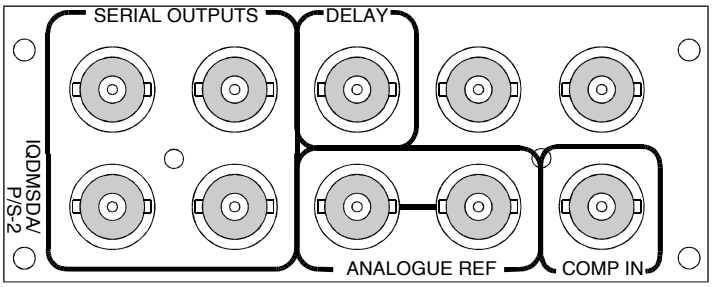
IQDMSDP Multi-standard Digital Decoder

Module Description

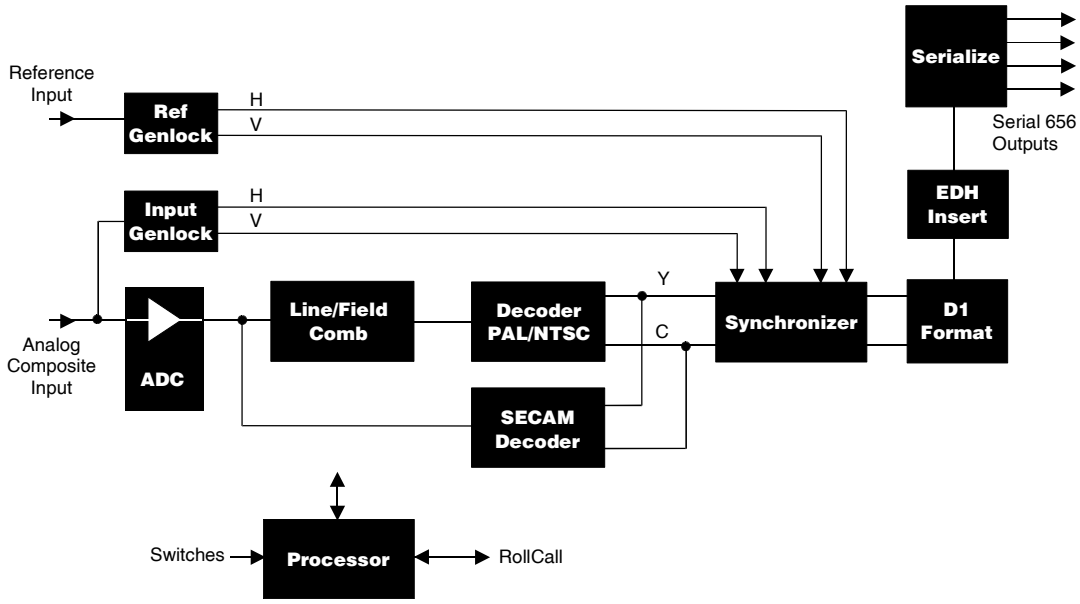
The IQDMSDP provides high quality adaptive decoding of PAL/NTSC/PAL-M/PAL-N/NTSC4.43/SECAM composite signals with frame synchronization and adaptive recursive noise reduction

The IQDMSDP module accepts a composite input in any one of five standards (PAL/NTSC/PAL-N/PAL-M,SECAM) which it digitises to 10-bits (8-bits for SECAM). This is decoded, selecting between either adaptive field or line combs or conventional low pass/high pass filters

REAR PANEL VIEWS



BLOCK DIAGRAM



Versions of the module cards available are:

IQDMSDP-2-0 *For details refer to "Feature Variations" on page 5*

Features

- Multi-standard decoding of PAL/NTSC-M/PAL-M/PAL-N/NTSC4.43/ NTSC-J/SECAM
- 10-bit sampling (8-bit VHS and SECAM)
- Will lock to unstable inputs e.g. VHS
- Adaptive recursive noise reduction with automatic noise floor measurement
- Multi-mode operation:
- Adaptive field comb filter
- Adaptive line comb filter
- Simple mode decoding
- Full frame synchronizer with phase controls
- 4 x 10-bit serial 4:2:2 output
- Switchable EDH insertion
- RollCall™ compatible
- Test pattern generator and caption generator

TECHNICAL PROFILE

Features

Signal Inputs

Composite Video ..... 1 x Differential input

Standards ..... PAL/NTSC//NTSC-J/PAL-M /PAL-N/SECAM/N4.43

Reference ..... 1 x Loop-through

Signal Outputs

10-bit Serial Digital..... 4 x SDI outputs

Standards ..... SMPTE 259M-C-1997

Processing

3 Decoder Modes..... Studio (Adaptive 10-bit Field Comb)
Display (Adaptive 10-bit Line Comb)
Simple Mode

Sampling..... 10-bit

Card Edge Controls (also available via RollCall)

Input Standard ..... PAL/PAL-M/PAL-N/NTSC-M/ NTSC-J/SECAM/NTSC4.43

Decode Mode..... Studio (Adaptive 10-bit Field Comb)
Display (Adaptive 10-bit Line Comb)
Simple Mode

Test Pattern Select ..... Black/100% Color bars/75% Color bars/Multiburst

Video Gain..... ±2dB

Black Level ..... ±75 units (approximately ±120 mV

Chrominance Gain ..... ±3dB (Not in VHS mode)

NTSC Hue..... ±30°

Y/C Delay ..... -222 ns to +148 ns in 74 ns steps

H Phase ..... ±31968 ns in 37 ns steps

Luma Noise Reduction..... Off/Low/Medium/High

Chroma Noise Reduction ... Off/Low/Medium/High

V Phase ..... ±7 lines in 1 line steps

VITS Pass..... Pass (through to SDI Y channel only) or Strip
Note VITS lines 318, 319 and 335 are not passed in 625 standard and VITS information is not passed in SECAM or VHS Mode.

Functions Available via RollCall™ Only

Lock Mode Reporting ..... Reports Genlock/Free-run Modes

Sync Mode Reporting..... Reports Lock Mode: Broadcast, TV, VHS

Decode Mode Reporting .... Reports Decoder Mode: Studio, Display or Simple Pattern: Color Bars, Multiburst, Black/Freeze

Input Standard Reporting ... Reports PAL/PAL-M/PAL-N/ NTSC/NTSC-J/SECAM/NTSC4.43

Signal input State Reporting

Reference Loss

EDH Insertion On/Off

Control of Independent EDH flags

Preset Unit

RollTrack

Specifications

Input Standard ..... PAL/PAL-M/PAL-N/NTSC-M/ NTSC-J/SECAM/NTSC4.43

Y Frequency Response..... 5.5 MHz ± 0.2dB (PAL, NTSC)

Signal/Noise Ratio ..... Better than 62dB Weighted

PbPr Frequency Response 1.5 MHz -3dB

2T Pulse-Shape K- rating... Better than 1%

Y-C Timing Error..... Better than 25 ns

Y non-linearity Error ..... Better than 1%

Subcarrier Rejection..... better than 46dB (Test signal Modulated Staircase)

