

# IQAAD Advanced Analogue Decoder



## DESCRIPTION

This advanced series of analogue decoders employ a line comb to accurately separate the luminance and chrominance components from the composite input.

A patented "gate" circuit forms the comb control element which greatly reduces susceptibility to jitter on the input signal and ensures high and stable levels of subcarrier suppression.

Adaptive control circuitry eliminates hanging dots (residual subcarrier appearing around horizontal chrominance transitions)

Processing controls for Luma Gain, Black level, Chroma Gain and Hue are available on the card edge.

## FEATURES

- Analogue PAL or NTSC Decoder with YPbPr outputs
- GBR outputs available as an option
- Advanced analogue gate Separator for Luminance and Chrominance with spectral inversion filter for additional subcarrier suppression
- Wide Chroma Bandwidth
- Good Cross Colour Suppression and Diagonal Resolution
- Up to 16 Decoders in 3U rack frame
- Selectable Chroma line average on flat chroma areas only, suppresses PAL Hanover bars in this mode

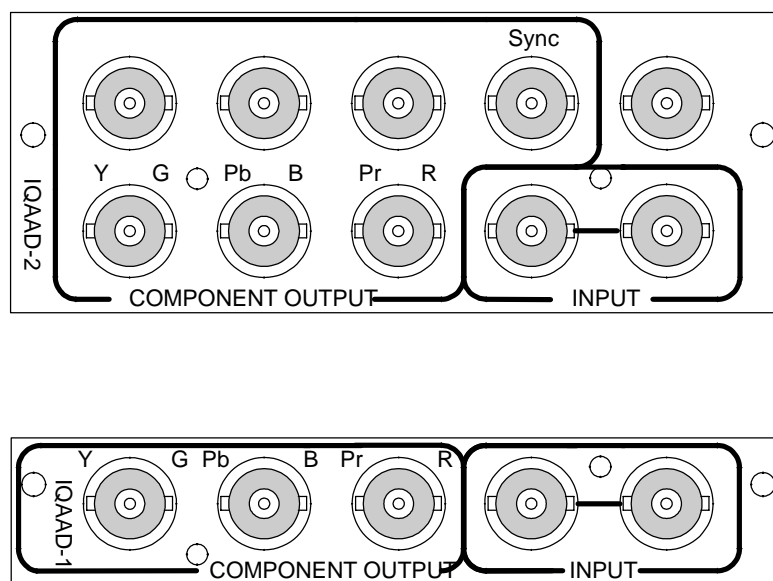
Module cards available are:

IQAAD-1-N	Decodes Composite NTSC (one YPbPr/GBR output)
IQAAD-2-N	Decodes Composite NTSC (two YPbPr/GBR outputs)
IQAAD-1-P	Decodes Composite PAL (one YPbPr/GBR output)
IQAAD-2-P	Decodes Composite PAL (two YPbPr/GBR outputs)
IQAAD-2-P-10F	Decodes Composite PAL (two YPbPr/GBR outputs + D1 10-Bit with near 601 filters)
IQAAD-2-N-10F	Decodes Composite NTSC (two YPbPr/GBR outputs + D1 10-Bit with near 601 filters)

# IQAAD Advanced Analogue Decoder

## TECHNICAL DATA

Rear View of Modules



### INPUT SIGNAL

Composite Video 1 V p-p via balanced loop-through BNC connectors for 75 Ohms

### OUTPUT SIGNALS

One set (0.8" module) or two sets (1.6" Module) of component signals YPbPr (to EBU/SMPTE specification) or GBR (levels 0.7 V, NTSC with/without pedestal) are available via BNC connectors for connection to 75 Ohm systems. Sync is selectable off or on all component outputs. (Betacam or MII levels available by simple re-alignment)

Mixed Syncs at -2 V p-p via BNC connector for 75 Ohms (1.6" Module only)

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TECHNICAL DATA (Normal Mode, all switches off)

