

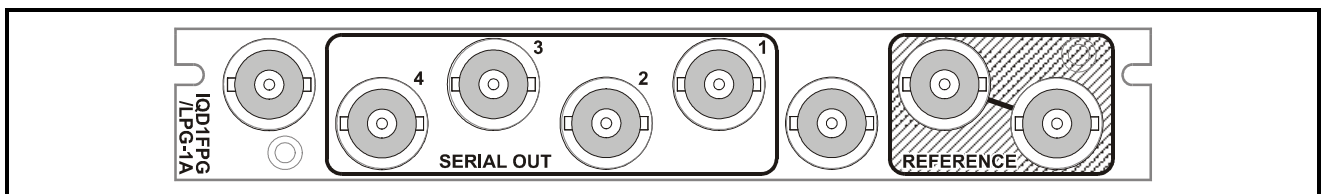
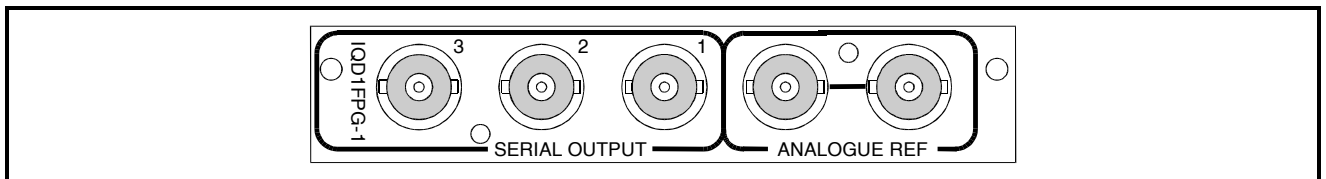
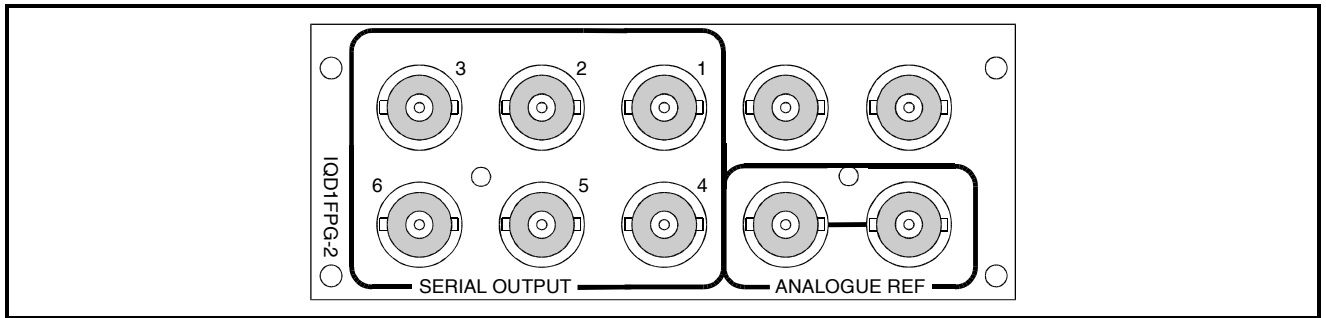
IQD1FPG D1 Frame Pattern Generator



Module Description

The IQD1FPG generates charts and logos in serial 4:2:2 (270 Mbit/s) video signals. All output patterns contain full EDH information.

REAR PANEL VIEWS



Versions of the module cards available are:

IQD1FPG-1A-5-0 10ppm clock stability Frame Pattern Generator with Genlock 4 outputs, 1 sample frame pattern in 525 4:3 plus full set of line based patterns.

IQD1FPG-1A-6-0 10ppm clock stability Frame Pattern Generator with Genlock 4 outputs, 1 sample frame pattern in 625 4:3 plus full set of line based patterns.

IQD1FPG-1A-6-W 10ppm clock stability Frame Pattern Generator with Genlock 4 outputs, 1 sample frame pattern in 625 16:9 plus full set of line based patterns.

IQD1FPG-1-5-0 10ppm clock stability Frame Pattern Generator with Genlock 3 outputs, 1 sample frame pattern in 525 4:3 plus full set of line based patterns.

IQD1FPG-1-6-0 10ppm clock stability Frame Pattern Generator with Genlock 3 outputs, 1 sample frame pattern in 625 4:3 plus full set of line based patterns.

IQD1FPG-1-6-W 10ppm clock stability Frame Pattern Generator with Genlock 3 outputs, 1 sample frame pattern in 625 16:9 plus full set of line based patterns.

IQD1FPG-2-5-0 10ppm clock stability Frame Pattern Generator with Genlock 6 outputs, 1 sample frame pattern in 525 4:3 plus full set of line based patterns.

IQD1FPG-2-6-0 10ppm clock stability Frame Pattern Generator with Genlock 6 outputs, 1 sample frame pattern in 625 4:3 plus full set of line based patterns.

IQD1FPG-2-6-W 10ppm clock stability Frame Pattern Generator with Genlock 6 outputs, 1 sample frame pattern in 625 16:9 plus full set of line based patterns.

IQD1FPG-FPO Custom frame pattern option featuring individual frame pattern storage on the module prior to delivery

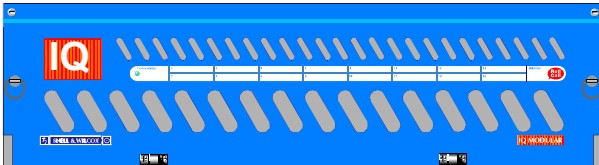
Product Comparison

Product	Sample Frame		SDI Outputs	Genlock	Width & Style
	Line Standard	Aspect Ratio			
IQD1FPG-1A-5-0	525	4:3	4	Loop-through	Single A
IQD1FPG-1A-6-0	625	4:3	4	Loop-through	Single A
IQD1FPG-1A-6-W	625	16:9	4	Loop-through	Single A
IQD1FPG-1-5-0	525	4:3	3	Loop-through	Single O
IQD1FPG-1-6-0	625	4:3	3	Loop-through	Single O
IQD1FPG-1-6-W	625	16:9	3	Loop-through	Single O
IQD1FPG-2-5-0	525	4:3	6	Loop-through	Double O
IQD1FPG-2-6-0	625	4:3	6	Loop-through	Double O
IQD1FPG-2-6-W	625	16:9	6	Loop-through	Double O
IQD1FPG-FPO	Custom frame pattern option for any of the above				

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

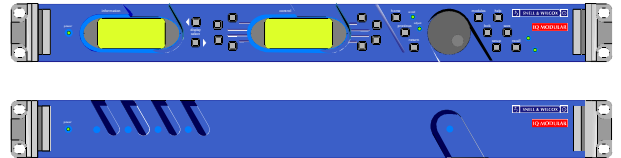
Rear panels **with** the suffix A may only be fitted into the 'A' style enclosure shown below.



