



IQD1LPG D1 Line Pattern Generator

Module Description

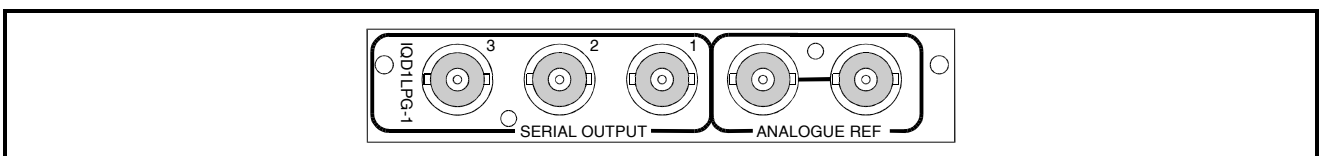
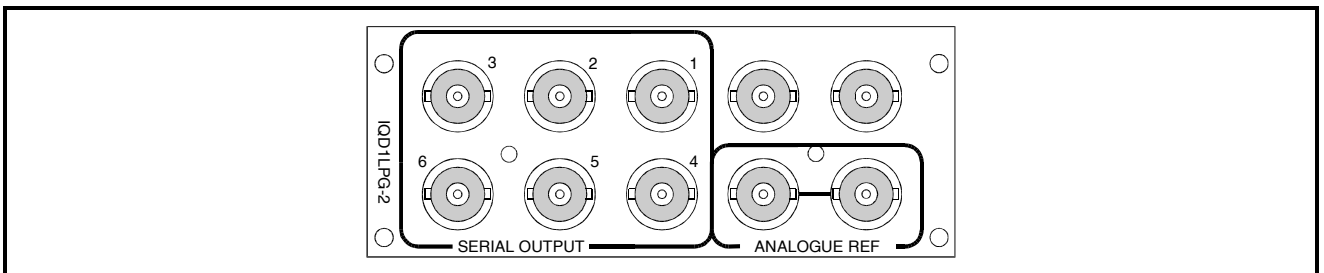
The IQD1LPG module generates line patterns in a component serial format (270Mbit/s). All output patterns contain full EDH information

IQD1FPG and IQD1MPG modules will lock to an analogue/slave source. If a genlock mode is used where the input line standard does not correspond the output line standard, (as used in the selected output pattern) the module will free run. In Slave mode, (i.e. in a system containing more than 1 module) the master card is set to genlock to the required reference, (or free run), and then all subsequent cards are linked together using the supplied 4-way ribbon cable. This enables a system supplying many patterns, to be locked together, and to a lock to a reference. A maximum of 15 cards may be linked in this fashion.

