

IQDSYN D1 Frame Synchronizer with Ancillary Space Passing Capability



Module Description

The IQDSYN is a full frame synchronizer for SDI video, capable of preserving all ancillary data. With a minimum delay of < 2us the IQDSYN is also useful in typical line synchronizer applications where it is necessary to delay a synchronous input up to a few lines. The synchronizer will operate in 2 modes-

First is as a frame synchronizer, where the output video is locked to a reference input. In this mode the delay through the unit will change according to the scan positions of the input video and the reference input and will consequently drop/repeat whole frames when the scan positions overtake. An ancillary data discontinuity will occur should the synchronizer drop or repeat a frame. To avoid an embedded audio disturbance in this condition the IQDAFS module should be used.

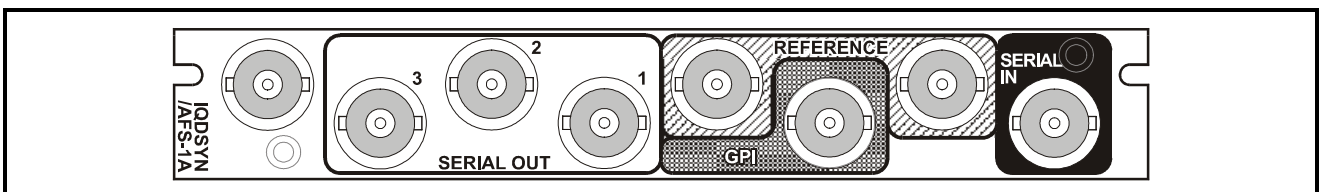
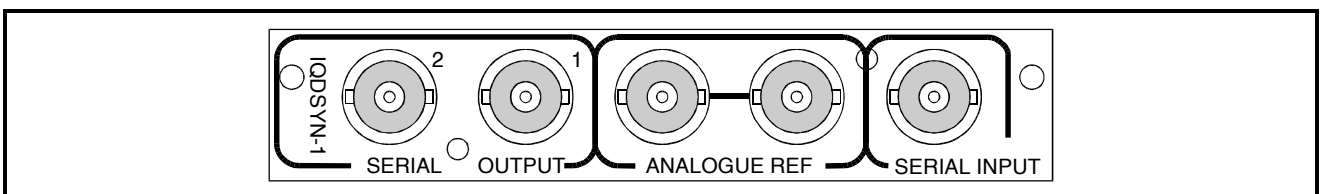
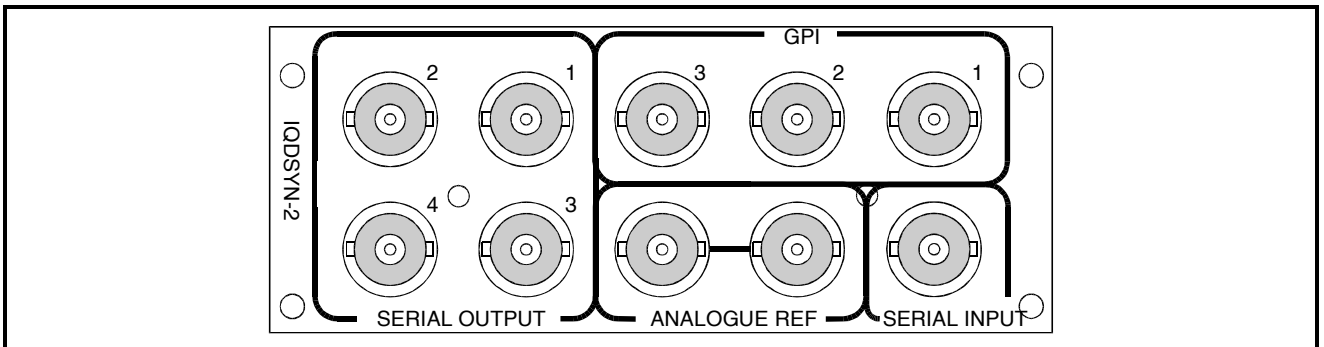
In the second operational mode the unit behaves as a constant, programmable delay of between 1 line and 1 frame.

The IQDSYN is tolerant to router switching in accordance with SMPTE RP168, but additionally with 625 line inputs it allows the seamless switching anywhere in the vertical interval of sources up to 23 lines apart.

The unit offers luminance gain and black and chrominance gain adjustment.

Full RollCall remote control as well as limited card edge control is available.

REAR PANEL VIEWS



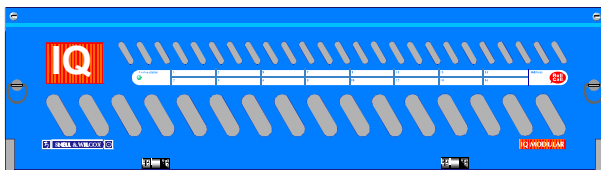
Versions of the module cards available are:

- IQDSYN-1 SDI Synchronizer with ancillary space passing 2 o/ps with EDH Single width module
- IQDSYN-1A SDI Synchronizer with ancillary space passing 3 o/ps with EDH & GPI Single width module
- IQDSYN-2 SDI Synchronizer with ancillary space passing 4 o/ps with EDH & GPI Double width module

Note that there are two styles of rear panels available. They are not interchangeable between the two styles of enclosures. However, the cards may be fitted into any style of enclosure.

‘A’ Style Enclosure

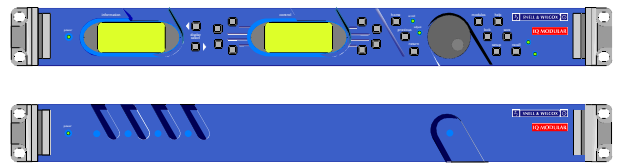
Rear panels **with** the suffix A may only be fitted into the ‘A’ style enclosure shown below.



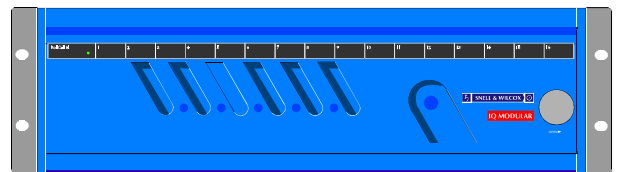
(Enclosure order codes IQH3A-E-O, IQH3A-E-P, IQH3A-N-O, IQH3A-N-P)

‘O’ Style Enclosures

Rear panels **without** the suffix A may only be fitted into the ‘O’ style enclosures shown below.



(Enclosure order codes IQH1S-RC-O, IQH1S-RC-AP, IQH1U-RC-O, IQH1U-RC-AP, Kudos Plus Products)

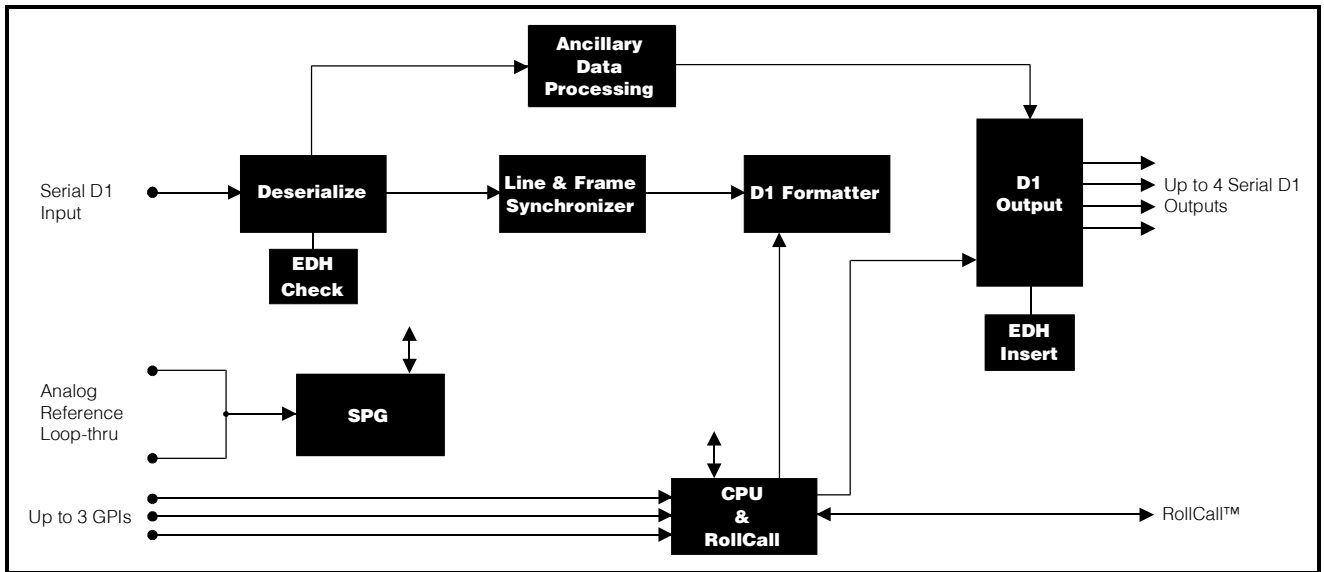


(Enclosure order codes IQH3N-O, IQH3N-P)



(Enclosure order codes IQH3U-RC-O, IQH3U-RC-P)

BLOCK DIAGRAM



Features

- SDI frame synchronizer with 10-bit data path
- Minimum delay of $2\mu\text{s}$ allows use as a Line Synchronizer
- Ancillary and vertical data passing
- Router switching tolerant (SMPTE RP168)
- Fixed delay mode (lock to input)
- Luminance and chrominance gain controls
- Luminance black level control
- EDH checking and insertion (SMPTE RP165)
- Pattern generation
- Un-interruptable valid output
- Controlled and crash freeze
- Automatic 625 and 525 operation
- Passive relay input bypass (without synchronization) option
- RollCall remote control plus 3 Configurable GPI BNC's (-2 only)

TECHNICAL PROFILE

Features

Signal Inputs

Serial 1 x SDI
 Standards SMPTE 259M-C-1997, SMPTE 272M-1994
 External Reference Composite Video or Black Burst (loop-through)
 GPI Up to 3 Closing Contact style inputs

Signal Outputs

Serial Up to 4 SDI
 Standards SMPTE 259M-C-1997, SMPTE 272M-1994

Card Edge Controls (also available via RollCall)

Mode Select..... Synchronize / Delay
 V Genlock offset ± 100 Lines
 H Genlock offset ± 1 Line in 37 ns steps
 V Delay (Delay mode)..... < 2 µs to 1 Frame + 2 µs
 H Delay (Delay mode)..... 0 to 64 µs in 37 ns steps
 EDH insertion..... On / Off
 Pattern On / Off