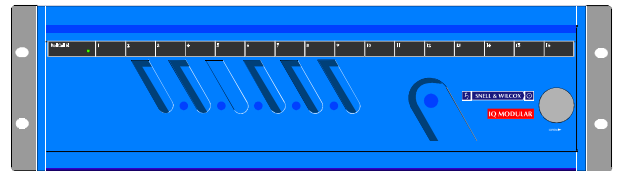
(Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P)

'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-0, IQH1S-RC-AP, IQH1U-RC-0, IQH1U-RC-AP, Kudos Plus Products)

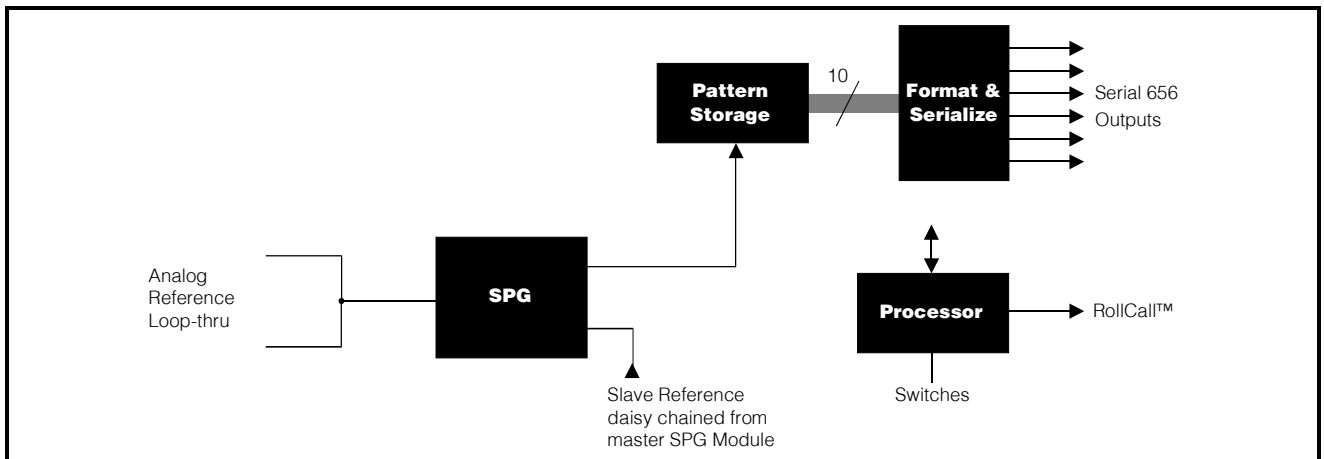


(Enclosure order codes IQH3N-0, IQH3N-P)



(Enclosure order codes IQH3U-RC-0, IQH3U-RC-P)

BLOCK DIAGRAM



Features

- Serial 4:2:2 frame pattern generator, selectable 525 or 625 line operation
- 2 x frame-based test patterns, plus-line based test signals
- Number of stored frames increases for less complex images
- Genlock from video
- Free-run stability of 10 ppm
- Up to six separate outputs of pattern
- 10-bit YPbPr pattern data with EDH data on all patterns
- Output may be horizontally and vertically phased to the input reference
- RollCall compatible

TECHNICAL PROFILE

Features

Signal Inputs

Analog Reference Composite/Luminance Video,
Black Burst (Burst not processed)
(loop-through)

Signal Outputs

Serial Up to 6 sets of SDI Patterns

Standards SMPTE 259M-C-1997

Card Edge Controls (also available via RollCall)

Pattern Select 625 and 525 frame based patterns

Genlock H-Phase Coarse .. Whole line period in increments of
74 ns

Genlock H-Phase Fine ± 35 ns continuously variable

Genlock V-Phase Complete frame in increments of 1
line

Reference Source Selection Free-Run (625 or 525)
Analog Reference Input
Slave Input

Vertical Timing Adjustment Complete frame in increments of 1
line

Horizontal Timing Adjustment
Any position during line period, in
increments of 37 ns

Functions Available via RollCall™ Only

Logging Reference Loss

Specifications

Serial Output Return Loss .. Better than 15 dB to 270 MHz

Reference Input Return Loss
Better than 35 dB to 5.8 MHz

Reference Input Standard .. 525/625

Composite or Black Burst Reference Level
Standard level ± 6 dB (burst not
processed)

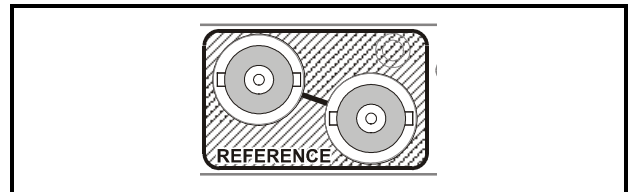
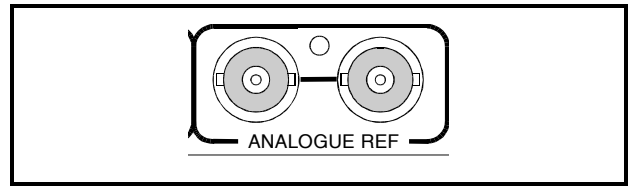
Power Consumption

