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# User Instruction Manual

## **IQOSY10**

3G/HD/SD-SDI Utility Frame Synchronizer with Fiber Interfacing

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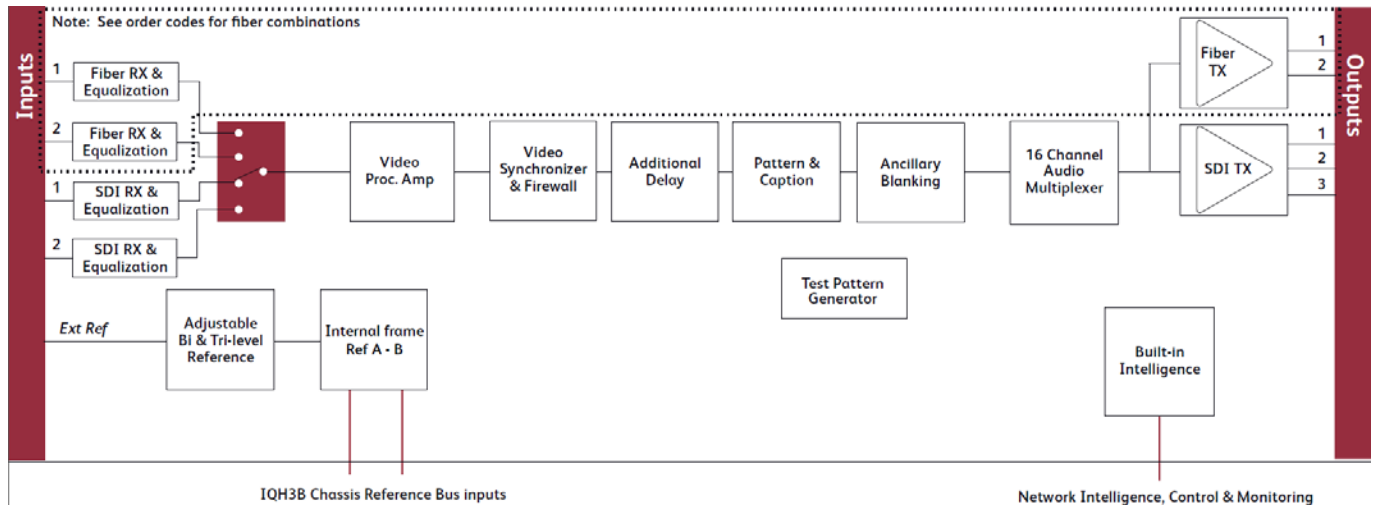
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# 1. Introduction

## 1.1 Description

The IQOSY10 provides frame synchronization for HD-SDI at 3 Gbps or 1.5 Gbps, or SD-SDI 270 Mbps with 16-channel embedded audio passing. Including two SDI inputs, and using a combination of fiber optic input and output Small Form-factor Pluggable (SFP) units, the IQOSY10 enables increased connectivity distances for HD and 3 Gbps SDI signals. A selection of electrical SFP units is also available providing up to four inputs and three outputs, or two inputs and five outputs, plus an HDMI output version (including adapter cable) to provide a built-in local monitoring output. A video proc. amp provides complete control over the video levels, and up to nine frames of video delay are available.

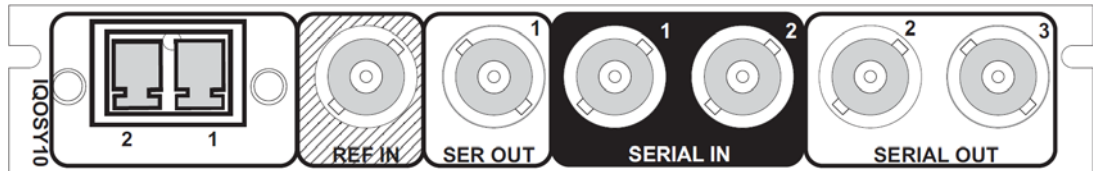


## 1.2 Order Codes

**Note:** Modules with “A” order codes (for example, IQSY1000-1A) can be fitted into either A- or B-style enclosures. Modules with “B” order codes (for example, IQSY1000-1B) can only be fitted into B-style enclosures. See page 6.

The following product order codes are covered by this manual:

### 1.2.1 Rear Panel View



**IQOSY1099-1A3** 3G/HD/SD-SDI Synchronizer with 2 empty SFP cages, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1099-1B3**

**Note:** SFPs are not supplied with these rear panels. See the IQOSY10 product data sheet for SFP order codes.

**IQOSY1000-1A** HD/SD-SDI Synchronizer with single fiber transceiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1000-1B**

**IQOSY1001-1A** HD/SD-SDI Synchronizer with single fiber transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1001-1B**

**IQOSY1002-1A** HD/SD-SDI Synchronizer with dual fiber transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1002-1B**

**IQOSY1003-1A** HD/SD-SDI Synchronizer with single fiber receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1003-1B**

**IQOSY1004-1A** HD/SD-SDI Synchronizer with dual fiber receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1004-1B**

**IQOSY1005-1A** HD/SD-SDI Synchronizer with DIN1.0/2.3 SFP transceiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1005-1B**

**IQOSY1006-1A** HD/SD-SDI Synchronizer with DIN1.0/2.3 SFP dual transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1006-1B**

**IQOSY1007-1A** HD/SD-SDI Synchronizer with DIN1.0/2.3 SFP dual receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1007-1B**

**IQOSY1008-1A** HD/SD-SDI Synchronizer with HD-BNC SFP transceiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1008-1B**

**IQOSY1009-1A** HD/SD-SDI Synchronizer with HD-BNC SFP dual transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1009-1B**

**IQOSY1010-1A** HD/SD-SDI Synchronizer with HD-BNC SFP dual receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection.  
**IQOSY1010-1B**

**IQOSY10-3G** Upgrade for IQOSY10 HD/SD-SDI Synchronizer to operate with 3 Gbps SDI signals.

## 1.2.2 Rear Panels No Longer Supplied with New Systems

The following table lists the rear panels that were supplied with earlier IQOSY10s. These rear panels are no longer supplied but are listed here for customers that have them fitted.

SFP rear panels are now supplied without any SFPs fitted and the SFPs are ordered separately, see section 1.2 for details.

<b>IQOSY1000-1A3</b> <b>IQOSY1000-1B3</b>	3G/HD/SD-SDI Synchronizer with single fiber transceiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1001-1A3</b> <b>IQOSY1001-1B3</b>	3G/HD/SD-SDI Synchronizer with single fiber transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1002-1A3</b> <b>IQOSY1002-1B3</b>	3G/HD/SD-SDI Synchronizer with dual fiber transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1003-1A3</b> <b>IQOSY1003-1B3</b>	3G/HD/SD-SDI Synchronizer with single fiber receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1004-1A3</b> <b>IQOSY1004-1B3</b>	3G/HD/SD-SDI Synchronizer with dual fiber receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1005-1A3</b> <b>IQOSY1005-1B3</b>	3G/HD/SD-SDI Synchronizer with DIN1.0/2.3 SFP transceiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1006-1A3</b> <b>IQOSY1006-1B3</b>	3G/HD/SD-SDI Synchronizer with DIN1.0/2.3 SFP dual transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1007-1A3</b> <b>IQOSY1007-1B3</b>	3G/HD/SD-SDI Synchronizer with DIN1.0/2.3 SFP dual receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1008-1A3</b> <b>IQOSY1008-1B3</b>	3G/HD/SD-SDI Synchronizer with HD-BNC SFP transceiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1009-1A3</b> <b>IQOSY1009-1B3</b>	3G/HD/SD-SDI Synchronizer with HD-BNC SFP dual transmitter, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.
<b>IQOSY1010-1A3</b> <b>IQOSY1010-1B3</b>	3G/HD/SD-SDI Synchronizer with HD-BNC SFP dual receiver, 2 SDI inputs, 3 SDI outputs, external and internal frame reference selection. No longer supplied.

### 1.3 Enclosures

The module can be fitted into the enclosure types shown.

**Important:** Although IQ modules are interchangeable between enclosures, their rear panels are enclosure specific. An IQH3B enclosure accepts modules with either “A” or “B” order codes. An IQH3A or IQH1A enclosure accepts modules with “A” order codes only. See page 6.

#### 1.3.1 B-style Enclosure



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

**Note:** The IQH3B enclosure provides two internal analog reference inputs. These inputs are applicable to modules with “B” order codes only.