Specifications

Serial Input Return Loss..... Better than 15 dB to 270 MHz
 Maximum Input Cable length
 > 200 m (up to 100 m, -RR version)
 (PSF1/2 or equiv. cable)
 Serial Output Level 800 mV ±10%
 Output Overshoot..... < 70 mV
 Output Return Loss..... Better than -15 dB to 270 MHz
 Output Jitter < 0.2 UI
 Reference Return Loss Better than -35 dB to 5.8 MHz
 Reference Input Level..... 1 V p-p ± 3 dB

Pattern Select Black; EBU Bars; 100% Bars; Multiburst; Valid Ramp; Pulse and Bar
 Auto Freeze..... Freeze on Input Loss (Default is Pattern Output)
 Vertical Data Pass / Strip (Individual selection via RollCall only)
 HANC Data Pass / Strip
 Preset Unit Returns all settings to factory defaults

Functions Available via RollCall™ Only

Vertical Data Individual Line Selection of Pass/Blank or Blank/Pass all lines
 Freeze On/Off
 EDH logging
 GPI configuration Select the function of each GPI input from a predefined list of options (-2 version only)
 Genlock Default Mode (for different input and reference standards)
 A – Default output locked to reference
 B – Minimum delay mode (input standard))

RollTrack™

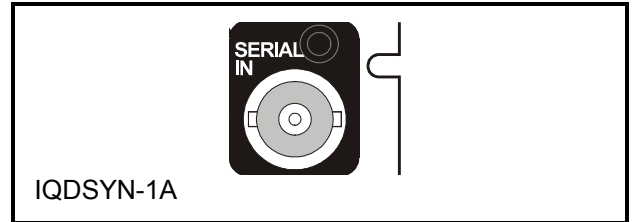
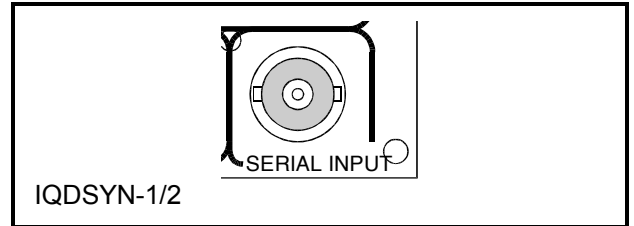
Minimum Delay (Synchronize Mode)
 <2 µs
 Synchronize Hysteresis 200 ns
 Minimum Delay (Delay Mode)
 < 2 µs
 Maximum Delay (Delay Mode)
 1 Fame + 2 µs

Power Consumption

Module Power Consumption
 6.7 W max

SERIAL INPUT

The serial digital input to the unit is made via this BNC connector that terminates in 75 Ohms.

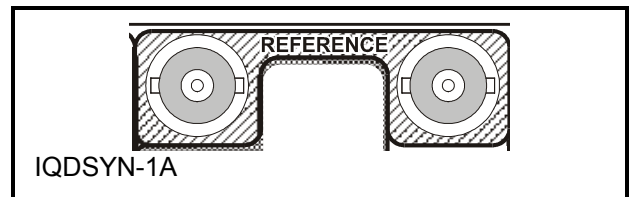
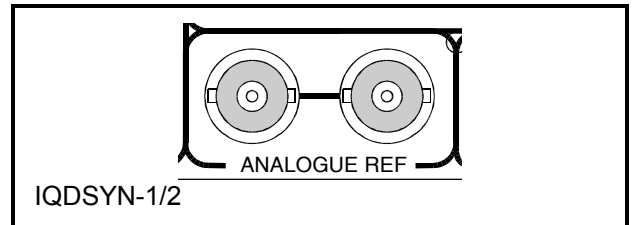


ANALOG REFERENCE INPUT

The external sync input to the unit is made via the passive loop-through BNC connectors for 75 Ohms.

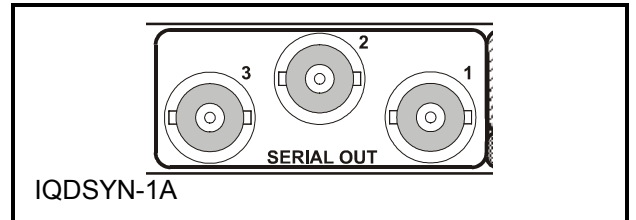
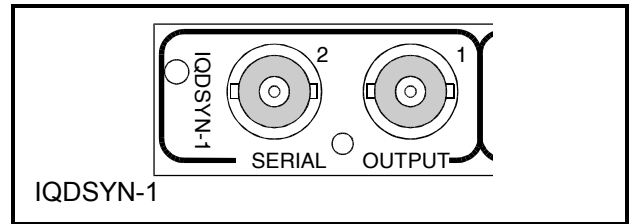
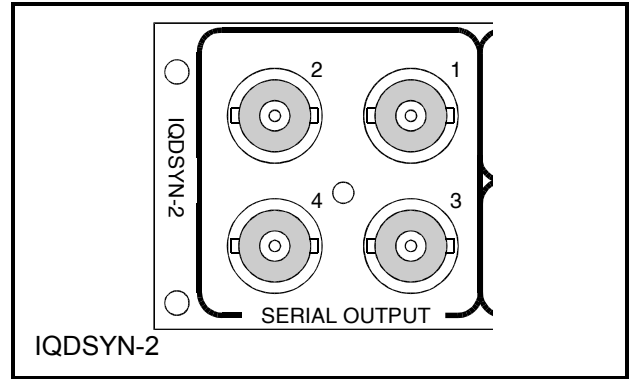
The external sync signal must be the same line standard as the D1 input.

Note that if the loop-through facility is not used the unused BNC socket must be fitted with a 75 Ohm terminator.



SERIAL OUTPUTS

These are the two (-1), three (-1A) or four (-2) isolated Serial Digital outputs of the unit via BNC connectors for 75 Ohms.

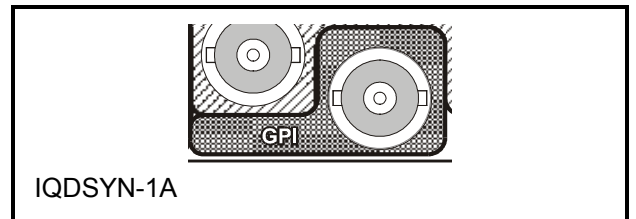
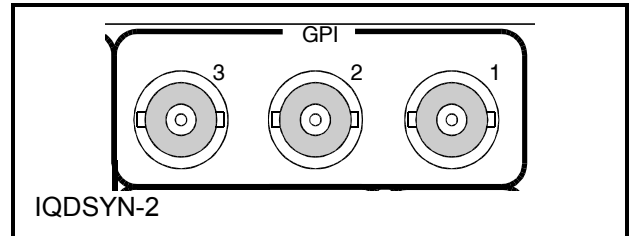


GPI (-1A & -2 versions only)

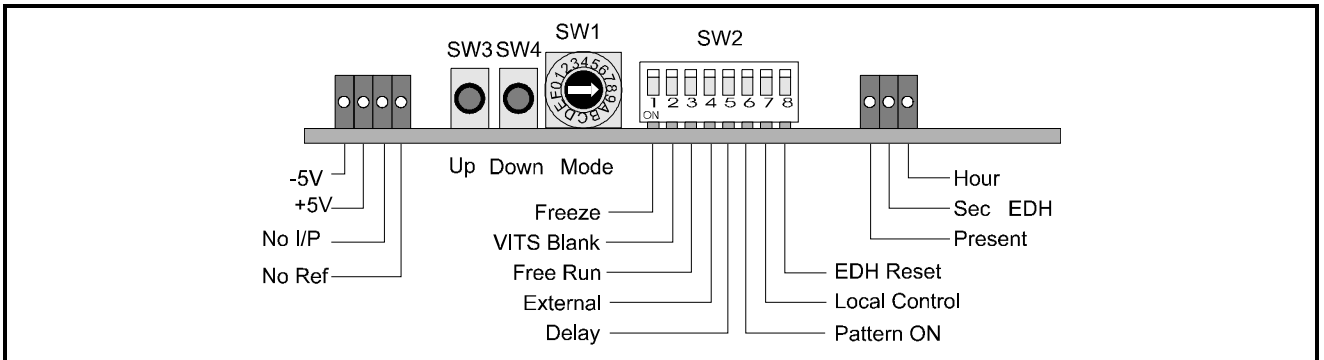
These connectors are used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be programmed via RollCall.

The GPI inputs have two user selectable modes of operation:

1. Latched: when the contact is closed the function is activated; when the contact is open, the function is de-activated.
2. Edge-triggered: with each open-to-closed trigger the GPI function is toggled between activated and de-activated.



CARD EDGE CONTROLS



Note that the unit will respond to both local and remote control, one system overriding the settings of the other. For cards using the RollCall™ remote control system, activating these switches will override the remote control settings. The RollCall™ control panel will then follow these settings.

Note that in Main-frames where RollCall™ is not available SW4/7, should be set to ON (DOWN). This ensures that when the unit is powered-up the factory default settings of parameters not available as card edge adjustments, are loaded. With SW4/7 OFF (UP) the card will power-up with the last settings sent by the remote control panel.

LED INDICATORS

+5V and -5V

When illuminated these LED's indicate that the +5 V and -5 V supplies are present.

No I/P

The **No I/P** LED will be continuously illuminated when the unit is not receiving an input signal.

Note that in the **Genlock** mode this LED will flash when the input signal is of a different standard to that of the reference input. Under these conditions the output signal standard will be the same as the reference signal; the input signal will be ignored.

No Ref

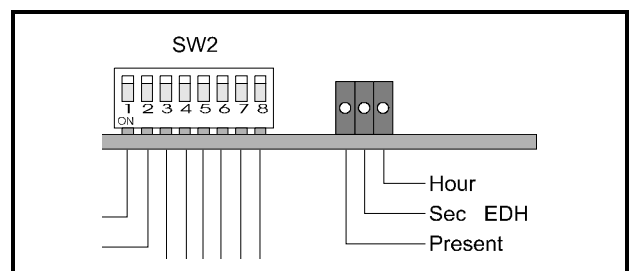
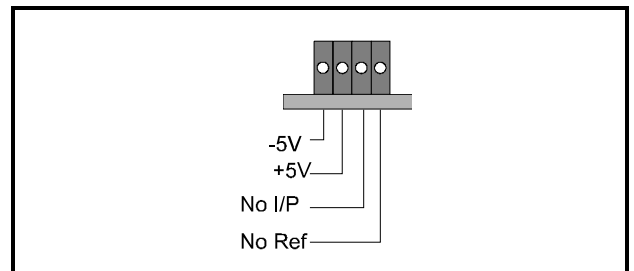
When the **No Ref** LED is illuminated this indicates that the unit is not receiving a reference input signal.

Note that when both the **No I/P** and **No Ref** LED's are flashing, this will indicate that an internal error has occurred.

