



User Instruction Manual

IQDSK00

HD/SD-SDI Linear Keyer

IQDSK01

SD-SDI Linear Keyer

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1. Introduction

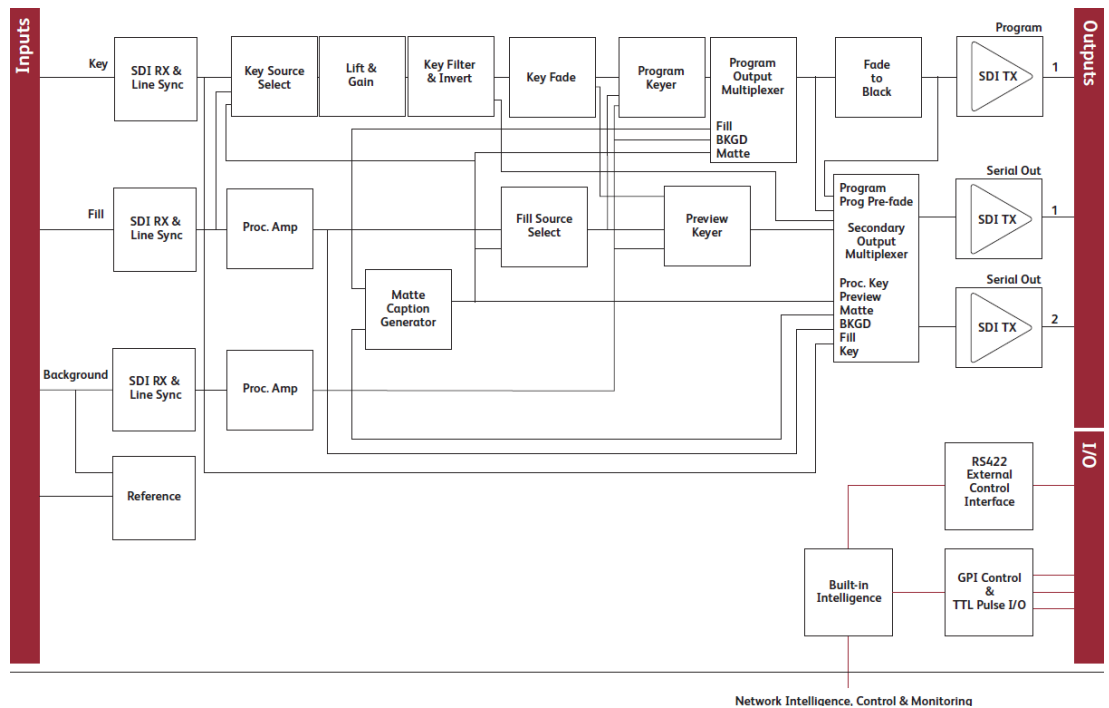
1.1 Module Description

The IQDSK00 and IQDSK01 modules provide simple linear or Luma keying capability: the IQDSK00 for HD/SD-SDI video streams, and the IQDSK01 for SD-SDI video streams.

The modules provide a dedicated program output along with selectable preview or program outputs which include a clean feed option. Being transparent to ancillary data allows the modules to pass any embedded audio or metadata, and this combined with a short signal delay makes the IQDSK00/01 suitable for all operational environments.

As well as operating with the RollCall control and monitoring system, the modules can interface with external systems using RS-422 control. When combined with the Snell Kahuna switcher, this allows seamless integration via the Kahuna control GUI enabling direct keying control and reporting.

1.2 Block Diagram



1.3 Enclosures

The modules can only be fitted into the following enclosure types:



Enclosure order codes: IQH3B-S-0, IQH3B-S-P



Enclosure order codes: IQH1A-S-P



Enclosure order codes: IQH3A-S-0, IQH3A-S-P



Enclosure order codes: IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P



Enclosure order codes: IQH1A-S-P

1.4 Module Order Codes

Order Code	Description
IQDSK0026-1A	HD/SD-SDI linear keyer. 1 program, 2 selectable preview SDI outputs.
IQDSK0045-2A	HD/SD-SDI linear keyer. 1 program, 2 selectable preview SDI outputs, external control interface via RS-422.
IQDSK0046-2A	HD/SD-SDI linear keyer. 1 program, 2 selectable preview SDI outputs, external control interface via RS-422, relay bypass for background input to program output.
IQDSK0126-1A	SD-SDI linear keyer. 1 program, 2 selectable preview SDI outputs.
IQDSK0145-2A	SD-SDI linear keyer. 1 program, 2 selectable preview SDI outputs, external control interface via RS-422.
IQDSK0146-2A	SD-SDI linear keyer. 1 program, 2 selectable preview SDI outputs, external control interface via RS-422, relay bypass for background input to program output.

2. Technical Specifications

2.1 IQDSK00

Inputs and Outputs	
Signal Inputs	
Serial digital background (bkgd)	1 x BNC, terminated in 75 Ohms
Serial digital key (key)	1 x BNC, terminated in 75 Ohms
Serial digital fill (fill)	1 x BNC, terminated in 75 Ohms
Standards	1.5 Gbit/s HD-SDI, SMPTE 292M/296M 270 Mbit/s SDI, SMPTE 259M-C
Analog reference (ref)	1 x BNC, terminated in 75 Ohms
Standards	HD Tri-sync, SMPTE 274M SD Bi-sync, RS170A
Signal Outputs	
Serial digital (prog 1)	1 x SDI Program
Serial digital (preview 1, 2)	2 x SDI Preview (independently selectable)
Standards	1.5 Gbit/s HD-SDI, SMPTE 292M/296M 270 Mbit/s SDI, SMPTE 259M-C
Control	
GPI	2 x closing contact style inputs 1 x I/O via BNC
RS422 remote control	1 x 9-pin D-type connector
Controls	
Bkgd/fill luma gain adjust	±6 dB in 0.1 dB steps
Bkgd/fill chroma gain adjust	±6 dB in 0.1 dB steps
Bkgd/fill black level adjust	± 100 mV in 0.8 mV steps
Fill picture position	Approx +600 ns in 148 ns (SD), or 27 ns (HD) steps
Key picture position	Approx +600 ns in 74 ns (SD), or 13.5 ns (HD) steps
Key gain	0 to 13.686 (0x0000 - 0xFFFF)
Key lift	-10% to +110% (0x800 - 0x7ff) in 0.01% steps
Program fade to black	On/Off. On: fades to black, Off: returns to program setting
Program fade to black time	0 to 2047 Frames (0x0000 - 0x0800) in steps of 1 field. Preset to 100
Default program output	Fill, Matte, Color Bars, Black
Preview output 1 and 2 select	Independent selection for each output of: Preview, Program Prefade, Bkgd I/P, Fill I/P, Key I/P, Processed Key, Matte, Black, Color Bars

Genlock mode	Analog Reference/Background Input. <i>Note: Fill and Key inputs can be up to one line earlier, but not later than the background input in this mode.</i>
Reference default	On Ref loss, use background input. If background input not valid, use fill input, otherwise free-run
Genlock H phase	± 1 H adjustable in 13.5 ns steps (HD), or ± 0.5 H in 37 ns steps (SD)
Ancillary data select	Background Input/Fill Input
Ancillary data blanking	Blank for HANC and/or VANC (Program Output, Preview Selection, Program Pre-fade, Background Only)
Pattern generator	On/Off – EBU Color Bars (Preview Out Only)
Keyer Controls	
Keyer control	Rollcall/RS422
Keyer mode	Linear, Luma
Key source	Key Input/Matte/Fill Input (self-key)
Fill source	Fill Input/Matte
Key invert	Off/On
Keyer enable	Off/On (cut to fade on/off the keyer)
Fade enable	Off/On (On: fade function enabled)
Keyer fade time	0 to 2047 Frames (0x0000 - 0x800) 1 field. Preset to 100.
Mix enable	Off/On (dissolve or cut to the set mix level)
Mix level	0 to 100% in 1% steps (100% = Full Key). Preset to 50%
Key opacity	Key fade level 50 to 100% (100% = Key full on)
Memory	16 user memories. Store/Name/Recall
GPI/O function	GPI – programmable to recall any memory, and toggle between two selectable memories <i>Note: GPIs functional whether Keyer control selected to RollCall or RS422.</i>
GPO (output closed when true)	Key Tally On, Key Fade Up, Key Fade Down, Full Key (100% mix) enabled, Bkgd Lost
Preset unit	Returns all settings to factory defaults
Matte Controls	
Matte Select	Single Color (default)/Frame Store
Frame store capture source	Background Input (default)/Fill Input
Frame capture	Activates capture from selected input
Frame store status	Captured = frame stored, Empty = not stored
Matte hue	0 to 360° (preset to 0°)
Matte saturation	0 to 100% (preset to 0%)
Matte luminance	0 to 100% (preset to 0%)

Indicators

Power	OK (green)
CPU running	OK (green flashing)
FPGA running	OK (green flashing)
Status	OK (green), Warning (yellow), Error (red)
Background input	OK (green)
Key input	OK (green)
Fill input	OK (green)

Additional Controls via the RollCall Control Panel

Logging	Input Status*
	Input Standard
	Reference Status
	ANC Error (Bkgd, Fill)
	EDH Error*, Error-Time*
	EDH Error-Seconds*
	CRC Error*, Error-Time*
	CRC Error-Seconds*
	<i>*Background, Key, and Fill</i>

Specifications

Input cable length	Up to 140 m Belden 1694A @ 1.5 Gbit/s (40 m input cable length and 35m output cable length, relay bypass version. Belden 1694A @ 1.5 Gbit/s) Up to 350 m Belden 1694A @ 270 Mbit/s <i>Note: Specified cable lengths are a guide only. Exact cable length performance will depend on the quality of the cable used, the SDI video rate, and the system setup. It is advisable not to cascade modules using the relay rear version although it may be possible if the interconnecting cable lengths are kept to a minimum.</i>
Input return loss	Better than -15 dB
Serial output level	800 mV \pm 10%
Output overshoot	<70 mV
Output return loss	Better than -15 dB
Output jitter	HD LF <1 UI, HF <0.2 0.2 UI SD <0.2 UI
Minimum delay (when locked to background input)	HD: 3 μ s SD: 5 μ s

Relay Bypass Versions

Input return loss	Better than -8 dB (when not in BYPASS mode)
Output return loss	Better than -8 dB (when not in BYPASS mode)

Reference Input

Electrical	Black (HD tri-level and SD bi-level) and Black Burst (SD bi-level) SD bi-level - RS170A HD Tri-level - SMPTE 240M, 274M and 296M
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Connector/format	BNC/75 ohm panel jack on standard IQ connector panel
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Analog reference return loss	SD bi-level <-40 dB to 5.5 MHz HD tri-level <-35 dB to 30 MHz
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Video Standards	1125(1080)/29i, 1125 (1080)/25i 750(720)/59p, 750(720)/50p 525(480)/29i, 625(576)/25i 1125(1080)/30i, 1125(1080)/30p 1125(1080)/29p, 1125(1080)/25p 1125(1080)/24p, 1125(1080)/23p 750(720)/60p
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Note: All inputs must be the same standard.