#### 1.3.2 A-style Enclosures



**Enclosure order code: 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 code: IQH1A-S-P**



## 1.4 Feature Summary

The IQSY10 provides the following features:

- 3G/HD/SD-SDI synchronizer with up to nine frames of video delay.
- Standards supported:
  - 3G-SDI to SMPTE 424M/425M level A and B compatible
  - HD-SDI to SMPTE 292M/274M/296M
  - SD-SDI to SMPTE 259M-C
  - Fiber to SMPTE 297-2006C
- Reference selection from either external input or internal IQH3B chassis reference bus.
- Single mode fiber optic transmitter and receiver options at a 1310 nm wavelength.
- Agile router switching tolerant synchronizer operation with precision genlock adjustment allowing you to time any SDI signal to pixel accuracy.
- Independent HANC and VANC blanking control.
- Input loss detection – default output of black/pattern/freeze.
- Video controls including video gain, offset, and hue.
- In-built test pattern generator.
- Input SDI, CRC, EDH and ANC data checking and reporting.
- 16 x user memories, save/recall/rename.
- RollCall control and monitoring compatible with standard RollTrack, logging, and reporting features.

## 2. Technical Specification

<b>Inputs and Outputs</b>	
<b>Signal Inputs</b>	
SDI Inputs	2x
Input 1 Cable Length	Up to 70 m Belden 1694A @ 3 Gbps Up to 160 m Belden 1694A @ 1.5 Gbps >350 m Belden 1694A @ 270 Mbps
Input 2 Cable Length	Up to 60 m Belden 1694A @ 3 Gbps Up to 100 m Belden 1694A @ 1.5 Gbps Up to 100 m Belden 1694A @ 270 Mbps
Analog Reference	1 x Analog Reference input 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.
<b>Fiber Signal Input</b>	
Inputs	Up to 2
Optical	3 Gbps HD-SDI, 1.485 Gbps HD-SDI or 270 Mbps SD-SDI
Connector/Format	LC single mode
Standard	SMPTE 297-2006
<b>Signal Outputs</b>	
SDI Outputs	3x
<b>Fiber Signal Output</b>	
Outputs	Up to 2
Optical	3 Gbps HD-SDI, 1.485 Gbps HD-SDI or 270 Mbps SD-SDI
Connector/Format	LC singlemode
Standard	SMPTE 297-2006
<b>Controls</b>	
<b>Indicators</b>	
Power	OK (Green)
CPU running	OK (Green flashing)
FPGA running	OK (Green flashing)
Status	OK (Green), Warning (Yellow), Error (Red)
Input 1	OK (Green), Loss (Off)
Input 2	OK (Green), Loss (Off)
Rx 1	OK (Green), Loss (Off)
Rx 2	OK (Green), Loss (Off)
Reference Lock	OK or Cross-locking (Green), Loss (Off), Std error (Flashing)
<b>Genlock and Video Delay</b>	
Genlock Mode	Free-run, Lock to Reference, Lock to input
Genlock H-Phase	$\pm 0.5H$ in pixel clock steps.
Genlock V-Phase	$\pm 0.5F$ in 1 line steps
Video H-Delay	0-1 Line in pixel clock steps

Video V-Delay	0-1 Frame in 1 line steps
Video Delay Frames	0-9 Frames
<b>Video Controls</b>	
Input Standard	1125(1080)/50P (A & B), 1125(1080)/59P (A & B), 1125(1080)/29i, 1125(1080)/25i, 750(720)/59P, 750(720)/50P, 525(480)/29i, 625(576)/25i
Default Video Output Type	Pattern, Freeze, Black
Default Video Output Standard	Last Known Good, 1125(1080)/50P (A & B), 1125(1080)/59P (A & B), 1125(1080)/29i, 1125(1080)/25i, 750(720)/59P, 750(720)/50P, 525(480)/29i, 625(576)/25i
Input Select	Input 1, Input 2, Option 1, Option 2
Manual Freeze	On/Off
Freeze	Field/Frame
VANC Data	Blank VANC
SD VANC Data	Line blanking (23/336 in 625, 21, 22, 283, 284 in 525)
HANC Data	Blank HANC (Removes all HANC data. Note audio removed when embedders disabled)
ProcAmp Enable	On/Off
Black Level	±100 mV in steps of 0.8 mV
Hue Adjust	±180° in steps of 1°
Master Video Gain	±6 dB in steps of 0.1 dB
Y-Gain	±6 dB in steps of 0.1 dB
Cb/Cr Gain	±6 dB in steps of 0.1 dB
Y/C Timing	± 8 pixels in 2 pixel steps SD ± 16 pixels in 2 pixel steps HD
Picture Position	± 8 pixels in 2 pixel steps SD ± 16 pixels in 2 pixel steps HD
Pattern On	On/Off
Pattern Select	75% color bars, black
Caption On	On/Off
Caption Animation	Slow/Medium/Fast
Edit Caption	19 characters available
<b>Other Controls</b>	
User Memories	16x Save, Recall, Rename
Memory Naming	User configurable naming of memories 1-16
RollTrack Index	Up to 70 RollTRack destinations
Optical Logging*	Tx Laser Bias High Warning
	Tx Power Low Warning
	Tx Power High Warning

Laser Wavelength	Input 1 (2) Rx Power High Warning
	Input 1 (2) Rx Power Low Warning
	Input 1 (2) Rx Power Measurement
Roll Track Sources	Unused, Input Present (1 & 2, Fiber 1 & 2), Input Loss (1 & 2, Fiber 1 & 2), Output 1 Rate/Std, Out 1 Selects (In 1 & 2 and Rx 1 & Rx2), Fiber Rx Power OK (1 & 2), Fiber Rx Power Fail (1 & 2), Fiber Tx Power OK (1 & 2), Fiber Tx Power Fail (1 & 2), Fiber Tx Bias OK (1 & 2), Fiber Tx Bias High (1 & 2), Output 1 Freeze/Unfreeze, Output 1 Pattern On/Off, Output 1 Black On/Off, Output 1 Caption Off/On, Reference Loss/OK.
Information Window	Input Status, Video Status, Reference Status
Factory Default	Resets all module settings to factory specified defaults but does not clear memories.
Restart	Software restart of the module
Module Information	Reports following module information: Software version, Serial number, Build number, KOS version, Firmware version, PCB version.

### Specifications

Electrical	3 Gbps SDI to SMPTE 424M 1.5 Gbps HD-SDI to SMPTE 292M 270 Mbps SDI to SMPTE 259M-C / DVB-ASI
Connector / Format	BNC/ 75 Ohm panel jack on standard IQ connector panel
Return Loss	>-15 dB (270 Mbps, 1.5 Gbps) >-10 dB (3 Gbps)
Output Jitter	SD-SDI 0.2 UI (10 Hz) / 0.2 UI (1 kHz) 3G/HD-SDI 1.0 UI (10 Hz) / 0.2 UI (100 kHz)
Reference Source Electrical	External - HD tri-level / SD bi-level / Input video syncs 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
Analog Reference Return Loss	SD bi-level > 40 dB to 5.5 MHz HD tri-level > 35 dB to 30 MHz

### Optical 1310 nm Tx

Wavelength	1310 nm
Spectral Width (FWHM)	>1.5 nm (typical)
Output Power	0 to -5 dBm (-2 dBm typical)
Extinction Ratio	>7.5:1 (typical)

### Optical Rx

Input Wavelength Range	1260 nm (min.), 1620 nm (max.)
Optical Power Input Range	>0 dBm, <-20 dBm
Link Distance	Up to 30 km

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**Video Standards**


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Standards	1125(1080)/50P (A & B), 1125(1080)/59P (A & B), 1125(1080)/29i, 1125(1080)/25i, 750(720)/59P, 750(720)/50P, 525(480)/29i, 625(576)/25i
Minimum Delay (Reference Lock or Free Run)	SD: 67 $\mu$ s HD: 28 $\mu$ s 3G-A: 15 $\mu$ s 3G-B: 25 $\mu$ s
Typical Delay (Input Lock)	Typical delay (input lock with Dolby E alignment off): 2 lines Typical delay (input lock with Dolby E alignment on): 1 frame
Synchronizer Hysteresis Window	5 $\mu$ s
Embedded Audio Handling	HD - 24-bit synchronous 48 kHz to SMPTE 299M SD - 20-bit synchronous 48 Hz to SMPTE 272M-A
Embedded Audio Delay	Minimum (PCM) 2 ms Maximum (Non-PCM) SD: 67 $\mu$ s HD: 28 $\mu$ s 3G-A: 15 $\mu$ s 3G-B: 25 $\mu$ s

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**Power Consumption**


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Module Power Consumption	9.5 W Max (A Frames) 9.5 PR (B Frames)
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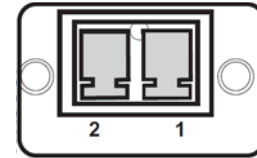
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### 3. Connections

This section describes the physical input and output connections provided by the IQOSY10.