EDH Reporting

The **Present** LED will be illuminated if EDH data is present on the incoming signal. The **Hour** LED indicates that an error has occurred in the last hour and the **Sec** LED indicates that an error has occurred in the last second.

Note that SW4/8 resets these indicators.



SWITCHES

Two push buttons, a Hex switch and a 8 way DIL switch allow various functions and modes to be set.

The DIL switch SW2 selects a particular function and the Hex switch SW1 selects a mode or variable parameter.

The push buttons SW3, SW4 allow the value of the selected function/parameter to be adjusted.

The Mode select switch may select a mode or a parameter that may be adjusted.

Note that to select the preset value both buttons should be pressed together.

These switches allow the module to be operated when an active front panel is not available.

More detailed information about these functions will be found under *MENU DETAILS*

FUNCTION AND MODE SELECTIONS

DIL SWITCH FUNCTIONS SW2

By setting these switches various modes of operation may be selected.
(Down is ON and Up is OFF)

Position 1
Setting this to ON provides a **freeze** frame picture.

Position 2
Setting to ON allows the **VITS** signal to pass through the unit; in the OFF position VITS signals are blanked out.

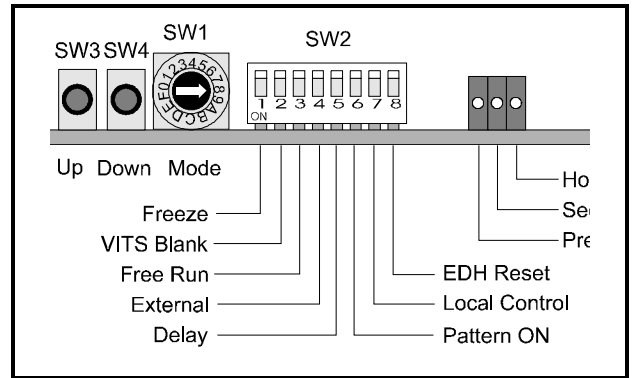
Note that in the 525 standard VITS lines are from line 11 and 274 and in the 625 standard from line 7 and 320 inclusive.

Position 3
Setting to ON enables the **Freerun** mode.

Position 4
Setting to ON enables the **External** mode.

Position 5
Setting to ON enables the **Delay** mode.

Position 6
When set to ON (Down) this allows the unit to produce a **test pattern** (selected using SW3) signal as an output.



Position 7
When set to ON (Down) this allows the unit to operate under **local control**.

Note that in Main-frames where RollCall™ is not available this switch should be set to the ON position. This ensures that when the unit is powered-up the factory default settings of parameters not available as card edge adjustments, are loaded. When set to the UP position the card will power-up with the last settings sent by the remote control panel.

Position 8
Setting this to the ON position resets the **EDH** log indicators.

SW3

This HEX switch selects a parameter that may be adjusted with the push-buttons SW1 and SW2.

Note that SW1 increases a setting and SW2 decreases a setting. Continual pressure on the button will cause the setting to change continuously, the rate of change increasing with time. Pressing both together sets functions to their default values.

Position 0

In the Synchronise mode (set by SW-4) this position allows the **horizontal phasing** between the external sync input and the output sync to be adjusted using SW3 and SW4. The range covers the whole line period in 37 ns steps.

Default is to 0 ns

Note that picture disturbance may occur while this setting is adjusted.

In the Delay mode (set by SW-5) this position allows the amount of input-to-output **horizontal delay** to be adjusted by up to ±1 line in steps of 37 ns using SW3 and SW4.

Default is to minimum horizontal delay.

Position 1

In the Synchronise mode (set by SW2-4) this position allows the **vertical phasing** between the external sync input and the output sync to be adjusted ±100 lines in steps of 1 line using SW3 and SW4.

Default is to 0 lines

Note that picture disturbance may occur while this setting is adjusted.

In the Delay mode (set by SW2-5) this position allows the amount of **input-to-output delay** to be adjusted by up to 1 frame in steps of 1 line using SW3 and SW4.

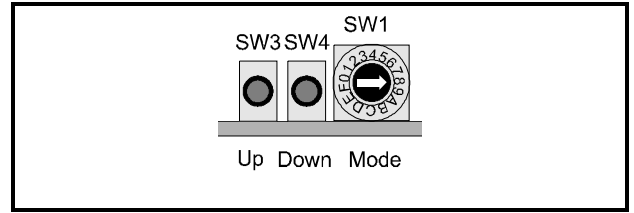
Minimum delay	2 µs
Maximum delay	1 frame + 2 µs

Default is to 1 line

Position 2 Adjusts the Luminance gain by ±6 dB in 0.1 dB steps.

Position 3 Adjusts the Chrominance gain by ±6 dB in 0.1 dB steps.

Position 4 Adjusts the Black Level by ±100 mV in 0.8 mV steps.



Position 5 Not Used

Position 6 Not Used

Position 7 Not Used

Position 8

This allows a **test pattern** to be selected (in this order) from the following list:

- Black
- EBU Bars
- Valid Ramp
- 100% Bars
- EBU Bars
- Multiburst
- Pulse and Bar

Default is to black.

Position 9, Position A, Position B and Position C are not used.

Position D

When the unit suffers a **loss of input** signal the output signal will revert to a pattern (selected only from the menu) or a frame freeze. Default pattern is to Black. In this position pressing SW3 sets the unit to the pattern and pressing SW4 sets the unit to freeze.

Note that picture corruption is possible in the freeze frame mode.

Default is to freeze.

Position E

This position allows **HANC data** to be passed through (SW4) or blanked (SW3)

Default is to pass

Position F

In this position pressing SW3 and SW4 together sets all parameters to the **default/preset** conditions.

RollCall PC Control Panel Screens for the IQDSYN

Genlock

This screen is used to control the genlocking functions of the synchronizer.

Freeze

This toggle On/Off function produces a freeze-frame picture.

Genlock Mode

This allows the method that the card may be locked (or not) to an external reference signal.

Note that the H-Delay and V-Delay adjustments will only be available when the Delay selection has been made in the Genlock Mode menu.

Free Run

In this mode the output signal will be locked to the internal clock generator.

Ext Reference

This selection locks the output signal to the signal connected to the Analog Ref input connector.

The standard of the reference signal determines the standard of the output signal.

In the absence of a reference signal the standard of the output signal will be the same as the input signal.

If the reference signal and input signal are of different standards the output will display a pattern selected by the default pattern menu in the standard of the reference signal.

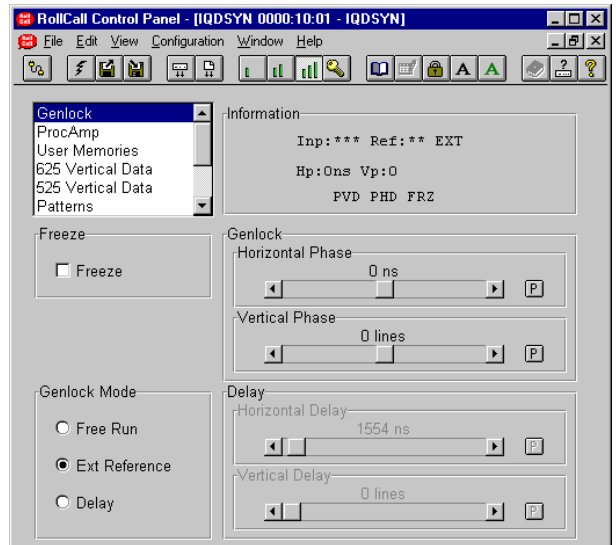
Note that to change the horizontal and vertical phasing between the external sync signal and the output signal select Lock Phase in the Main menu.

Note that for this and other screens the following applies to the scroll bars:

The **P** symbol represents the Preset function and will return the function to the default setting.

The **◀** and **▶** symbols at the ends of the scroll bar allow the value to be adjusted in discrete steps.

The numerical value will be shown above the scroll bars and selecting Preset **P** will return the setting to the calibrated value for that item.



Genlock (continued)**Horizontal Phase**

This item allows the horizontal timing of the output signal relative to the reference sync signal to be adjusted using the scrollbar by ± 1 Line in 37 ns steps.

Note that picture disturbance may occur while this setting is adjusted.

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

Vertical Phase

This item allows the vertical timing of the output signal relative to the reference sync signal to be adjusted, in TV lines. The scrollbar will adjust this value. Range is ± 100 lines in 1 line steps.

Note that picture disturbance may occur while this setting is adjusted.

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

Delay

When this mode is selected the output signal will appear after the input signal with a time delay. When not selected the module will operate in the synchronize mode.

Note that to change the horizontal and vertical delay between the input signal and the output signal select Lock Phase in the Main menu. This function is only available when the delay mode is selected.

Horizontal Delay

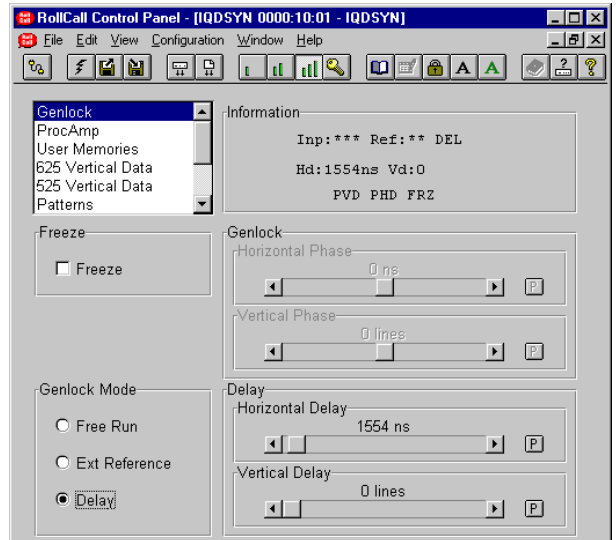
This item allows the horizontal timing of the output signal relative to the input signal to be adjusted by up to 1 line in 37 ns steps. The scrollbar will adjust this value.

Selecting Preset returns the setting to the minimum horizontal delay.

◀ Vertical Delay

This item allows the vertical timing of the output signal relative to the input signal to be adjusted, in TV lines. The scrollbar will adjust this value. Range is from 1 line to 624 or 525 lines in 1 line steps.

Selecting Preset returns the setting to the minimum vertical delay.



ProcAmp

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

Black_Level

This allows the Y pedestal or black level to be adjusted.

By adjusting the scrollbar the pedestal may be adjusted by ± 100 mV in steps of 0.8 mV.

Selecting Preset returns the setting to the calibrated value of 0.0 mV.

Luma Gain

This allows the gain of the luminance signal to be adjusted.

By adjusting the scrollbar the gain may be adjusted by ± 6 dB in steps of 0.1 dB.