Y Frequency Response	5.5 MHz $\pm$ 0.3 dB
PbPr Frequency Response	1.0 MHz $<$ -3 dB
S/N (Y output)	$>$ 69 dB Unified filter 10 kHz HPF (Tektronix VM700A)
K Rating	2T $<$ 1.5%
Tilt	Line and Field $<$ 1%
Subcarrier rejection	$>$ 46 dB (EBU Colour Bars test signal)
Linearity error	$<$ 2%
Input Return Loss	$>$ 40 dB @ 5 MHz
Output Return Loss	$>$ 36 dB @ 5 MHz
2T Pulse to Bar ratio	$<$ 1% error
DC component on output	$<$ 40 mV.
Signal Delay Through Module	1 Line + 0.8 $\mu$ s
Picture Position Error	$<$ 50 ns
Y/C Timing Error	$<$ 50 ns
Power	+ 7.5 V @ 600 mA - 7.5 V @ 600 mA

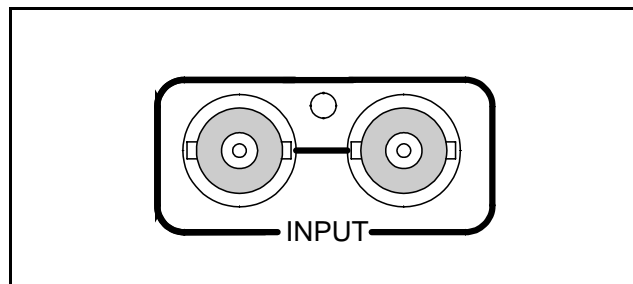
Supplied via rack connector.

## IQAAD Advanced Analogue Decoder

### COMPOSITE INPUT

This is the composite video input to the decoder via loop-through BNC connectors for 75 Ohms. If only one connector is used the other connector should be fitted with a 75 Ohm terminator.

Nominal input level 1 V p-p when terminated in 75 Ohms.

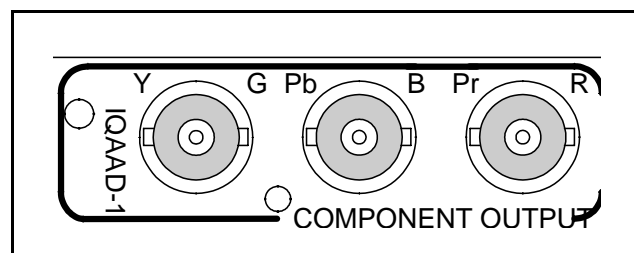
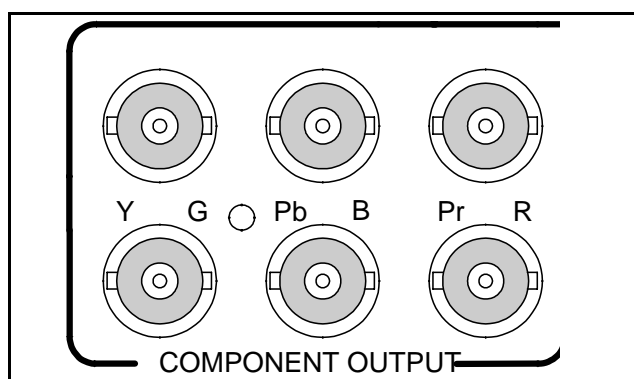


### COMPONENT OUTPUTS

These are the component outputs of the decoder via BNC connectors for 75 Ohms. The IQAAD1 provides 1 set of outputs and the IQAAD2 provides 2 sets.

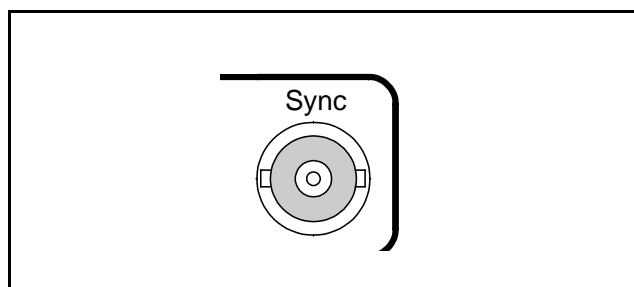
Depending on the card configuration the signals will be either YPbPr or GBR, factory set to give output levels to EBU/SMPTE standards.