Module Power Consumption
5.5 W max

INPUTS AND OUTPUTS

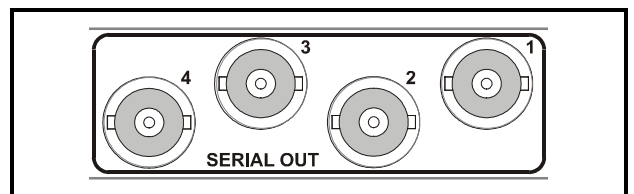
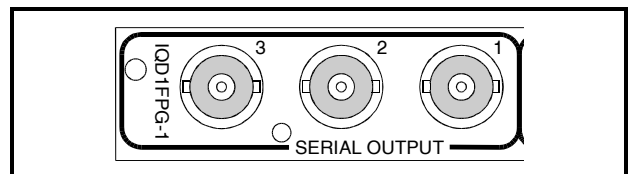
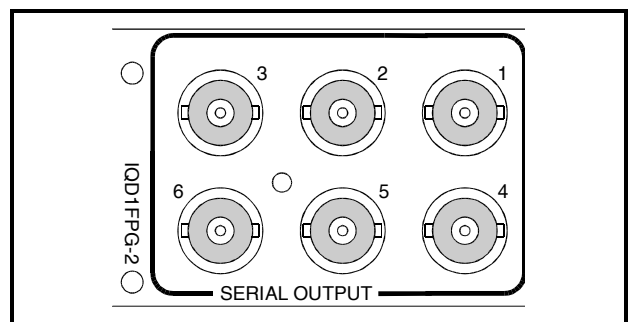
ANALOGUE REFERENCE INPUT

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

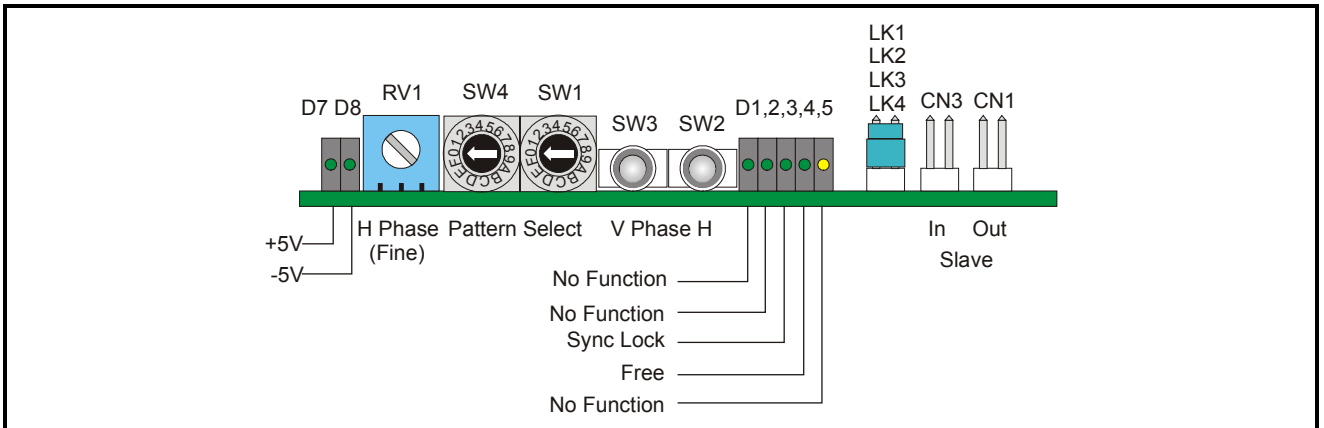


D1 SERIAL OUTPUTS

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



CARD EDGE CONTROLS



Adjustment of the settings for the IQD1FPG is available either via card edge controls and/or via a more comprehensive remote control system using RollCall™.

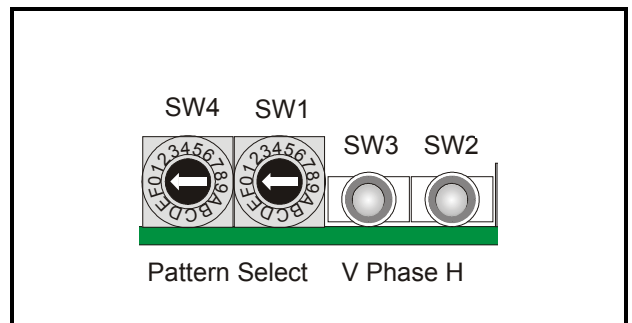
Note that the unit will respond to both local and remote control, one system overriding the settings of the other. For cards using the RollCall remote control system, activating these switches will override the remote control settings. The RollCall control panel will then follow these settings.

Note that in Mainframes where RollCall is not available the remote link, LK7, located at the centre left of the card, should be removed. This ensures that when the unit is powered-up the factory default settings are loaded. With LK7 fitted the card will power-up with the last settings sent by the remote control panel.

SWITCHES SW1, SW2, SW3 & SW4

The HEX switches SW1 and SW4 allow the reference source and the pattern type to be selected.

The two-way biased switches SW2 and SW3 are used to adjust the V Phase and H Phase or the reference source if SW4 is set to F.



REFERENCE SOURCE SELECTION

The unit may be referenced to various external signals or can free-run.

Note that if an inappropriate signal (e.g. wrong line standard) is connected to the selected reference source, or no signal is present, and that source is selected, the unit will free-run in the line standard of the pattern selected. The appropriate status LED will flash under these conditions.

Selections available are as follows:

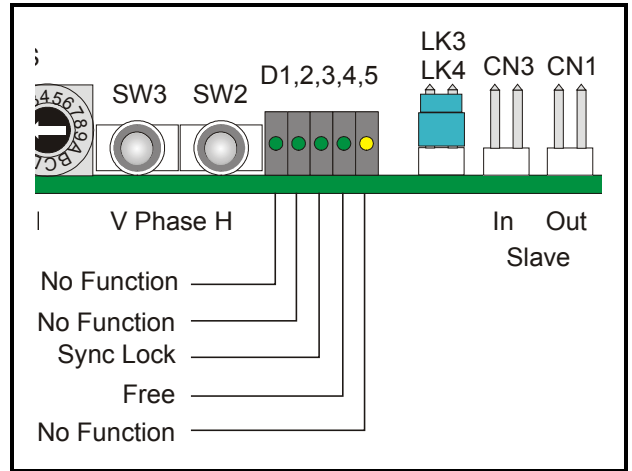
Sync Lock

The unit will lock to a suitable signal connected to the reference input.