EMC Performance Information

Environment	Commercial and light industrial E2
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Peak mains inrush current following a five-second mains interruption	No mains input
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Performance information	No performance degradation or cable length limitations
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Power Consumption

Module power consumption	8.5 W max (A frames) 8 PR (B frames) 9 W max (PR) – relay bypass version
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2.2 IQDSK01

Inputs and Outputs

Signal Inputs

Serial digital background (bkgd)	1 x BNC, terminated in 75 Ohms
Serial digital key (key)	1 x BNC, terminated in 75 Ohms
Serial digital fill (fill)	1 x BNC, terminated in 75 Ohms
Standards	270 Mbit/s SDI, SMPTE 259M-C
Analog reference (ref)	1 x BNC, terminated in 75 Ohms
Standards	SD Bi-sync, RS170A

Signal Outputs

Serial digital (prog 1)	1 x SDI Program
Serial digital (preview 1, 2)	2 x SDI Preview (independently selectable)
Standards	270 Mbit/s SDI, SMPTE 259M-C

Control

GPI	2 x closing contact style inputs 1 x I/O via BNC
RS422 remote control	1 x 9-pin D-type connector

Controls

Bkgd/fill luma gain adjust	±6 dB in 0.1 dB steps
Bkgd/fill chroma gain adjust	±6 dB in 0.1 dB steps
Bkgd/fill black level adjust	± 100 mV in 0.8 mV steps
Fill picture position	Approx +600 ns in 148 ns (SD), or 27 ns (HD) steps
Key picture position	Approx +600 ns in 74 ns (SD), or 13.5 ns (HD) steps
Key gain	0 to 13.686 (0x0000 - 0xFFFF)
Key lift	-10% to +110% (0x800 - 0x7ff) in 0.01% steps
Program fade to black	On/Off. On: fades to black, Off: returns to program setting
Program fade to black time	0 to 2047 Frames (0x0000 - 0x0800) in steps of 1 field. Preset to 100
Default program output	Fill, Matte, Color Bars, Black
Preview output 1 and 2 select	Independent selection for each output of: Preview, Program Prefade, Bkgd I/P, Fill I/P, Key I/P, Processed Key, Matte, Black, Color Bars
Genlock mode	Analog Reference/Background Input. <i>Note: Fill and Key inputs can be up to one line earlier, but not later than the background input in this mode.</i>
Reference default	On Ref loss, use background input. If background input not valid, use fill input, otherwise free-run
Genlock H phase	±1 H adjustable in 13.5 ns steps (HD), or ±0.5 H in 37 ns steps (SD)

Ancillary data select	Background Input/Fill Input
Ancillary data blanking	Blank for HANC and/or VANC (Program Output, Preview Selection, Program Pre-fade, Background Only)
Pattern generator	On/Off – EBU Color Bars (Preview Out Only)
Keyer Controls	
Keyer control	Rollcall/RS422
Keyer mode	Linear, Luma
Key source	Key Input/Matte/Fill Input (self-key)
Fill source	Fill Input/Matte
Key invert	Off/On
Keyer enable	Off/On (cut to fade on/off the keyer)
Fade enable	Off/On (On: fade function enabled)
Keyer fade time	0 to 2047 Frames (0x0000 - 0x800) 1 field. Preset to 100.
Mix enable	Off/On (dissolve or cut to the set mix level)
Mix level	0 to 100% in 1% steps (100% = Full Key). Preset to 50%
Key opacity	Key fade level 50 to 100% (100% = Key full on)
Memory	16 user memories. Store/Name/Recall
GPI/O function	GPI – programmable to recall any memory, and toggle between two selectable memories <i>Note: GPIs functional whether Keyer control selected to RollCall or RS422.</i>
GPO (output closed when true)	Key Tally On, Key Fade Up, Key Fade Down, Full Key (100% mix) enabled, Bkgd Lost
Preset unit	Returns all settings to factory defaults
Matte Controls	
Matte Select	Single Color (default)/Frame Store
Frame store capture source	Background Input (default)/Fill Input
Frame capture	Activates capture from selected input
Frame store status	Captured = frame stored, Empty = not stored
Matte hue	0 to 360° (preset to 0°)
Matte saturation	0 to 100% (preset to 0%)
Matte luminance	0 to 100% (preset to 0%)
Indicators	
Power	OK (green)
CPU running	OK (green flashing)
FPGA running	OK (green flashing)
Status	OK (green), Warning (yellow), Error (red)
Background input	OK (green)

Key input	OK (green)
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Fill input	OK (green)
------------	------------

Additional Controls via the RollCall Control Panel

Logging	Input Status*
	Input Standard
	Reference Status
	ANC Error (Bkgd, Fill)
	EDH Error*, Error-Time*
	EDH Error-Seconds*
	CRC Error*, Error-Time*
	CRC Error-Seconds*
	<i>*Background, Key, and Fill</i>

Specifications

Input cable length	Up to 350 m Belden 1694A @ 270 Mbit/s
Input return loss	Better than -15 dB
Serial output level	800 mV \pm 10%
Output overshoot	<70 mV
Output return loss	Better than -15 dB
Output jitter	<0.2 UI
Minimum delay (when locked to background input)	5 μ s

Reference Input

Electrical	Black and Black Burst SD bi-level - RS170A
Connector/format	BNC/75 ohm panel jack on standard IQ connector panel
Analog reference return loss	SD bi-level <-40 dB to 5.5 MHz

Video Standards	525(480)/29i, 625(576)/25i <i>Note: All inputs must be the same standard.</i>
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EMC Performance Information

Environment	Commercial and light industrial E2
Peak mains inrush current following a five-second mains interruption	No mains input
Performance information	No performance degradation or cable length limitations

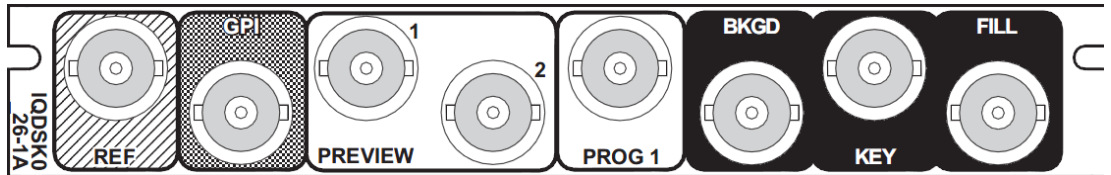
Power Consumption

Module power consumption 8.5 W max (A frames)

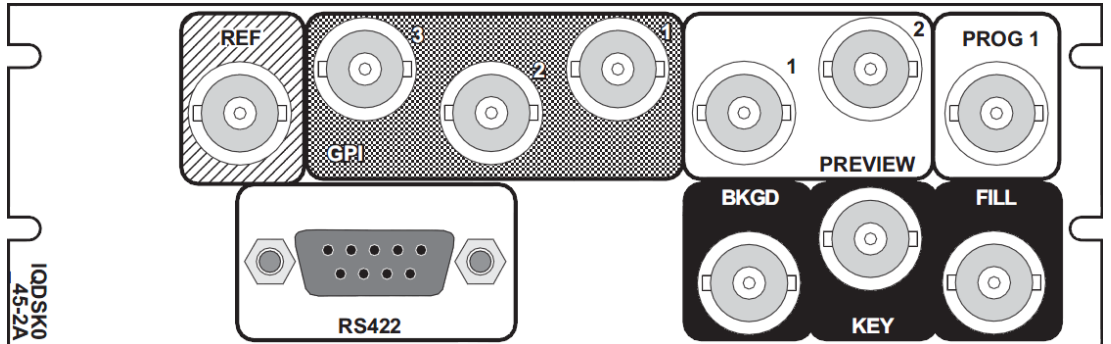
8 PR (B frames)

3. Connections

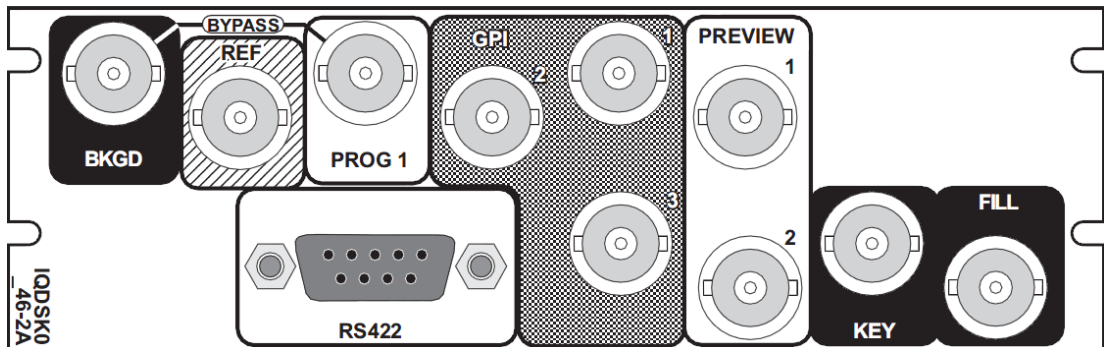
3.1 Rear Panel Views



IQDSK0026-1A, IQDSK0126-1A



IQDSK0045-2A, IQDSK0145-2A



IQDSK0046-2A, IQDSK0146-2A

3.2 Input Connections

Label	Description	Connector
BKGD	Serial digital background. On the IQDSK0046-2A module, a relay bypass connection exists between the BKGD input and the PROG 1 output.	1 x BNC.
KEY	Serial digital key.	1 x BNC.
FILL	Serial digital fill.	1 x BNC.
REF	Analogue reference input.	1 x BNC.