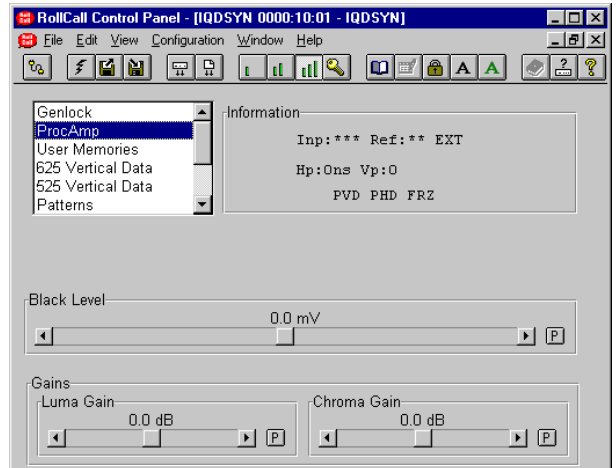
Selecting Preset returns the setting to the calibrated value of 0.0 dB.

◀ Chroma Gain

This allows the gain of the chrominance signal to be adjusted.

By adjusting the scrollbar the gain may be adjusted by ± 6 dB in steps of 0.1 dB.

Selecting Preset returns the setting to the calibrated value of 0.0 dB.



User Memories

All settings of the unit may be stored in any of 8 non-volatile memory locations. These locations may be loaded, saved, given a new name or cleared to the preset names.

Load User Memory

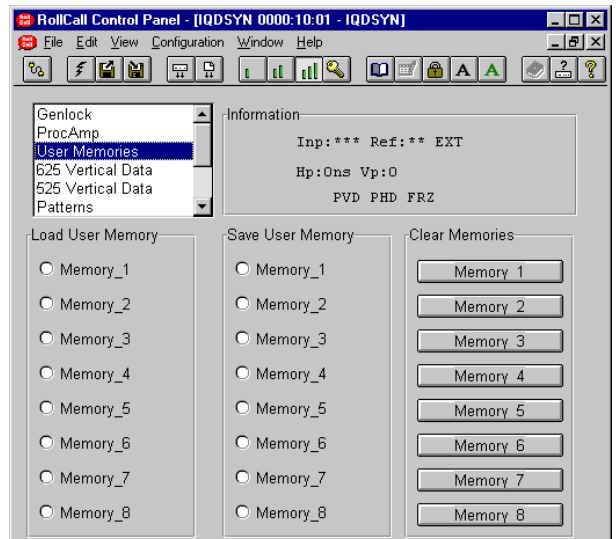
When a particular memory is selected, settings will be changed to the values contained in that memory location.

Save User Memory

When a particular memory is selected, current settings will be saved in that memory location.

Clear Memories

When a particular memory is selected the settings will be cleared to the default values.



625/525 Vertical Data

This item allows the Vertical Interval data (all or specific lines) contained in the input signal to be blanked or passed through the module.

Note that in the 625 standard VITS lines are from line 7 to 22 and from 320 to 335 inclusive.

Blank All

This function will blank (remove) all data lines.

Pass All

This function will allow all data lines to pass through the unit.

625 Vertical Data

This allows the selected lines to be blanked from the 625 output signal.

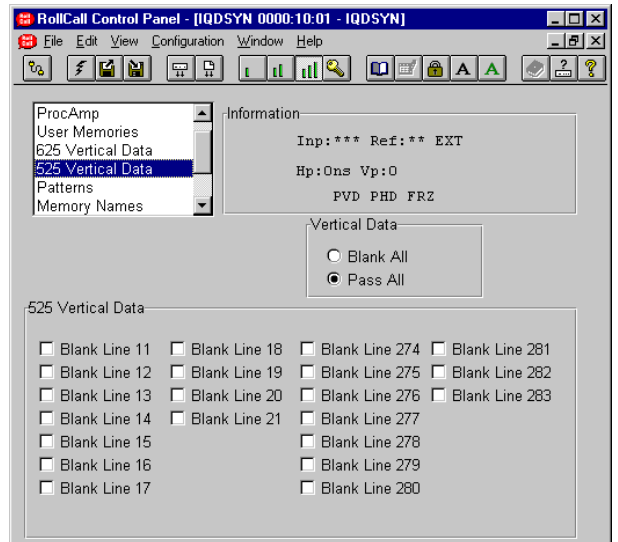
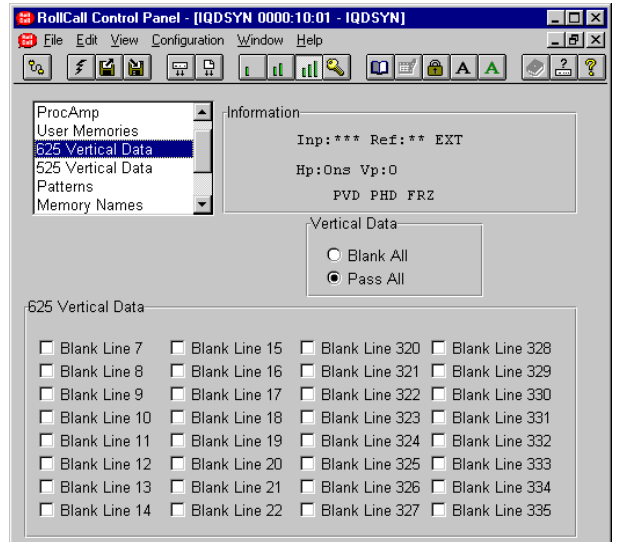
VITS lines are from line 7 to 22 and from 320 to 335 inclusive.

525 Vertical Data

Note that in the 525 standard VITS lines are from line 11 to 21, and from 274 to 283 inclusive.

This allows the selected lines to be blanked from the 525 output signal.

VITS lines are from line 11 to 21, and from 274 to 283 inclusive.



Patterns

This function will allow various patterns to be used as the output signal.

Pattern

A pattern may be selected using the scroll bar. This will become the output signal if the **Pattern On** function is enabled.

Patterns available are:

- Black
- Valid Ramp
- 100% Bars
- EBU Bars
- Multiburst
- Pulse and Bar

Preset is to Black.

Default Pattern

This item allows the pattern to be selected in the event of a loss of input or a conflict of input/reference standard.

Patterns available are:

- Black
- Valid Ramp
- 100% Bars
- EBU Bars
- Multiburst
- Pulse and Bar

Preset is to Black.

Default Standard

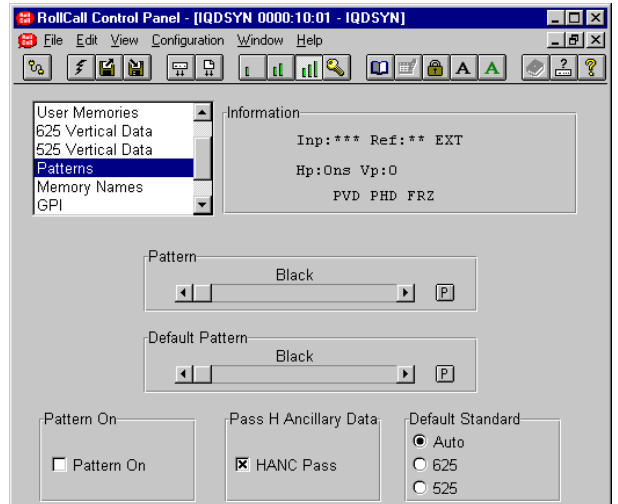
In the event of a loss of input *and* reference the output standard may be set to become:

- Auto The output will be in the last known standard
- 625 The output will be in the 625 standard
- 525 The output will be in the 525 standard

Pass H Ancillary Data


HANC Pass


When this function is selected the unit will pass all ancillary data in the HANC region.



Memory Names

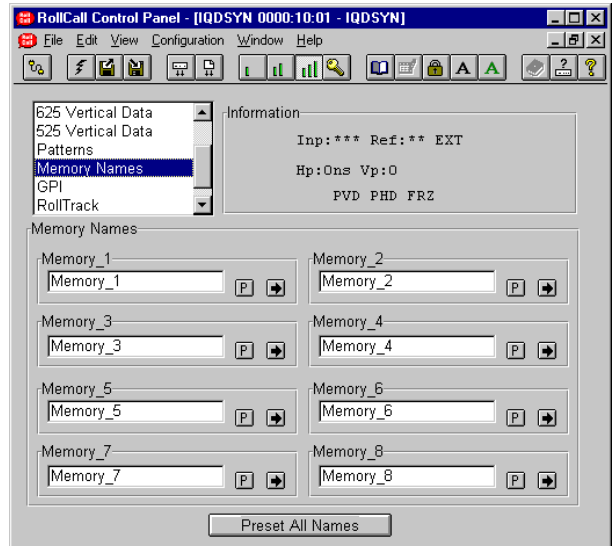
Each of the 8 memory locations may be given a specific name.

To change the memory name, type the new name in the text area and then select  (return).

Selecting Preset  will return the text to the default name.

Preset All Names

This function will set all names to their preset (default) values.



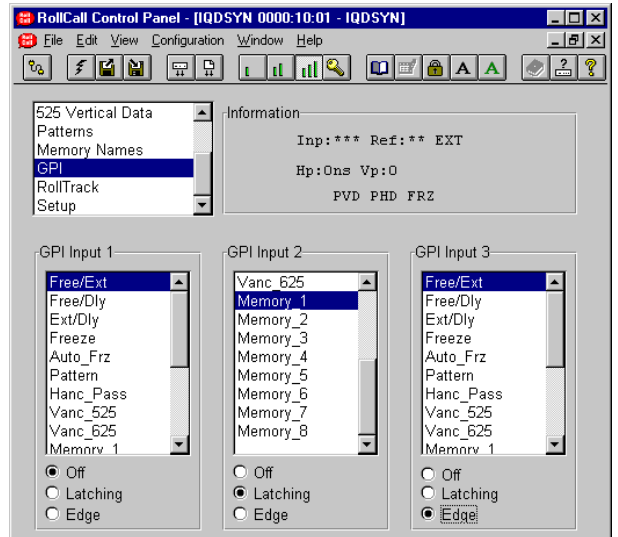
GPI

GPI Input 1, 2, 3

The three GPI connectors are used for accepting GPI information (from mechanical switch contacts, relay contacts etc.)

The action resulting from the selected GPI input being activated may be programmed from this list:

Setting	Action
Free/Ext	Lockmode to Free Run or External Reference
Free/Dly	Lockmode to Free Run or Delay Mode
Ext/Delay	Lockmode to External Reference or Delay Mode
Freeze	Freezes picture
Auto_Frz	Produces a Freeze Frame
Pattern	Output to Pattern
Hanc_Pass	HANC Pass or Blank
VANC 525	Blanks 525 VANC
VANC 625	Blanks 625 VANC
Memory_1 to Memory_8	Recalls settings from the specified memory location



The GPI input has 3 user selectable modes of operation:

Off

This will turn the GPI function OFF

Latching

When the contact is closed the function is activated; when the contact is open, the function is de-activated.