For other configurations and output level settings see page 10.9 'CARD CONFIGURATIONS'



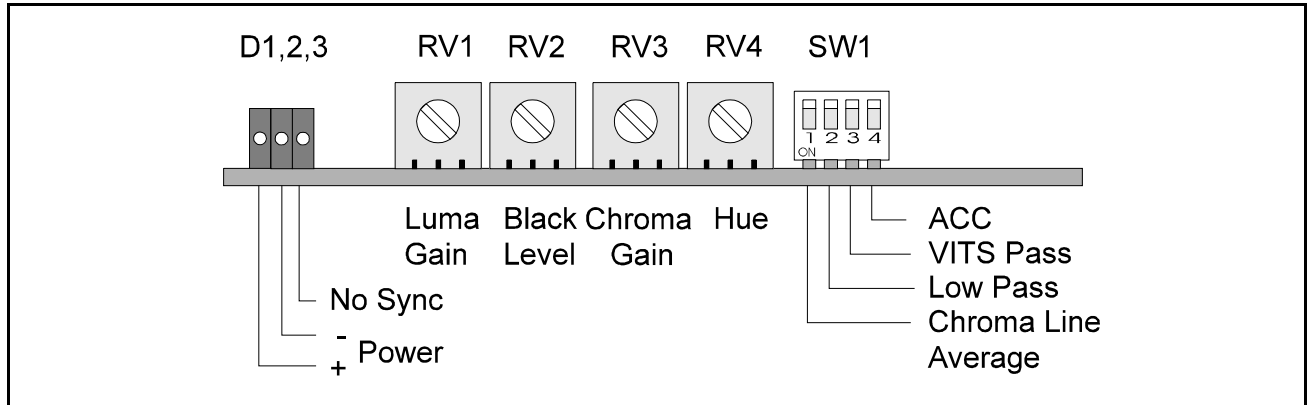
### SYNC OUTPUT ( IQAAD2 only)

An output of negative going mixed syncs are available from this BNC connector at 2 V p-p into 75 Ohms. Timing is co-incident with the syncs on the component signal outputs.



# IQAAD Advanced Analogue Decoder

## CARD EDGE CONTROLS

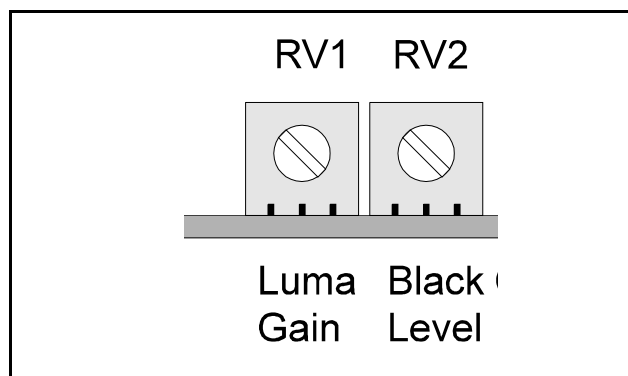


Adjustment of the settings for the IQAAD is available via card edge controls.

## IQAAD Advanced Analogue Decoder

### LUMINANCE GAIN

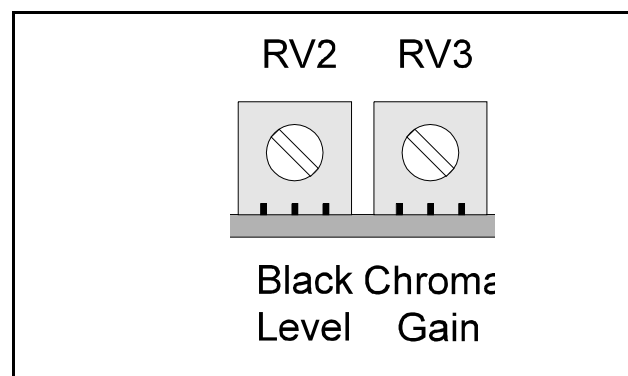
The luminance gain of the module may be adjusted by  $\pm 3$  dB using RV1. Clockwise rotation increases gain, anticlockwise rotation reduces gain.