3.3 Output Connections

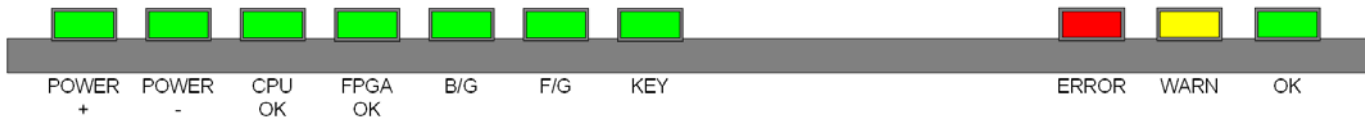
Label	Description	Connector
PROG 1	<p>Program output.</p> <p>On the program output, the key layer can be faded up or down, or cut in and off. It is possible to mix between the fill and background inputs. The output can also be faded or cut to black.</p> <p>In the event of background input loss the default output can be set to revert to Fill, Matte, Color Bars, or Black. This is valid for all outputs but only for the Preview outputs if Program output is selected. The default fill ancillary data is only passed to the output when Ancillary data source is set to fill.</p> <p>On the IQDSK0046-2A and module, a relay bypass connection exists between the BKGD input and the PROG 1 output.</p>	1 x BNC.
PREVIEW	<p>Preview output.</p> <p>The output can display any of the 3 SDI inputs, the processed key signal, the matte source, color bars, or black.</p> <p>The default output can be set to matte, color bars, or black.</p>	2 x BNC.

3.4 Control Connections

Label	Description	Connector
GPI (1A)	General Purpose Input/Output.	1 x BNC.
GPI (2A)	<p>General Purpose Input/Output.</p> <p>Two closing contact style and one I/O GPI connections.</p>	3 x BNC.
RS422 (2A)	<p>RS422 connection.</p> <p>Enables direct keyer control from production switchers such as the Snell Kahuna.</p>	1 x 9-pin D-type.

4. Card Edge LEDs

The LEDs on the edge of the module indicate its operating status.



LED	Color	State	Indication
POWER +	Green	Illuminated	A positive power supply is present.
POWER -	Green	Illuminated	A negative power supply is present.
CPU OK	Green	Flashing	The CPU is running.
FPGA OK	Green	Illuminated	The unit is booting. LED stays illuminated until the SDI is enabled.
	Green	Flashing	The FPGA is running.
B/G	Green	Illuminated	The background input signal is present and valid.
	Green	Flashing	The background input signal is present but not co-timed.
F/G	Green	Illuminated	The fill input signal is present and valid.
	Green	Flashing	The fill input signal is present but not co-timed.
KEY	Green	Illuminated	The key input signal is present and valid.
	Green	Flashing	The key input signal is present but not co-timed.
ERR	Red	Illuminated	The board has an internal fault – service required.
WARN	Yellow	Illuminated	The background input is lost.
OK	Green	Illuminated	The background input is present and the module is operating correctly.

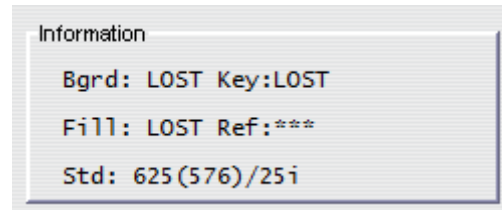
5. Controlling the IQDSK00/01 from the RollCall Control Panel

The RollCall Control Panel enables you to control the module through various different screens.

See the *RollCall Control Panel Installation & Operator's Manual* for information on installation and setup of the RollCall Control Panel.

5.1 The Information Window

The Information Window at the top of each screen displays information about the current operating state of the unit.



- **Bgrd:** The status of the background input signal.
- **Key:** The status of the key input signal.
- **Fill:** The status of the fill input signal.
- **Ref:** The unit's genlock status.
- **Std:** The current input standard.

The input statuses reported can be one of OK, FAIL:LOST, WARN:ERROR, or WARN:WRAPPED. The WARN:WRAPPED status indicates that the input is not co-timed with the reference/background. In this state, ancillary data is blanked.

When locked to a reference signal, the Background, Fill, and Key inputs:

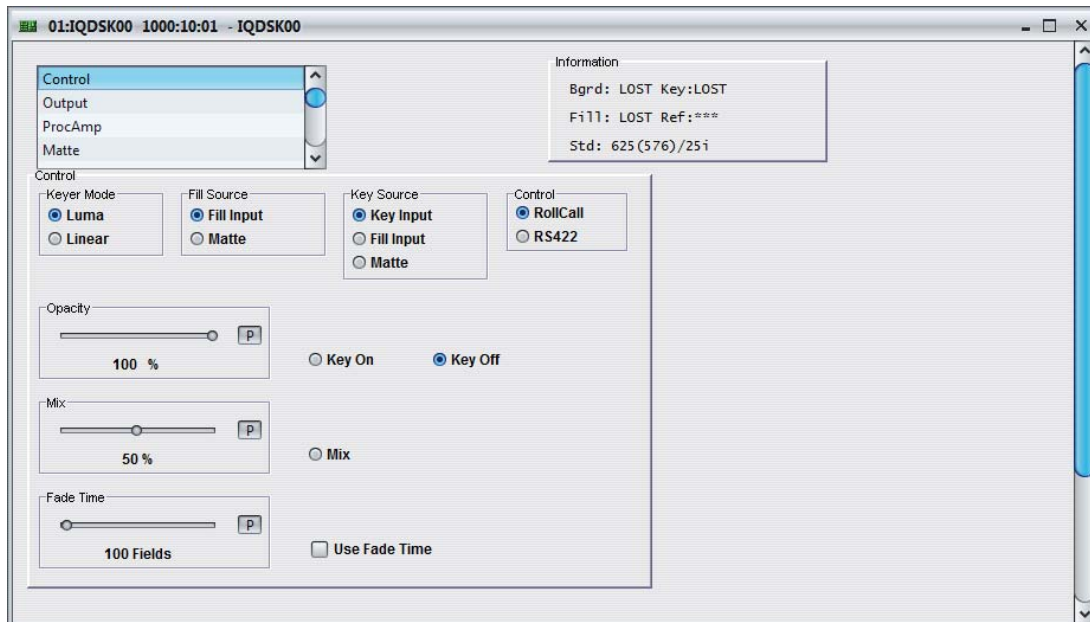
- Must be in the range of 5 μ s to 1H + 5 μ s ahead of the output for SD.
- Must be in the range of 3 μ s to 1H + 3 μ s ahead of the output for HD.

When locked to background, the fill and key inputs may be one line earlier, but not later than, the background input.

5.2 Control

The Control screen provides access to the main key and mix operations. The module can operate in two independent modes:

- As a keyer, where the key layer can be faded up or down, or cut in and off.
- As a simple mixer, with either a dissolve or cut to the set mix level.



5.2.1 Keyer Mode

- **Luma:** This mode should be used when a normal, non-keyed video signal is used at the fill source.



Background Signal



Fill Signal



Key Signal



Program Output Signal

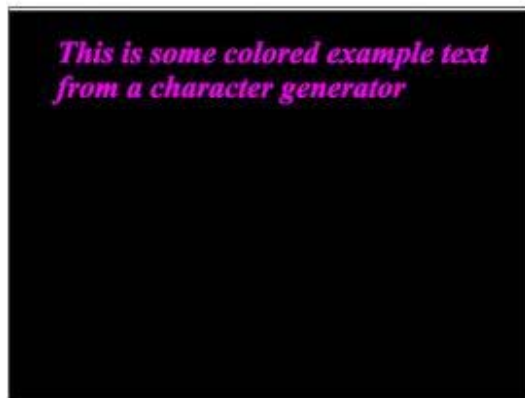
- **Linear:** This mode is used when the fill source has already been keyed, such as the output from a character generator, where the video outside the key area is black.

It is not possible to fade the key layer up or down in linear key mode. The key layer is cut on and off regardless of the Fade Enable setting.

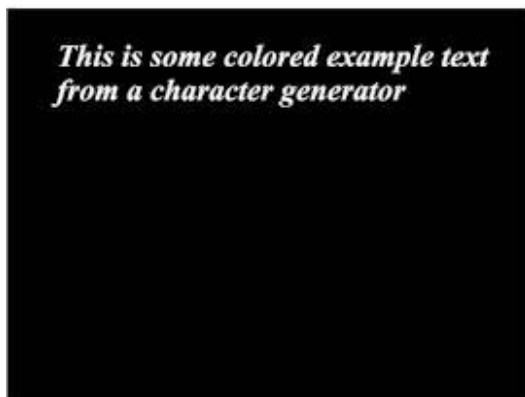
Continued on page 23.



Background Signal



Fill (Main output from Character Generator)



Key Signal
(Alpha output from Character Generator)

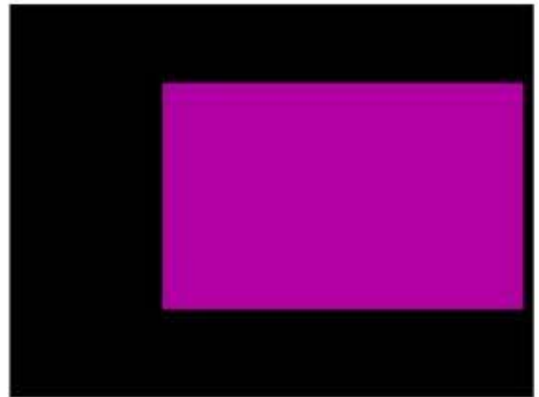


Program Output Signal

- **Linear (continued):** If the fill input is not black outside the key area, the result will be as shown opposite.



Background Signal



Fill Signal



Key Signal



Program Output Signal

5.2.2 Fill Source

The source of the fill input can be selected as either **Fill Input** or the **Matte** source.

When **Matte** is selected as the fill source, keying will still take place even if the fill input is lost.