Input Return Loss (Analog) Better than 35dB at 5 MHz

Output Return Loss (Digital) Better than 15dB to 270 MHz

Power Consumption

Module Power Consumption
13.5W max

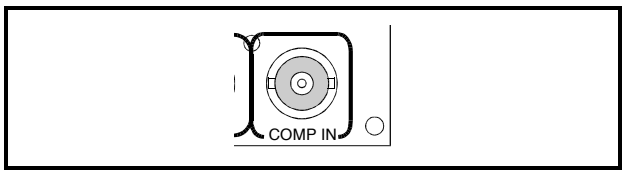
FEATURE VARIATIONS OF THE IQDMSD CARDS

FEATURE	IQDMSDP	IQDMSDA	IQDMSDN	IQDMSDD	IQDMSDS
Crystal lock for stable inputs	YES	YES	YES	YES	YES
Has VHS Mode	YES	YES			YES
Has frame synchroniser	YES	YES			YES
8 bit Decoding	YES	YES			YES
10 bit Decoding	YES	YES	YES	YES	
Has delay flag output (Frame Synchroniser)/RollTrack	YES	YES			YES
Decodes NTSC/PAL/PAL-M/PAL-N standards	YES	YES	YES	YES	
Decodes SECAM	YES	YES			YES
Decoder Mode: Adaptive Field Comb	YES	YES	YES	YES	
Decoder Mode: Adaptive Line Comb	YES	YES	YES	YES	YES
No reference input indication	YES	YES			YES
Recursive Noise Reducer	YES		YES		
Auto standard detect	YES	YES	YES	YES	YES
EDH Insertion	YES	YES	YES	YES	YES
Field Freeze	YES	YES			YES
Has user memories	YES	YES	YES	YES	YES
Caption Generator	YES	YES	YES	YES	YES

INPUTS AND OUTPUTS

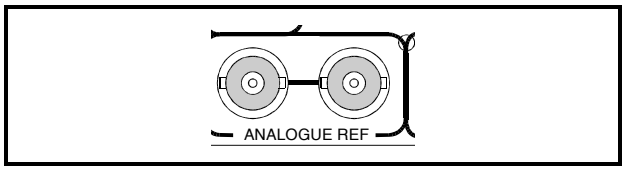
COMPOSITE INPUT

The connector is the composite video input to the decoder via a BNC connector terminated in 75 Ohms.
Nominal input level is 1V p-p.



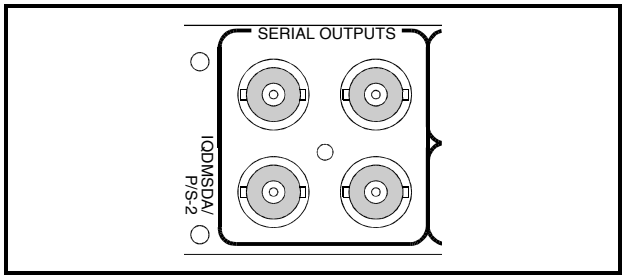
ANALOGUE REF INPUT

These are the loop-through connections via BNC connectors for 75 Ohms, for a black burst reference signal for the synchroniser.



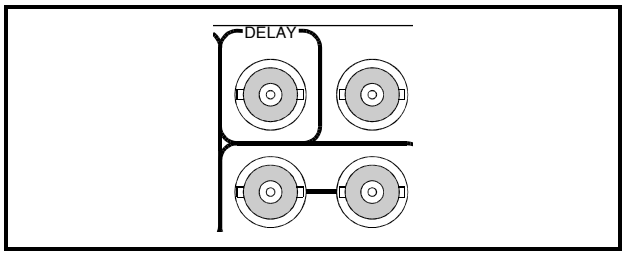
SERIAL OUTPUTS

These are the four Serial Digital outputs of the unit via BNC connectors for 75 Ohms.

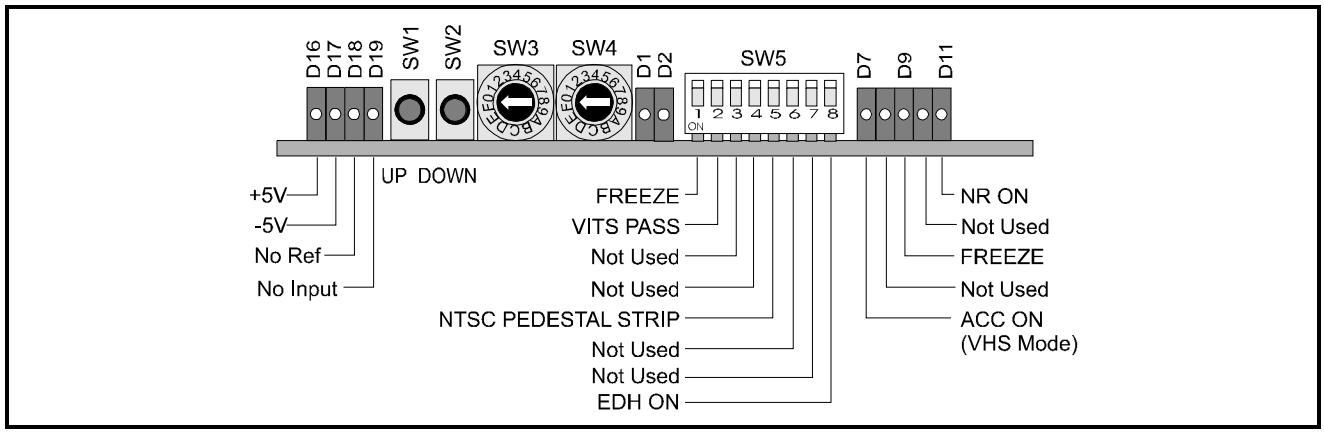


DELAY OUTPUT

This connector provides a signal that represents the delay time through the synchroniser. The output is high (+3 V) for the duration of the delay and low at other times.



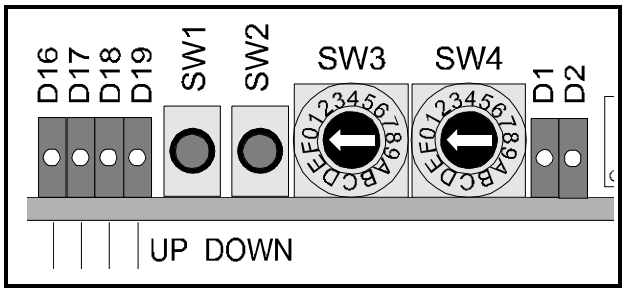
CARD EDGE CONTROLS



Adjustment of the settings of the IQDMSDP is available either via card edge controls and/or via a more comprehensive remote control system using RollCall™

Note that the availability of some of the card edge controls will depend on the card version; see feature table for variations.

LED INDICATORS D16, 17, 18 & 19



When illuminated D16 indicates that the +5 V supply is present and D17 indicates that the -5 V supply is present.

When D18 is illuminated this indicates that the unit is not receiving a reference input signal.

When D19 is illuminated this indicates that the unit is not receiving an video input signal.

