

# IQDLY20/21

## AES and Analog Audio Delay and Shuffler Module

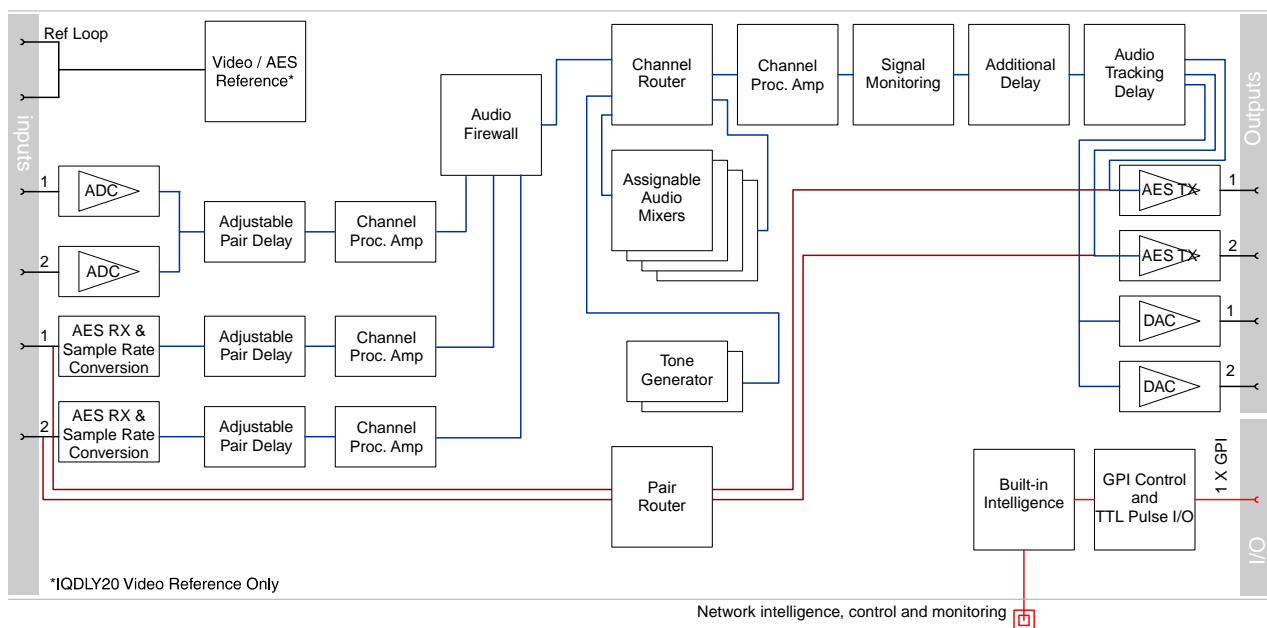
The IQDLY20/21 provides two channels of analog audio and four channels of AES audio with up to 3 seconds of preset delay, and 0.5 seconds of tracking audio delay. The availability of both analog and AES inputs and outputs also enables it to be used as a two-channel audio ADC and DAC.

### Does this module suit your application?

- 2 x balanced analog audio paths
- 2 x balanced or unbalanced AES paths
- Synchronizes AES/analog inputs
- Proc. amp control of audio channels
- Flexible preset and tracking delay
- Channel-level shuffling
- 4 off assignable 4 input mixers
- References to video or AES signals (IQDLY20 video reference only)
- Professional standard 48kHz operation, sample rate converts non-48kHz signals
- Firewall for processed PCM audio to provide a continuous output regardless of input
- Passes non-PCM AES signals including Dolby E
- Pair-level Dolby E routing Operates at 48 kHz
- 20-bit sampling resolution

### Why should you choose this module?

- A complete AES/analog delay solution in one module
- Firewall function makes this an ideal first unit in a signal chain
- Channel-level manipulation and mixing allows detailed control of audio material
- Tracking capability allows the audio to follow a video synchronizer
- Suitable for use as a 2 channel audio ADC and DAC with delay and processing
- Separate per pair and global user adjustable delays

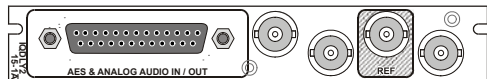


Block diagram for IQDLY2117-2A shown

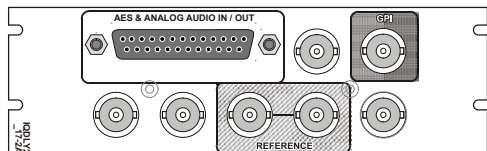
# IQDLY20/21

## AES and Analog Audio Delay and Shuffler Module

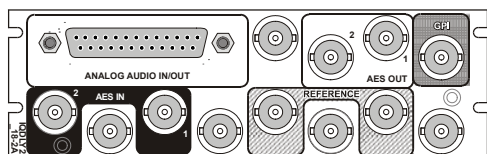
### Order codes for IQH3A/1A enclosures



IQDLY2115-1A AES and Analog Audio Delay. Balanced Audio connection via 25 way D type. 2 Analog inputs, 2 AES inputs, 2 Analog outputs, 2 AES outputs