5.2.3 Key Source

The source of the key signal can be selected as one of the **Key Input**, the **Fill Input**, or the **Matte** source.

When Matte or fill is selected as the key source, keying still takes place when the key input is lost.

5.2.4 Control

This configures the module's control input. **RollCall** allows the module to be controlled via the RollCall system. **RS422** allows the module to be directly controlled by an external keyer, such as a Snell Kahuna.

5.2.5 Key On/Key Off

Key On cuts or fades the Key layer to the specified level. **Key Off** cuts or fades the Key layer off.

5.2.6 Opacity

This level can be adjusted between 50% and 100% (key fully on), in increments of 1%. The preset value is 100%.

5.2.7 Mix

The mix level controls the proportion of background signal and fill signal in the output picture. When the **Mix** radio button control is selected, the unit will dissolve or cut to the selected level. The mix level can be manually adjusted while the control is enabled.

The level can be adjusted from 0% (background signal) to 100% (fill signal) in steps of 1%. Preset is to 50%.

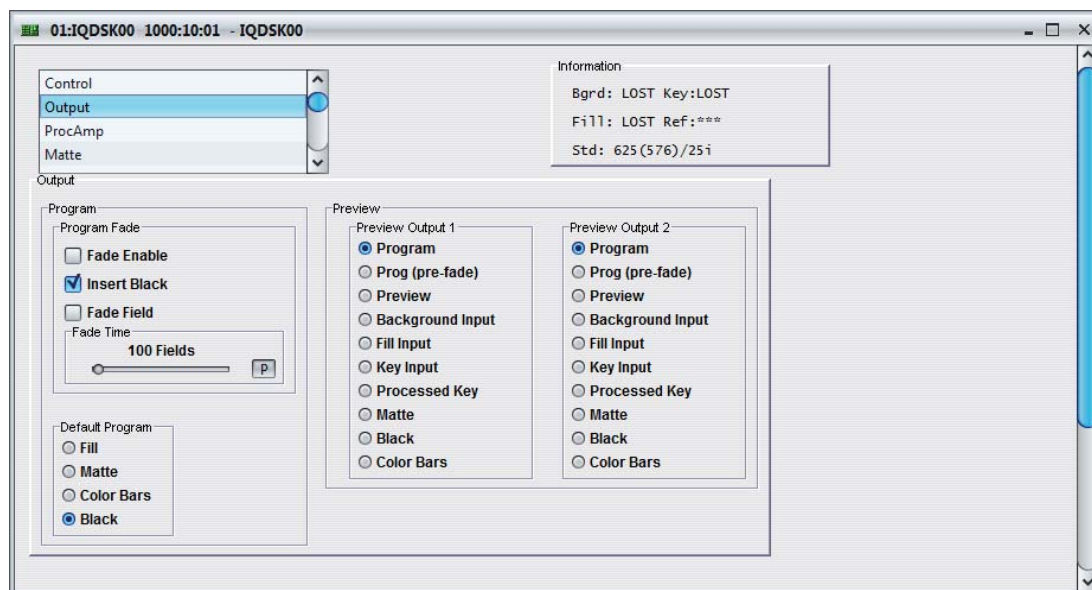
5.2.8 Fade Time

This sets the time taken to fade the Key layer up or down, or to dissolve to the set mix level. To enable the fade time, select the **Use Fade Time** check box.

The time can be adjusted from 0 fields (an instant cut) to 2047 fields in increments of 1 field. The preset value is 100 fields.

5.3 Output

The Output screen allows the Preview and Program output to be chosen.



5.3.1 Program

The Program Output keyer and mixer operations are controlled by the Key enable and Mix enable functions on the Control template.

If the fill or key inputs are lost, the program output will automatically revert to the background source.

5.3.1.1 Program Fade

These settings control the fading of the program output to and from black.

- **Fade Enable** when selected, the program output fades down to black in the specified fade time. Clearing the check box fades back up to normal program output in the specified fade time.
- **Insert Black:** On selecting the **Fade Enable** check box, the program output is faded to black for the duration set on the **Fade Time** slider, before cutting back to the program. On deselecting the **Fade Enable** the program cuts to black and fades up over the fade time period.
- **Fade Field:** Changes the start field by toggling between field 1 and field 2.
- **Fade Time:** Controls the time taken to fade from the background signal to and from black. The time can be adjusted from 0 fields (an instant cut) to 2047 fields in increments of 1 field. The preset value is 100 fields.

5.3.1.2 Default Program

If the background input is lost, the program output will revert to the signal selected as the **Default Program**. The default program options are: Default Fill, Matte, Color Bars, and Black.

If the Default Fill input is selected, and both the background and fill inputs are lost, the output will revert to black.

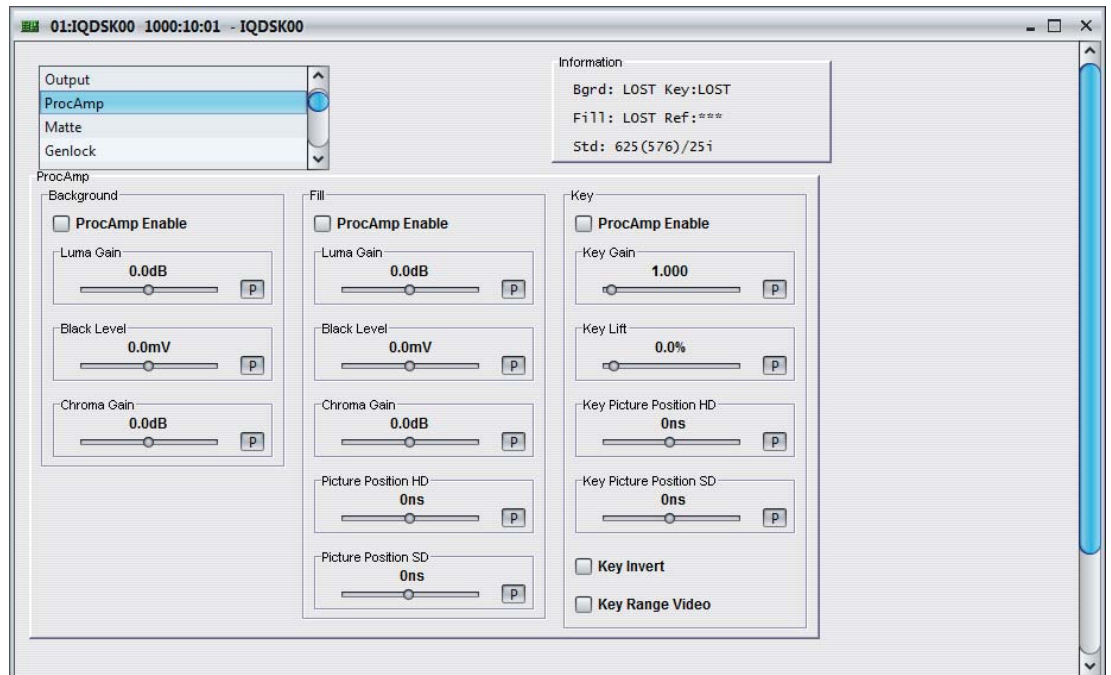
5.3.2 Preview Output (1 and 2)

The preview output can be selected from the following sources:

- **Program:** Displays the default program output.
- **Prog (pre-fade):** If the program output has been faded to black, this option displays the unfaded picture.
- **Preview:** Displays the picture that will be displayed when Key On is selected. Note that the effects of opacity adjustment are not shown, and the key mode on the preview output will be Luma (even if Linear is selected); in this case, the Key mode will change to Linear when Key is selected.
- **Background Input:** Displays the background input.
- **Fill Input:** Displays the fill input.
- **Key Input:** Displays the key input.
- **Processed Key:** Displays the signal output from the key proc amp that will be used for keying.
- **Matte:** Displays the currently selected matte source.
- **Black:** Displays a black picture.
- **Color Bars:** Displays a color bar signal.

5.4 ProcAmp

The ProcAmp screen allows the processing controls for the background, fill and keyer signals to be adjusted.



5.4.1 Background

These controls allow the background signal to be adjusted.

- **ProcAmp Enable:** When selected, the background procamp functions will be enabled. When not selected, the preset values of the controls will be used.
- **Luma Gain:** Adjusts luminance gain on the background signal. The range of adjustment is ± 6 dB in steps of 0.1 dB. The preset value is 0.0 dB.
- **Black Level:** Adjusts the black level on the background signal. The range of adjustment is ± 100 mV in steps of 0.8 mV. The preset value is 0.0 mV.
- **Chroma Gain:** Adjusts the chrominance gain on the background signal. The range of adjustment is ± 6 dB in steps of 0.1 dB. The preset value is 0.0 dB.

5.4.2 Fill

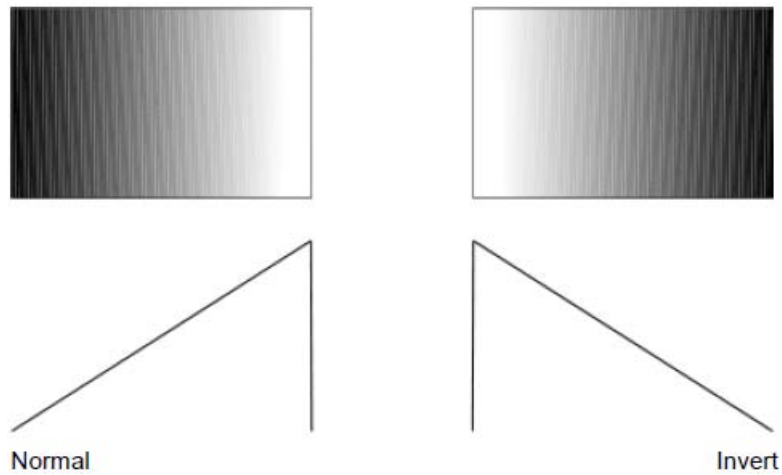
These controls allow the fill signal to be adjusted.