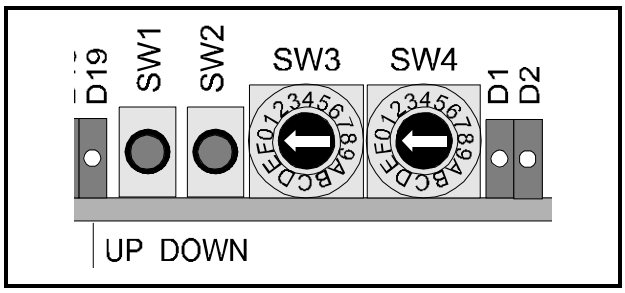
SW1, SW2, SW3 & SW4

These two push buttons and two Hex switches allow various functions and modes to be set.

SW3 selects a particular function and SW4 selects the mode or value of that function.

The push buttons SW1 & 2 allow the value of the selected function to be adjusted.
SW1 (UP) increases the value and SW2 (DOWN) decreases the value; D1 and D2 indicate which direction away from the default position that is currently set.

Note that to select the default value both buttons should be pressed together. D1 and D2 will both be extinguished when the default position reached.



The various modes and selections made with SW3 & SW4 are detailed in the table below:

FUNCTION AND MODE SELECTIONS

SW3 SETTING		SW4 SETTING									
		0	1	2	3	4	5	6	7	8	9
0	Standard	PAL/NTSC	PAL-N/ PAL-M	SECAM*/N4.4							
1	Decode Mode	Studio	Display	Simple							
2	Lock Mode	Broadcast	TV	VHS							
3	Pattern	Video	Black	100% Bars	75% Bars	Multiburst					
4	Video Gain	Use Buttons									
5	Black Level	Use Buttons									
6	Chroma Gain	Use Buttons									
7	NTSC Hue	Use Buttons									
8	Genlock Mode	Genlock	Free Run								
9	YC Delay	Use Buttons									
A	H-Phase	Use Buttons									
B	V-Phase	Use Buttons									
C	Unused										
D	Line Standard	525	625	Auto							
E	Noise reduction*	Off	Low	Medium	High						
F	Preset	Press both buttons together to preset unit									

*Note that when SW3 position E (Noise Reduction) is selected the amount of noise reduction selected by SW4 will be applied to the Chrominance signal when SW1 is pushed, and to the Luminance signal when SW2 is pressed.

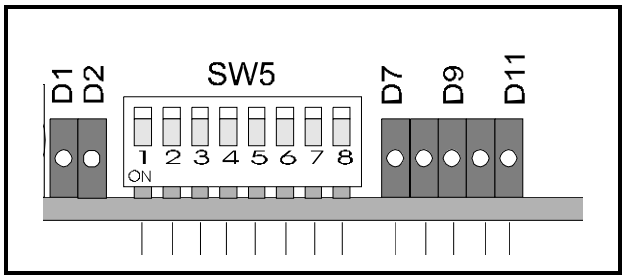
ADJUSTMENT RANGES

Video Gain	±2 dB
Chrominance Gain	±3 dB
Black Level	±75 units Overall range ±120 mV
NTSC Hue	±30° in 1° steps
YC Delay	-222 ns to +148 ns in 74 ns steps
H-Phase	±31968 ns in 37 ns steps
V-Phase	±7 lines in 1 line steps

SW5 SWITCH FUNCTIONS

(Functions enabled when switch is set to ON)

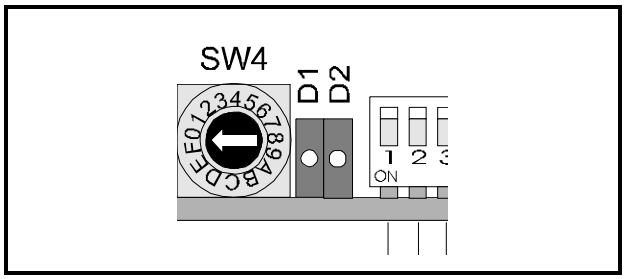
Position 1	Freeze
Position 2	VITS Pass
Position 3	Not used
Position 4	Not used
Position 5	Pedestal strip
Position 6	Not used
Position 7	Auto Freeze
Position 8	EDH



LED INDICATORS D1 and D2

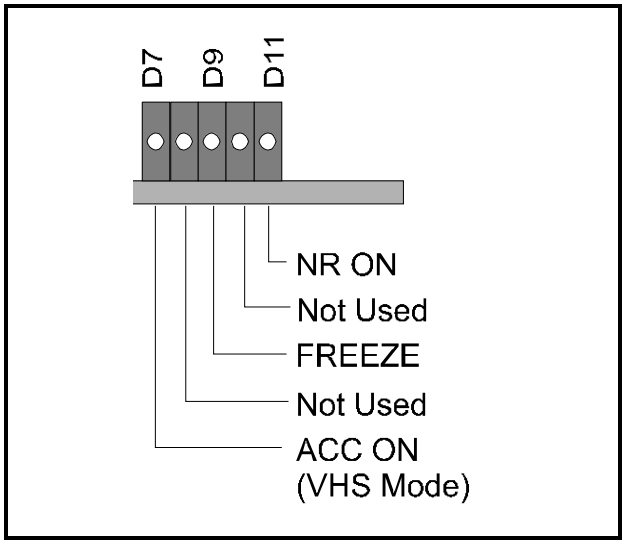
These LED's will indicate the state of a selected function.