#### 3.1 Fiber Inputs/Outputs

Two fiber optic LC singlemode connectors provide either inputs or outputs, depending on the model. See "Order Codes" on page 6.



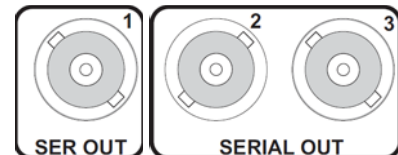
#### 3.2 SDI Inputs

Serial digital input to the unit is made to the unit via two BNC connectors which terminate in 75 Ohms.



#### 3.3 SDI Outputs

Serial digital output from the unit is made to the unit via three BNC connectors which terminate in 75 Ohms.



#### 3.4 Analog Reference Input

The external sync input to the unit is made via a BNC connector which terminates in 75 Ohms.

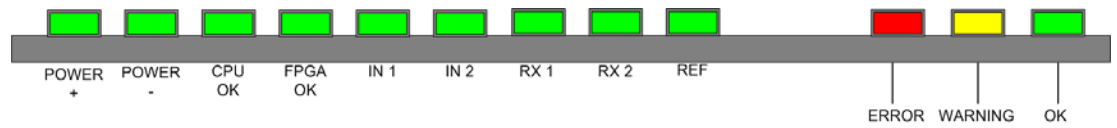


It should be noted that proper operation to the full specification can only be achieved with a correctly terminated, noise-free, stable, black sync reference input. Whilst lock may be achieved with an unsuitable sync source the increased jitter evident on the SDI output will affect locking and cable length performance at the receiving equipment.

**Note:** The IQOSY10 has a 75 R termination link for reference input located on the board.

## 4. Card Edge Controls

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



LED	Color	Description
<b>POWER +</b>	Green	Indicates that a positive power supply is present.
<b>POWER -</b>	Green	Indicates that a negative power supply is present.
<b>CPU OK</b>	Green	This LED will flash to indicate that the CPU is running.
<b>FPGA OK</b>	Green	Flashes when the FPGA is running. When the unit is booting, this LED is illuminated continuously, until the SDI is enabled.
<b>IN 1, IN 2</b>	Green	These LEDs are illuminated when a valid input is present at the Serial Data Inputs.
<b>RX 1, RX 2</b>	Green	These LEDs are illuminated when a valid input is present at the Fiber Optic Inputs.
<b>REF</b>	Green	This LED indicates that a reference signal is present.
<b>ERROR</b>	Red	This LED indicates board fault conditions. When the unit is booting, this LED is illuminated, until the SDI is enabled.
<b>WARNING</b>	Yellow	This LED is illuminated if one or more of the SDI inputs is not valid or if the reference signal is missing when the unit is set to Lock to Reference.
<b>OK</b>	Green	Indicates that the module is operating correctly.

## 5. Controlling the IQOSY10 from the RollCall Control Panel

### 5.1 The Information Window

The information window is displayed in the upper-right corner of each screen and displays basic information about the input status, video, audio and reference status of the module.

Select either **Input Status**, **Video Status**, or **Reference Status** to display the corresponding information.

#### 5.1.1 Input Status

When **Input Status** is selected, the input status is displayed:



Name	Status	Description	Standard
IN1:	<b>OK</b>	SDI Input signal received	Detected video input standard is displayed, e.g. <b>1080/29i</b> (Blank if input lost).
IN2:	<b>FAIL</b>	SDI Input signal failed	
	<b>LOST</b>	No signal received	
	<b>MISM</b>	Mismatch format detected	
OPT1:	<b>OK</b>	Fiber Input signal delivered	Detected video input standard is displayed, e.g. <b>1080/29i</b> (Blank if input lost).
OPT2:	<b>FAIL</b>	Fiber Input delivered	
	<b>LOST</b>	No signal received	
	<b>MISM</b>	No signal received	

#### 5.1.2 Video Status

When **Video Status** is selected, the video status is displayed:



Name	Status	Description	Standard
IN1/2	<b>OK</b>	Selected signal received	Detected video input standard is displayed, e.g. <b>1080/29i</b> (Blank if input lost).
OPT1/2:	<b>FAIL</b>	Selected signal failed	
	<b>LOST</b>	No signal received	
	<b>MISM</b>	Mismatch format detected	
OUT:	<b>OK</b>	Output signal delivered	Selected video output standard is displayed, e.g. <b>1080/29i</b> . A \$ symbol indicates that the caption is enabled. (Blank if disabled)
	<b>BLK</b>	Black output delivered	
	<b>FRZ</b>	Frozen output delivered	
	<b>PAT</b>	Pattern output delivered	



### 5.1.3 Reference Status

When **Reference Status** is selected, the following information is displayed:

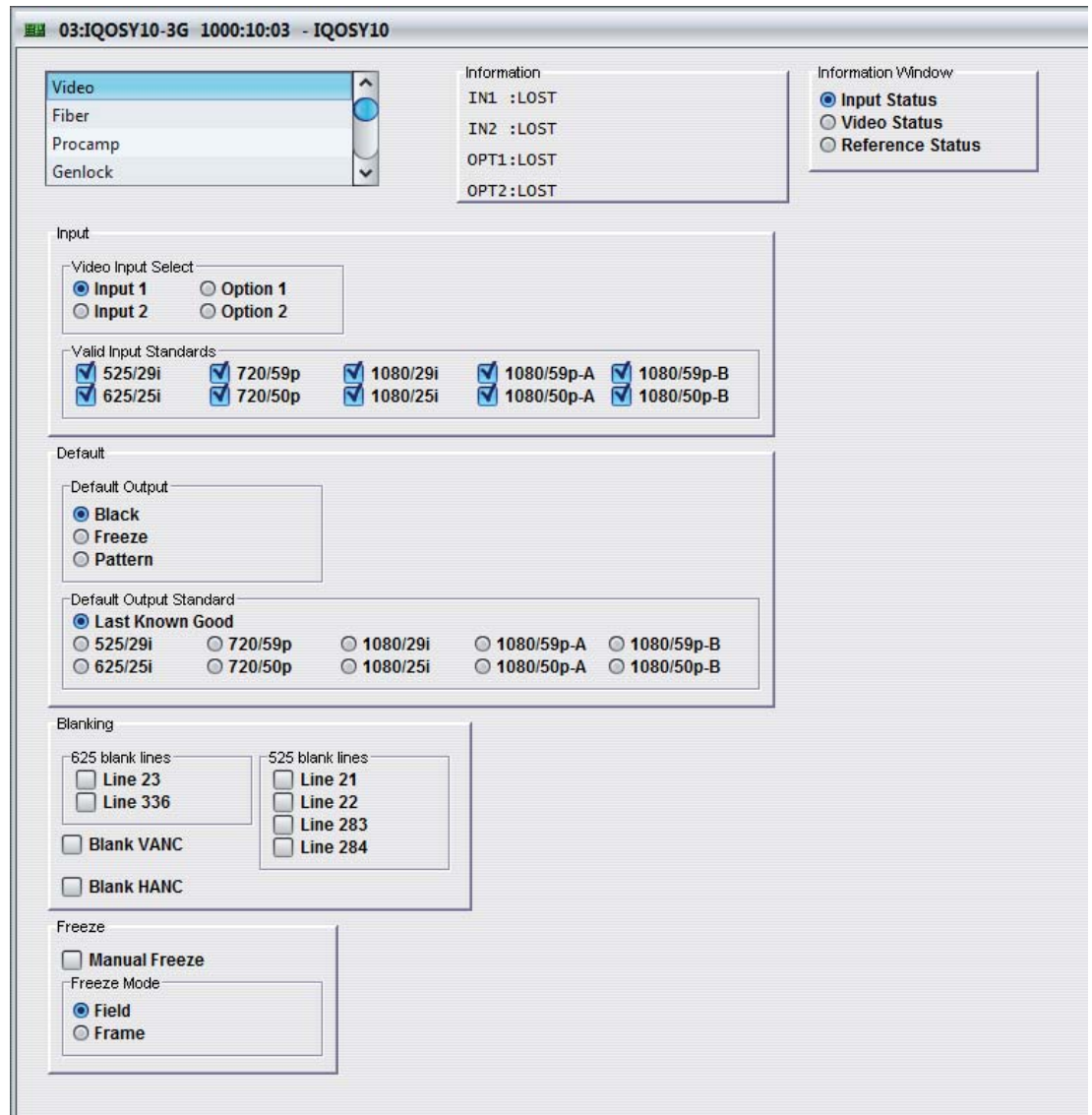


Name	Status	Description	Standard
REF:	<b>FREE + STD</b>	Free running	Displays the Reference standard.
	<b>LOCK + STD</b>	Locked to reference	
	<b>Cross + STD</b>	Cross lock to reference	

## 5.2 Video

The **Video** screen enables you to specify the settings for the video inputs:

- Selection of SDI or Fiber Optic inputs.
- Valid Input standards.
- The default output standard.
- Any required ancillary blanking.
- Freeze options and apply a manual freeze to the output image.
- The default output.