Free

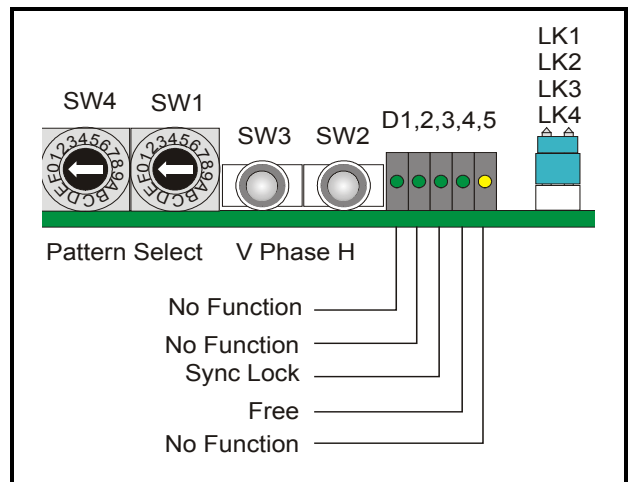
The unit will free-run in the line standard (525 or 625) set by the selected pattern.

The mode selection system uses switches SW1, SW2 and the STATUS LED's.



To Select the External Reference Signal (Sync Lock)

Set SW4 to position F and operate the two-way biased switch SW2 until the Sync Lock LED is illuminated.



H PHASE AND V PHASE OFFSET

The phasing of the output signal relative to the reference signal may be offset in both horizontal and vertical directions.

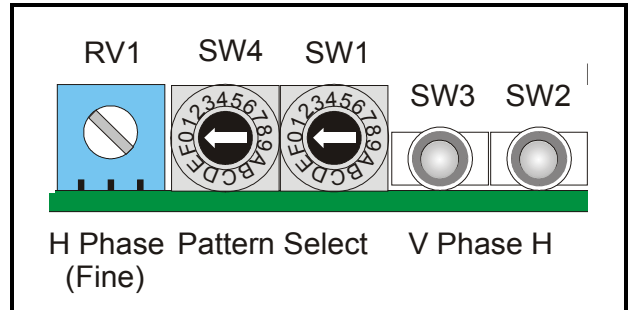
These functions are enabled at all times except when SW4 is set to the F position.

H PHASE-Coarse

Operating SW2 enables the horizontal phasing to be adjusted left or right in steps of 74ns over a 1 line range.

H PHASE-Fine (When fitted)

Operating RV1 enables the horizontal phasing to be adjusted left or right by at least \approx 35ns.

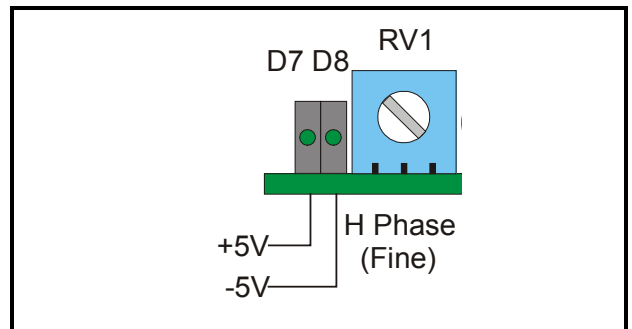


V PHASE

Operating SW3 enables the vertical phasing to be adjusted up or down in steps of 1 line over a range of 625 or 525 lines.

INDICATORS D7, D8

D7 indicates that the +5V power supply is present and D8 that the -5V power supply is present.

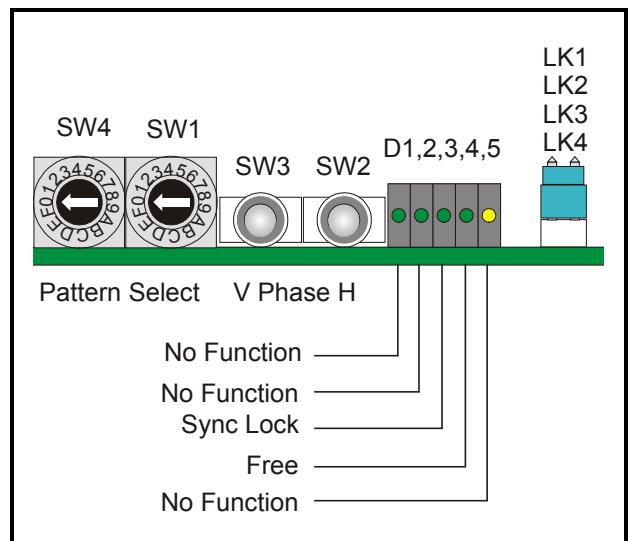


PATTERN SELECTION

A number of patterns in each standard may be stored in the unit and are selected using the HEX switches SW1 and SW4 to set up a 2-digit HEX code.

The codes for the various patterns are user shown on the next pages.

Note that the items shown here will depend on which version of the IQD1FPG has been ordered. For details please see page 17.2.
The following describes examples of what may be available.