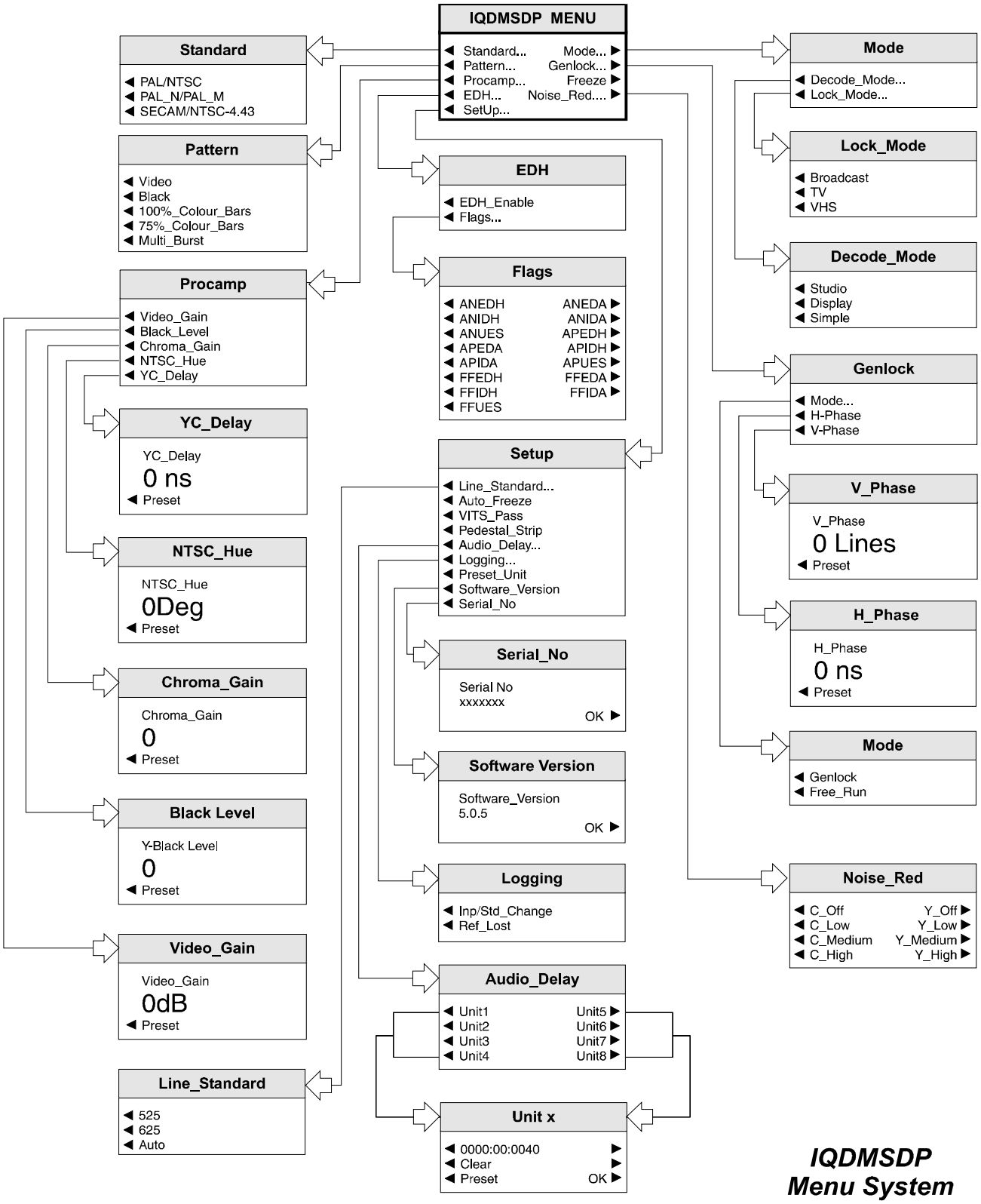
D1	D2	State of Variable
Off	Off	Default Value
Off	On	Above Default Value
On	Off	Below Default Value
On	On	N/A



LED INDICATORS D7, 9 and D11

D7, D9 and D11 will become illuminated when the respective ACC, Freeze and Noise Reduction functions are enabled.





IQDMSDP
Menu System

OPERATION FROM AN ACTIVE CONTROL PANEL

The card may be operated with an active control panel via the RollCall™ network.

The menus available for this card are shown on page opposite and will appear in the Control display window.

Operational details for the remote control panel will be found in SECTION 1 of the Modular System Operator's Manual.

MENU DETAILS
(see IQDMSDP Menu System Opposite)

MAIN MENU

The main, or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

Note that where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.

Whenever a menu item is selected the parameters of that selection will be displayed in the Information window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode is not available for selection the text will remain normal.

◄ STANDARD

This menu selection allows the operating standard of the unit to be set.

The operating standard depends on three things:

1 The line standard menu selection
2 The input line rate
3 This setting

If the line standard selection is set to Auto the unit will automatically detect either a 525 or 625 input standard.

If the detected input standard is 525 or the line standard selection is 525, and the PAL/NTSC mode selected, the decode standard will be NTSC.

If the detected input standard is 525 or the line standard selection is 525, and the PAL-M mode selected, the decode standard will be PAL-M.

If the detected input standard is 525 or the line standard selection is 525, and the SECAM*/NTSC-4.43 mode selected, the decode standard will be NTSC-4.43.

If the detected input standard is 625 or the line standard selection is 625, and the PAL/NTSC mode selected, the decode standard will be PAL.

If the detected input standard is 625 or the line standard selection is 625, and the PAL-N mode selected, the decode standard will be PAL-N.

If the detected input standard is 625 or the line standard selection is 625, and the SECAM*/NTSC-4.43 mode selected, the decode standard will be SECAM*.

If the input standard detected is different to the forced line standard, i.e. not Auto, the unit will produce black as an output.

◄ PATTERN

This menu selection allows the unit to output the following signals:

◄ **Video**	The output will be the processed video.
◄ **Black**	The output will be standard black.
◄ **100% Colour_Bars**	The output will be 100% colour bars.
◄ **75% Colour_Bars**	The output will be 75% colour bars.
◄ **Multiburst**	The output will be a multiburst signal.

◄ PROCAMP

This selection allows various adjustments to made to the processed signal.

◄ Video_Gain

This selection reveals a numerical readout display for the gain of the composite video signal.

The overall range of adjustment is ±2 dB

Selecting Preset returns the setting to the calibrated value of 0.

◄ Black Level

This selection reveals a numerical readout display for the Y pedestal or black level. By rotating the spinwheel the pedestal may be adjusted by ±75 units in steps of 1 unit.
Note that the overall range of adjustment is approximately ±120 mV

Selecting Preset returns the setting to the calibrated value of 0.

◄ Chroma Gain

This selection reveals a numerical readout display for the gain of the chrominance signal.
By rotating the spinwheel the gain may be adjusted by ±3 dB
Selecting Preset returns the setting to the calibrated value of 0.

Note that the Chroma Gain function does not operate in the VHS Lock Mode; Automatic Colour Control (ACC) is enabled in this mode.

◄ NTSC_Hue

This selection reveals a numerical readout display for the Hue of an NTSC signal. By rotating the spinwheel the Hue may be adjusted by ±30 ° in steps of 1°

Selecting Preset returns the setting to the calibrated value of 0°

◄ YC Delay

The relative timing between the luminance and the chrominance signals may be set using this function and rotating the spinwheel. The range is -222 ns to +148 ns in steps of 74 ns.

When viewing a picture, the chrominance will move to the right for positive values and to the left for negative values of shift.

Selecting Preset returns the setting to 0 ns.

◄ EDH

This selection reveals the EDH sub-menu which enables the generation of EDH checkwords and flags.

For more information please refer to SMPTE RP165 "Error Detection Checkwords and Status Flags for use in Bit-Serial Digital Interfaces for Television" or as reprinted in Appendix 2 of the IQD1MON (D1 EDH Inserter and D1 Monitor) operator's manual.

Error reporting provides the information necessary to allow system diagnostics. The error flags are used to identify specific error types and are contained in an error packet which can be read through a serial communication interface.

◄ EDH_Enable

Selecting this item (appears as reversed text) enables the error detection system. The following error flags are normally reset in equipment sourcing serial video data. However, they may be set in order to check the error handling and reporting of downstream 4:2:2 equipment.
When this item is selected the word EDH appears in the bottom line of the information window.