### 5.2.1 Input Select

Enables the selection of either SDI Input 1, SDI Input 2, Fiber Optic Option 1, or Fiber Optic Option 2.

### 5.2.2 Valid Input Standards

The **Valid Input Formats** check boxes specify the video input standards that the module will accept. The module will automatically detect the standard of the received input and block any signal that does not comply with these selected video formats.

By default, all input standards are selected.

### 5.2.3 Default Output

The **Default Output** control specifies the module's output in the event of signal loss at the input. Options are:

- **Black:** video out is a black screen
- **Freeze:** video output is frozen/paused
- **Pattern:** video output is a pre-determined test pattern or information screen

### 5.2.4 Default Output Standard

The **Default Output Standard** settings specify the output standard that the module will use if it cannot determine the correct output standard to use.

By default, the **Last Known Good** setting is selected, which uses the last valid output standard.

### 5.2.5 Blanking

The **Blanking** controls enable specific lines of VANC to be blanked.

- **625 blank lines:** Applied to 625 only, you can blank either or both of line 23 or line 336.
- **525 blank lines:** Applied to 525 only, you can blank any or all of lines 21, 22, 283, or 284.
- **Blank VANC:** Selecting this option blanks the following lines inclusively:

525: 11 – 20, 274 – 282

625: 7 – 22, 320 – 335

720: 8 – 25

1080i: 8 - 20, 570 – 583

1080P: 8 – 41

All VANC data from the end of the last active video line to the end of the RP168 switch line is always blanked, irrespective of this control.

- **Blank HANC:** Selecting this option removes all horizontal ancillary data.

### 5.2.6 Freeze

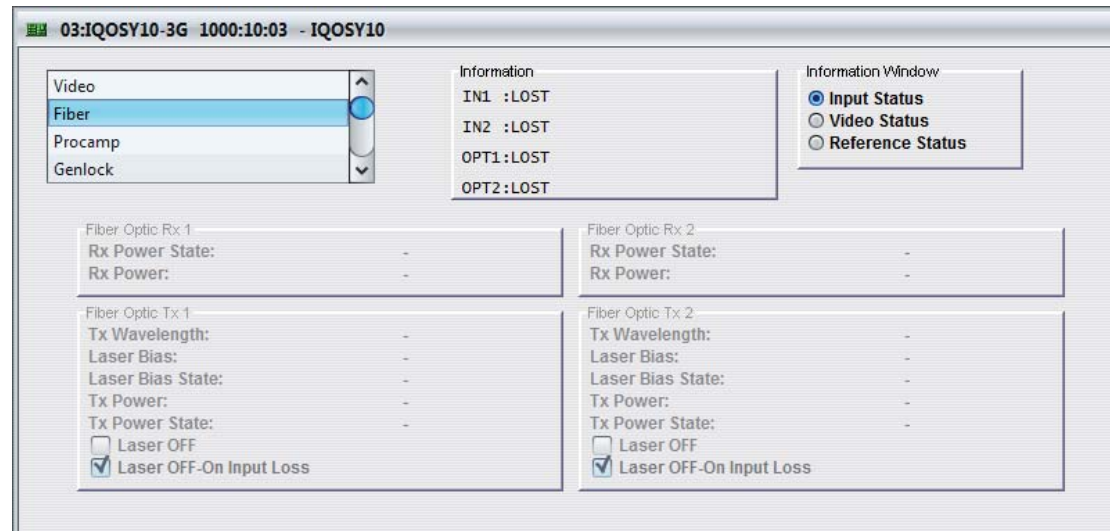
The **Manual Freeze** control freezes/pauses the output. Freeze type can be specified as either **Field** or **Frame**.

**Note:** This function is disabled on a power cycle of the module.

## 5.3 Fiber

The **Fiber** screen displays information about each of the Fiber Optic Receivers (Rx) and Transmitters (Tx).

The controls are duplicated for the Fiber Optic Receiver Options 1 and 2.



### 5.3.1 Fiber Optic Rx 1/2

The following receiver parameters are displayed:

- **Rx Power State:** Displays the state of the received signal (options include OK, WARN:HI, WARN:LO, FAIL:LO and FAIL:HI).
- **Rx Power:** Displays the signal level received at the input (in dBm).

### 5.3.2 Fiber Optic Tx 1/2

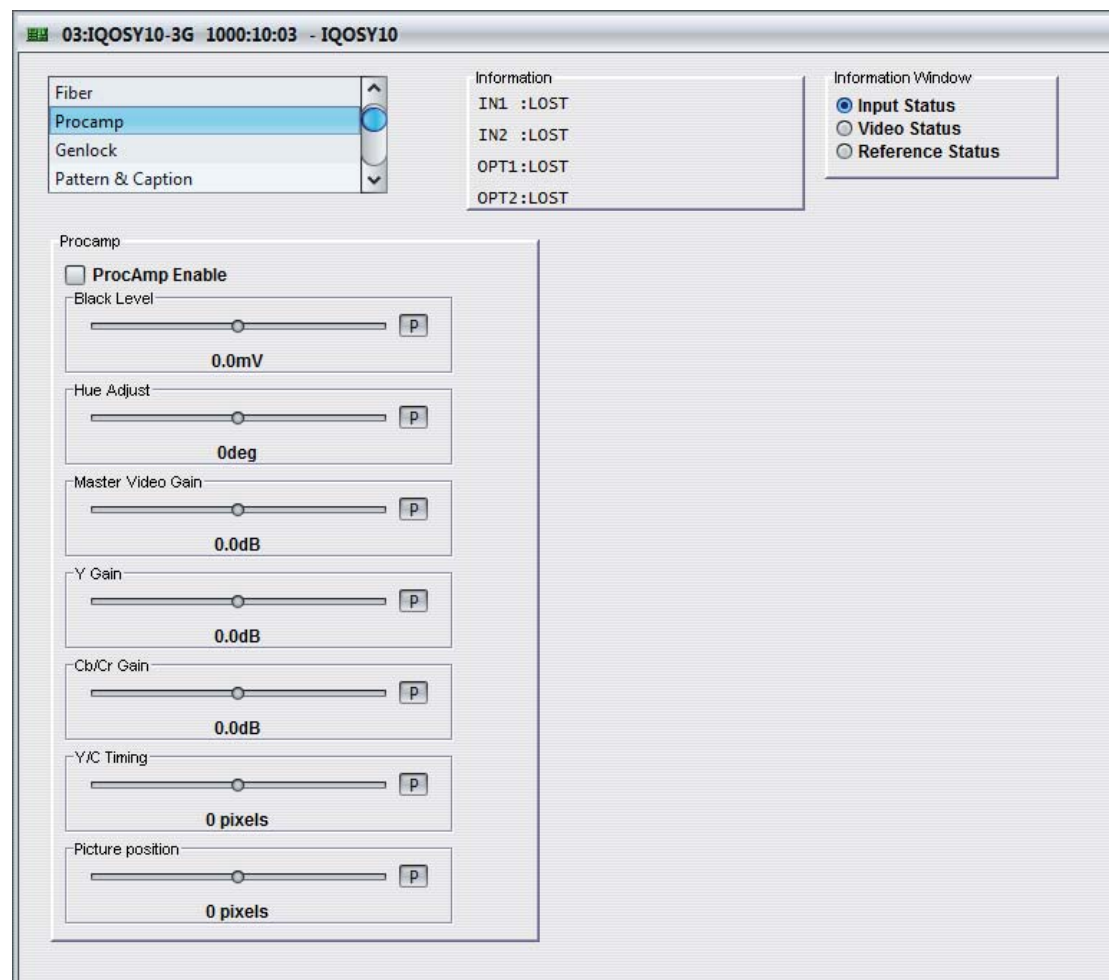
The following transmitter parameters are displayed:

- **Tx Wavelength:** Displays the wavelength of the transmitted output signal (either 1310 nm or 1550 nm).
- **Laser Bias:** Displays the bias level (in mA).
- **Laser Bias State:** Displays the bias state (options include OK, WARN:HI, WARN:LO, FAIL:LO and FAIL:HI).
- **Tx Power:** Displays the signal level of the transmitted output signal (in dBm)
- **Tx Power State:** Displays the state of the transmitted output signal (options include OK, WARN:HI, WARN:LO, FAIL:LO and FAIL:HI).
- **Laser OFF:** Enables the laser for the fiber optic output to be turned off manually.
- **Laser OFF-On Input Loss:** When selected, enables the laser for the fiber optic output to be turned off automatically when the signal is lost at the associated fiber optic receiver input. This option is enabled by default. If a default output (Firewall feature) via the Fiber Optic Tx on input loss, is required, this option must be un-ticked.