Edge

(Edge-triggered) With each open-to-closed trigger the GPI function is toggled between activated and de-activated.

RollTrack

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:

Up to 8 units (mainframes enclosures etc.) may be selected as a destination.

The code may be entered into the text box.

For more detailed information see the RollTrack section, page 16, of this manual.

The full network address has four sets of numbers.

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

The second set (00) is the number identifying the (enclosure/mainframe) unit

The third set (00) is the slot number in the unit


The fourth set (00) separated by an * is the channel number.

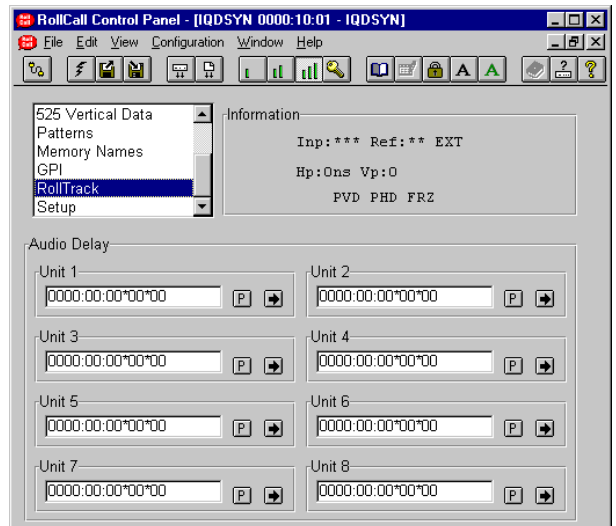
Note that only channel numbers 14, 15, 16 & 17 should be used for audio delay cards.

The fifth set is the ID of the destination unit

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.

To accept the address select  (return).

Selecting Preset  will return the text to the default address.



Setup

Preset Unit

Selecting this item sets all adjustment functions that include a preset facility, to their preset values.

Restart Unit

This function allows the unit to reboot and all power-up settings to be enabled. This is an easier method than switching the mains power off and on.

Logging

If a logging device is attached to the RollCall™ network, information about various parameters can be made available to such a device.

Three parameters may be made available for logging.

Input Change

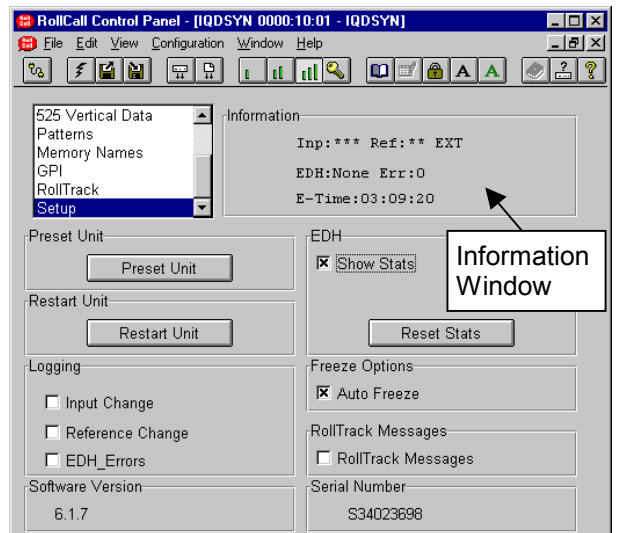
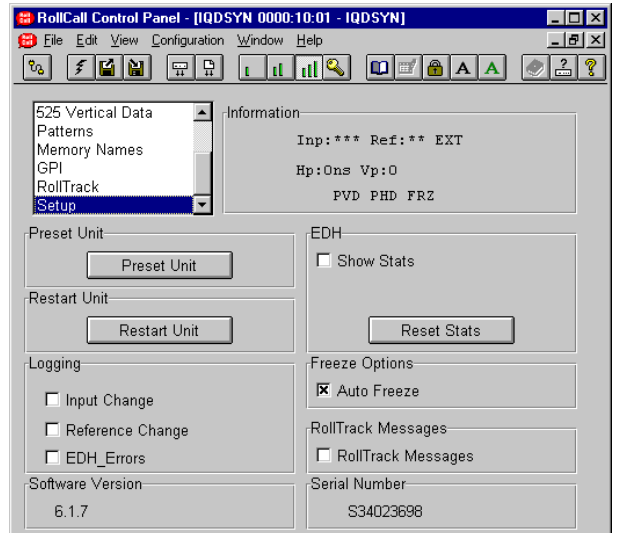
When activated, a change of input signal condition will be available for the logging device.

Ref Change

When activated, a change of External reference signal condition will be available for the logging device.

EDH Errors

When activated, EDH error reports will be available for the logging device.



EDH

This item allows various Input or Output EDH parameters to be enabled.

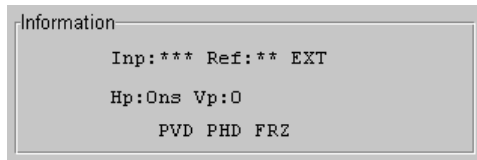
Show Stats (Statistics)

When this function is selected the information window will display the number of errors from the time the function was enabled. The elapsed time in hours, minutes and seconds is also displayed.

Reset Stats (Statistics)

Selecting this function will reset the EDH error count and the timer shown in the information window, to zero.

The Information Window



The first item of the first line will show the status of the input. It may show:

- INP: OK** The unit is receiving a valid input signal.
- Inp:***** The unit is not is receiving a valid input signal.

The second item of the first line will show the status of the reference signal. It may show:

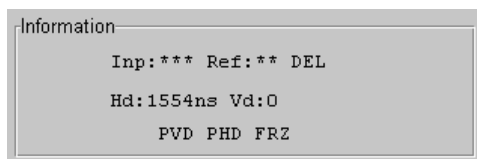
- Ref:**INT** The unit is in free run mode.
- Ref:**EXT** The unit is locked to an external reference signal.
- Ref:**DEL** The unit is in Delay mode

Where ****** may show:

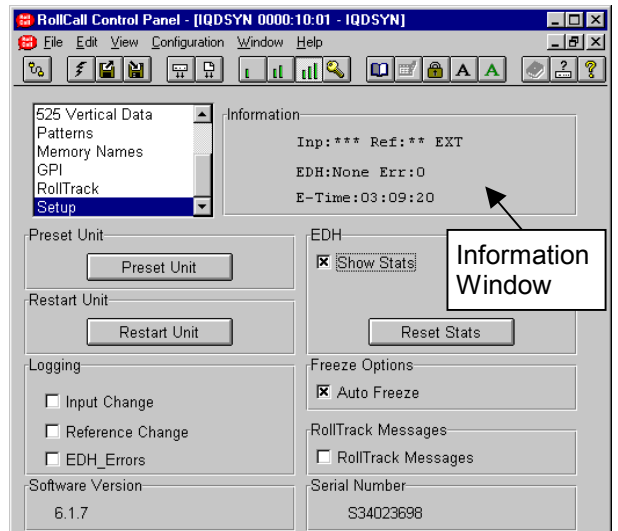
- OK** The unit is receiving a valid reference signal.
- **** The unit is not receiving a valid reference signal.

The second line may show the delay time if in **Delay Mode** or phasing if in **Genlock Mode**.

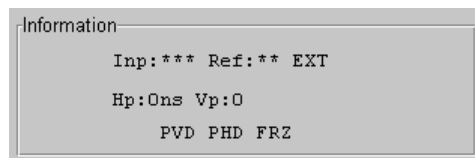
Delay Mode



- Hd:1554ns** This is the horizontal delay in ns.
- Vd:0** This is the vertical delay in TV lines.



Genlock Mode



- Hp:0ns** This is the genlock horizontal phasing time in ns.
- Vp:0** This is the genlock vertical phasing time in TV lines.

The third line may show various flags indicating the status of the unit.

Possible Flags are:

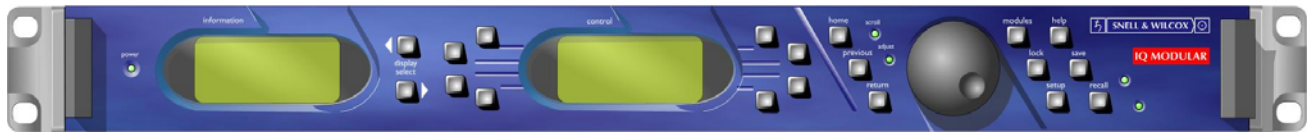
- PVD** Pass vertical Data
- PHD** Pass horizontal Data
- BVD** Blank vertical Data
- USD** User vertical Data
- FRZ** Freeze ON (Auto or manual)
- PAT** Pattern ON (Auto or manual)

E-Time:03:09:20

The third line will (if Show Stats is enabled) show the number of EDH errors from the time the function was enabled. The elapsed time is in hours, minutes and seconds.

Operation from an Active Control Panel

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



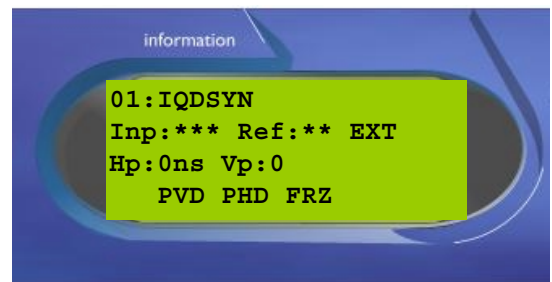
All operational parameters and selections are made using a system of menus displayed in two LCD windows.

Operational details for the remote control panel can be found in the Modular System Operator's Manual.

Information Window

The Information window has four lines of text indicating the current state of the unit.

For details of the abbreviations used please see page 34.