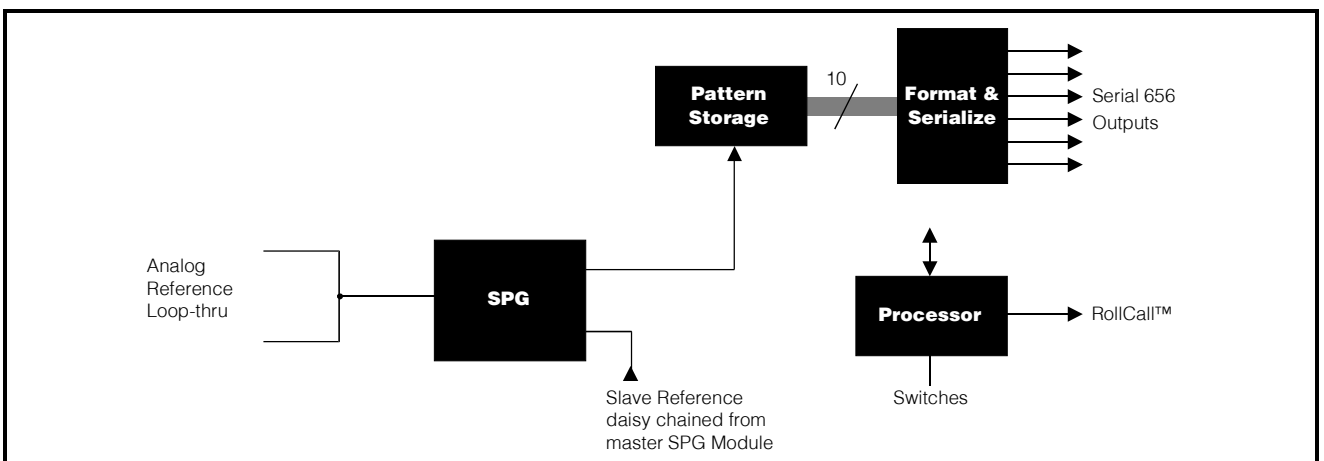
Functional Description

Pattern selection is accomplished by using RollCall™ or via 2 Hex switches on the card edge. The data is read out of the 5 PROMS, and fed into the output formatter ASIC. Data is then passed onto the GENNUM serialiser, converting to 270 Mbits/sec serial, and then buffered to provide six outputs. If a Genlock mode is used (which can be set from RollCall™ or from the card edge controls) then the system clock, H and V timing information is extracted from the appropriate reference source. NOTE: IQD1BPG, IQD1LPG,

REAR PANEL VIEWS



BLOCK DIAGRAM



Features

- Line pattern generator, selectable 525 or 625 line operation
- More than 80 patterns stored in PROM
- Typical patterns: black, color bars, multi-bursts, bowties, ramps, crosshatch etc
- Genlock from video
- Free-run stability of 10ppm
- 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

Versions of the module cards available are:

IQD1MPG-2	1 Master pattern generator, Analogue/D1/Slave genlock	Double width module
IQD1BPG-1/2	D1 black generator, Slave/Analogue genlock.	Single/Double width module
IQD1FPG-1/2	D1 Frame pattern generator. Slave/Analogue genlock.	Single/Double width module

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 line based patterns
Genlock H-Phase Coarse .. Whole line period in steps of 74 ns
Genlock H-Phase Fine ± 35 ns continuously variable
Genlock V-Phase..... Complete frame in steps of 1 line
Reference Source Selection Free-Run (625 or 525)
 Analog Reference Input
 Slave Input

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)

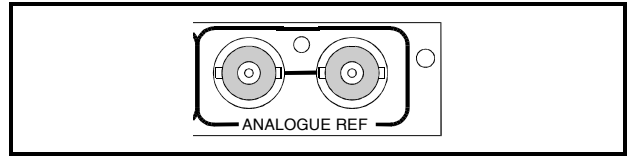
Power Consumption

Module Power Consumption
5.5W max

INPUTS AND OUTPUTS

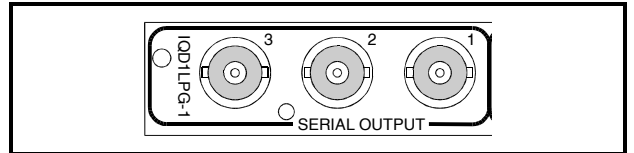
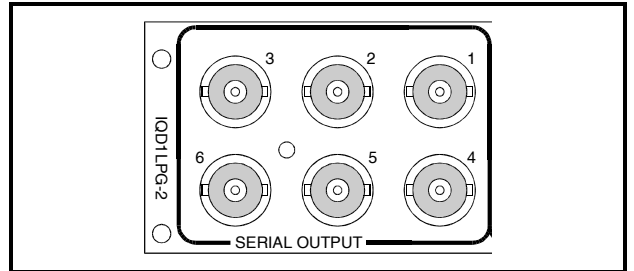
ANALOGUE REFERENCE INPUT