◄ Flags

When selected any of the following flags may be set:

◄ ANEDH

Ancillary Data: Error Detected Here

◄ ANIDH

Ancillary Data: Internal Device Error Detected Here

◄ ANUES

Ancillary Data: Unknown Error Status

◄ APEDA

Active Picture: Error Detected Already

◄ APIDA

Active Picture: Internal Error Detected Already

◄ FFEDH

Full Field: Error Detected Here

◄ FFIDH

Full Field: Internal Device Error Detected Here

◄ FFUES

Full Field: Unknown Error Status

ANEDA ►

Ancillary Data: Error Detected Already

ANIDA ►

Ancillary Data: Internal Device Error Detected Already

APEDH ►

Active Picture: Error Detected Here

APID ►

Active Picture: Internal Device Error Detected Here

APUES ►

Active Picture: Unknown Error Status

FFEDA ►

Full Field: Error Detected Already

FFIDA ►

Full Field: Internal Error Detected Already

◄ NOISE_RED

This menu allows various levels of noise reduction to be applied to the Luminance (Y) and/or Chrominance (C) parts of the signal.

The levels that may be selected are:

OFF
LOW
MEDIUM
HIGH

The noise reducer operates by recursive averaging so incoherent signals (noise) are reduced in the picture. To avoid blurring of moving objects the noise reduction is reduced if movement is detected in the image.

The noise floor is applied automatically based on a measurement of the degree of noise in the video signal. The higher the level of noise the higher the amount of noise reduction that is applied.

The current noise floor value will be shown in the information display window.
Note that if any of the noise reduction settings are set to ON, noise floor values will be displayed.

MODE ►

The decoding mode and reference lock mode may be selected using this sub-menu:

◄ Decode Mode

◄ Studio — This is an adaptive field comb (not available in TV, VHS or SECAM* modes)

◄ Display — This is an adaptive line comb (not available in VHS or SECAM* modes)

◄ Simple — Enables a lowpass/high pass band-split filter

◄ Lock Mode

◄ Broadcast — This should be used when the input is known to be a stable full broadcast quality signal

◄ TV — This should be used when the input is less stable than a full broadcast quality signal e.g. Laser Disc

◄ VHS — This should be used when the input is known to be an unstable signal such as the output from a non-timebase-corrected VCR

Notes:

1. *When the standard is not NTSC, the NTSC Hue menu is not available*
2. *Mode and standard are displayed in the information menu*

GENLOCK►

◄ Mode

◄ Genlock

The unit will be genlocked to the reference signal.

◄ Free Run

The output signal will be locked to an internal free-running signal.

Note that if there is no reference input signal present the unit will default to this Free Run mode. This function will be shown in the information window.

◄ H Phase (Only operational in Genlock mode)

Selecting this item reveals a display showing the horizontal timing of the output signal relative to the reference sync signal, in nanoseconds. Rotating the spin-wheel will adjust this value.
The range is ±31968 ns in steps of 37 ns.

Selecting Preset returns the setting to zero. (Output coincident with reference)

◄ V Phase (Only operational in Genlock mode)

Selecting this item reveals a display showing the vertical timing of the output signal relative to the reference sync signal, in TV lines. Rotating the spin-wheel will adjust this value. Range is ±7 lines in 1 line steps.

Selecting Preset returns the setting to zero.

FREEZE►

This toggle function produces a freeze-field picture
This function will be shown in the information window.

SETUP►

This selection reveals a sub-menu that allows the following functions to be set up:

◄ Line Standard

This sub-menu allows the operating line standard to be set to either 525, 625 or Auto.
In the Auto position the unit will automatically sense the standard of the input signal and operate at the correct standard.

◄ Auto_Freeze

When enabled and the input signal is lost, the output signal will become a frozen picture of the last good field; if this function is not enabled the unit will output black when the input signal is lost.

◄ VITS_Pass

When selected (text reversed) the unit will pass data (unblanked) present on VITS lines, to the digital Y output. The PbPr channels are always blanked during the vertical interval. When de-selected (text normal) all data in the vertical interval will be blanked.

Note that in the 525 standard VITS lines are from line 10 and 273 and in the 625 standard from line 6 and 320 inclusive. *Note VITS lines 318 and 319 are not passed in 625 standard.*
When this item is selected the word VITS will appear on the bottom line in the information window.
VITS information is not passed in the VHS Mode.

◄ Pedestal Strip

This toggle ON/OFF function allows the effect of any set-up on the input signal to be cancelled. This function only operates in NTSC.

◄ Audio_Delay

This function allows the value of the delay time produced by this module to be sent, via the RollCall™ network, to audio delay units connected on the same network. This enables compatible audio delay units to produce an audio delay dependent on this and other similar units. The audio delay unit will dynamically follow or track the received delay-time information allowing processed video signals to be timed correctly with audio signals. This automatic tracking system via the RollCall™ network is called **RollTrack**.

The destination for the delay information is set by the network code address as follows:

Selecting Audio Delay in the Set-up menu provides a sub-menu that allows up to 8 units to be selected as a destination.

A further sub-menu then appears to allow the code to be set up using the adjacent push buttons to edit the text.

(The left and right hand buttons select the cursor position and the spinwheel selects the character; the clear button sets the text line to all zero's and the OK button accepts the network address)

For more detailed information see the RollTrack section, page 17, of this manual.

The full network address has four sets of numbers.

For example: 0000:10:01*14

The first set (0000) is the network segment code number

The second set (10) is the number identifying the (enclosure/mainframe) unit

The third set (01) is the slot number in the unit

The fourth set (14) separated by an * is the channel number.
Note that only channel numbers 14, 15, 16 & 17 should be used for audio delay cards.

Once a destination address for a unit has been set the OK function will return to the unit menu to allow another address to be set if required.

◄ Logging

If a logging device is attached to the RollCall™ network, information about various parameters will be reported to the logging device assigned in the Remote Control Interface system. (See Section 1) The RCIF Menu System can be made available to such a device.

◄ Inp/Std_Change

When activated, a loss of input signal condition or change of input line standard will be available for the logging device.

◄ Reference_Loss
When activated, a loss of reference signal condition will be available for the logging device.

◄ Preset_Unit

Selecting this function presets various functions such that some sort of signal is produced at the output even though some settings may be inappropriate for the input signal. This is useful if many settings have been set in error such that no output signal is being produced.

◄ Software_Version

Selecting this item reveals a display showing the version of the software fitted in the module.
Select OK to return to the Setup Menu.

◄ Serial No

This displays the serial number of the unit. Select OK to return to the setup menu.

RollTrack Audio Delay Tracking

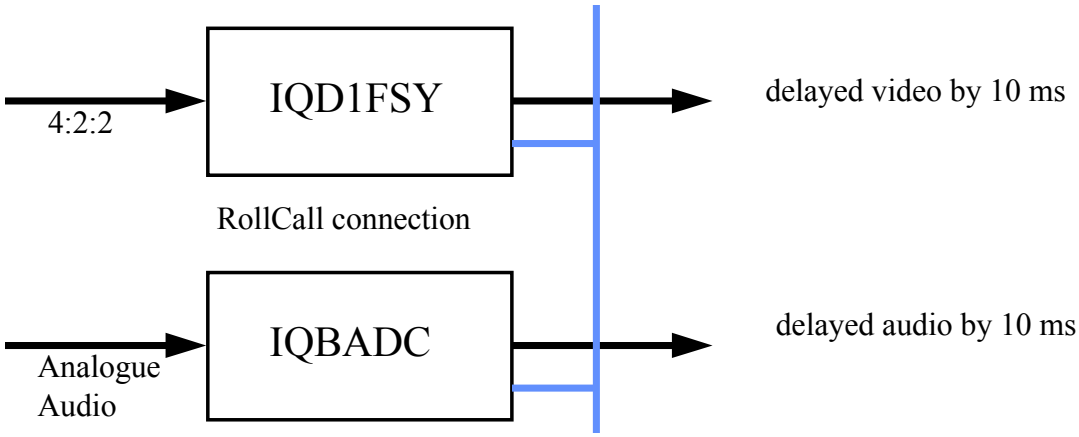
RollTrack is a feature of RollCall™ (Snell & Wilcox's proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

RollTrack Audio Delay Tracking enables Snell & Wilcox RollCall™ compatible audio delay products to track delay introduced by RollCall™ compatible video processing products.