625 LINE PATTERNS D1 10-BIT

Pattern	SW4	SW1
BLACK	0	0
EBU COLOUR BARS	0	1
100% COLOUR BARS	0	2
EBU BARS & RED	0	3
WHITE 100%	0	4
RAMP100%	0	5
RAMP115%	0	6
ULTRABLACKRAMP	0	7
MODULATED RAMP	0	8
SHALLOW RAMPS	0	9
VALID RAMP	0	A
STAIRCASE-5	0	B
STAIRCASE-10	0	C
MOD/STAIRCASE-5	0	D
EBU PLUGE1-5	0	E
100% WINDOW	0	F
50% WINDOW	1	0
15% WINDOW	1	1
PULSE & BAR 2T	1	2
PULSE & BAR 2T/4T/8T	1	3
PULSE & BAR2T/4T/10T	1	4
SINX/X	1	5
MULTI-PULSE 5.8	1	6
MULTI-BURST 5.75	1	7
MULTI-BURST 5.8	1	8
HORZ.MULTIBURST	1	9
SWEEP 5.5/2.75	1	A
BOWTIE (1nsRES)	1	B
BOWTIE (5nsRES)	1	C
VITS 17	1	D
VITS 18	1	E
UK ITS-1 LINE 19	1	F
UK ITS-2 LINE 20	2	0
VITS 330	2	1
VITS 331	2	2
MULTI-VITS	2	3
CROSSHATCH	2	4
CROSSHATCH/DOTS	2	5
BLACK CROSSHATCH	2	6
BLACK CROSS/HATCH/DOTS	2	7
SDI EQU TEST	2	8
SDI PLL TEST	2	9
SDI CHECKFIELD	2	A
BLANKING TEST	2	B
AUTO-TEST MATRIX	2	C
S & W TEST # 1	2	D

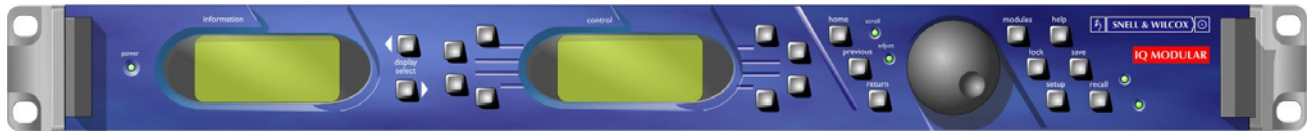
525 LINE PATTERNS D1 10-BIT

Pattern	SW4	SW1
BLACK	8	0
SMPTE COLOR BARS	8	1
FULL FIELD BARS	8	2
100% COLOR BARS	8	3
EBU BARS & RED	8	4
WHITE 100%	8	5
RAMP 100%	8	6
RAMP 115%	8	7
MODULATED RAMP	8	8
ULTRA BLACK RAMP	8	9
SHALLOW RAMPS	8	A
VALID RAMP	8	B
STAIRCASE-5	8	C
STAIRCASE-10	8	D
MOD/STAIRCASE-5	8	E
MULTI-BURST 5.8	8	F
MULTI-BURST 4.2	9	0
HORZ.MULTIBURST	9	1
SWEEP 5.5/2.75	9	2
PULSE & BAR 2T	9	3
PULSE & BAR 2T/4T/10T	9	4
SINX/X	9	5
MULTI-PULSE 4.2	9	6
NTC-7 COMPOSITE	9	7
NTC-7 COMBINATION	9	8
FCC COMPOSITE	9	9
FCC MULTI-BURST	9	A
VIRS	9	B
MULTI-VITS	9	C
BOWTIE (1ns RES)	9	D
BOWTIE (5ns RES)	9	E
CROSSHATCH	9	F
CROSSHATCH/DOTS	A	0
BLACK CROSSHATCH	A	1
BLACK CROSSHATCH/DOTS	A	2
SDI EQU TEST	A	3
SDI PLL TEST	A	4
SDI CHECKFIELD	A	5
BLANKING TEST	A	6
AUTO-TEST MATRIX	A	7

For detailed descriptions of most of these patterns please refer to section 4 of the TPG20 operator's manual.

Operation from an Active Control Panel

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



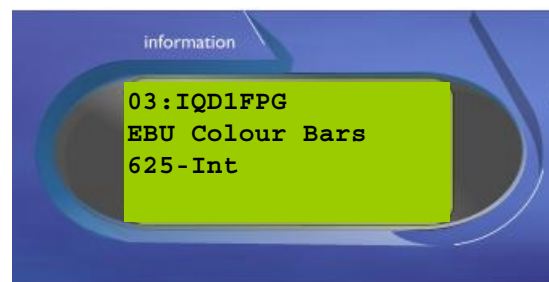
All operational parameters and selections are made using a system of menus displayed in two LCD windows.

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

Information Window

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

For details of the abbreviations used please see page 18.