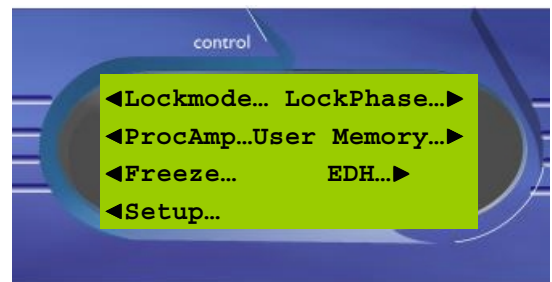


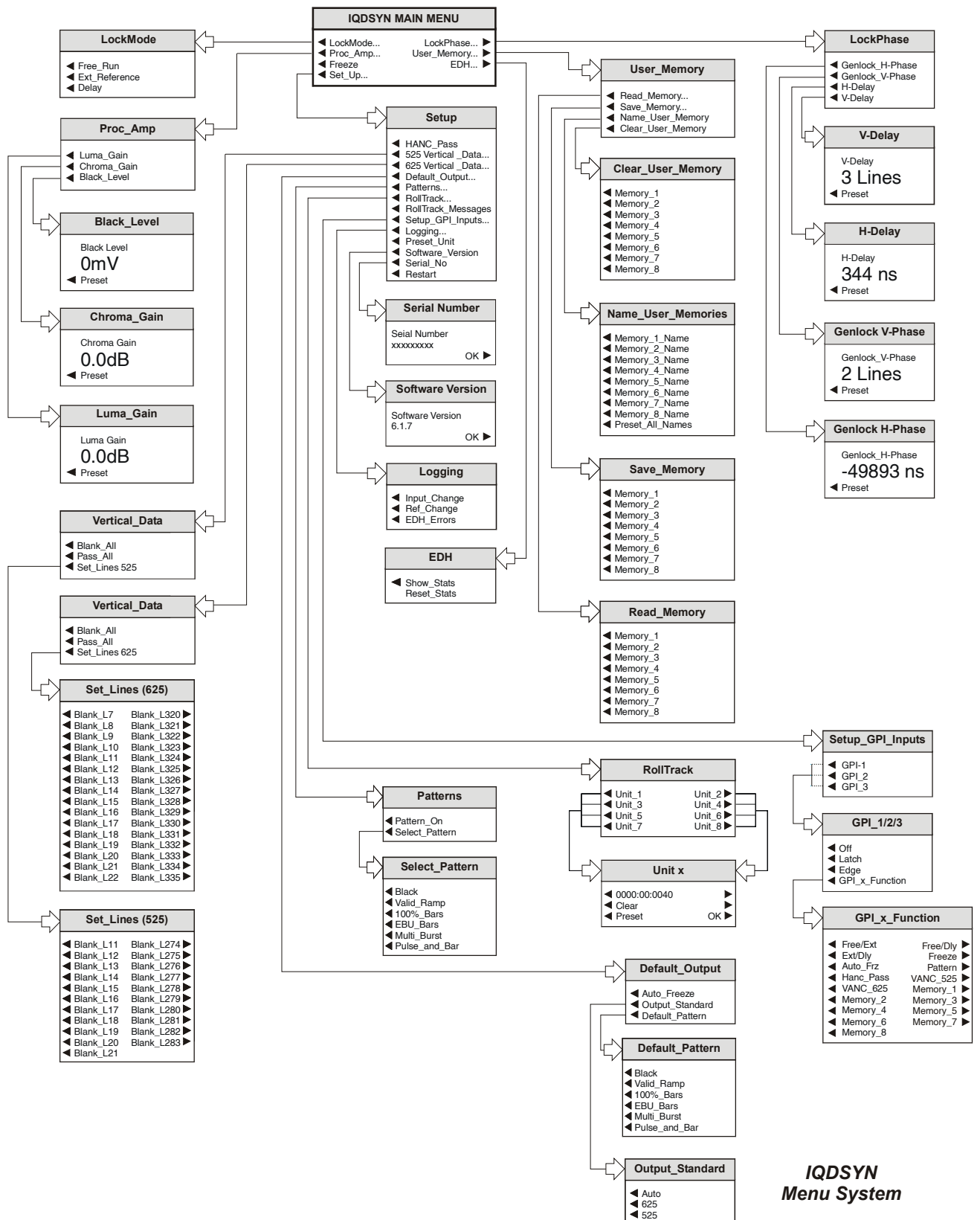
Control Window

The Control window displays all Selection Menus and sub-menus.

The selection is made by pressing the button adjacent to the required item.

The menu structure is detailed in the following pages.





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 opposite and will appear in the Control display window.

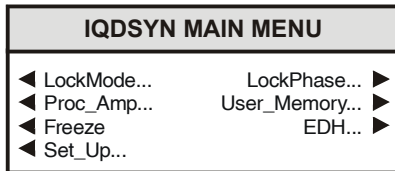
Operational details for the remote control panel will be found in SECTION 1 of the Modular System Operator's Manual.

MENU DETAILS

(see IQDSYN 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.

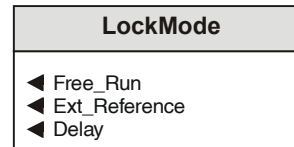


Note that where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.

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.

◀ Lock Mode...

This allows the method that the card may be locked (or not) to an external reference signal.



◀ Free Run

In this mode the output signal will be locked to the internal clock generator.

◀ Ext Reference

This selection locks the output signal to the signal connected to the Analogue Ref input connector.

The standard of the reference signal determines the standard of the output signal.

In the absence of a reference signal the standard of the output signal will be the same as the input signal.

If the reference signal and input signal are of different standards the output will display a pattern selected by the default pattern menu in the standard of the reference signal.

Note that to change the horizontal and vertical phasing between the external sync signal and the output signal select Lock Phase in the Main menu.

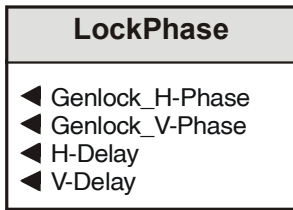
◀ Delay

When this mode is selected the output signal will appear after the input signal with a time delay. When not selected the module will operate in the synchronise mode.

Note that to change the horizontal and vertical delay between the input signal and the output signal select Lock Phase in the Main menu. This function is only available when the delay mode is selected.

Lock Phase... ▶

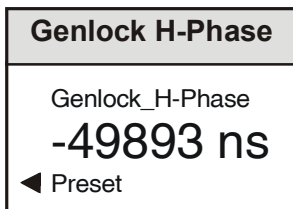
This menu allows various phasing/delay adjustments to be made.



Note that the H-Delay and V-Delay adjustments will only be available when the Delay selection has been made in the Lock Mode menu.

◀ Genlock H Phase

This item allows the horizontal timing of the output signal relative to the reference sync signal to be adjusted by ± 1 Line in 37 ns steps.

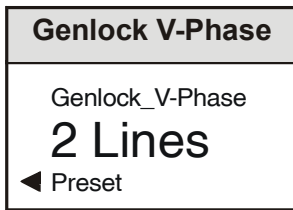


Rotating the spin-wheel will adjust this value. *Note that picture disturbance may occur while this setting is adjusted.*

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

◀ Genlock V Phase

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 ±100 lines in 1 line steps. *Note that picture disturbance may occur while this setting is adjusted.*

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

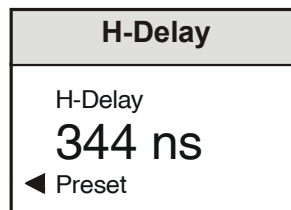
Delay

When this mode is selected the output signal will appear after the input signal with a time delay. When not selected the module will operate in the synchronize mode.

Note that to change the horizontal and vertical delay between the input signal and the output signal select Lock Phase in the Main menu. This function is only available when the delay mode is selected.

◀ H Delay

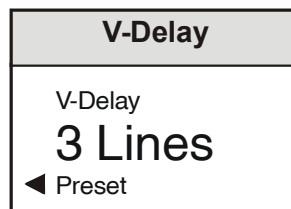
This item allows the horizontal timing of the output signal relative to the input signal to be adjusted by up to 1 line in 37 ns steps



Rotating the spin-wheel will adjust this value. Selecting Preset returns the setting to the minimum horizontal delay.

◀ V Delay

Selecting this item reveals a display showing the vertical timing of the output signal relative to the input signal, in TV lines.

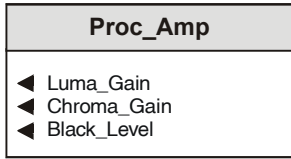


Rotating the spin-wheel will adjust this value. Range is from 1 line to 624 or 525 lines in 1 line steps.

Selecting Preset returns the setting to the minimum vertical delay.

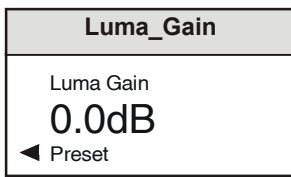
◀ **Proc_Amp**

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



◀ **Luma_Gain**

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

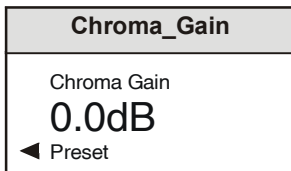


By rotating the spinwheel the gain may be adjusted by ±6 dB in steps of 0.1 dB.

Selecting Preset returns the setting to the calibrated value of 0.0 dB.

◀ **Chroma_Gain**

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

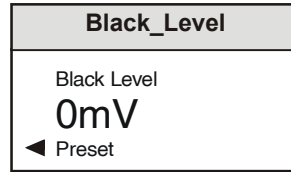


By rotating the spinwheel the gain may be adjusted by ±6 dB in steps of 0.1 dB.

Selecting Preset returns the setting to the calibrated value of 0.0 dB.

◀ **Black_Level**

This selection reveals a numerical readout display for the Y pedestal or black level.

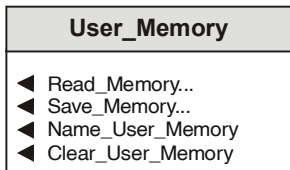


By rotating the spinwheel the pedestal may be adjusted by ±100 mV in steps of 0.8 mV.

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

User Memory ▶

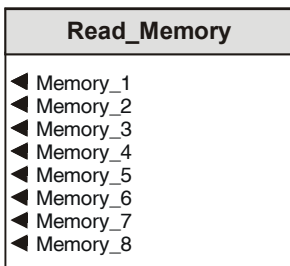
All settings of the unit may be stored in any of 8 non-volatile memory locations.



These locations may be read, saved, given a name or cleared to the preset names by selecting this function to reveal the sub-menu.

◀ Read Memory

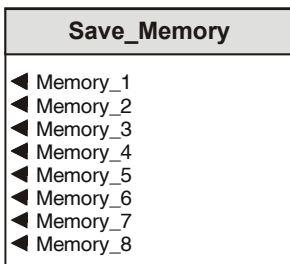
This will reveal a list of 8 memory locations.



When a particular location is enabled, settings will be changed to the values contained in that memory location.

◀ Save Memory

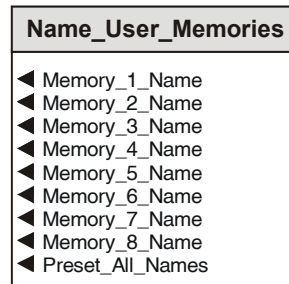
This will reveal a list of 8 memory locations.



When a particular location is enabled, current settings will be saved in that memory location.

◀ Name User Memory

This will reveal a list of the 8 memory locations which may be given a specific name.



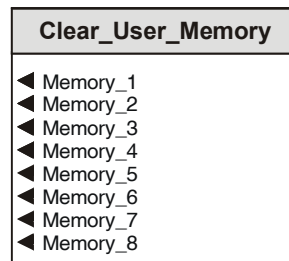
Use the adjacent buttons to select the cursor position and the spinwheel to select the alphanumeric character.