The current products that implement RollTrack Audio Delay Tracking are:

Audio Delay Modules	Video Modules	Other Products	
IQBAAD	IQD1FSY	ALCHEMIST	MDD3000
IQBADC	IQDMSDS	CPP100	MDD550
IQBDAC	IQDAFS	CPP200	MDD560
IQBDAD	IQDMSDS	NRS500	MDD570
IQBSYN	IQDMSDP	HD5050	MDD2000
IQBADCD	IQDSYN		

The simplest configuration is a single video unit and a single audio delay in a RollCall™ system. The audio delay will have the same delay as through the video path. If the delay changes the audio delay will track.



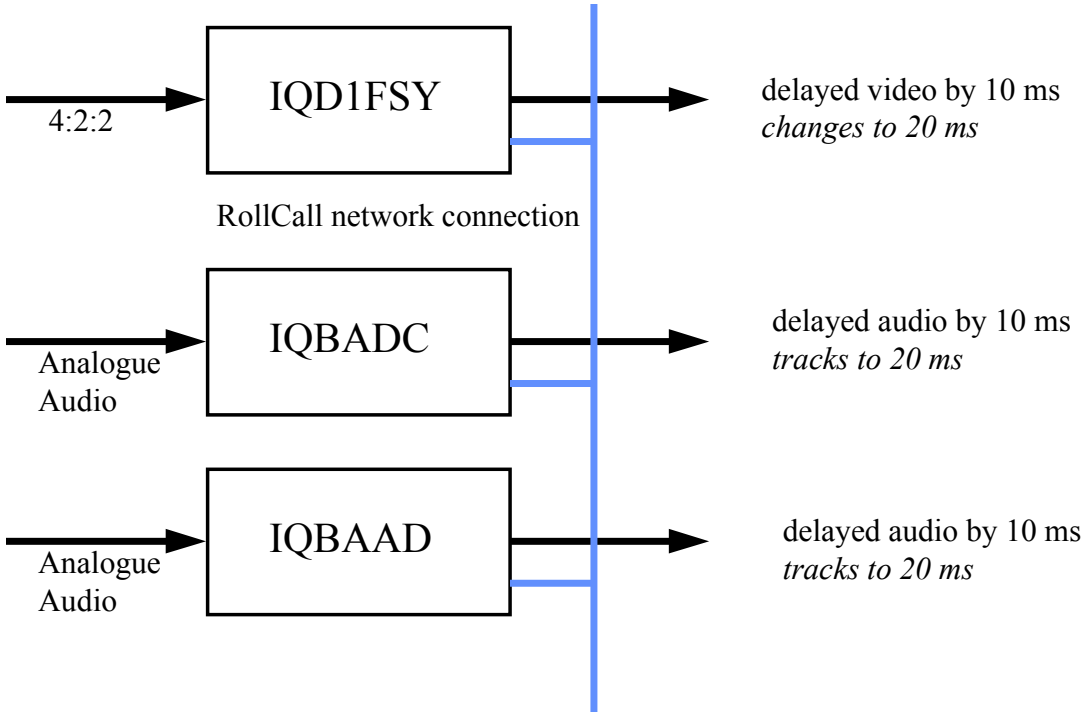
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later, allows for the units to be positioned anywhere in the RollCall™ domain.)

The maximum number of video units and audio delays in a RollCall™ system is set by the maximum limit of the number of modules in a RollCall™ network and is currently 3840 on a single network without bridges.

The unique identification of the destination unit (a decimal number) for various modules is as follows:

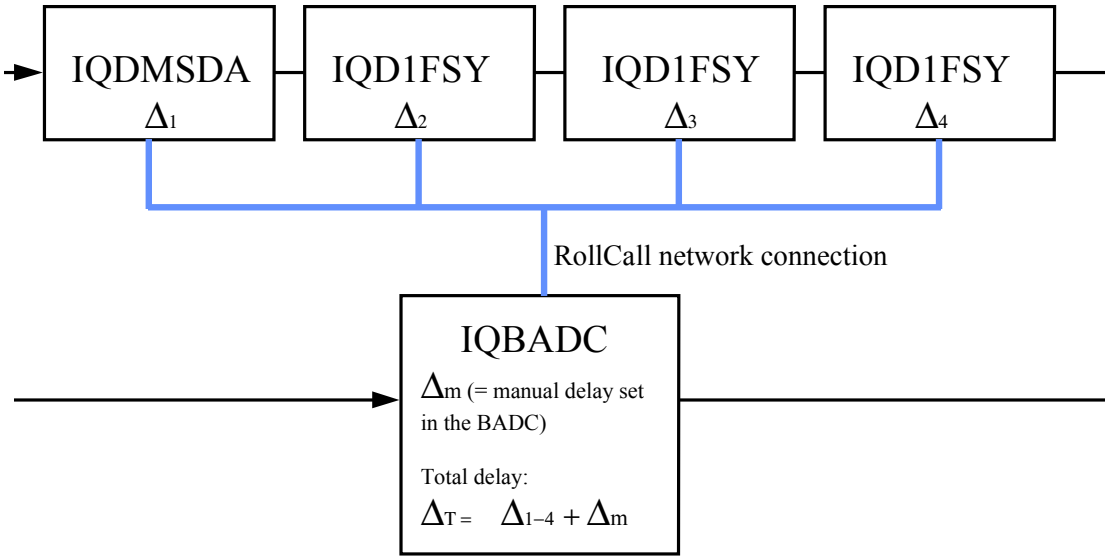
Module	ID
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

The next level of complexity is *a vertical delay cluster* where a video unit can have up to eight audio delays tracking - of the same or different types.