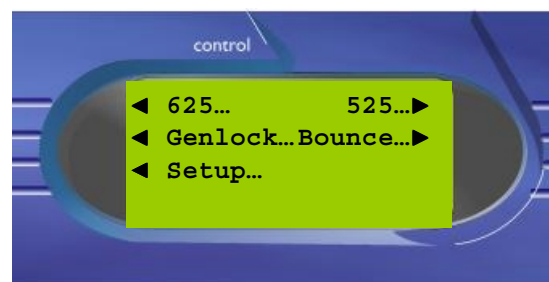


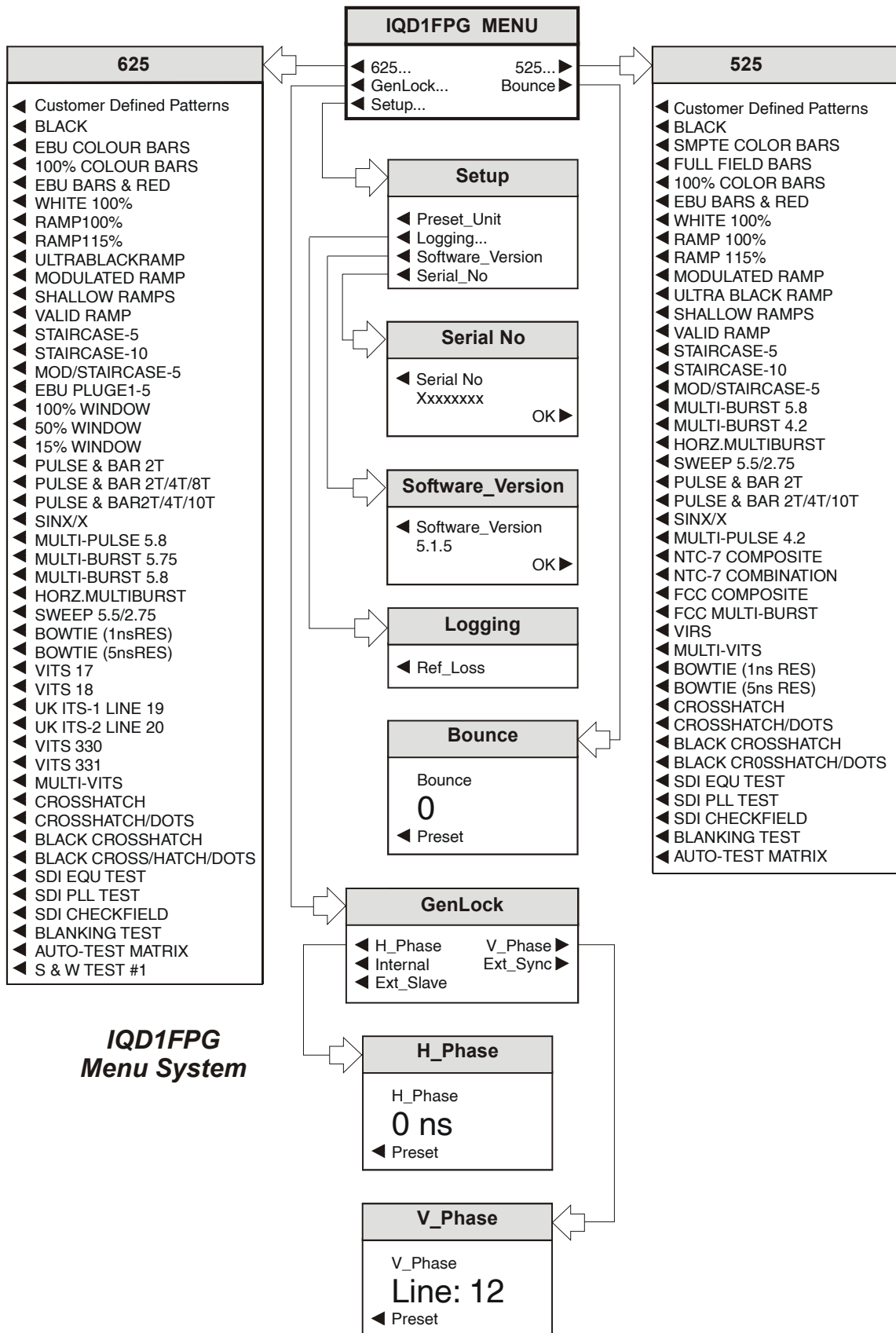
Control Window

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.





IQD1FPG Menu System

MENU DETAILS (see IQD1FPG Menu System on previous page)

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.

Note that the items shown in these menus will depend on which version of the IQD1FPG has been ordered. For details please see page 17.2. The following describes examples of what may appear.

IQD1FPG MENU	
◀ 625...	525... ▶
◀ GenLock...	Bounce ▶
◀ Setup...	

◀ 625

This selection reveals a sub-menu containing a list of all the 625 patterns available from the unit.

625
◀ Customer Defined Patterns
◀ BLACK
◀ EBU COLOUR BARS
◀ 100% COLOUR BARS
◀ EBU BARS & RED
◀ WHITE 100%
◀ RAMP100%
◀ RAMP115%
◀ ULTRABLACKRAMP
◀ MODULATED RAMP
◀ SHALLOW RAMP
◀ VALID RAMP
◀ STAIRCASE-5
◀ STAIRCASE-10
◀ MOD/STAIRCASE-5
◀ EBU PLUGE1-5
◀ 100% WINDOW
◀ 50% WINDOW
◀ 15% WINDOW
◀ PULSE & BAR 2T
◀ PULSE & BAR 2T/4T/8T
◀ PULSE & BAR2T/4T/10T
◀ SINX/X
◀ MULTI-PULSE 5.8
◀ MULTI-BURST 5.75
◀ MULTI-BURST 5.8
◀ HORZ.MULTIBURST
◀ SWEEP 5.5/2.75
◀ BOWTIE (1nsRES)
◀ BOWTIE (5nsRES)
◀ VITS 17
◀ VITS 18
◀ UK ITS-1 LINE 19
◀ UK ITS-2 LINE 20
◀ VITS 330
◀ VITS 331
◀ MULTI-VITS
◀ CROSSHATCH
◀ CROSSHATCH/DOTS
◀ BLACK CROSSHATCH
◀ BLACK CROSS/HATCH/DOTS
◀ SDI EQU TEST
◀ SDI PLL TEST
◀ SDI CHECKFIELD
◀ BLANKING TEST
◀ AUTO-TEST MATRIX
◀ S & W TEST #1

When a particular pattern is selected the text will change to reversed to show that this is the active pattern. This pattern name will then be displayed in the Information window.

Note that any customer-defined patterns will appear at the top of the list.

For detailed descriptions of most of these patterns please refer to section 4 of the TPG20 operator's manual.

525 ►

This selection reveals a sub-menu containing a list of all the 525 patterns available from the unit.

525
◀ Customer Defined Patterns
◀ BLACK
◀ SMPTE COLOR BARS
◀ FULL FIELD BARS
◀ 100% COLOR BARS
◀ EBU BARS & RED
◀ WHITE 100%
◀ RAMP 100%
◀ RAMP 115%
◀ MODULATED RAMP
◀ ULTRA BLACK RAMP
◀ SHALLOW RAMPS
◀ VALID RAMP
◀ STAIRCASE-5
◀ STAIRCASE-10
◀ MOD/STAIRCASE-5
◀ MULTI-BURST 5.8
◀ MULTI-BURST 4.2
◀ HORZ.MULTIBURST
◀ SWEEP 5.5/2.75
◀ PULSE & BAR 2T
◀ PULSE & BAR 2T/4T/10T
◀ SINX/X
◀ MULTI-PULSE 4.2
◀ NTC-7 COMPOSITE
◀ NTC-7 COMBINATION
◀ FCC COMPOSITE
◀ FCC MULTI-BURST
◀ VIRS
◀ MULTI-VITS
◀ BOWTIE (1ns RES)
◀ BOWTIE (5ns RES)
◀ CROSSHATCH
◀ CROSSHATCH/DOTS
◀ BLACK CROSSHATCH
◀ BLACK CROSSHATCH/DOTS
◀ SDI EQU TEST
◀ SDI PLL TEST
◀ SDI CHECKFIELD
◀ BLANKING TEST
◀ AUTO-TEST MATRIX

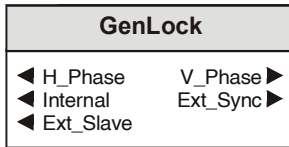
When a particular pattern is selected the text will change to reversed to show that this is the active pattern. This pattern name will then be displayed in the Information window.