### BLACK LEVEL

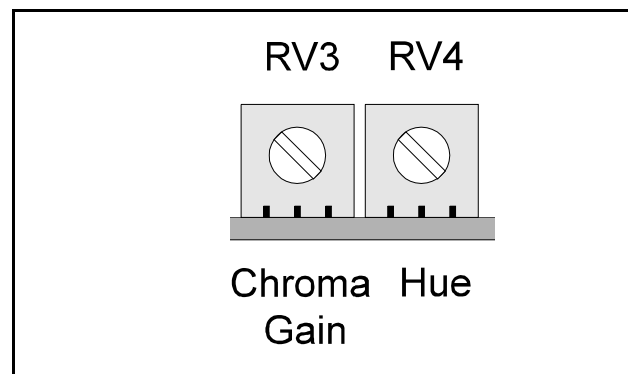
The black level (pedestal or set-up) present on the luminance component of the output signals may be adjusted by  $\pm 100$  mV relative to blanking level, by using RV2.

Clockwise rotation increases the level, anticlockwise rotation reduces the level.



### CHROMA GAIN

The chrominance gain of the module may be adjusted by  $\pm 3$  dB using RV3. Clockwise rotation increases colour saturation, anticlockwise rotation reduces saturation.

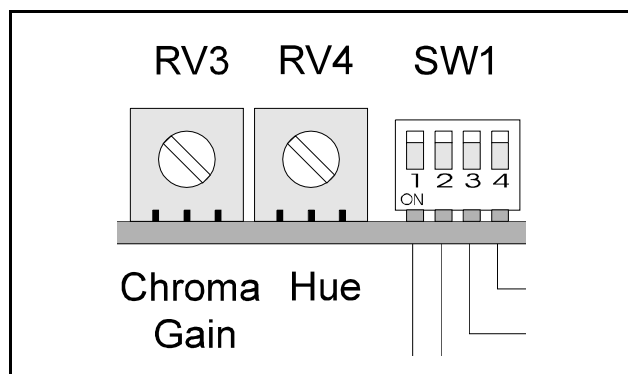


### HUE

The colour Hue or specific colour tint of the output picture can be changed by adjusting RV4. The effect can also be seen on a Vectorscope as a change in the vector angle between the burst vector and the colour vectors.

The range of adjustment is  $\pm 10^\circ$  and is factory preset to zero.

*Note that this control is active for both NTSC and PAL signals.*



## IQAAD Advanced Analogue Decoder

### SWITCH SW1

This switch allows various processing modes to be selected.

SW1/1	Chroma Line Average
SW1/2	Low Pass
SW1/3	VITS Pass
SW1/4	ACC

#### CHROMA LINE AVERAGE (Position 1)

When selected (switch down) adjacent chroma lines are averaged except where horizontal chroma transitions occur.

This mode is normally selected for PAL signals so that "Hanover Bars" are suppressed.

When de-selected (switch up) line averaging does not occur.

#### LOW PASS (Position 2)

When selected (switch down) a band stop filter (centred around subcarrier frequency) is inserted into the luminance signal path.

When de-selected (switch up) the full bandwidth of the luminance signal is available for pure horizontal frequencies.

#### VITS PASS (Position 3)

When this switch is ON the unit will pass data (unblanked and undecoded) present on VITS lines, to the Y output or GBR outputs. The PbPr channels are always blanked during the vertical interval. When the switch is OFF all data in the vertical interval will be blanked and during this period the signal will be at blanking level..

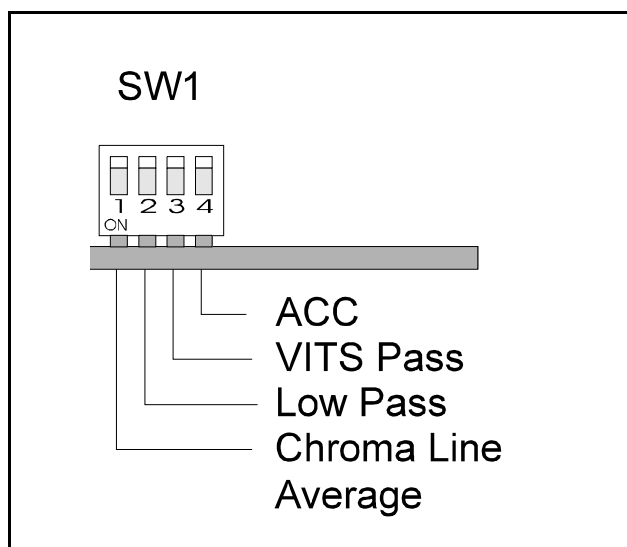
*Note that in the 525 standard VITS lines are from line 10 and 273 and in the 625 standard from line 6 and 319 inclusive.*

#### ACC (Position 4)

This switch controls the Automatic Colour Control function.