- **ProcAmp Enable:** When selected, the fill procamp functions will be enabled. When not selected, the preset values of the controls will be used.
- **Luma Gain:** Adjusts luminance gain on the fill signal. The range of adjustment is ± 6 dB in steps of 0.1 dB. The preset value is 0.0 dB.
- **Black Level:** Adjusts the black level on the fill signal. The range of adjustment is ± 100 mV in steps of 0.8 mV. The preset value is 0.0 mV.
- **Chroma Gain:** Adjusts the chrominance gain on the fill signal. The range of adjustment is ± 6 dB in steps of 0.1 dB. The preset value is 0.0 dB.
- **Picture Position HD/Picture Position SD:** Allows the fill picture position to be changed. The range of adjustment is approximately ± 600 ns in 148 ns (SD) or 27 ns (HD) steps. The preset value is 0.0 ns.

5.4.3 Key

These controls allow the key signal to be adjusted.

- **ProcAmp Enable:** When selected, the key procamp functions will be enabled. When not selected, the preset values of the controls will be used.
- **Key Gain:** The key input signal is multiplied by the gain about the key lift point. The Range of adjustments is from 0.000 to 13.686 in steps of 0.001. The preset value is 1.000.
- **Key Lift:** Adjusts the level of the key input signal that gives no keying action. The gain then works about this point. The range of adjustment is from -10% to +110% in steps of 0.1%. The preset value is 0.0%.
- **Key Picture Position HD/Key Picture Position SD:** Allows the timing of the key signal to be adjusted relative to the background signal. The range of adjustment is approximately ± 600 ns in 74 ns (SD) or 13.5 ns (HD) steps. The preset value is 0.0 ns.
- **Key Invert:** When selected, the key signal will be inverted as shown below:



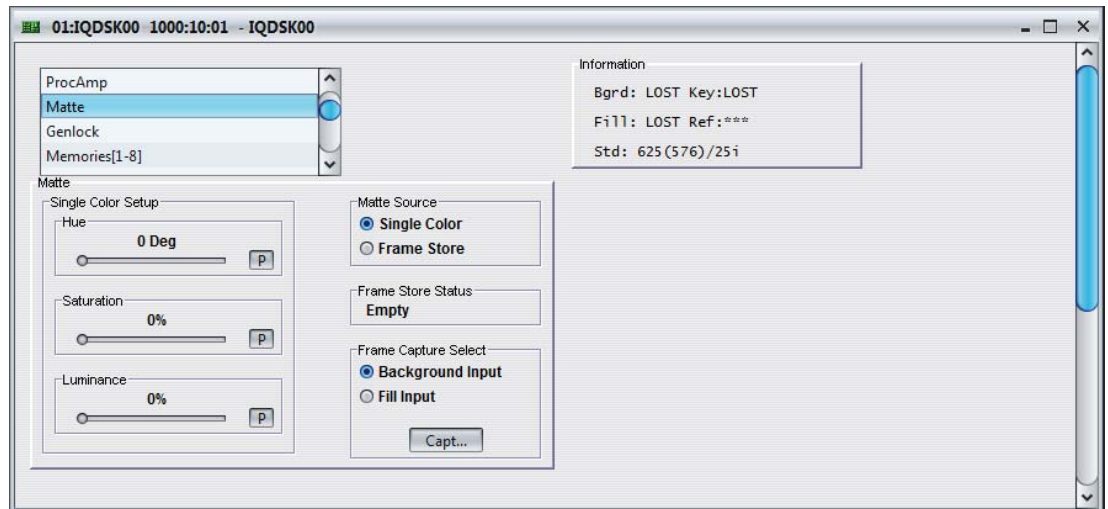
- **Key Range Video:** When selected, 100% key signal is at a gain of 1.000. If there is a discrepancy between 100% key and a gain of 1.000, select or deselect the Key Range Video control.

5.5 Matte

The Matte function provides either a single color full frame of video, or a full frame of video that can be captured from the background and fill inputs.

Note: Any captured data will be lost when the unit is powered down.

On unit start-up, the single color matte is selected as the matte source until a frame of video from either the background or fill input has been captured.



5.5.1 Single Color Setup

- **Hue:** Adjusts the hue of the single color matte source. The range of adjustment is from 0 to 360° in 1° steps. The preset value is 0°.
- **Saturation:** Adjusts the saturation of the single color matte source. The range of adjustment is from 0% to 100% in 1% steps. The preset value is 0%.
- **Luminance:** Adjusts the luminance of the single color matte source. The range of adjustment is from 0% to 100% in 1% steps. The preset value is 0%.

5.5.2 Matte Source

Matte Source enables the matte source to be chosen:

- **Single Color:** The single color picture as set up with the Single Color Setup controls.
- **Frame Store:** The captured full frame picture.

5.5.3 Frame Store Status

Frame Store Status will show if the frame store has a picture stored (**Captured**) or not (**Empty**).

5.5.4 Frame Capture Select

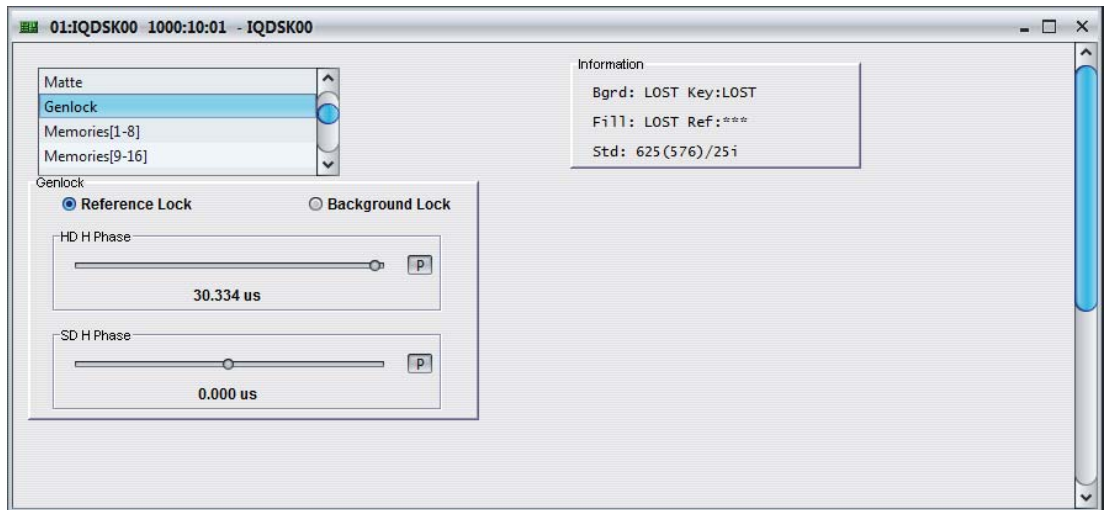
Use this control to select the input source to be captured and to perform the frame capture operation.

To capture a frame, select the input source (**Background Input** or **Fill Input**) and then click **Capt....**

Note: This picture frame will be lost when the unit is powered down.

5.6 Genlock

The unit can be set to genlock to the analog reference or the background input. The delay through the unit and allowable offset of the input signals relative to the selected reference is different for the two genlock modes.

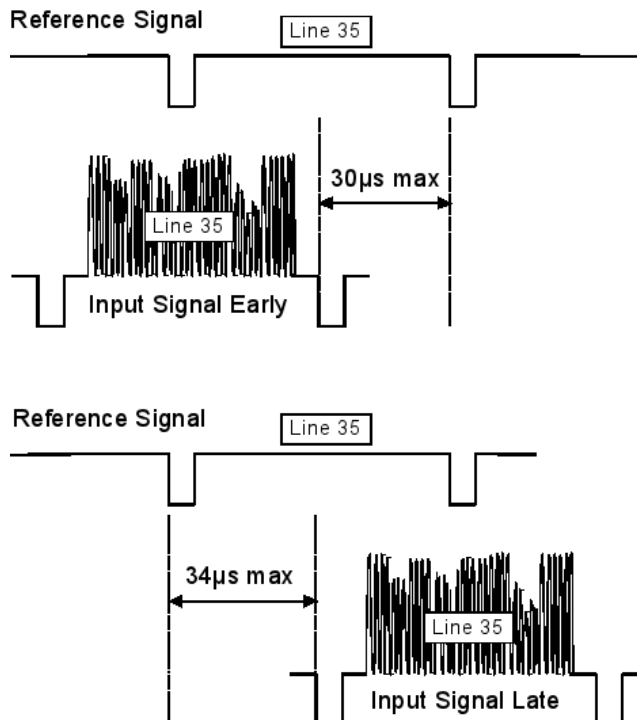


5.6.1 Reference Lock

When this control is selected, the unit will lock to a valid signal connected to the Reference input.

When locked to a reference signal, the background, fill, and key inputs must be in the range of 5 μ s to 1H + 5 μ s ahead of the output for SD, or 3 μ s to 1H + 3 μ s ahead of the output for HD (approx).

If the video inputs fall outside of this range, the keyer will not operate correctly, and a vertical shift in the keyed out put is likely.



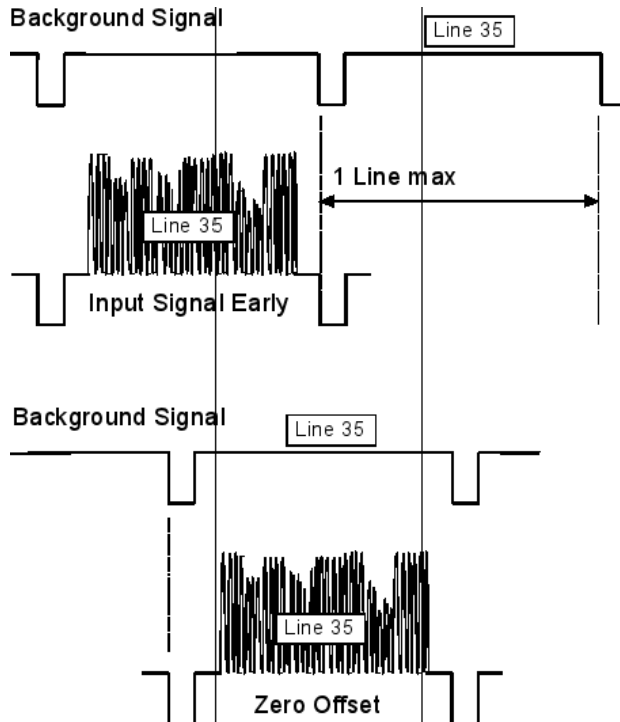
5.6.2 Background Lock

When this control is selected, the unit will lock to a valid background signal.

