU running / Power .....One green LED, flashing = OK

### RollCall Functions

### Audio Controls

Audio extraction select.....SDI input 1/2/Follow Video Control

Set line up level .....+20 to –20 dBu in 1 dB steps

Set headroom .....4 to 24 dB in 1 dB steps

Set audio detector thresholds
High and low levels, time delay

External input audio delay.... Up to 1.5 s additional delay in 1 ms steps

Input side control proc. - audio gain and polarity
Independent Gain, Mute, Polarity control over de-embedded and input channels. ±18 dB in 0.1 dB steps.

Channel routing ..... Output channels routed from AES pairs 1 to 4, test tone and silence, SDI 8 embedded channels from any group

Output side control proc. - gain and polarity
Independent Gain, Mute, & Polarity control over embedded and AES output channels. ±18 dB in 0.1 dB steps.

Lock..... Control to select the clock source from the output side of the synchronizer – Video, Input 1, internal

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Engineering with Vision

## Universal Audio Video Module with Synchronizer

Global delay offset ..... up to +1.5 s in 1 ms steps, common to all processed audio.

Variable audio delay control source
Up to 0.5 s from RollTrack + GPI + video synchronizer

Tone frequency, amplitude & Ident
2-channel tone generator. 100 Hz to 10 kHz in 100 Hz steps.

Tone Setup:

Frequency ..... 100 Hz to 10 kHz in 100 Hz steps

Channel Ident ..... 0.5 s interruption every 2 s

### Video Controls

Select primary input..... 1/2

Black Level..... ± 100 mV in 0.8 mV steps

Y/C Timing ..... ± 592 ns in 148 ns steps

Picture position ..... ± 592 ns in 148 ns steps

Luminance Gain ..... ± 6 dB

Chrominance Gain..... ± 6 dB

Genlock Mode..... Free-run / Genlock / Primary SDI (delay mode)

Genlock H Phase..... ± 32 µs in 74 ns steps

Genlock V Phase..... ± 262/312 lines in 1 line steps

Video Horizontal Delay..... +1 Line in 37 ns steps

Video Vertical Delay..... +1 Frame in 1 line steps

Video Delay Frames..... 0 to +2 frames

### Other Controls

Pass vertical data ..... On/Off (lines selectable 7/11 to 23/21 & 320/274 to 335/283)

Preset Unit ..... Returns all settings to default

Pattern Select..... 100%/75% Bars, Multiburst, Black, Animated Bars

User Memories ..... Name, clear, save and read 8 user memories

Default Video Output ..... pattern / freeze/ run through

Default Audio Output ..... Silence

Caption Output ..... On/Off (default and pattern output only)

Caption Generator ..... Programmable up to 19 characters

GPI/O set-up ..... May be attached to any memory function/polarity

### Reporting (* also Logged)

EDH (for selected input) ..... *Presence, *Error-Time, *Error-Seconds

No SDI ..... *No input present

No reference..... *No reference present

Reference error..... Standard different to selected input

Input ancillary error ..... ANC error, ANC error-seconds

Input error..... Unused input not at current operating standard

Report Embedded Audio Data
Report audio data pairs on input and output SDI

Audio Silence, High Level, Low Level, Overflow
For processed audio channels only

### RollTrack Input

Delay ..... Audio delay – Fixed, RollTrack + fixed, Internal Sync + Fixed

### RollTrack Output

Delay ..... Current video/audio delay

Input state ..... Selected Input: Input Present, Input Missing, Standard 525, Standard 625
Input 1: Input Present, Input Missing, Standard 525, Standard 625
Input 2: Input Present, Input Missing, Standard 525, Standard 625

Reference state ..... Ref Lost, Ref Present, Ref error [error: different standard to input – input has precedence

Embedded Audio state ..... Pair present

External AES Audio state ..... Pair present

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Universal Audio Video Module with Synchronizer

## Specifications

Video Internal Processing.....4:2:2 with 10 bit data paths

Serial Input Return Loss .....Better than 15 dB to 270 MHz

Maximum Input Cable length
> 200 m (PSF1/2 or equiv. cable)

Serial Output Level.....800 mV ±5%

Output Overshoot .....< 70 mV

Output Return Loss.....Better than 15 dB to 270 MHz

Output Jitter.....< 0.2 UI (with 10 Hz High pass filter selected on 601 monitor)

Reference Return Loss.....Better than -35 dB to 5.8 MHz

Reference Input Level.....1 V p-p ± 3 dB

Minimum Delay .....6 µs

Synchronize Hysteresis Window
0.5 - 1 µs

Delay (Synchronize Mode)....Sync delay + 0, 1 or 2 Frames

Delay (Delay Mode) .....6 µs - 3 Frames + 5.5 µs

THD+N .....< -117 dB @ 700 Hz (24 bits) AES to AES

### Digital Audio Input (Balanced)

Connector/Format .....25 W D

Sample Frequency .....25 – 96 kHz (48 kHz for Reference)

Input Cable Length.....>150 m of AES3 cable

Impedance.....110 Ohms

### Digital Audio Input (Unbalanced)

Connector/Format..... BNC

Sample Frequency ..... 25 – 96 kHz (48 kHz for Reference)

Input Cable Length..... >500 m of RG59 cable

Impedance ..... 75 Ohms

Output Sampling ..... 48 kHz frame locked to 48 kHz AES/EBU Reference in AES lock mode

### Digital Audio Output (Balanced)

Connector/Format..... 25 W D

Level ..... 3 V p-p typical into 110 Ohms

### Digital Audio Output (Unbalanced)

Connector/Format..... BNC

Level ..... 1 V p-p typical into 75 Ohms

### Analog Audio Outputs

Output Level..... Adjustable +12 dBu to +24 dBu

Output Impedance ..... ~25 Ohms

THD+N..... -92 dB at 23 dBu, typical at 1 kHz

Conversion..... min 20-bit – 105 dB dynamic range

Sampling..... 48 kHz Synchronous to D1 video stream

### Power Consumption

Module Power Consumption
9.5 W