## 5.4 Procamp

The **Procamp** screen enables the processing amplifier settings to be adjusted:

- Black Level
- Hue Adjust
- Master Video Gain
- Y Gain (Luma)
- Cb/Cr Gain (Chroma)
- Y/C Timing
- Picture position



### 5.4.1 Procamp Enable

The **Procamp Enable** check box enables the video processing amplifier functions for the relevant channel. Clear the check box to disable the Procamp functions.

### 5.4.2 Black Level

The **Black Level** control allows the channel's black level to be adjusted over a range of  $\pm 100$  mV in steps of 0.8 mV. The preset value is 0.

### 5.4.3 Hue Adjust

The **Hue** control allows the channel's hue to be adjusted over a range of  $\pm 180^\circ$  in steps of  $1^\circ$ . The preset value is 0.

#### 5.4.4 Master Video Gain

The **Master Video Gain** control allows the video gain to be adjusted over a range of  $\pm 6$  dB in steps of 0.1 dB. The preset value is 0.

#### 5.4.5 Y Gain

The **Y Gain** control allows the luma to be adjusted over a range of  $\pm 6$  dB in steps of 0.1 dB. The preset is 0.

#### 5.4.6 Cb/Cr Gain

The **Cb/Cr Gain** control allows the chrominance to be adjusted over a range of  $\pm 6$  dB in steps of 0.1 dB. The preset value is 0.

#### 5.4.7 Y/C Timing

The **Y/C Timing** control allows the luma/chroma timing to be adjusted over a range of:

- $\pm 8$  pixels in 2 pixel steps in SD
- $\pm 16$  pixels in 2 pixel steps in HD

The preset value is 0.

#### 5.4.8 Picture Position

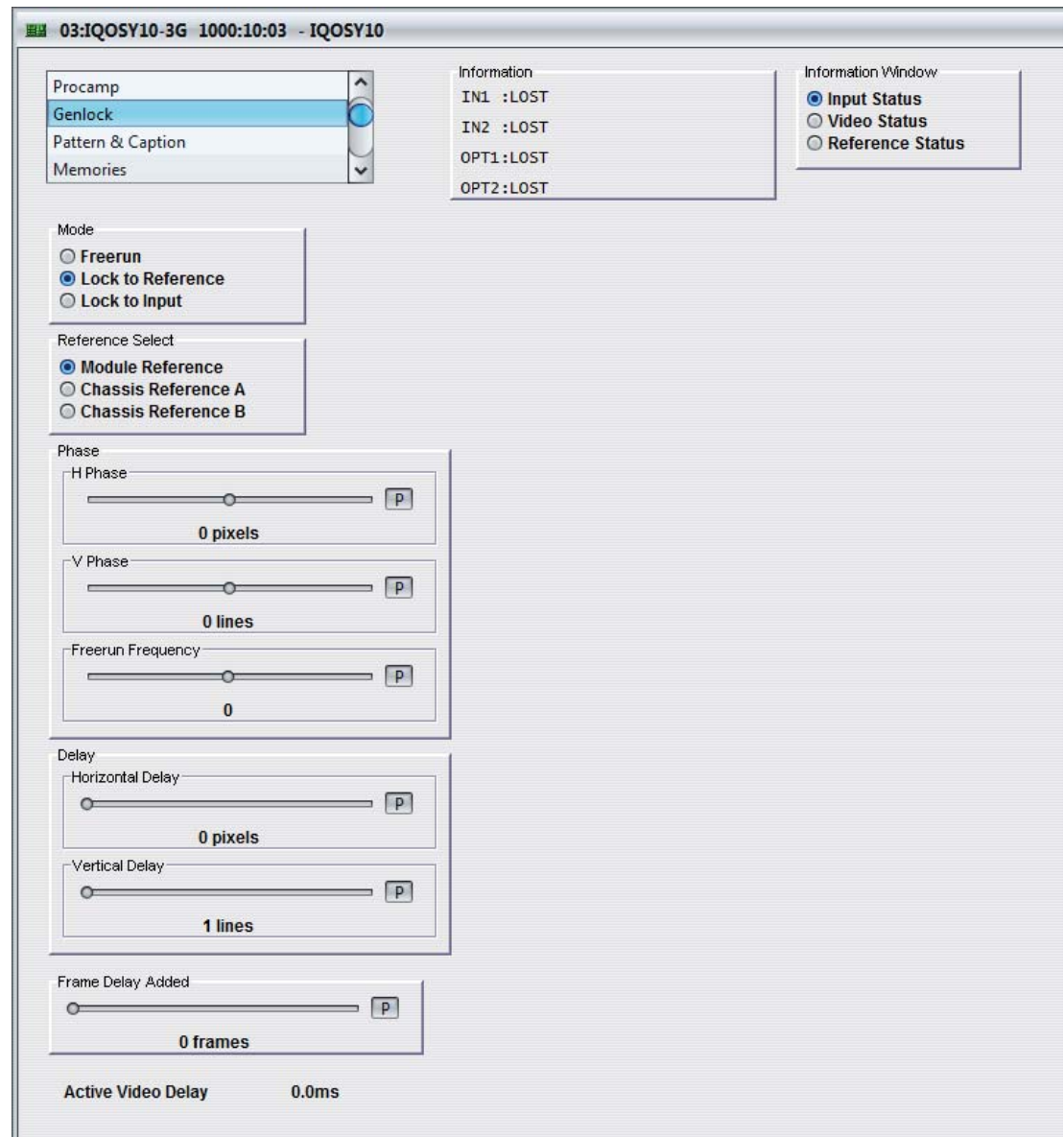
The **Picture Position** control allows the picture position to be adjusted over a range of:

- $\pm 8$  pixels in 2 pixel steps SD
- $\pm 16$  pixels in 2 pixel steps HD

The preset value is 0.

## 5.5 Genlock

The **Genlock** screen enables the module's generator lock (synchronizer) settings to be specified.



### 5.5.1 Mode

There are three main genlock modes:

- **Freerun:** When selected, the unit's output will not be locked to any input signal. Instead, it will run nominally at the correct frame rate and synchronize input video to this.
- **Lock to Reference:** This is the default reference mode. When selected, the unit will lock to an external tri-level / bi-level reference source. If the reference source is lost, the unit will switch to Freerun mode. On return of the reference signal, the unit will return to Lock to Reference mode.

**Note:** The unit will clock lock to signals of different frame rates.

- **Lock to Input:** When selected, the unit locks to Input 1. If Input 1 is lost, the reference mode will switch to Freerun. In this mode, the delay can be adjusted by changing the horizontal and vertical timing.

### 5.5.2 Reference Select

Enables the module to work with the Reference A and Reference B on 3B frames.

### 5.5.3 Phase

Three phase controls are provided:

- **H Phase:** If the module is referenced locked, use the slider bar to adjust the horizontal genlock phase over a range of  $\pm 0.5 H$  in 1 pixel steps. The preset value is 0.
- **V Phase:** If the module is referenced locked, use the slider bar to adjust the vertical genlock phase over a range of  $\pm 0.5 F$  in 1 line steps. The preset value is 0.
- **Freerun Frequency:** The slider bar may be used to adjust the module's freerun frequency.

### 5.5.4 Delay

- **Horizontal Delay:** The slider bar may be used to adjust the horizontal delay over a range of 0 to 1 line in 1 pixel steps. The preset value is 0. Note that when the module is input locked, if the delay is set to lower than the latency, the delay will stop at the latency but this will not be indicated. Additionally, if the vertical delay is set to 0, the lowest horizontal delay will equal the latency of the module rather than the delay specified by this control.
- **Vertical Delay:** The slider bar may be used to add up to 1 frame of vertical delay in steps of 1 line. The preset value is 0.

### 5.5.5 Frame Delay Added

You can specify up to 9 additional frames of delay using this slider bar. This delay can be added in all reference modes, including freerun.

The delay of non-PCM audio, or 'pass-through' audio is also set by this control.

The delay, in ms, is displayed below this control.