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

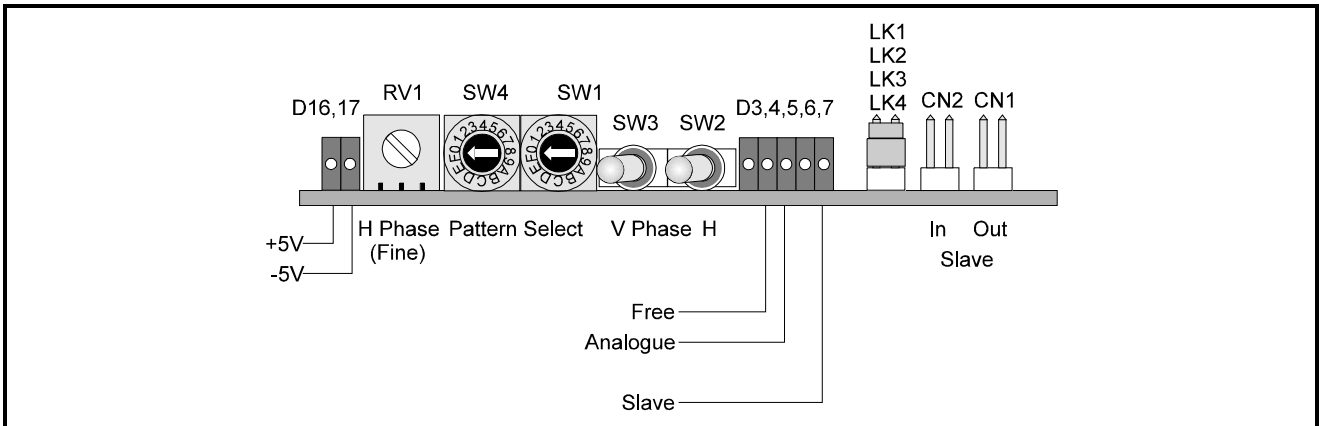


D1 SERIAL OUTPUTS

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



CARD EDGE CONTROLS



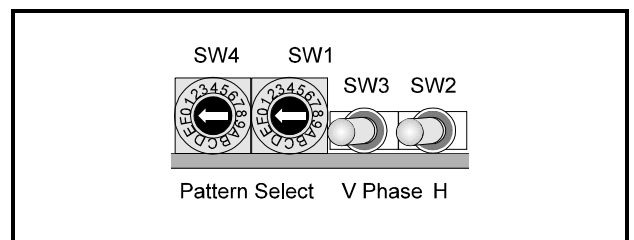
Adjustment of the settings for the IQD1LPG is available either via card edge controls and/or via a more comprehensive remote control system using RollCall™.

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 Main-frames 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

These HEX switches 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:

FREE

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

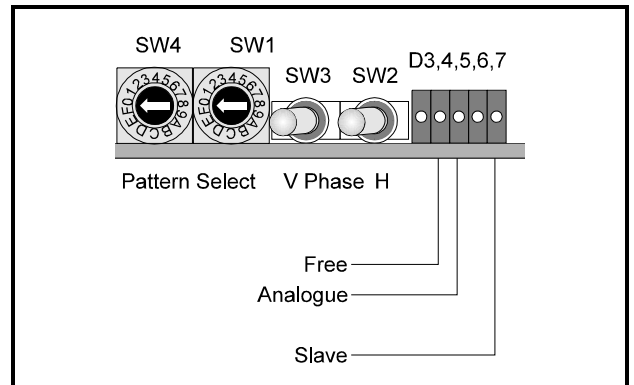
ANALOGUE

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

SLAVE

The unit will lock to the signal connected to the card Slave connector via the special linking cable assembly that may be connected to the Slave connector of other similar modules.

