

# IQAVS00/10

## SDI and 4/8 Channel AES/EBU Synchronizer

A complete audio and video synchronizer in a single module, the IQAVS00/10 handles SDI video and two streams of AES. Additionally, this unit has both multiplexing and de-multiplexing capability allowing it to be used as an all-embracing fix-it module for digital AV signals in multi-role applications. An additional application of this module is to take up to two embedded audio streams, break them out to AES/ AC3/ Dolby E and then re-embed the resultant signals. The PCM audio returning to the module does not have to be synchronized and does not necessarily have to be related to the extracted audio. Note however that non-PCM audio such as Dolby E must be synchronous to the output.

Applications:

AV synchronizer for SDI with integrated AES synchronization

- Incoming lines processor for lines with SDI video and AES audio as well as integrated embedded audio
- Audio break-out, de-embed audio output to external dedicated audio unit (e.g. Graphic EQ, reverb, dynamics etc.), then re-embed its output into the video stream.
- Dolby E coding, de-embed Dolby E audio stream, pass through Dolby E encoder or decoder, re-embed resulting AES audio.

### Does this module suit your application?

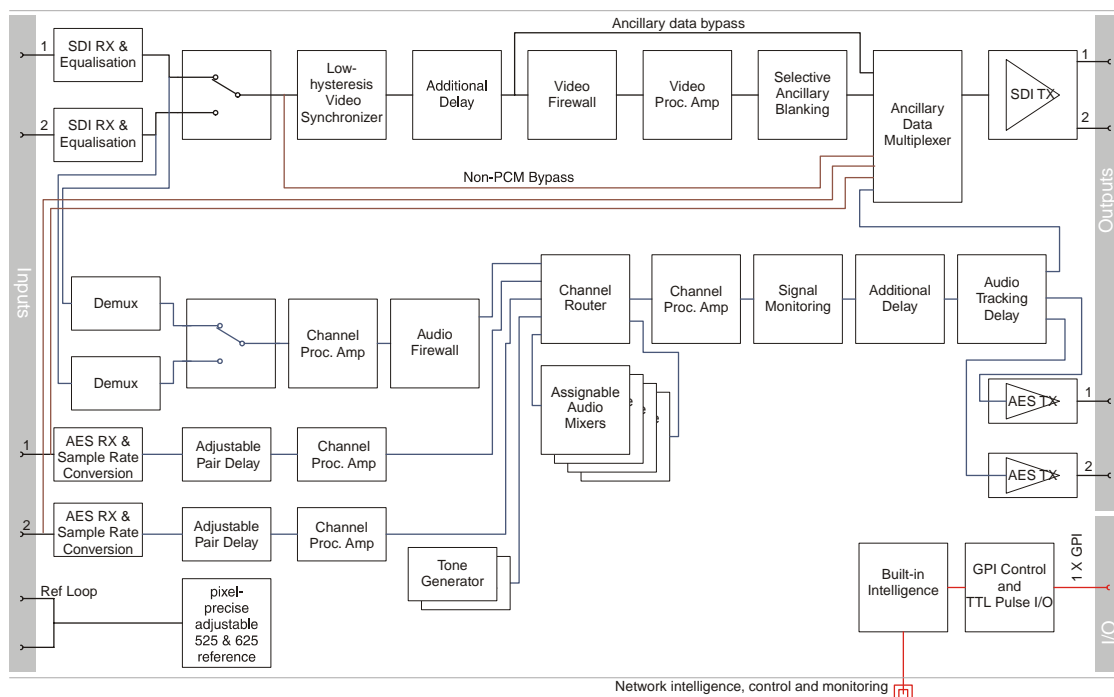
- SDI synchronizer with tracking audio delay
- Choice of AES or embedded sources and both AES and embedded audio outputs
- Handles 2/4 AES streams
- Handles up to 24-bit embedded audio present on the incoming SDI stream, and embeds/de-embeds to 20 bits
- Channel-level (Sub-frame) routing
- 4 of 4 channel 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
- Allows the use of mixed AES and embedded audio for combined solutions
- A complete audio solution with proc. amp, shuffling and delay
- Can be used to break out embedded audio for AES processing and then return the audio to the embedded domain



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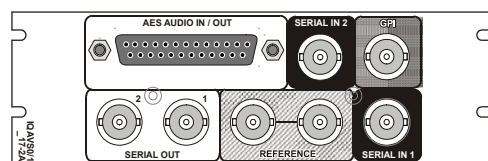
## SDI and 4/8 Channel AES/EBU Synchronizer

### Order codes for IQH3A/1A enclosures



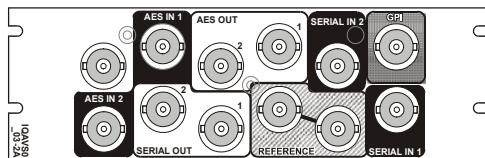
IQAVS0115-1A SDI and 4 channel AES Synchronizer with extended video delay, embedded audio processing. Balanced AES connection. 1 SDI input, 2 AES inputs, 2 SDI outputs, 2 AES outputs, analog reference