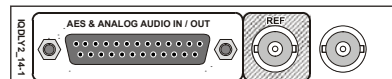


IQDLY2117-2A AES and Analog Audio Delay. Balanced Audio connection via 25 way D type. 2 Analog inputs, 2 AES inputs, 2 Analog outputs, 2 AES outputs and 1 x GPI

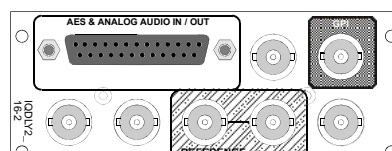


IQDLY2018-2A AES and Analog Audio Delay. Balanced Audio connection via 25 way D type, Unbalanced AES connection via BNC. 2 Analog inputs, 2 AES inputs, 2 Analog outputs, 2 AES outputs and 1 x GPI

### Order codes for other enclosures



IQDLY2114-1 AES and Analog Audio Delay. Balanced Audio connection via 25 way D type. 2 Analog inputs, 2 AES inputs, 2 Analog outputs, 2 AES outputs



IQDLY2116-2 AES and Analog Audio Delay. Balanced Audio connection via 25 way D type. 2 Analog inputs, 2 AES inputs, 2 Analog outputs, 2 AES outputs and 1 x GPI

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

### Inputs & Outputs

#### Signal Inputs

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)  
 Analog..... 2 Channels (1 Stereo Pair)  
 Reference..... IQDLY21: Composite video / AES/EBU (BNC)  
 IQDLY20: Composite video (BNC)

#### Signal Outputs

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)  
 Analog..... 2 Channels (1 Stereo Pair)

#### Control Interface

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

### Card Edge & RollCall Controls

#### Card Edge Controls

NONE

#### Card Edge Indicators

AES Input Present ..... 1 x LED per pair  
 Reference Present  
 CPU running / Power..... One green LED, flashing = OK

#### RollCall Functions

##### Audio Controls

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

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 input channels. +18 dB to -18 dB in 0.1 dB steps.  
 Channel routing ..... Output channels routed from Analog inputs 1-2, AES pairs 1 to 4, test tone and silence  
 Output side control proc. - gain and polarity  
 Independent Gain, Mute, & Polarity control over output channels. +18 dB to -18 dB in 0.1 dB steps.

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## AES and Analog Audio Delay and Shuffler Module

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

Tone frequency, amplitude & Ident  
2-channel tone generator. 100 Hz  
to 15 kHz in 100 Hz steps.

### Tone Setup:

Frequency ..... 100 Hz to 15 kHz in 100 Hz steps

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

### Other Controls

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

Default Audio Output ..... Silence

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

### Reporting (\* also Logged)

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

### Audio Delay Setup

Delay ..... Audio delay - Fixed, RollTrack +  
fixed, GPI + Fixed

### RollTrack Output

Delay ..... Current audio delay

Reference state ..... Present, Error, Loss

External Audio state ..... Pair present

AES 1-2 ..... Loss, Present

GPI ..... Low, High, Inactive

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### Specifications

Noise Floor ..... Better than -100 dBFS  
(20 Hz to 20 kHz)

Channel Amplitude Matching  
Better than  $\pm 0.15$  dBu

Output Level Accuracy ..... Better than  $\pm 0.2$  dBu

Flatness ..... Better than +0.1 dBu to -0.3 dBu  
(20 Hz to 20 kHz with reference to  
1 kHz)

### 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

### Analog to Digital audio

Analog Input Impedance ..... 10 k Ohms

Frequency Response ..... 20 Hz to 20 kHz (+/- 0.1 dB)

Distortion (THD+N) ..... Better than -90 dB, 1kHz@ -  
1 dBFS

Dynamic range ..... > 106 dB

Audio delay ..... Equal to video delay + adjustable  
offset

### Digital to Analog audio

Analog Output Impedance  
50 Ohms

Frequency Response ..... 20 Hz to 20 kHz (+/- 0.1 dB)

Distortion (THD+N) ..... Better than -92 dB at 23 dBu,  
1kHz@ -1 dBFS

Dynamic range ..... > 106 dB

Power Consumption

Module Power Consumption  
9.5 W