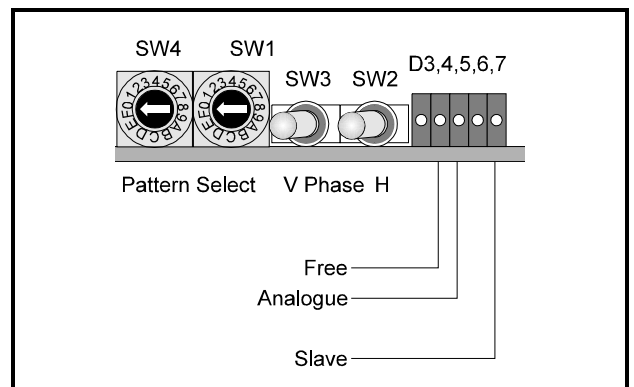
The mode selection system uses switches SW1, SW2 and the STATUS LED's.



To Select The External Reference Signal

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

(Note that the yellow LED D7, has no function on this unit)



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)

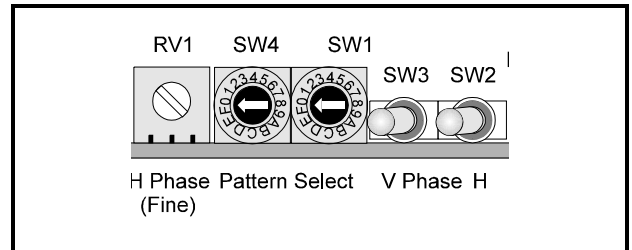
Operating RV1 enables the horizontal phasing to be adjusted left or right by at least ± 35 ns.

V PHASE

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

INDICATORS D16,17

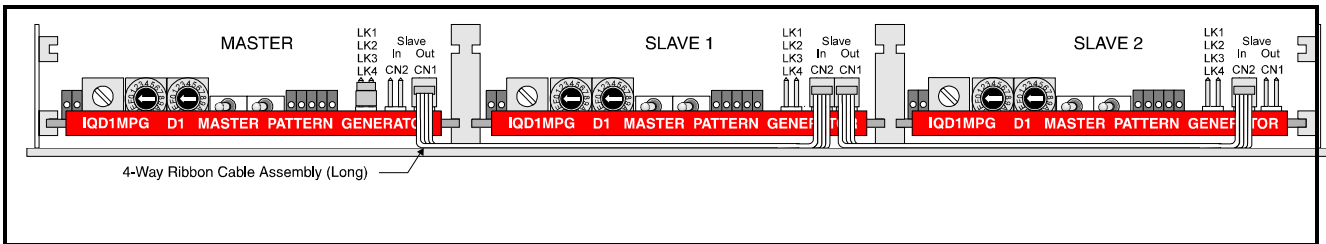
D16 indicates that the +5V power supply is present and D17 that the -5V power supply is present.



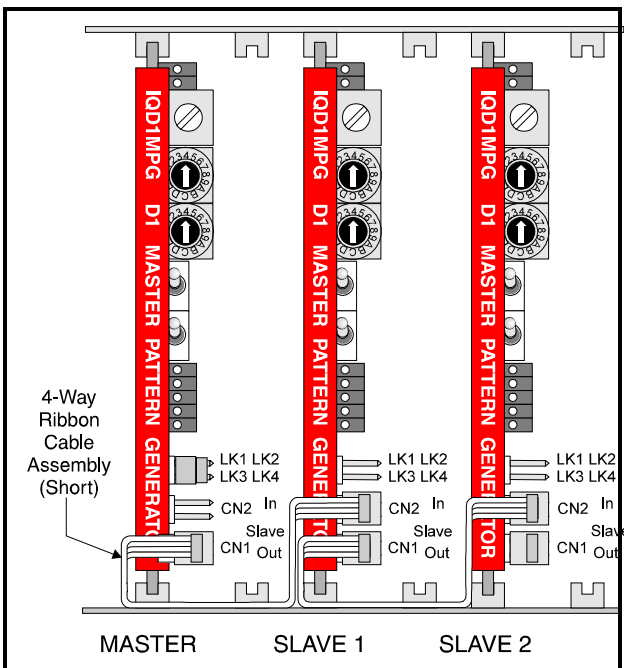
MASTER-SLAVE MODE CONFIGURATION

The slave mode may be used in a system containing more than 1 module where the master card is set to genlock to the required reference, (or free run), and then all subsequent cards linked together using the supplied 4-way ribbon cable. This enables a system supplying many patterns, to be locked together, and to a lock to a reference. A maximum of 15 cards, using the 3U mainframe, or 3 cards, using the 1U mainframe, may be linked in this fashion.