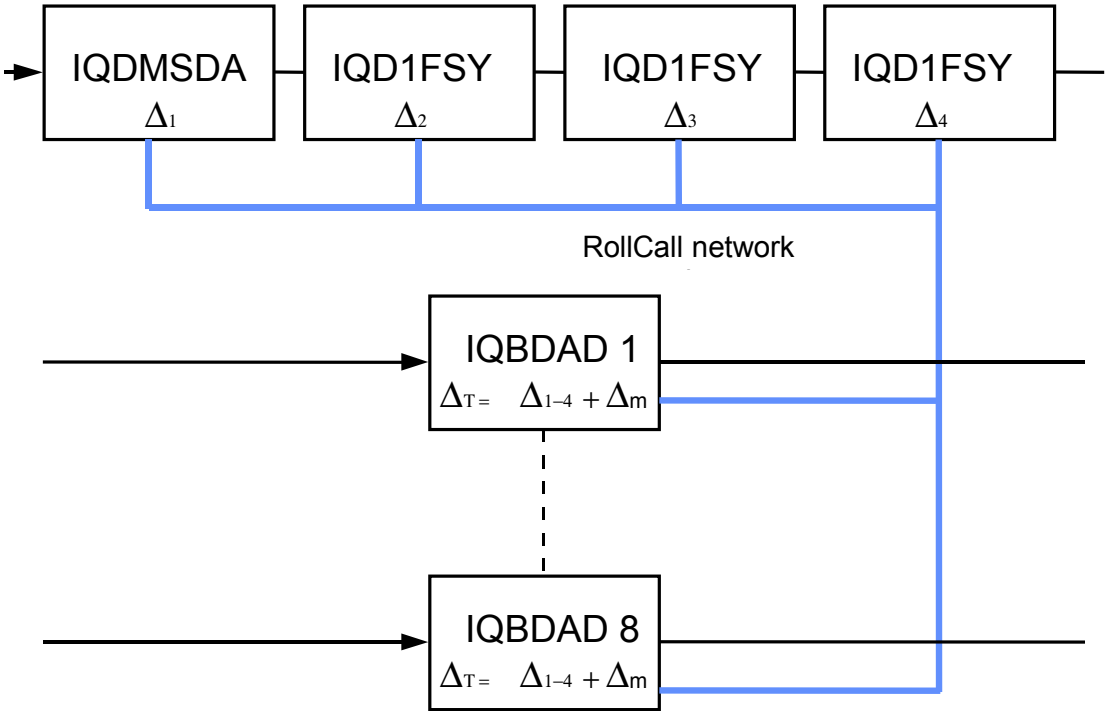
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

The next level of complexity is *a horizontal delay cluster* where an audio delay can track up to four video units.



The total delay time through the audio delay is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit. The manual delay can be set to compensate for any fixed propagation delay in the video path or may be set to zero.

The next level of complexity is a *matrix delay cluster* where each audio delay (up to eight) can track up to four video units. This configuration is in effect a four by eight matrix of video units and audio delay units. The total delay time through the audio delay units is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit.



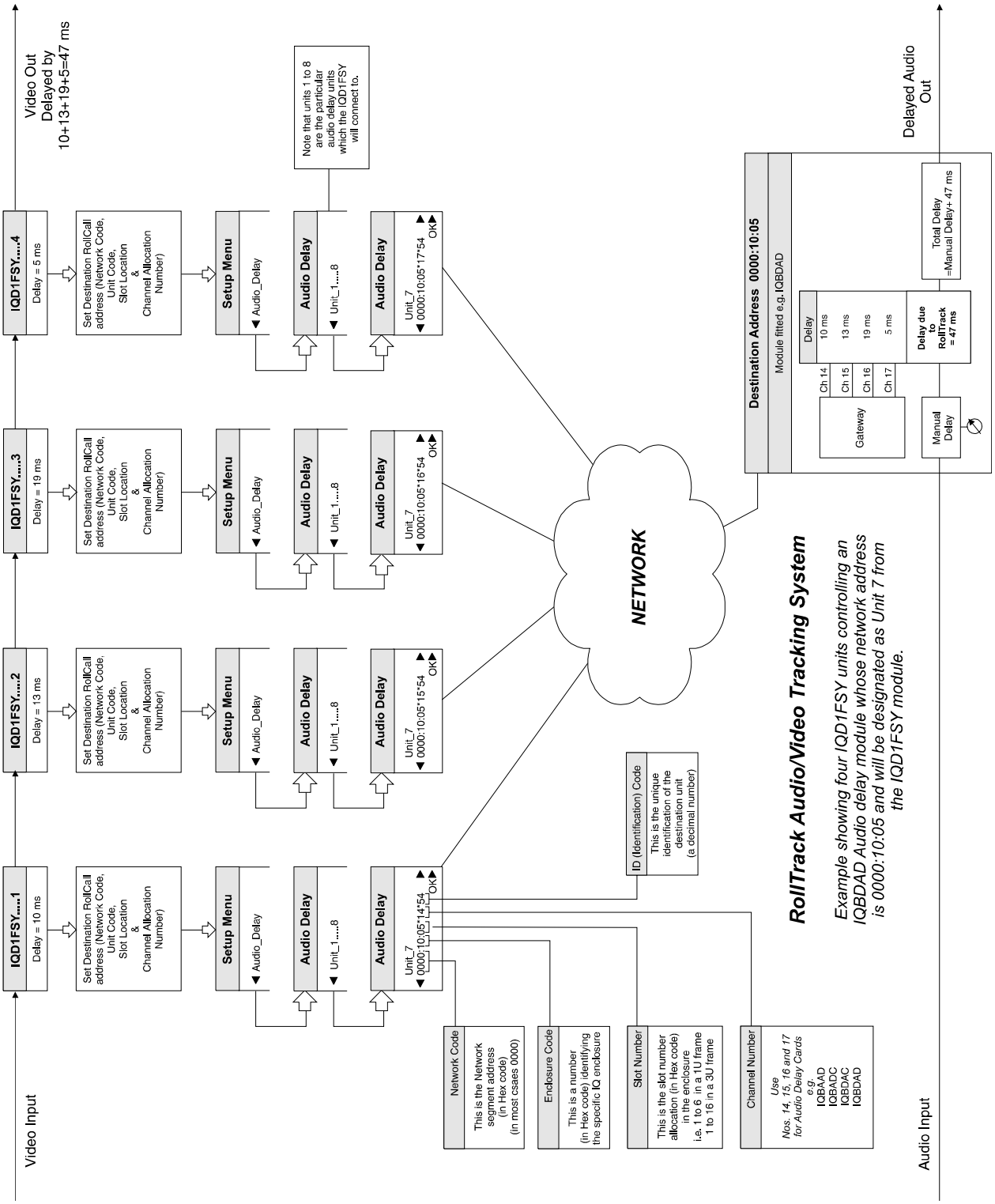
As any of the delay times change in the video path so will the audio delay time track this delay.
A virtual connection is made between from, say, an IQD1FSY to an IQBDAD by:

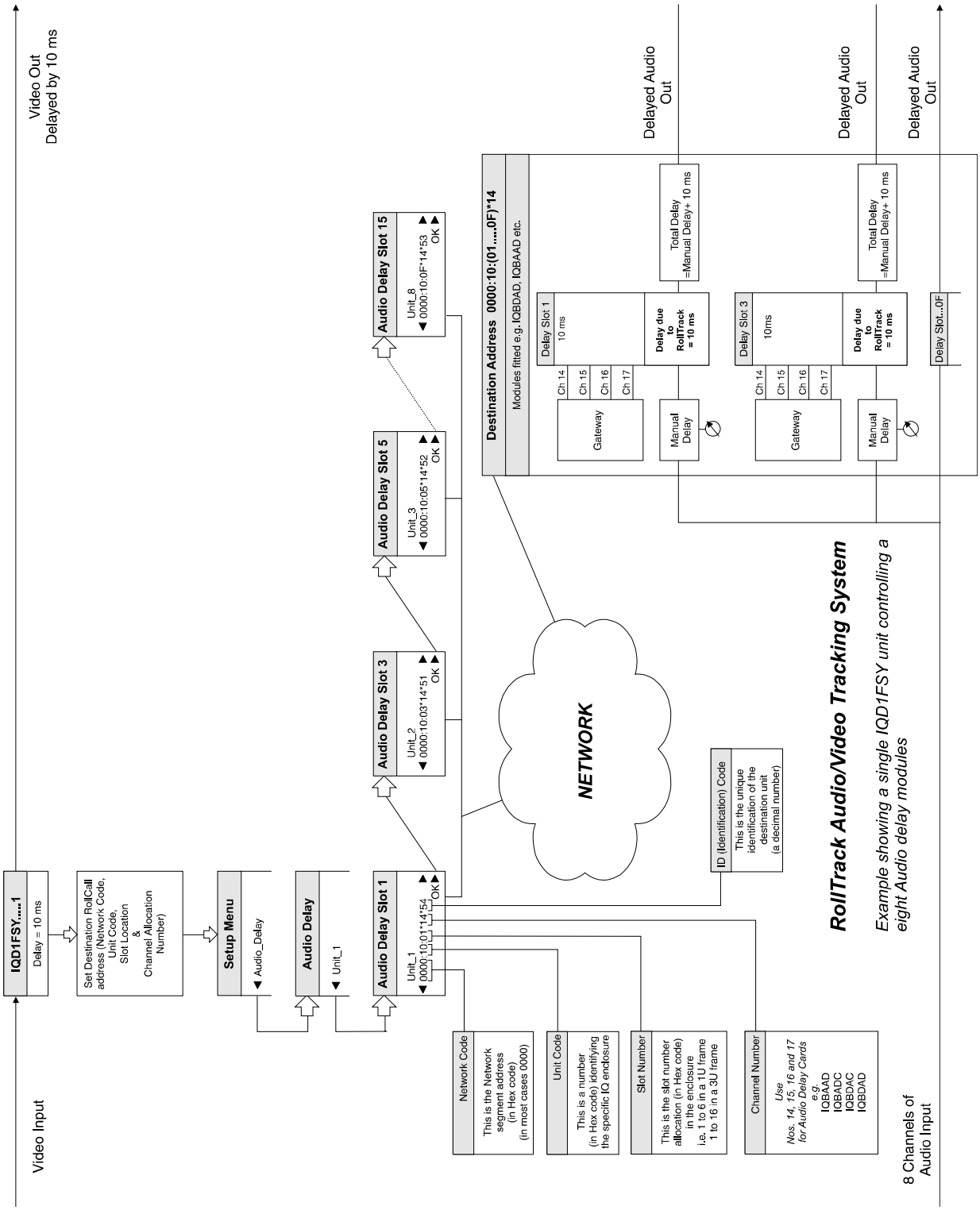
selecting the *Setup...* Menu of the IQD1FSY
then selecting the *Audio_Delay...* Menu
then choosing from *Unit_1* to *Unit_8*
then entering the unique network address of the IQBDAD in the form *nnnn:xx:yy*z*d*
where *nnnn* = network address and in most cases will be 0000(hex);
xx = IQ enclosure address (hex);
yy = slot address of the IQBDAD (hex)
z = the connection (or channel) number (decimal) - see table below.
d = the unique identification of the destination unit (decimal) The ID entered must match the receiving units own ID or else the command will be ignored. If the ID value is set to 00, the receiving unit does not perform an ID match and will always accept the incoming command
then selecting the *Delay...* Menu of the IQBDAD
then selecting *RollTrack*

Example of Network Addresses with Channel Numbers and ID Numbers

	D1FSY 1	**D1FSY 2**	**D1FSY 3**	**D1FSY 4**
Audio delay 1	0000:10:01*14*54	0000:10:01*15*54	0000:10:01*16*54	0000:10:01*17*54
Audio delay 2	0000:10:03*14*54	0000:10:03*15*54	0000:10:03*16*54	0000:10:03*17*54
Audio delay 3	0000:10:05*14*54	0000:10:05*15*54	0000:10:05*16*54	0000:10:05*17*54
Audio delay 4	0000:10:07*14*54	0000:10:07*15*54	0000:10:07*16*54	0000:10:07*17*54
Audio delay 5	0000:10:09*14*54	0000:10:09*15*54	0000:10:09*16*54	0000:10:09*17*54
Audio delay 6	0000:10:0B*14*54	0000:10:0B*15*54	0000:10:0B*16*54	0000:10:0B*17*54
Audio delay 7	0000:10:0D*14*54	0000:10:0D*15*54	0000:10:0D*16*54	0000:10:0D*17*54
Audio delay 8	0000:10:0F*14*54	0000:10:0F*15*54	0000:10:0F*16*54	0000:10:0F*17*54

The most complex system would be an array of matrix delay clusters




Video Out
Delayed by 10 ms
IQD1FSY.....1
Delay = 10 ms
Set Destination RollCall address (Network Code, Unit Code, Slot Location & Channel Allocation Number)
Setup Menu
Audio_Delay
Audio Delay
UnitL1
Audio Delay Slot 1
Unit_1
0000:10:01*14*54
OK
Audio Delay Slot 3
Unit_2
0000:10:03*14*51
OK
Audio Delay Slot 5
Unit_3
0000:10:05*14*52
OK
Audio Delay Slot 15
Unit_8
0000:10:0F*14*53
OK
NETWORK
Destination Address 0000:10:(01.....0F)*14
Modules fitted e.g. IQBDAD, IQBAAD etc.
Delay Slot 1
10 ms
Ch 14
Ch 15
Ch 16
Ch 17
Gateway
Delay due to RollTrack = 10 ms
Manual Delay
Total Delay =Manual Delay+ 10 ms
Delayed Audio Out
Delay Slot 3
10ms
Delay Slot..0F
ID (Identification) Code
This is the unique identification of the destination unit (a decimal number)
Network Code
This is the Network segment address (in Hex code) (in most cases 0000)
Unit Code
This is a number (in Hex code) identifying the specific IQ enclosure
Slot Number
This is the slot number allocation (in Hex code) in the enclosure i.e. 1 to 6 in a 1U frame 1 to 16 in a 3U frame
Channel Number
Use Nos. 14, 15, 16 and 17 for Audio Delay Cards e.g. IQBAAD IQBADC IQBDAC IQBDAD
RollTrack Audio/Video Tracking System
Example showing a single IQD1FSY unit controlling a eight Audio delay modules
Video Input
8 Channels of Audio Input

Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
190198	1	1		First Issue
060298	1	2	SECAM notes added	New manual Issued
030498	1	3	Changes/corrections ref MG	New manual Issued
260598	1	4	SECAM Notes removed	New manual Issued
110403	1	5	Power consumption added to techspec	New manual issued