IQAVS1115-1A SDI and 8 channel AES Synchronizer with extended video delay, embedded audio processing. Balanced AES connection. 1 SDI input, 4 AES inputs, 2 SDI outputs, 4 AES outputs, analog reference

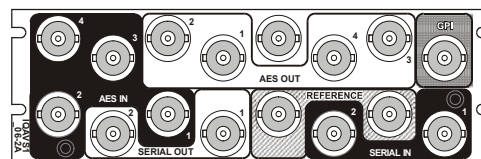


IQAVS0117-2A SDI and 4 channel AES Synchronizer with extended video delay, embedded audio processing. Balanced AES connection. 2 SDI inputs, 2 AES inputs, 2 SDI outputs, 2 AES outputs, analog reference loop-through

IQAVS1117-2A SDI and 8 channel AES Synchronizer with extended video delay, embedded audio processing. Balanced AES connection. 2 SDI inputs, 4 AES inputs, 2 SDI outputs, 4 AES outputs, analog reference loop-through

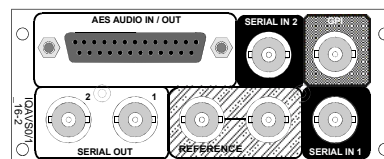


IQAVS0003-2A SDI and 4 channel AES Synchronizer with extended video delay, embedded audio processing. Unbalanced AES connection. 2 SDI inputs, 2 AES inputs, 2 SDI outputs, 2 AES outputs, analog reference loop-through



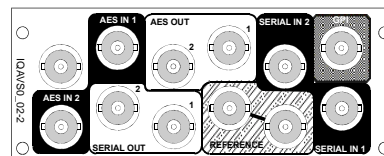
IQAVS1006-2A SDI and 8 channel AES Synchronizer with extended video delay, embedded audio processing. Unbalanced AES connection. 2 SDI inputs, 4 AES inputs, 2 SDI outputs, 4 AES outputs, analog reference loop-through

### Order codes for other enclosures



IQAVS0116-2 SDI and 4 channel AES Synchronizer with extended video delay, embedded audio processing. Balanced AES connection. 2 SDI inputs, 2 AES inputs, 2 SDI outputs, 2 AES outputs, analog reference loop-through

IQAVS1116-2 SDI and 8 channel AES Synchronizer with extended video delay, embedded audio processing. Balanced AES connection. 2 SDI inputs, 4 AES inputs, 2 SDI outputs, 4 AES outputs, analog reference loop-through



IQAVS0002-2 SDI and 4 channel AES Synchronizer with extended video delay, embedded audio processing. Unbalanced AES connection. 2 SDI inputs, 2 AES inputs, 2 SDI outputs, 2 AES outputs, analog reference loop-through

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

### Inputs & Outputs

<b>Signal Inputs</b>	
Digital Video .....	2 x SDI (BNC) (1 x SDI – single width versions)
Video / AES Reference .....	Composite video / AES/EBU (BNC)
Unbalanced digital audio .....	2/4 x AES/EBU, AC3, Dolby E (BNC)
Balanced digital audio .....	2/4 x AES/EBU, AC3, Dolby E (25 Way D-Type)
Standards.....	SMPTE 259M-C-1997, SMPTE 272M-A-1994, AES3-1992

### Signal Outputs

Digital Video .....	SDI x 2
Unbalanced digital audio .....	2/4 x AES/EBU, AC3, Dolby E (BNC)
Balanced digital audio .....	2/4 x AES/EBU, AC3, Dolby E (25 Way D-Type)
Standards.....	SMPTE 259M-C-1997, SMPTE 272M-A-1994, AES3-1992

### Control Interface

GPI.....	1x Closing contact I/O interface (BNC)
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## SDI and 4/8 Channel AES/EBU Synchronizer

### Card Edge & RollCall 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 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.  $\pm 18$  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.  $\pm 18$  dB in 0.1 dB steps.

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

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 .....  $\pm 100$  mV in 0.8 mV steps

Y/C Timing .....  $\pm 592$  ns in 148 ns steps

Picture position .....  $\pm 592$  ns in 148 ns steps

Luminance Gain.....  $\pm 6$  dB

Chrominance Gain.....  $\pm 6$  dB

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

Genlock H Phase.....  $\pm 32$   $\mu$ s in 74 ns steps

Genlock V Phase .....  $\pm 262/312$  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

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## SDI and 4/8 Channel AES/EBU Synchronizer

### 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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### 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  $\pm$ 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  $\pm$  3 dB

Minimum Delay ..... 6  $\mu$ s

Synchronize Hysteresis Window  
0.5 - 1  $\mu$ s

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

Delay (Delay Mode)..... 6  $\mu$ s - 3 Frames + 5.5  $\mu$ s

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

### Power Consumption

Module Power Consumption  
7.5 W max