Example of three IQD1MPG cards locked together in a 1U mainframe:



Example of three IQD1MPG cards locked together in a 3U mainframe:
(Cards shown in alternate slots for clarity)



The Slave Out connector (CN1) of the Master card is connected to the Slave In (CN2) of the Slaved card using the supplied 4-way ribbon cable assembly. Other slaved cards are similarly connected. (Note that the cable connections are pin-to-pin)

TO CONFIGURE A CARD AS A MASTER

Set SW4 to the F position and operate SW2 to select either Free, Analogue or D1 reference signal mode as indicated by the appropriate status LED.

Note that the Slave mode must not be selected. Links LK1, 2, 3 and 4 should be fitted.

TO CONFIGURE A CARD AS A SLAVE

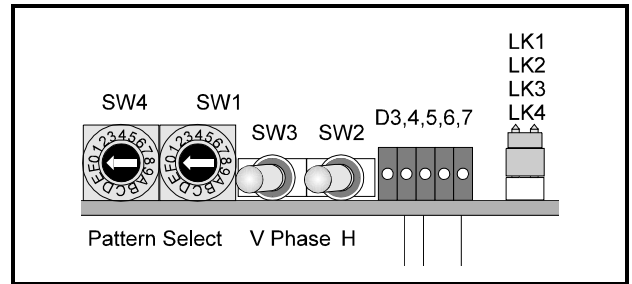
Set SW4 to the F position and operate SW2 to select the Slave reference signal mode as indicated by the appropriate status LED.

Note that only the Slave mode should be selected. Links LK1, 2, 3 and 4 should not be fitted.

TIMING CONSIDERATIONS IN THE SLAVED MODE

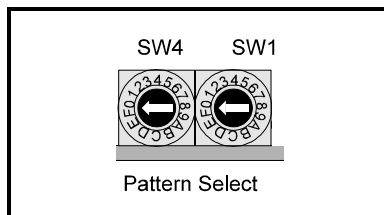
When cards are slaved to a Master all output signals will be locked together (synchronous) however, the timing of the signals from the Slaved cards relative to those from the Master card will be dependent on the settings of the Vertical and Horizontal phasing controls.

It follows that in a Master-Slave system configuration it is important to ensure that all output signals are timed correctly using the phasing controls.