◀ Preset All Names

This function will set all names to their preset (default) values.

◀ Clear_User_Memory

This will reveal a list of the 8 memory locations that may be selected and individually cleared to their default settings.



◀ Freeze

This toggle On/Off function produces a freeze-frame picture.

EDH... ▶

This selection reveals a sub-menu that allows various Input or Output EDH parameters to be enabled.

EDH
◀ Show_Stats Reset_Stats

◀ Show Stats (Statistics)

When this function is enabled (text reversed) the information window will display the number of errors from the time the function was enabled. The elapsed time in hours, minutes and seconds is also displayed.

◀ Reset Stats (Statistics)

Selecting this function will reset the EDH error count and the timer shown in the information window, to zero.

◀ Set Up...

This menu allows various system parameters to be set.

Setup
◀ HANC_Pass
◀ 525 Vertical _Data...
◀ 625 Vertical _Data...
◀ Default_Output...
◀ Patterns...
◀ RollTrack...
◀ RollTrack_Messages
◀ Setup_GPI_Inputs...
◀ Logging...
◀ Preset_Unit
◀ Software_Version
◀ Serial_No
◀ Restart

◀ HANC Pass

When this function is enabled the unit will pass all ancillary data in the HANC region.

◀ 525 Vertical Data

Vertical_Data
◀ Blank_All
◀ Pass_All
◀ Set_Lines 525

Activating this item allows the Vertical Interval data (all or specific lines) contained in the 525 input signal to be blanked or passed through the module.

Note that in the 525 standard VITS lines are from line 11 to 21, and from 274 to 283 inclusive.

◀ Blank All

This function will blank (remove) all data lines.

◀ Pass All

This function will allow all data lines to pass through the unit.

◀ Set Lines 525

Set_Lines (525)
◀ Blank_L11 Blank_L274 ▶
◀ Blank_L12 Blank_L275 ▶
◀ Blank_L13 Blank_L276 ▶
◀ Blank_L14 Blank_L277 ▶
◀ Blank_L15 Blank_L278 ▶
◀ Blank_L16 Blank_L279 ▶
◀ Blank_L17 Blank_L280 ▶
◀ Blank_L18 Blank_L281 ▶
◀ Blank_L19 Blank_L282 ▶
◀ Blank_L20 Blank_L283 ▶
◀ Blank_L21

This sub-menu will show the lines that may be selected to be blanked from the 525 output signal. VITS lines are from line 11 to 21, and from 274 to 283 inclusive.

◀ 625 Vertical Data

Vertical_Data
◀ Blank_All
◀ Pass_All
◀ Set_Lines 625

Set_Lines (625)
◀ Blank_L7 Blank_L320 ▶
◀ Blank_L8 Blank_L321 ▶
◀ Blank_L9 Blank_L322 ▶
◀ Blank_L10 Blank_L323 ▶
◀ Blank_L11 Blank_L324 ▶
◀ Blank_L12 Blank_L325 ▶
◀ Blank_L13 Blank_L326 ▶
◀ Blank_L14 Blank_L327 ▶
◀ Blank_L15 Blank_L328 ▶
◀ Blank_L16 Blank_L329 ▶
◀ Blank_L17 Blank_L330 ▶
◀ Blank_L18 Blank_L331 ▶
◀ Blank_L19 Blank_L332 ▶
◀ Blank_L20 Blank_L333 ▶
◀ Blank_L21 Blank_L334 ▶
◀ Blank_L22 Blank_L335 ▶

Activating this item allows the Vertical Interval data (all or specific lines) contained in the 625 input signal to be blanked or passed through the module.

Note that in the 625 standard VITS lines are from line 7 to 22 and from 320 to 335 inclusive.

◀ Blank All

This function will blank (remove) all data lines.

◀ Pass All

This function will allow all data lines to pass through the unit.

◀ Set Lines 625

This sub-menu will show the lines that may be selected to be blanked from the 625 output signal. VITS lines are from line 7 to 22 and from 320 to 335 inclusive.

◀ **Default Output**

This item allows the output standard and pattern output to be selected in the event of a loss of input or a conflict of input/reference standard.

Default_Output
◀ Auto_Freeze
◀ Output_Standard
◀ Default_Pattern

◀ **Auto Freeze**

When this item is active and the input signal is lost, a freeze field picture will be produced. When inactive a pattern signal (as selected from the Default Output/Default Pattern menu) will be produced under these conditions.

◀ **Output Standard**

Output_Standard
◀ Auto
◀ 625
◀ 525

In the event of a loss of input *and* reference the output standard may be set to become:

- ◀ **Auto** The output will be in the last known standard
- ◀ **625** The output will be in the 625 standard
- ◀ **525** The output will be in the 525 standard

◀ **Default Pattern**

Default_Pattern
◀ Black
◀ Valid_Ramp
◀ 100%_Bars
◀ EBU_Bars
◀ Multi_Burst
◀ Pulse_and_Bar

Under the above conditions the pattern that appears at the output may be selected from the following list:

- ◀ Black
- ◀ Valid Ramp
- ◀ 100% Bars
- ◀ EBU Bars
- ◀ Multiburst
- ◀ Pulse and Bar

◀ **Patterns**

Enabling this function will allow various patterns to be used as the output signal.

Patterns
◀ Pattern_On
◀ Select_Pattern

◀ **Pattern On**

When this item is enabled a pattern, selected via the Select_Pattern function below, will become the output signal.

◀ **Select_Pattern**

Select_Pattern
◀ Black
◀ Valid_Ramp
◀ 100%_Bars
◀ EBU_Bars
◀ Multi_Burst
◀ Pulse_and_Bar

A pattern may be selected from the list below. This will become the output signal if the Pattern_On function is enabled.

Patterns available are:

- ◀ Black
- ◀ Valid Ramp
- ◀ 100% Bars
- ◀ EBU Bars
- ◀ Multiburst
- ◀ Pulse and Bar

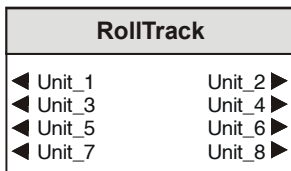
Preset is to Black.

◀ **RollTrack**

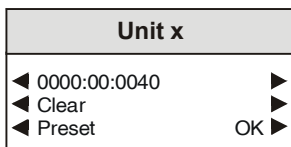
This function allows the value of the delay time produced by this module to be sent, via the RollCall™ network, to audio delay units connected on the same network. This enables compatible audio delay units to produce an audio delay dependent on this and other similar units. The audio delay unit will 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 call **RollTrack**.

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

Selecting RollTrack in the Set-up menu provides a sub-menu that allows up to 8 units (mainframes enclosures etc.) 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 16, of this manual.

The full network address has four sets of numbers.

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.

The fifth set is the ID of the destination unit

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.

◀ **RollTrack_Messages**

Selecting this item will enable a message to be displayed in the information window to report an error if RollTrack does not reach its destination.

◀ Setup GPI Inputs (-2 version only)

Setup_GPI_Inputs
<ul style="list-style-type: none"> ◀ GPI-1 ◀ GPI_2 ◀ GPI_3

The three GPI connectors are used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be selected from this menu.

The required GPI input should be selected:

- ◀ GPI-1
- ◀ GPI-2
- ◀ GPI-3

The GPI input has 3 user selectable modes of operation:

GPI_1/2/3
<ul style="list-style-type: none"> ◀ Off ◀ Latch ◀ Edge ◀ GPI_x_Function

- ◀ Off

This will turn the GPI function OFF

- ◀ Latch

When the contact is closed the function is activated; when the contact is open, the function is de-activated.

- ◀ Edge

(Edge-triggered) With each open-to-closed trigger the GPI function is toggled between activated and de-activated.

◀ GPI_x_Function

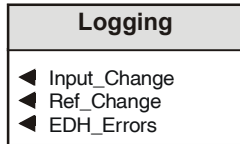
GPI_x_Function	
◀ Free/Ext	Free/Dly ▶
◀ Ext/Dly	Freeze ▶
◀ Auto_Frz	Pattern ▶
◀ Hanc_Pass	VANC_525 ▶
◀ VANC_625	Memory_1 ▶
◀ Memory_2	Memory_3 ▶
◀ Memory_4	Memory_5 ▶
◀ Memory_6	Memory_7 ▶
◀ Memory_8	

The action resulting from the selected GPI input being activated may be programmed from this list:

Setting	Action
◀ Free/Ext	Lockmode to Free Run or External Reference
Free/Dly ▶	Lockmode to Free Run or Delay Mode
◀ Ext/Delay	Lockmode to External Reference or Delay Mode
Freeze ▶	Freezes picture
◀ Auto_Frz	Produces a Freeze Frame
Pattern ▶	Output to Pattern
◀ Hanc_Pass	HANC Pass or Blank
VANC 525 ▶	Blanks 525 VANC
◀ VANC 625	Blanks 625 VANC
Memory_1 ▶ to ◀ Memory_8	Recalls settings from the specified memory location

◀ **Logging**

If a logging device is attached to the RollCall™ network, information about various parameters can be made available to such a device.



Selecting this item reveals a display that allows information about three parameters to be made available for logging.

◀ **Input Change**

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

◀ **Ref Change**

When activated, a change of External reference signal condition will be available for the logging device.

◀ **EDH Errors**

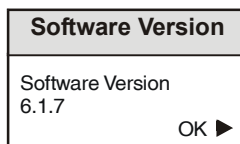
When activated, EDH error reports will be available for the logging device.

◀ **Preset Unit**

Selecting this item sets all adjustment functions that include a preset facility, to their preset values. Note that this is a momentary action and the text will not become reversed.

◀ **Software Version**

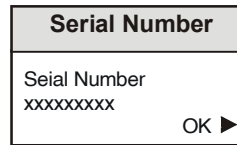
Selecting this item reveals a display showing the version of the software fitted in the module.



Select OK to return to the Setup Menu.

◀ **Serial Number**

Selecting this item reveals a display showing the serial number of the module.



Select OK to return to the Setup Menu.

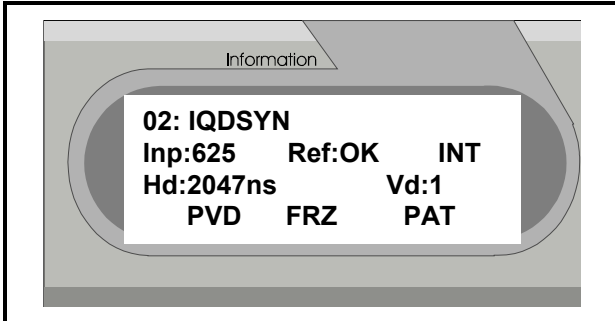
◀ **Restart**

This function allows the unit to reboot and all power-up settings to be enabled. This is an easier method than switching the mains power off and on.