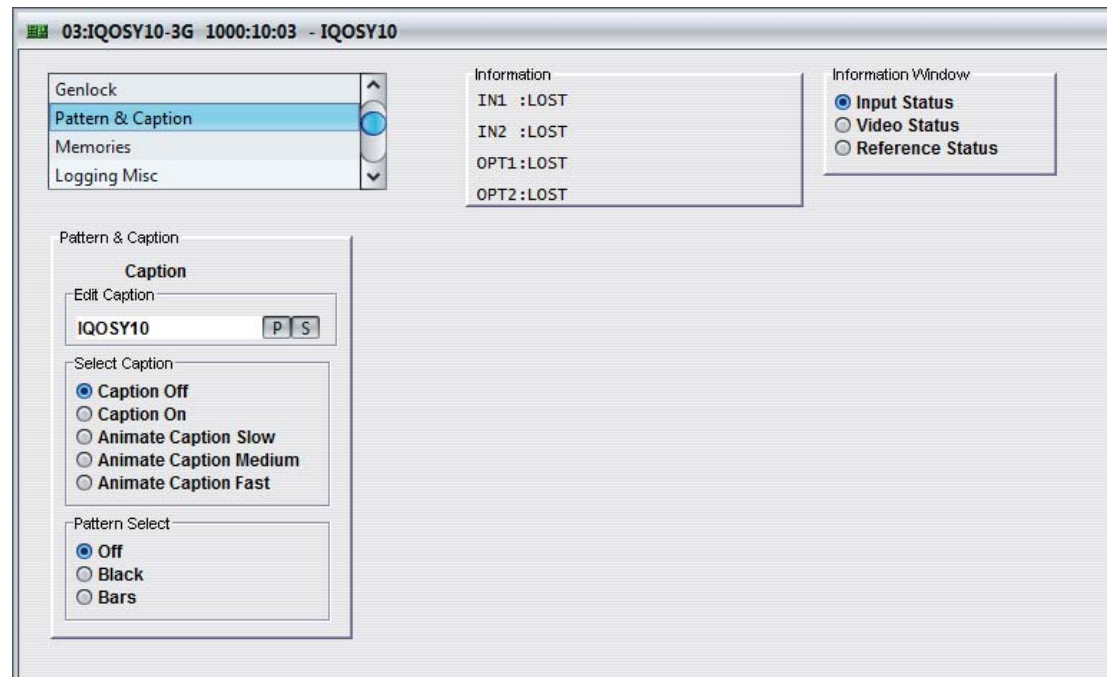
### 5.5.6 Active Video Delay

The total active video delay (in ms) is displayed at the bottom of this screen.



## 5.6 Pattern & Caption

The **Pattern & Caption** screen settings enables a caption to be specified, turned on and off and pattern generation to be enabled.



### 5.6.1 Edit Caption

In the **Edit Caption** text field, a caption of up to 19 characters may be entered to be displayed when the caption function is enabled.

Clicking the **S** button saves the caption as entered.

Clicking the **P** button returns the caption to the default preset value.

### 5.6.2 Select Caption

When enabled, a caption will appear as white text on a black background in the lower portion of the picture. Basic animation may also be selected, which enables a scrolling effect from right to left, also known as a 'ticker-tape' effect.

The options are:

- **Captions Off**
- **Captions On**
- **Animate Captions Slow**
- **Animate Captions Medium**
- **Animate Captions Fast**

### 5.6.3 Pattern Select

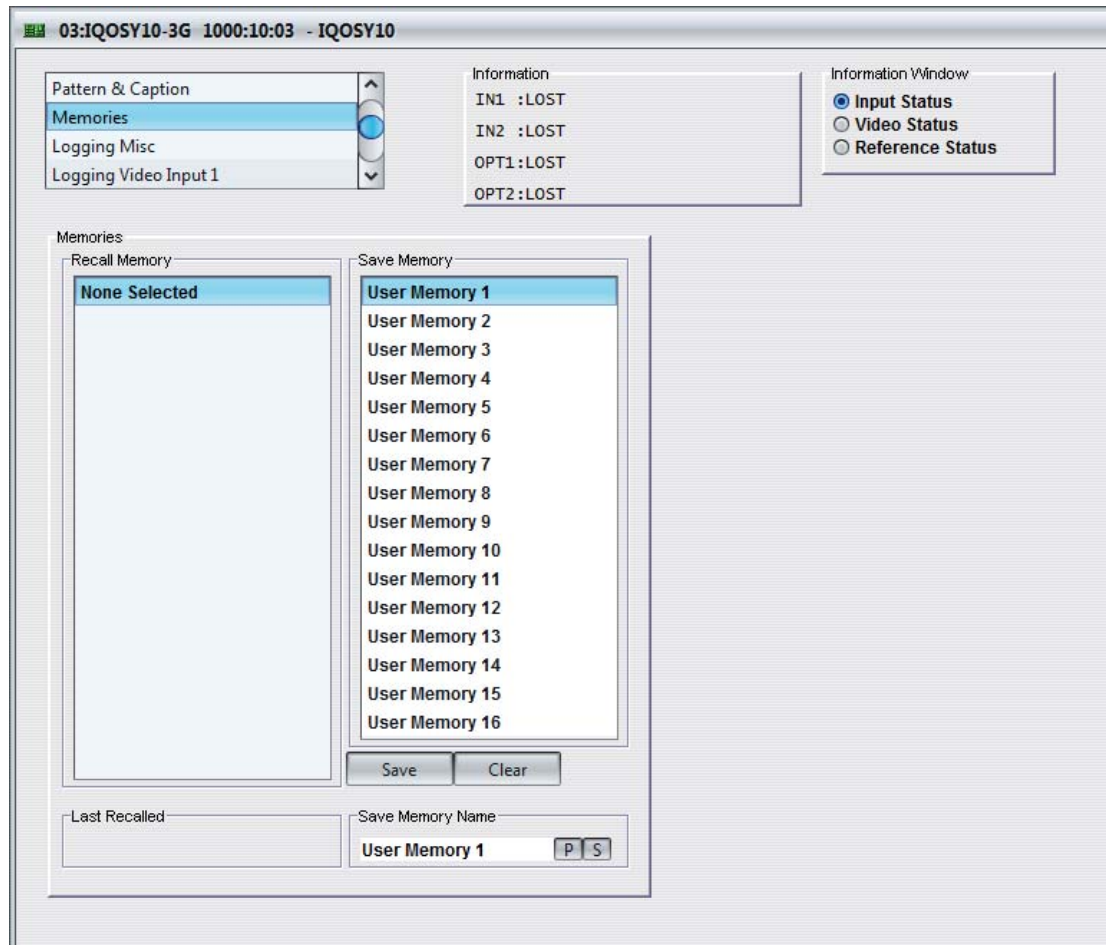
The radio buttons enable / disable pattern generation.

The options are:

- **Off**
- **Black**
- **Bars**

### 5.7 Memories

The **Memories** screen enables up to 16 setups to be saved and recalled later. Default memory names can be changed to provide more meaningful descriptions.



#### 5.7.1 Recall Memory

This column lists the settings that have been previously saved. If no settings have been saved, **None Selected** is displayed.

**To recall the settings saved in a memory:**

In the **Recall Memory** column, select the memory to recall by clicking on it. The recalled settings will be applied and the memory name will appear in the **Last Recalled Memory** section.

**Note:** User memories do not recall log field states. I.e., whether a log value has been enabled or disabled.

#### 5.7.2 Save Memory

This column lists the 16 pre-set memory names that are available for use.

**To save settings:**

In the **Save Memory** column, select a memory location, and then click **Save**. The current settings are saved and the memory appears in the **Recall Memory** column.

#### 5.7.3 Last Recalled

The **Last Recalled** pane displays the most recently recalled memory. If any of the settings have been changed since it was recalled, an asterisk will be displayed after the memory name.

### 5.7.4 Save Memory Name

This option enables the pre-set memory names to be changed (to something more memorable or meaningful), if required.

**To change a memory name:**

In the **Save Memory Name** field, type the new memory name, and then click the **S** button. To return the memory to its default preset value, click **P** button.

## 5.8 Logging

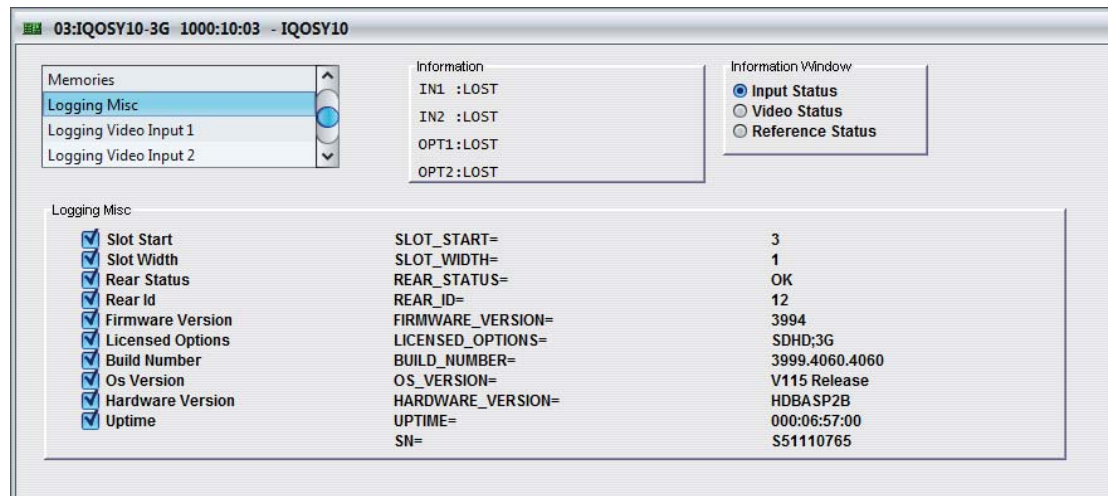
Information about several parameters can be made available to a logging device that is connected to the RollCall network.