When locked to background, the fill and key inputs may be one line earlier, but not later than, the background input. If the fill and key inputs fall outside of this range, the keyer will not operate correctly, and a vertical shift in the keyed output is likely.

Selecting the background lock mode provides the minimum delay through the unit for both the program and preview outputs – approximately 4 μ s.

Note: H-Phase adjustment is not available in this mode.

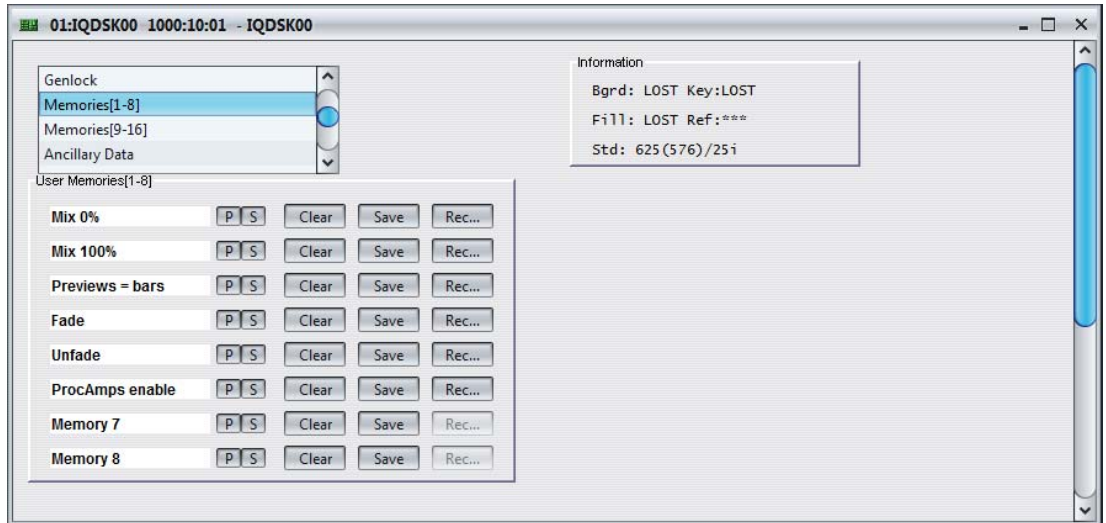


5.6.3 HD H Phase/SD H Phase

These controls allow the horizontal timing of the Program output signal in Lock to Reference mode relative to the analog reference sync.

5.7 Memories 1-8 and 9-16

The Memories functions allow the unit's settings to be saved and recalled. There are 16 memory locations available.



To change the name of a memory location:

- In the text field, type a new name for the memory location.

To return the name to the preset setting:

- Click the **P** button.

To save the unit's current settings to memory:

- Click the **Save** button next to the desired memory location.

To recall a saved configuration:

- Click the **Recall** button next to the corresponding memory location.

Note: If a setup has not be saved to a location, the Recall button will be grayed out.

To clear a memory location:

- Click the **Clear** button next to the memory.

5.8 Ancillary Data

Ancillary Data allows the source of ancillary data to be specified, and whether horizontal ancillary data (HANC), vertical ancillary data (VANC), or both are blanked.



5.8.1 Ancillary data source

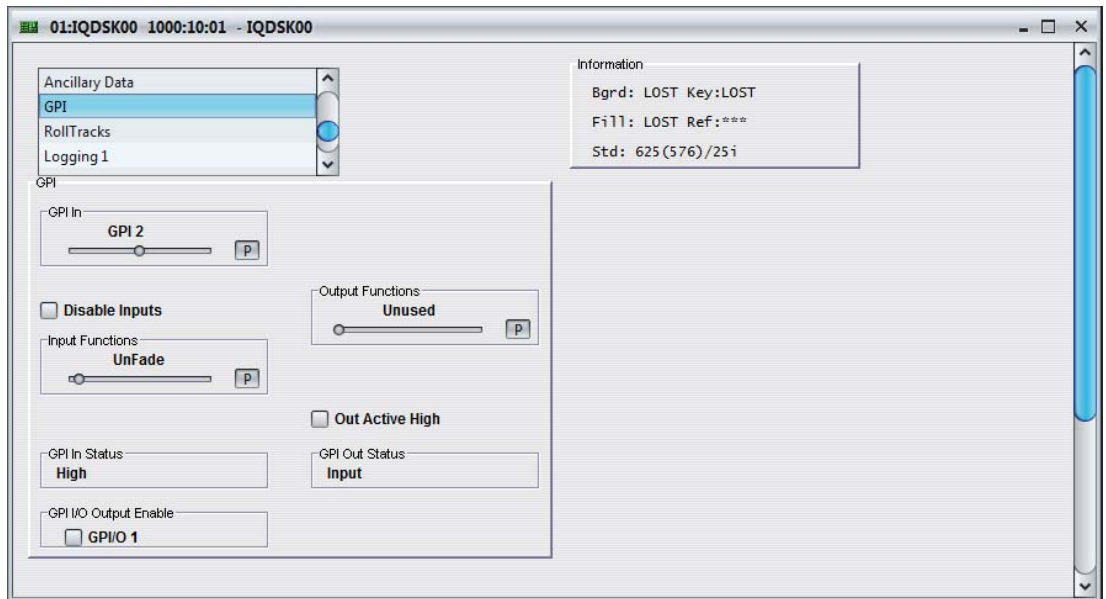
Use the radio buttons to specify the source of ancillary data. This can be either from the **Background** input, or the **Fill** input

5.8.2 Blanking

These controls specify whether horizontal ancillary data (**Blank HANC**), vertical ancillary data (**Blank VANC**), or both, from the specified ancillary data source, are blanked.

5.9 GPI

The GPI screen allows the GPI functions to be configured and their actions defined.



The function of each GPI, when operating as an input, is set using the **GPI In** and **Input Functions** controls.

The function of GPI/O 1, when operating as an output, is set using the **Output Functions** control.

Note: On the single width version there is only one GPI connection. This is designated GPIO In/Out 1 on the template. On the double width versions there are three GPI connections. GPIO 1 can be enabled as an output.

5.9.1 GPI In

This allows the GPI input (1 to 3) to be selected. Preset is to GPI 1.

5.9.2 Disable Inputs

When selected, all GPI input functions are disabled.

5.9.3 Input Functions

When configured as an input, the GPI connection can accept GPI information (from mechanical switch contacts, relay contacts etc). The resulting action that the unit takes is selected using this control.

The input functions are:

- **Fade:** Fades to black for the duration set on the **Fade Time** slider, before cutting back to the program.
- **UnFade up:** Cuts to black and fades up for the duration set on the **Fade Time** slider.
- **Fade follow:** Fades to black, cuts to program, cuts to black, fades to program.
- **Unused:** The unit will perform no function. This is the preset setting.
- **Memory 1-16:** The unit will use the settings in the selected memory location when the input changes from open to closed.
- **Mem x-y:** The unit will toggle between the settings of memory locations x and y. Open to Closed selects Memory x settings. Closed to Open selects Memory y settings.

5.9.4 GPI In Status

This displays the current status of the selected GPI input: either High (open circuit) or Low (closed circuit).

5.9.5 GPI/O Output Enable

When selected, GPI/O 1 is configured as an output.

5.9.6 Output Functions

The GPI/O can be configured to produce an output corresponding to one of the following conditions:

- Unused
- Key Tally On
- Key Fade Up
- Key Fade Down
- Full Key
- Bkgd Lost
- Key Lost
- Fill Lost

The preset setting for the Output Functions control is Unused.

Note: Full Key output is only active when the Mix output level is set to 100% and Mix is selected.

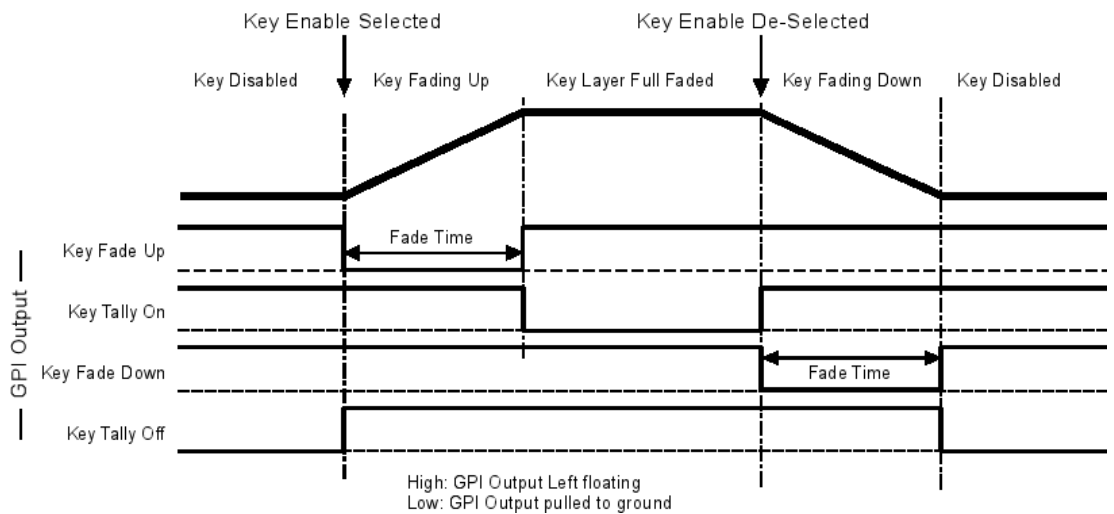
5.9.7 Out Active High

This determines the sense of the asserted GPI output signal. When selected, the GPI is active when the signal is high. When not selected, the GPI is active when the signal is low.