Note that any customer-defined patterns will appear at the top of the list.

For detailed descriptions of most of these patterns please refer to section 4 of the TPG20 operator's manual.

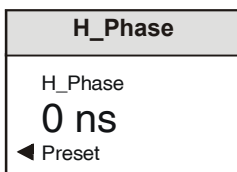
◀ Genlock

This selection reveals a sub-menu that allows various genlock functions to be enabled.



◀ H_Phase

The phasing of the output signal relative to the reference signal may be offset in the horizontal direction using this function.

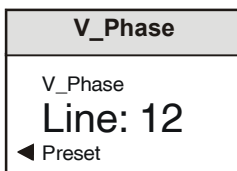


Operating the spinwheel enables the horizontal phasing to be adjusted left or right in steps of 37 ns over a 1 line range.

Selecting Preset returns the setting to zero.

V_Phase ▶

The phasing of the output signal relative to the reference signal may be offset in the vertical direction using this function.



Selecting Preset returns the setting to Line 1.

Operating the spinwheel enables the vertical phasing to be adjusted up or down in steps of a line over a 625 or 525 line range.

Note that both the H_Phase and V_Phase controls will still be operative when the unit is not genlocked to a reference signal. i.e. the unit is in the Internal mode. However, as soon as the unit is genlocked, the H and V phase settings will be applied.

The genlock source may be selected from the following list:

Internal
Ext_Sync
Ext_Slave

When the selection is made the text will change to reversed text.

◀ Internal

The unit will free-run in the line standard (525 or 625) set by the previously selected pattern.

◀ Ext_Sync

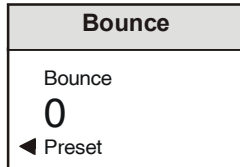
The unit will lock to the signal connected to the Analogue Reference connector.

Ext_Slave ▶

This item has no function on this unit and should not be selected.

Bounce ►

A Bounce signal is a waveform that alternates from one pattern e.g. Black, to another e.g. White at a regular rate imitating a signal that has a continuously changing A.P.L. (Average Picture Level). This type of waveform is often used to check the correct operation of black level clamp circuits.



The spinwheel will allow the rate at which the output alternates from one pattern to the other pattern to be set. The range is from 0 to 240 seconds in one second steps.

To set up a bounce signal

1. Select a pattern from the 625/525 list
2. Set the bounce rate to a value greater than 0
3. Select the other pattern from the list

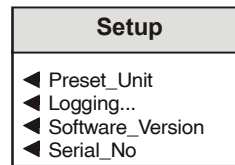
The output will then alternate from the first pattern to the second at a rate set by the bounce control.

To turn off the bounce function set the bounce control to zero or select preset.

Note that if required one signal may be a 625 pattern and the other a 525 pattern.

◀ Setup

This item reveals a sub-menu that allows various system parameters to be viewed and set.

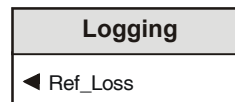
**◀ Preset Unit**

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

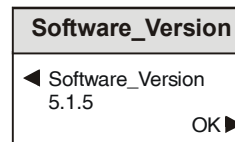
Note that this is a momentary action.

◀ Logging

This sub-menu enables data to be sent to the logging device.



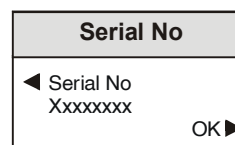
When Ref_Loss is enabled (appearing in reversed text) these errors will be reported to the logging device assigned in the Remote Control Interface system.

◀ Software_Version

This display the software version number fitted to the module. Press OK to return to the previous menu.

◀ Serial No

This item reveals a display showing the serial number of the module.



Select OK to return to the Unit Menu.

RollCall PC Control Panel Screens for the IQD1FPG

Note that the items shown in these screens will depend on which version of the IQD1FPG has been ordered. For details please see page 17.2.

The following describes examples of what may appear.

625 Patterns

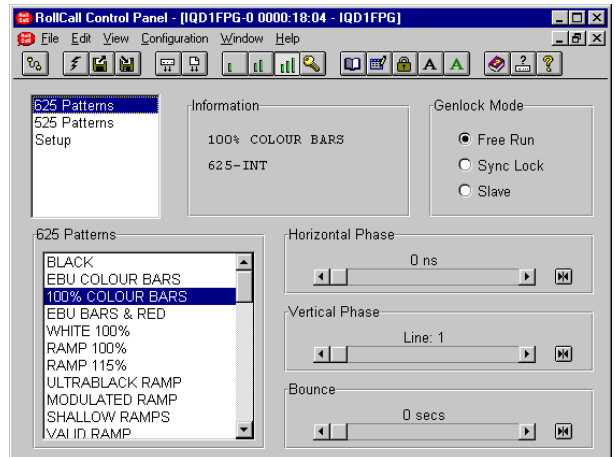
625 Patterns

This allows a 625 standard pattern to be chosen from the list.

The full list of patterns available is shown on page 17.11.

Note that any customer-defined patterns will appear at the top of the list.

For detailed descriptions of these patterns please refer to section 4 of the TPG20 operator's manual.



525 Patterns

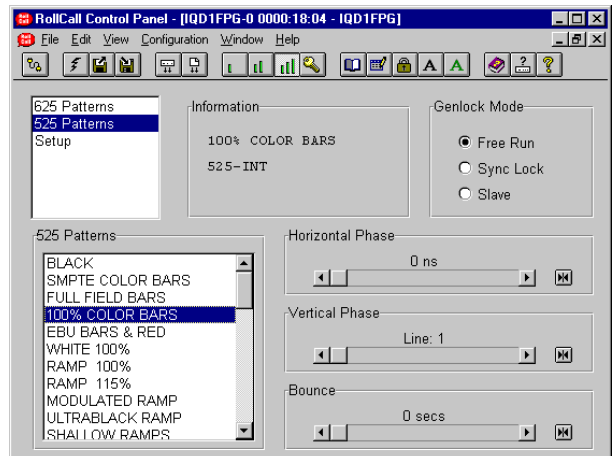
525 Patterns

This allows a 525 standard pattern to be chosen from the list.