Each logging screen comprises three columns:

- **Log Enable:** Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field:** Displays the name of the logging field.
- **Log Value:** Displays the current log value.

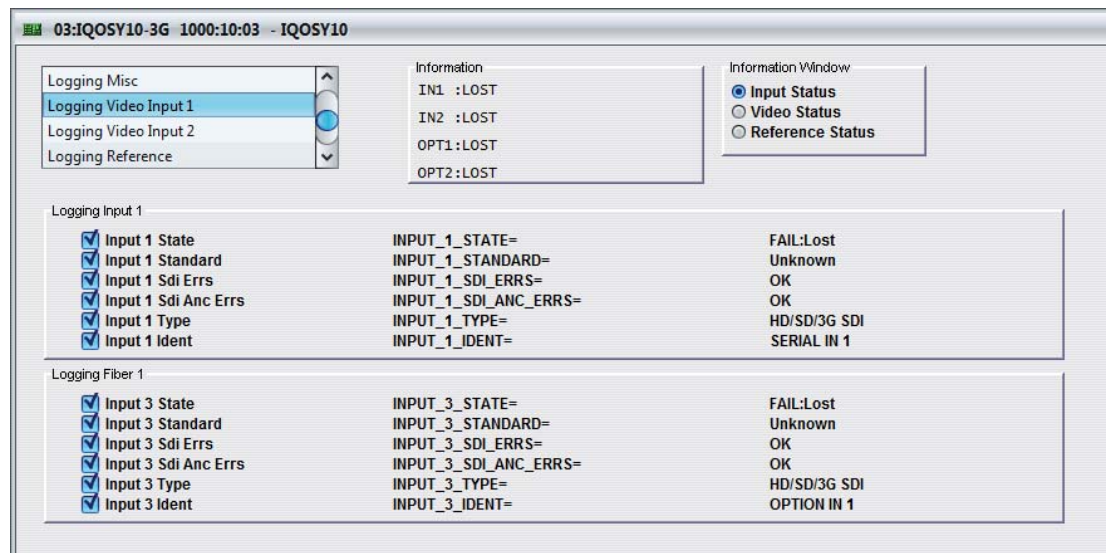
### 5.8.1 Logging Misc

The **Logging Misc** screen displays the current log information about the unit's basic parameters.



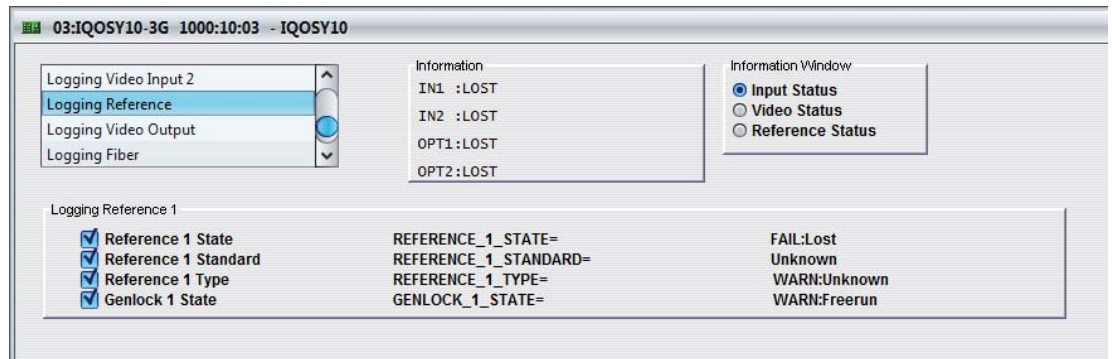
### 5.8.2 Logging Video Input 1 / 2

The **Logging Video Input 1 / 2** screen displays the current log information for for the relevant video inputs.



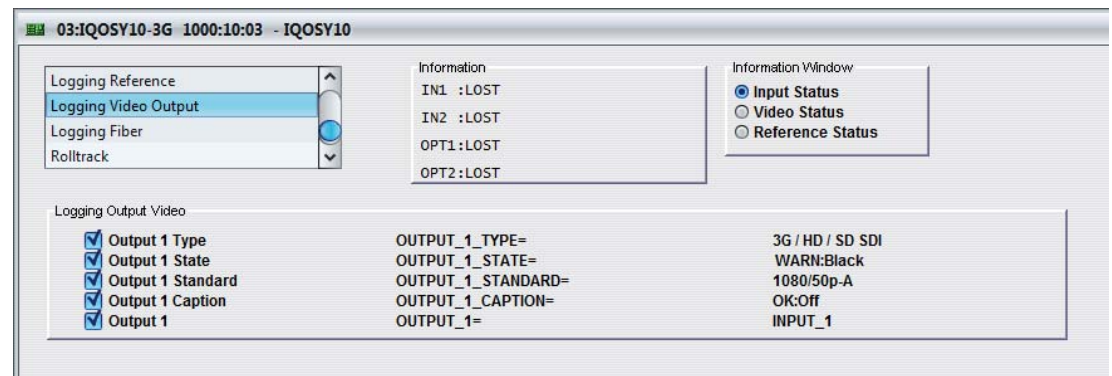
### 5.8.3 Logging Reference

The **Logging Reference** screen displays the current log information for the reference input.



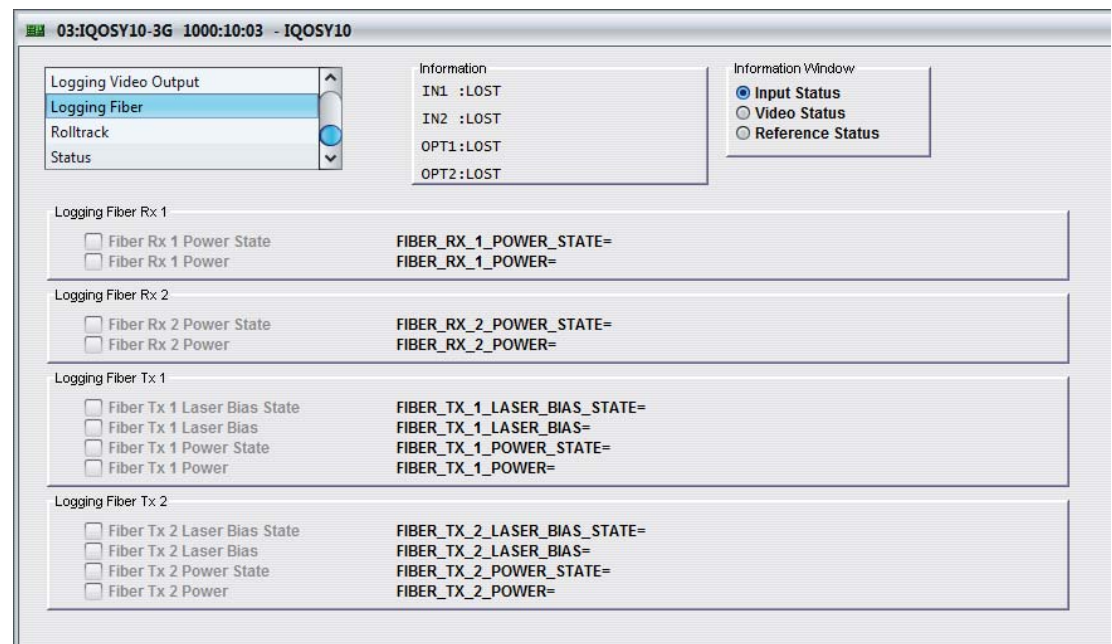
### 5.8.4 Logging Video Output

The **Logging Video Output** screen displays the current log information for the video output



### 5.8.5 Logging Fiber

The **Logging Fiber** screen displays the current log values for the fiber optic receivers and transmitters.