THE INFORMATION WINDOW

The parameters of the selected item in the Control window will be displayed in the Information window.

An example is shown below:



The first line shows the name of the module card. This name can be changed using RollCall™ and the Remote Control Interface Menu.

The second line shows that the signal input and the reference input are receiving valid signals; if there is no signal or the signal is invalid it will show Inp:** or Ref:**

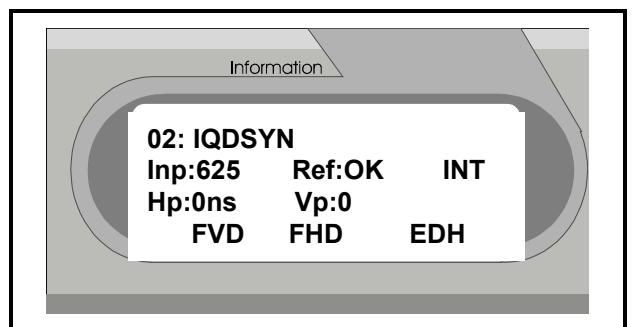
This text may be followed by the following abbreviations:

- INT** Unit is in free run mode
- EXT** Unit is locking to an external reference signal
- DEL** Unit is in delay mode

The third line shows that the module is operating in the Delay mode (could be Ext Reference lock or Internal Lock mode) and that the line standard is 625 (could be 525).

The fourth line shows that in the Delay mode the Vertical Delay is 1 Line (could be Vp, the genlock vertical phase in synchronise mode) and that the Horizontal Delay is 2047 ns (could be Hp, the genlock horizontal phase).

In the next example the module is receiving a 625 input signal, a reference signal is present, Lock mode is internal, H phase=0 and V phase=0.



Possible Flags in the last line:

- PVD** Pass vertical Data
- PHD** Pass horizontal Data
- BVD** Blank vertical Data
- USD** User vertical Data
- FRZ** Freeze ON (Auto or manual)
- PAT** Pattern ON (Auto or manual)

ROLLTRACK X FAILED

RollTrack Audio Delay Tracking

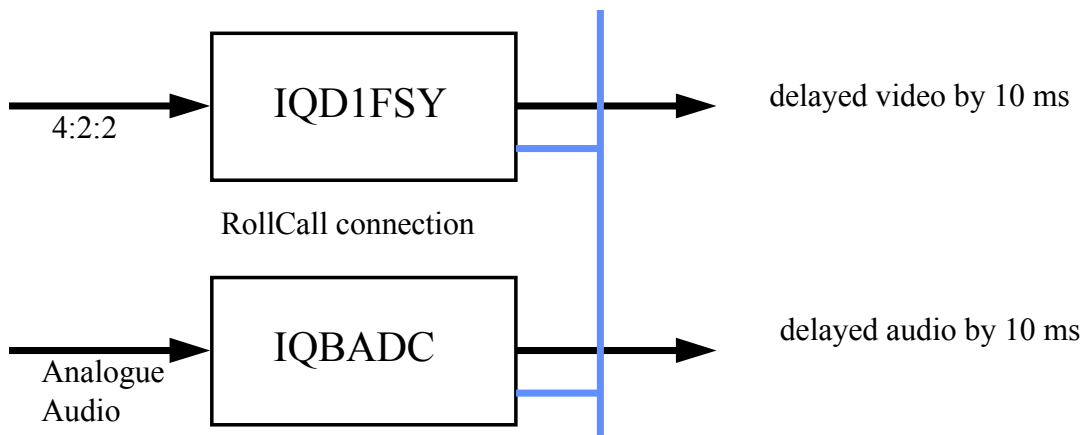
RollTrack is a feature of RollCall™ (Snell & Wilcox’s proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

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.



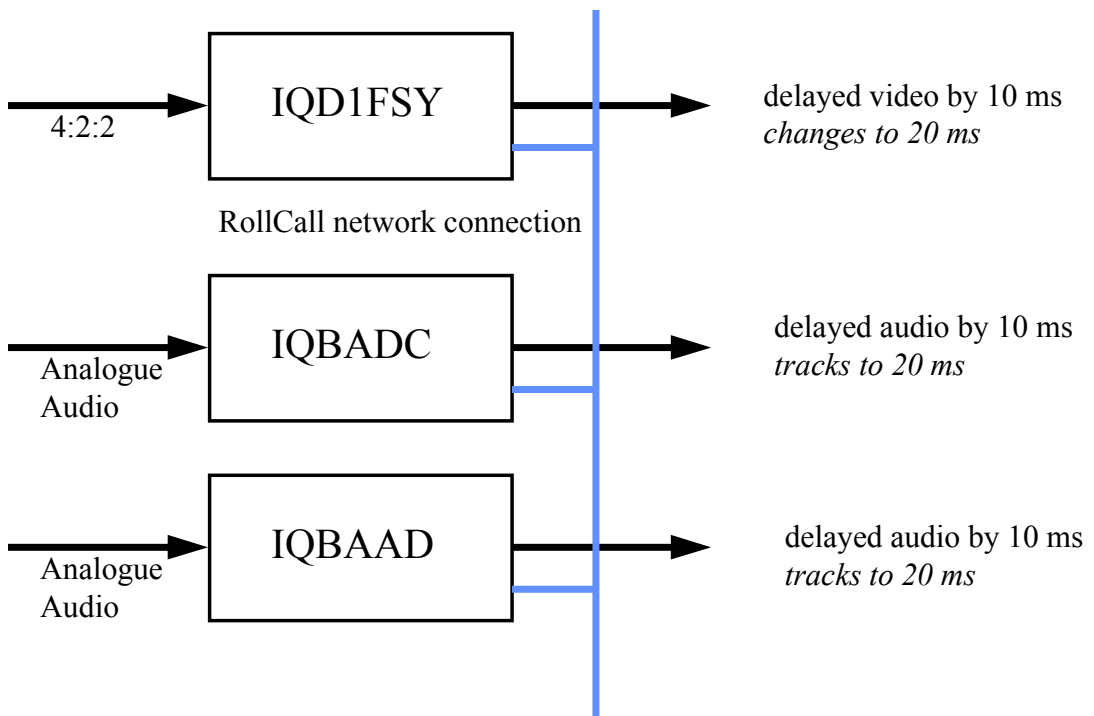
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later,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

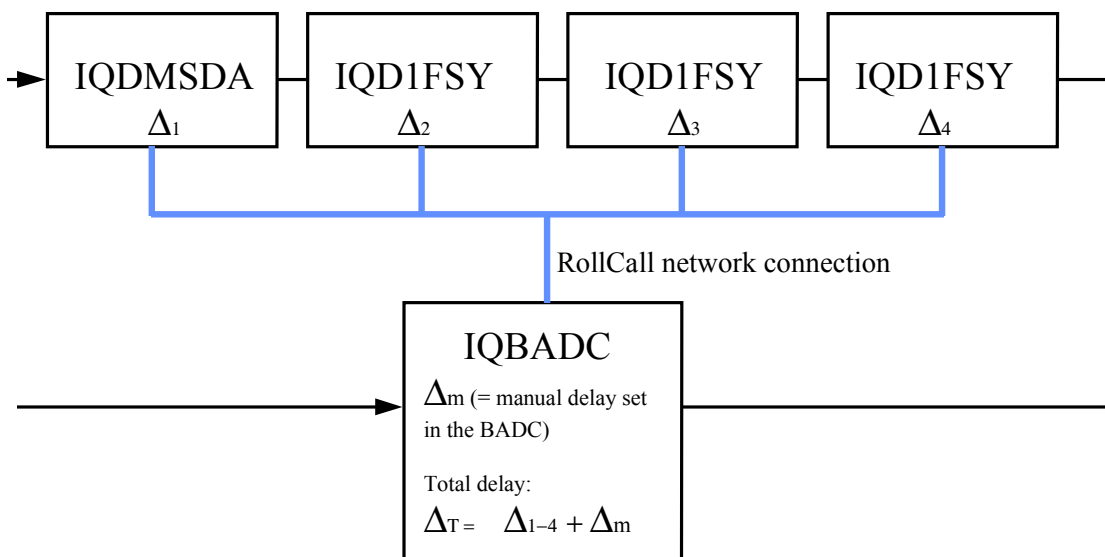
Module	ID
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

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.



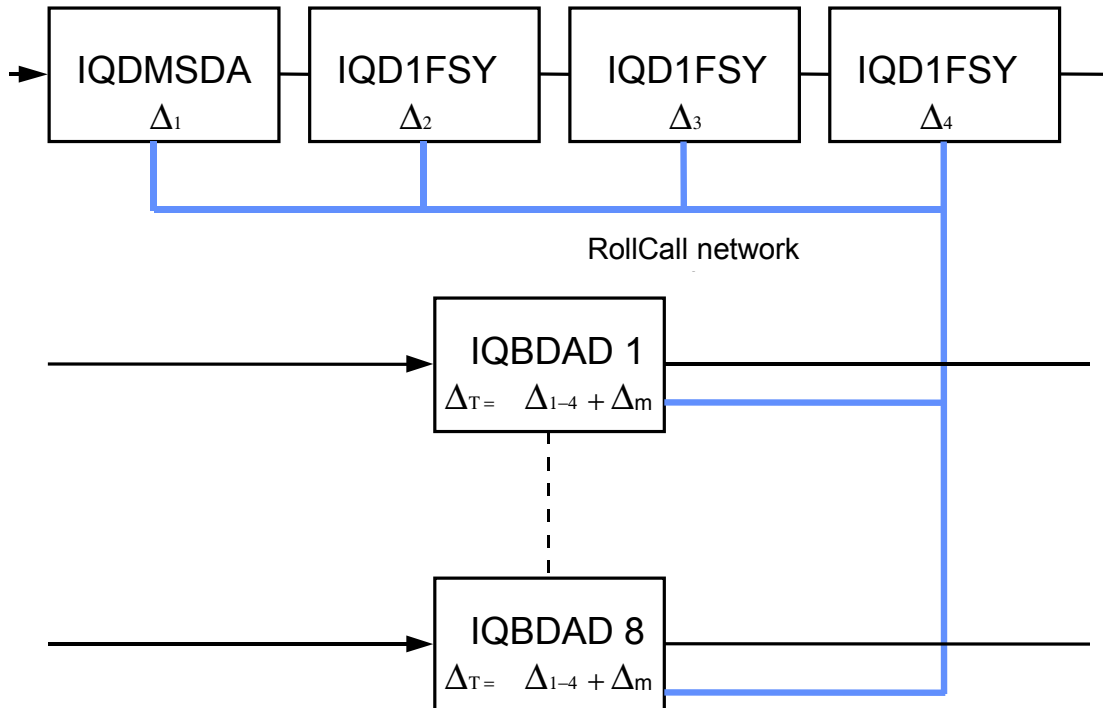
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

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