5.9.8 GPI Out Status

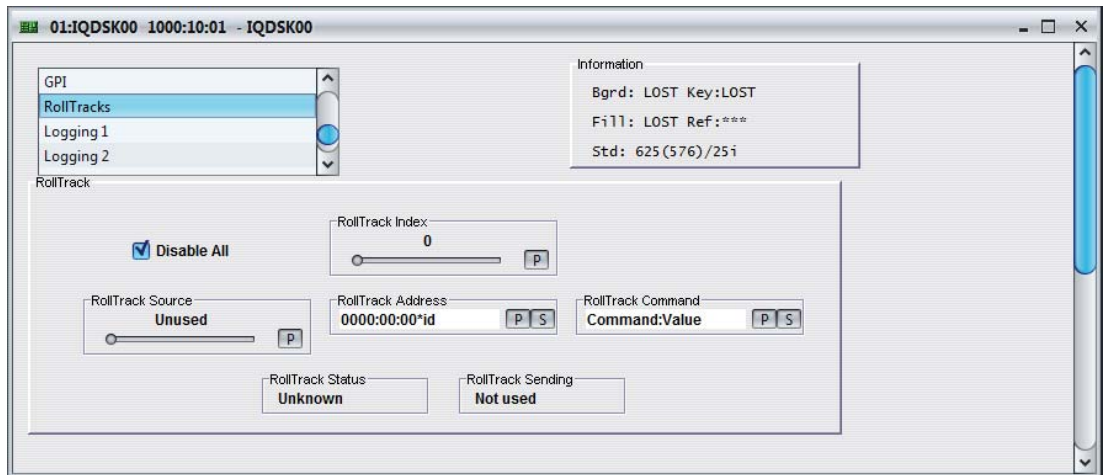
This displays the current status of the GPI output. It displays Input, Unused, Open or Closed.

5.9.9 GPI Output Example



5.10 Rolltracks

This function allows information about the status of the module to be communicated to other RollCall compatible units connected to the network. These messages can then be used to cause another unit to perform a specified action; for example, to cause the switching of a router unit or changeover module on loss of input.



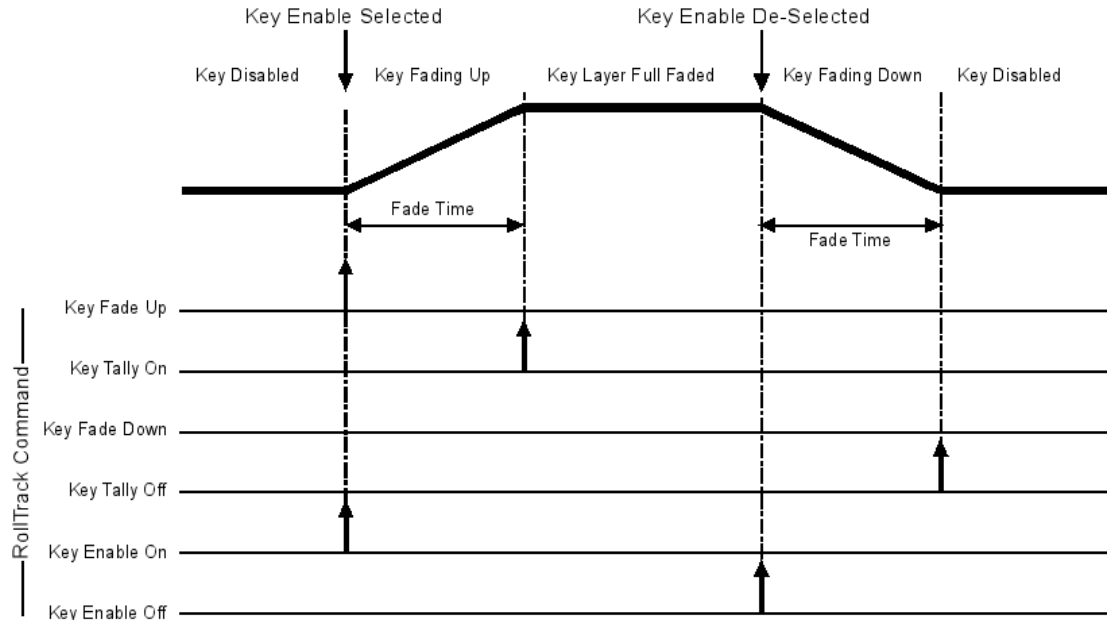
5.10.1 RollTrack Source

This control selects the source of information that triggers the transmission of the RollTrack data.

The options are:

- Unused (Off & Preset)
- Key Tally On
- Key Tally Not On
- Key Fade Up
- Key Fade Down
- Key OK
- Full Key
- Not Full Key
- Key Missing
- Key Error
- Bkgd OK
- Bkgd Missing
- Bkgd Error
- Fill OK
- Fill Missing
- Fill Error

5.10.2 Example of RollTrack Source Commands



5.10.3 RollTrack Index

There are 32 (0 to 31) RollTrack destinations available. This item is used to select which RollTrack Index is set up using the RollTrack Source, RollTrack Address, and RollTrack command functions.

5.10.4 RollTrack Address

This item allows the address of the destination unit to be set.

The full RollTrack address has four sets of numbers, for example, 0000:10:01*99.

- The first set, 0000 in the example, is the network segment code number.
- The second set, 10 in the example, identifies the enclosure/mainframe unit.
- The third set, 01 in the example, identifies the slot number in the unit.
- The fourth set (99) specifies which type of unit will respond to the command. For example setting to 158 will ensure only an IQDRT8 will respond. This feature can be used to protect against a different type of unit responding incorrectly.

Setting to 00 allows any type of unit to respond to the command.

For a list of unit IDs, please contact your local Snell agent.

5.10.5 RollTrack Command

The full RollTrack command has two sets of numbers, for example, 84*156.

- The first set, 84 in the example, is the RollTrack command number.
- The second set, 156 in the example, is the value sent with the RollTrack command number.

For details of the RollCall command values for specific units, please contact your local Snell agent.

5.10.6 Disable All

When this item is checked all RollTrack items will be disabled.

5.10.7 RollTrack Status

This item displays the status of the RollTrack system. It can show OK, Bad, Unknown, Timeout, or Error.

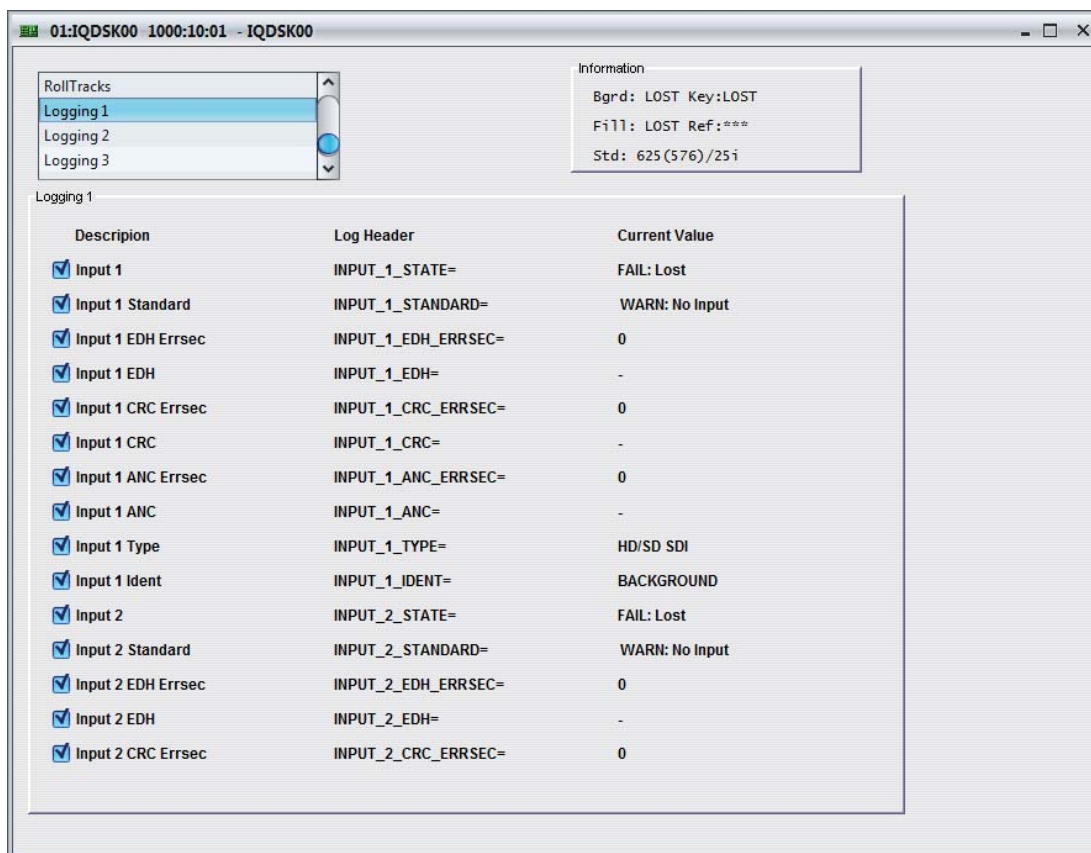
5.10.8 RollTrack Sending

This shows whether or not the selected RollTrack command is being sent.