PATTERN SELECTION

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



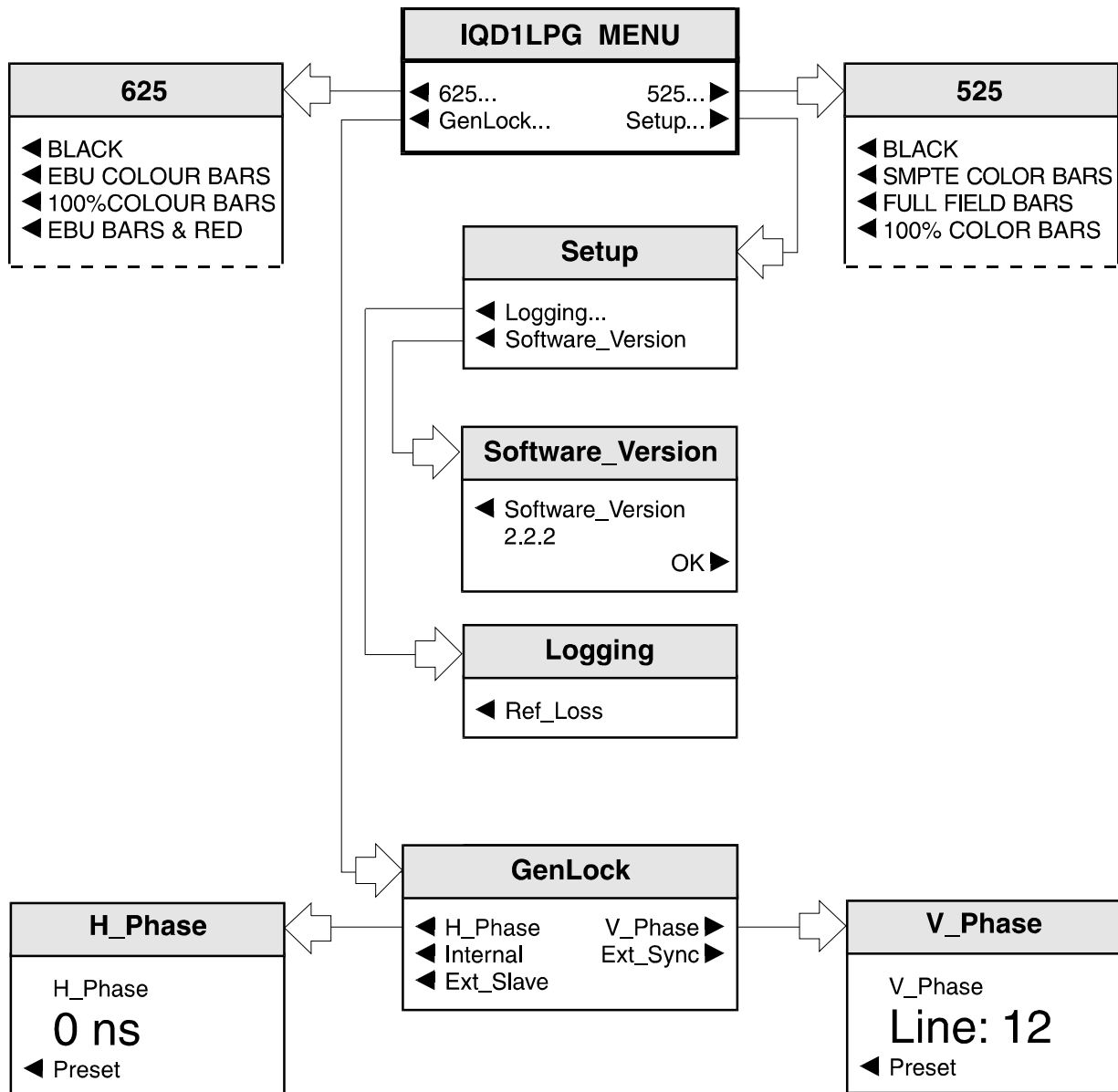
The codes for the various patterns are as follows:

625 LINE PATTERNS D1 10-BIT

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

525 LINE PATTERNS D1 10-BIT

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



***IQD1LPG
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 IQD1LPG Menu System Opposite)

625

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.

This selection reveals a sub-menu containing a list of all the 625 line patterns available from the unit. A full list of these patterns (in the same order) will be found on page 16.10.

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.

525

This selection reveals a sub-menu containing a list of all the 525 line patterns available from the unit. A full list of these patterns (in the same order) will be found on page 16.11. Selection as in 625 above.

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

The unit will lock to the signal connected to the card Slave connector via the special linking cable assembly that may be connected to the Slave connector of other similar modules.

*Note that the selected mode will be displayed in the Information window followed by the word `Ref:' If this followed by `OK' this means that the relevant locking signal source is available and the unit will lock to that signal. If this followed by `***' this means that the relevant locking signal source is not available and the unit will default to the Internal mode.*

SETUP

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

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. (See Section 1, The RCIF Menu System)

Software_Version

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