When selected (switch down) the output signal chroma level will track the incoming colour burst level, automatically correcting the chroma amplitude.

When de-selected (switch up) the chroma gain is independent of the incoming colour burst level.



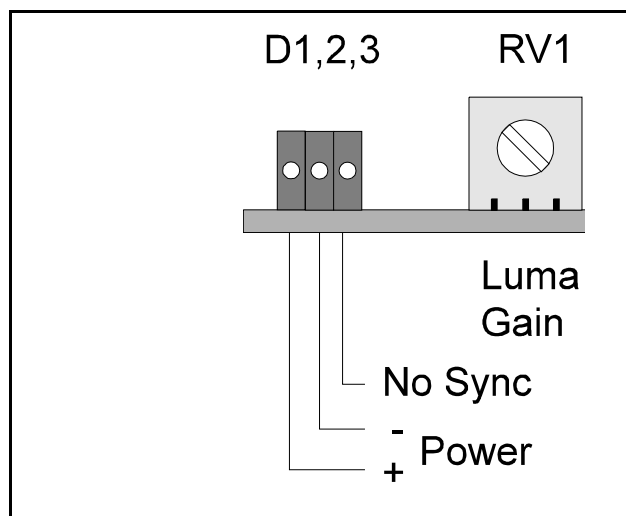
## IQAAD Advanced Analogue Decoder

### LED INDICATORS

When D1 is illuminated this indicates that the positive power supply is present.

When D2 is illuminated this indicates that the negative power supply is present.

When D3 is illuminated this indicates that the unit is not receiving an input signal or that the sync level of the input signal is less than 100 mV p-p.





# IQAAD Advanced Analogue Decoder

## CARD CONFIGURATIONS

### Output Level Settings

The card is normally factory set to give correct YPbPr or GBR output levels to EBU/SMPTE standards.

### To Convert a Card Configured for YPbPr Outputs to give GBR Outputs

- 1 Power down unit and remove card from the mainframe
- 2 Using an extender card refit the decoder card
- 3 Fit links LK3,LK4 and LK5 (labelled 'RGB')
- 4 Apply EBU Colour bars to input

Using an accurately calibrated oscilloscope or waveform monitor fitted with a input terminator of 75 Ohms:

- 5 Connect Blue Output and adjust RV26 for 700 mV Black to White amplitude
- 6 Connect Blue Output and adjust RV3 (Chroma Gain) for 525 mV Black to 'Blue' amplitude
- 7 Connect Red Output and adjust RV27 for 700 mV Black to White amplitude
- 8 Connect Red Output and adjust RV16 for 525 mV Black to 'Red' amplitude

### To Convert a Card Configured for GBR Outputs to give YPbPr Outputs

- 1 Power down unit and remove card from the mainframe
- 2 Using an extender card refit the decoder card
- 3 Remove links LK3, LK4 and LK5 (labelled 'RGB')
- 4 Apply EBU Colour bars to input

Using an accurately calibrated oscilloscope or waveform monitor fitted with a input terminator of 75 Ohms:

- 5 Set RV3 (Chroma Gain) to centre of range
- 6 Connect Pb Output and adjust RV26 for 525 mV p-p
- 7 Connect Pr Output and adjust RV27 for 525 mV p-p

### To Disable Syncs from Y signal or GBR Signals

Fit Link LK2

## NTSC Versions

For NTSC versions the input signal pedestal (set-up) is normally removed and will not appear on the output signals.

If a pedestal is required on the Y signal or the GBR outputs the following re-alignment should be carried out:

- 1 Connect the relevant output signal to an accurately calibrated oscilloscope/waveform monitor and terminate in 75 Ohms.
- 2 Adjust the Black Level card edge control clockwise to give a 53 mV (7.5 IRE Units) pedestal
- 3 Adjust the Luma Gain card edge control anti-clockwise to give a white level of 714 mV (100 IRE Units)