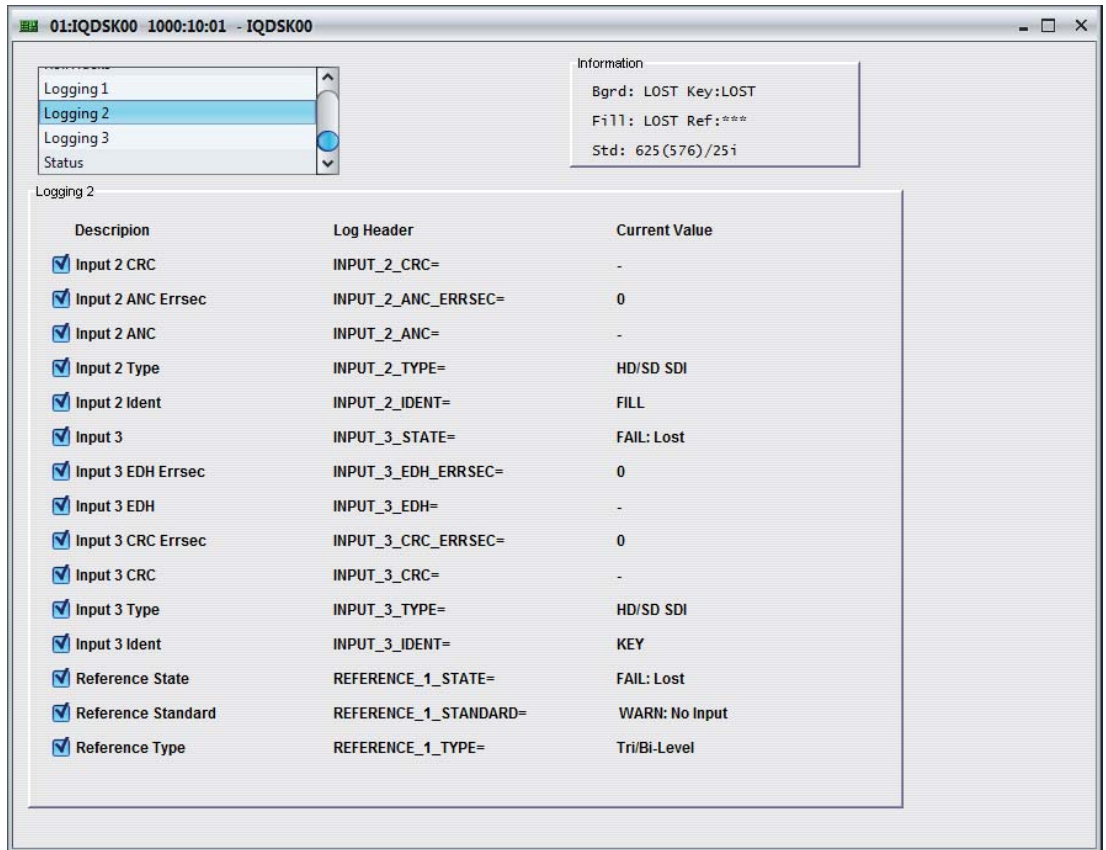
5.11 Logging

Information about various parameters can be made available to logging devices via the RollCall network.

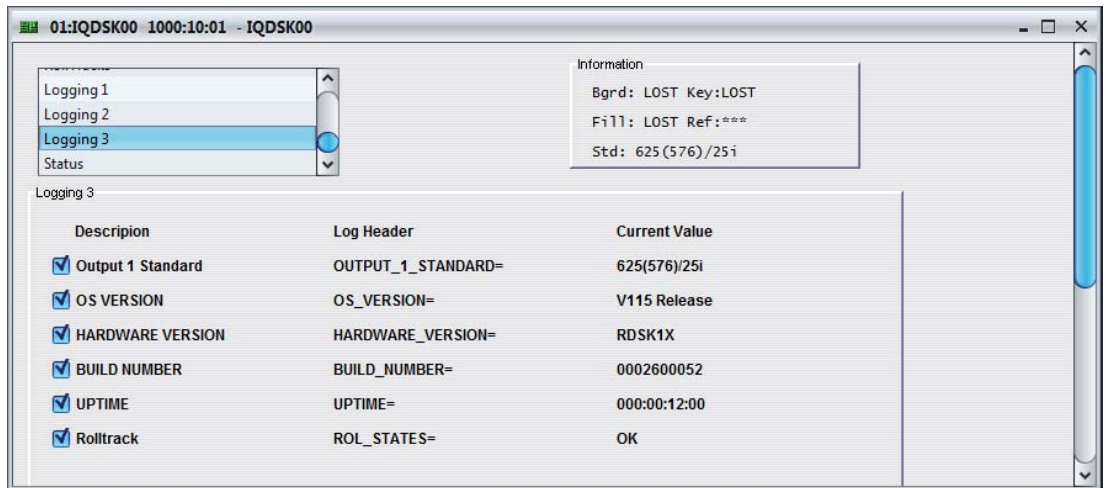
5.11.1 Logging 1



5.11.2 Logging 2



5.11.3 Logging 3



5.11.4 Log Field Descriptions

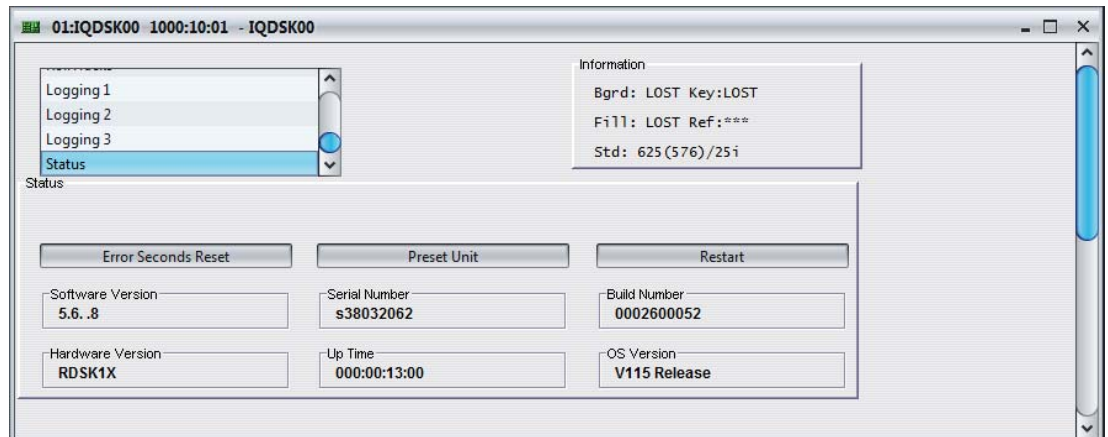
Description	Log Header	Valid Field Values/Description
Logging 1		
Input 1	INPUT_1_STATE=	OK FAIL: LOST WARN: ERROR WARN:WRAPPED
Input 1 Standard	INPUT_1_STANDARD=	The current input standard on Input 1.
Input 1 EDH Errsec	INPUT_1_EDH_ERRSEC=	The number of seconds that input 1 has been affected by EDH checksum errors.
Input 1 EDH	INPUT_1_EDH=	None OK WARN:EDH ERROR
Input 1 CRC Errsec	INPUT_1_CRH_ERRSEC=	The number of seconds that Input 1 has been affected by CRC errors.
Input 1 CRC	INPUT_1_CRC=	OK WARN:NO CRC WARN:CRC ERRIOR
Input 1 ANC Errsec	INPUT_1_ANC_ERRSEC=	The number of seconds that Input 1 has been affected by ANC errors.
Input 1 ANC	INPUT_1_ANC=	OK WARN:ANC ERROR -
Input 1 Type	INPUT_1_TYPE=	HD/SD SDI
Input 1 Ident	INPUT_1_IDENT=	BACKGROUND
Input 2	INPUT_2_STATE=	OK FAIL:LOST WARN:ERROR WARN:WRAPPED
Input 2 Standard	INPUT_2_STANDARD=	The current input standard on Input 2.
Input 2 EDH Errsec	INPUT_2_EDH_ERRSEC=	The number of seconds that input 2 has been affected by EDH checksum errors.
Input 2 EDH	INPUT_2_EDH=	NONE OK WARN:EDH ERROR
Input 2 CRC Errsec	INPUT_2_CRH_ERRSEC=	The number of seconds that Input 2 has been affected by CRC errors.

Description	Log Header	Valid Field Values/Description
Logging 2		
Input 2 CRC	INPUT_2_CRC=	OK WARN:NO CRC WARN:CRC ERROR
Input 2 ANC Errsec	INPUT_2_ANC_ERRSEC=	The number of seconds that Input 2 has been affected by ANC errors.
Input 2 ANC	INPUT_2_ANC=	OK WARN:ANC ERROR -
Input 2 Type	INPUT_2_TYPE=	HD/SD SDI
Input 2 Ident	INPUT_2_IDENT=	FILL
Input 3	INPUT_3_STATE=	OK FAIL:LOST WARN:ERROR WARN:WRAPPED
Input 3 EDH Errsec	INPUT_3_EDH_ERRSEC=	The number of seconds that input 3 has been affected by EDH checksum errors.
Input 3 EDH	INPUT_3_EDH=	NONE OK WARN:EDH ERROR
Input 3 CRC Errsec	INPUT_3_CRH_ERRSEC=	The number of seconds that Input 3 has been affected by CRC errors.
Input 3 CRC	INPUT_3_CRC=	OK WARN:NO CRC WARN:CRC ERROR
Input 3 Type	INPUT_3_TYPE=	HD/SD SDI
Input 3 Ident	INPUT_3_IDENT=	KEY
Reference State	REFERENCE_1_STATE	OK FAIL:LOST WARN:ERROR
Reference Standard	REFERENCE_1_STANDARD	Tri/Bi-level: IQDSK00 Bi-level: IQDSK01
Reference Type	REFERENCE_1_TYPE	The current reference type.

Description	Log Header	Valid Field Values/Description
Logging 3		
Output 1 Standard	OUTPUT_1_STANDARD=	The output standard on Output 1.
OS VERSION	OS_VERSION=	The operating system name and version number.
HARDWARE VERSION	HARDWARE_VERSION=	The hardware version number.
BUILD NUMBER	BUILD_NUMBER=	The module's build number – used to identify the module.
UPTIME	UPTIME=	The elapsed time since the module was started.
RollTrack	ROL_STATES=	OK, Message sent and received. FAIL, RollTrack message not acknowledged.

5.12 Status

The Status screen displays basic information about the unit.



5.12.1 Product Information

- **Error Seconds Reset:** Resets all of the error second counters.
- **Preset Unit:** Returns all adjustments to their preset values, returning the unit to its default state.
- **Restart:** Restarts the unit, restoring all power-up settings. This is equivalent to switching the mains power on and off.
- **Software Version:** The currently installed software version.
- **Serial Number:** The module's serial number.
- **Build Number:** The factory build number. This number defines all parameters of the unit for identification purposes.
- **Hardware Version:** The module's hardware version.
- **Up Time:** The elapsed time since the unit was last started.
- **OS Version:** The operating system version number.

6. Controlling the IQDSK00/01 from an Active Front Panel

The active front panel enables you to control the module via the RollCall™ network.



All operational parameters and selections described in the previous section are made using a system of menus displayed in the two LCD windows: the Information window and the Control window.

6.1 The Information Window

The information window contains text indicating the current state of the unit.



6.2 The Control Window

The Control window displays all selection menus and sub-menus.



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 (...) it 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.