The full list of patterns available is shown on page 17.11.


Note that any customer-defined patterns will appear at the top of the list.

For detailed descriptions of most of these patterns please refer to section 4 of the TPG20 operator's manual.



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

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

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

Genlock Mode

The genlock source may be selected by checking the box appropriate item.

Free Run

The unit will free-run in the line standard (525 or 625) set by the previously selected pattern.

Sync Lock

The unit will lock to the signal connected to the Analogue Reference connector.


Slave

This item has no function on this unit and should not be selected.

Horizontal Phase

The phasing of the output signal relative to the reference signal may be offset in the horizontal direction using this function.

The horizontal phasing may be adjusted in steps of 37 ns over a 1 line range.

Selecting  Preset returns the setting to zero.

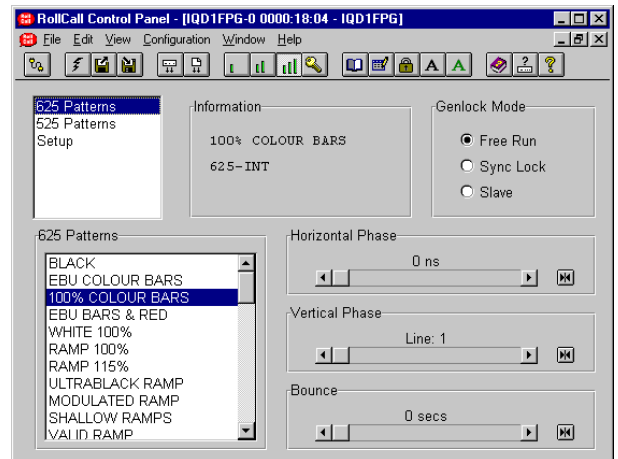
Vertical Phase

The phasing of the output signal relative to the reference signal may be offset in the vertical direction using this function.

Selecting  Preset returns the setting to Line 1.

The vertical phasing may be adjusted in steps of a line over a 625 or 525 line range.

Note that both the H_Phase and V_Phase controls will still be operative when the unit is not genlocked to a reference signal. i.e. the unit is in the Internal mode. However, as soon as the unit is genlocked, the H and V phase settings will be applied.



Bounce


A Bounce signal is a waveform that alternates from one pattern e.g. Black, to another e.g. White at a regular rate imitating a signal that has a continuously changing A.P.L. (Average Picture Level). This type of waveform is often used to check the correct operation of black level clamp circuits.

The scrollbar will allow the rate at which the output alternates from one pattern to the other pattern to be set. The range is from 0 to 240 seconds in one second steps.

To set up a bounce signal

1. Select a pattern from the list
2. Set the bounce rate to a value greater than 0
3. Select the other pattern from the list

The output will then alternate from the first pattern to the second at a rate set by the bounce control.

To turn off the bounce function set the bounce control to zero or select preset .

Note that if required one signal may be a 625 pattern and the other a 525 pattern.

Setup

This allows various system parameters to be viewed and set.

Status Logging

This enables data to be sent to the logging device.

When Reference Loss is checked these errors will be reported to the logging device assigned in the Remote Control Interface system.

Software Version

This display the software version number fitted to the module. It is followed by the build number.

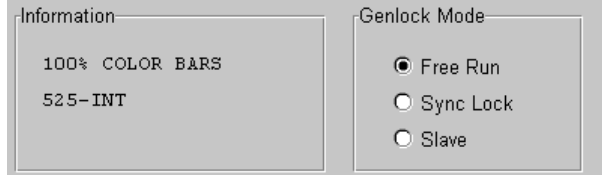
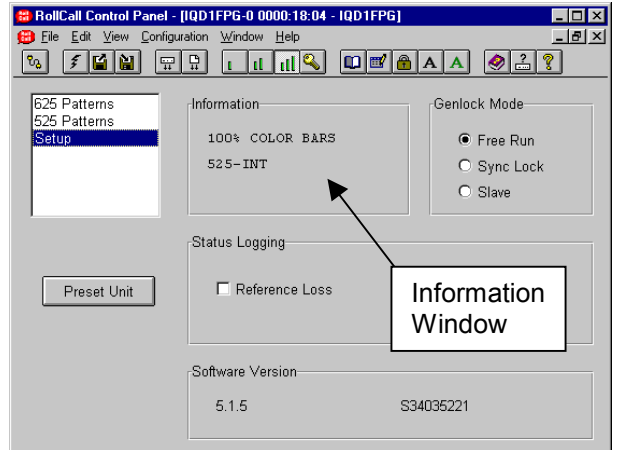


Selecting this item sets all adjustment functions that include a preset facility, to their preset values.

Note that this is a momentary action.

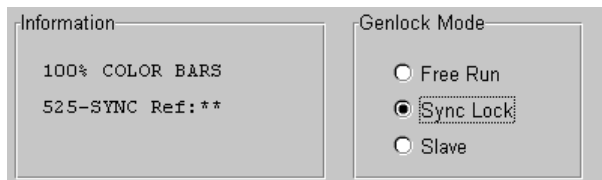
The Information Window

This will show abbreviated information about the status of the unit.



The first line will show the selected pattern.

The second line will show the operating standard (625 or 525) followed by the selected genlock mode and the status of the reference signal where ** indicates that a valid reference signal is not available.



Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
050796				Existing manual
220897	2	1	Word version created	New issue released
160402	2	2	Now includes information for the 3A enclosure modules	New manual issued
080403	2	3	Power consumption added to techspec	New manual issued
081004	2	4	Updated for 5.1.5 software, edge controls corrected, templates added, patterns listed	New manual issued
291104	2	5	New order codes added	New manual issued