### 5.8.6 Log Field Descriptions

Log Field	Description
SLOT_START=	Displays the rear panel slot start (boot-up) number.
SLOT_WIDTH=	Displays the rear panel slot width. For example, 1 or 2.
REAR_STATUS=	Display the status of the rear panel. Valid values are: <ul style="list-style-type: none"> <li>• OK</li> <li>• FAIL:Lost</li> </ul>
REAR_ID=	Displays a rear panel identifier number.
FIRMWARE_VERSION=	Displays the FPGA version.
LICENSED_OPTIONS=	Displays any specially licensed options, if applicable.
BUILD_NUMBER=	Displays the build number.
OS_VERSION=	Displays the operating system name and version. For example, KOS V115.
HARDWARE_VERSION=	Displays the hardware version number.
UPTIME=	Displays the time since the last restart in the format ddd:hh:mm:ss.
SN=	Displays the module serial number, which consists of an S followed by eight digits.
INPUT_N_STATE=	Displays the current input state. Valid values are: <ul style="list-style-type: none"> <li>• OK</li> <li>• WARN:Mismatch</li> <li>• FAIL:Lost</li> </ul> <p><b>Note:</b> WARN:Mismatch indicates that the input and output standards are not the same.</p>
INPUT_N_STANDARD=	This displays the current input signal standard. For example, 1080/29i.  If the input standard is not recognized or supported the field will display: WARN:Unknown
INPUT_N_SDI_ERRS=	Displays SDI errors. Valid values are: <ul style="list-style-type: none"> <li>• OK</li> <li>• WARN</li> </ul>
INPUT_N_SDI_ANC_ERRS=	Displays ANC errors. Valid values are: <ul style="list-style-type: none"> <li>• OK</li> <li>• WARN</li> </ul>
INPUT_N_TYPE=	This displays the type of input as specified by the unit's configuration. Valid values are 3G / HD /SD SDI.
INPUT_N_IDENT=	Display the input ID.
REFERENCE_1_STATE=	Displays the reference state. Valid values are: <ul style="list-style-type: none"> <li>• OK</li> <li>• FAIL:Lost</li> </ul>

Log Field	Description
REFERENCE_1_STANDARD=	Displays the current video standard of the reference signal. For example, 1080/59P
REFERENCE_1_TYPE=	Displays the reference type. Valid values are: <ul style="list-style-type: none"> <li>• OK:Tri-Level</li> <li>• OK:Bi-Level</li> <li>• WARN:Unknown</li> </ul>
GENLOCK_1_STATE=	Displays the Genlock state. Valid values are: <ul style="list-style-type: none"> <li>• OK:Reference</li> <li>• OK:Input</li> <li>• WARN:Freerun</li> <li>• WARN:CrossLock</li> </ul>
OUTPUT_N_TYPE=	3G / HD / SD SDI
OUTPUT_N_STATE=	<ul style="list-style-type: none"> <li>• OK</li> <li>• WARN:Pattern</li> <li>• WARN:Black</li> <li>• WARN:Freeze</li> </ul>
OUTPUT_N_STANDARD=	Displays the current output video standard.
OUTPUT_N_CAPTION=	<ul style="list-style-type: none"> <li>• OK:Off</li> <li>• WARN:On</li> </ul>
OUTPUT_N=	Displays the relevant input source for the output video.
FIBER_RxN_POWER_STATE=	These fields display the power status. Valid values are: <ul style="list-style-type: none"> <li>• OK</li> <li>• WARN:HI</li> <li>• WARN:LO</li> <li>• FAIL:LO</li> <li>• FAIL:HI</li> </ul>
FIBER_RxN_POWER=	Displays the power level of the receiver input, in dBm.
FIBER_TxN_LASER_BIAS_STATE=	These fields display the laser bias status. Valid values are: <ul style="list-style-type: none"> <li>• OK</li> <li>• WARN:HI</li> <li>• WARN:LO</li> <li>• FAIL:LO</li> <li>• FAIL:HI</li> </ul>
FIBER_TxN_LASER_BIAS=	Displays the bias level, in mA.

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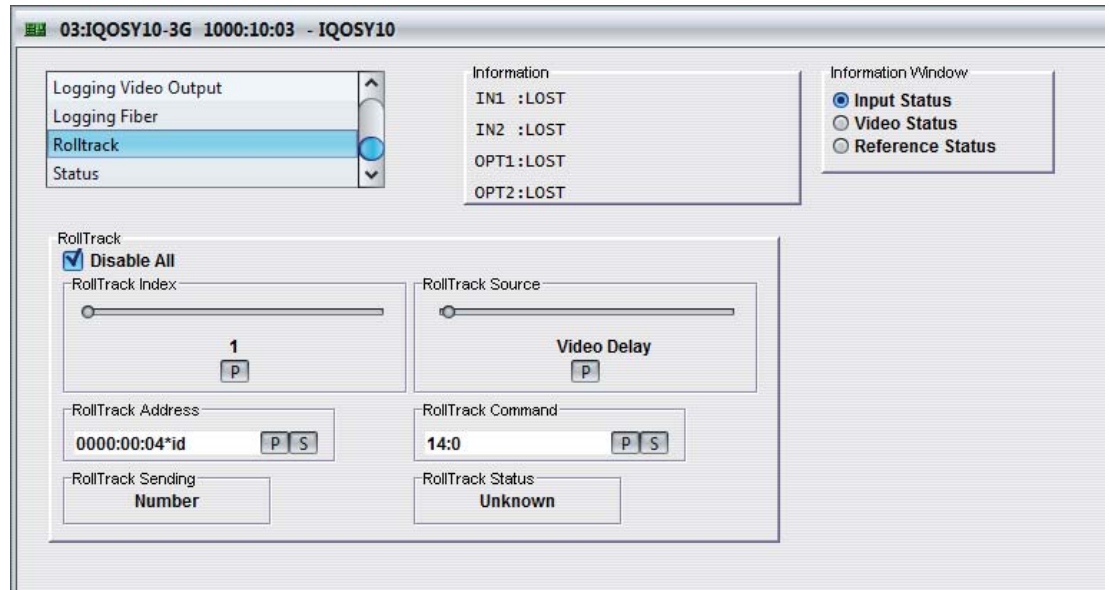
Log Field	Description
FIBER_TxN_POWER_STATE=	These fields display the power status. Valid values are: <ul style="list-style-type: none"><li data-bbox="799 259 879 293">• OK</li><li data-bbox="799 315 954 349">• WARN:HI</li><li data-bbox="799 371 965 405">• WARN:LO</li><li data-bbox="799 427 938 461">• FAIL:LO</li><li data-bbox="799 483 938 517">• FAIL:HI</li></ul>
FIBER_TxN_POWER=	Displays the power level of the transmitter output, in dBm.

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## 5.9 RollTrack

The **RollTrack** screen allows information to be sent, via the RollCall™ network, to other compatible units connected on the same network.



### 5.9.1 Disable All

When checked, all RollTrack items are disabled.

### 5.9.2 RollTrack Index

This slider enables up to 70 RollTrack outputs to be setup. Dragging the slider selects the RollTrack Index number, displayed below the slider. Clicking the **P** button selects the default preset value.

### 5.9.3 RollTrack Source

This slider enables the source of information that triggers the transmission of data to be selected. Dragging the slider selects the RollTrack source, displayed below the slider. Clicking the **P** button selects the default preset value. When no source is selected, **Unused** is displayed.

### 5.9.4 RollTrack Address

This item enables the address of the selected destination unit to be set.

The address may be changed by typing the new destination in the text area and then selecting the **S** button to save the selection. Clicking the **P** button returns to the default preset destination.

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

- 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 (**99**) is a user-settable number that is a unique identification number for the destination unit in a multi-unit system. This ensures that only the correct unit will respond to the command. If left at 00 an incorrectly fitted unit may respond inappropriately.

### 5.9.5 RollTrack Command

This item enables a command to be sent to the selected destination unit.

The command may be changed by typing a code in the text area and then selecting the **S** button to save the selection. Clicking the **P** button returns to the default preset command.

The RollTrack command consists of two sets of numbers, for example: **84:156**.

- The first number (**84**) is the actual RollTrack command.
- The second number (**156**) is the value sent with the RollTrack command.

### 5.9.6 RollTrack Sending

A message is displayed here when the unit is actively sending a RollTrack command. Possible RollTrack Sending messages are:

**String** A string value is always being sent.

**Number** A number value is always being sent.

**No** The message is not being sent.

**Yes** The message is being sent.

**Internal Type Error** Inconsistent behavior. Please contact your local SAM agent.

### 5.9.7 RollTrack Status

A message is displayed here to indicate the status of the currently selected RollTrack index. Possible RollTrack Status messages are:

**OK** RollTrack message sent and received OK.

**Unknown** RollTrack message has been sent but it has not yet completed.

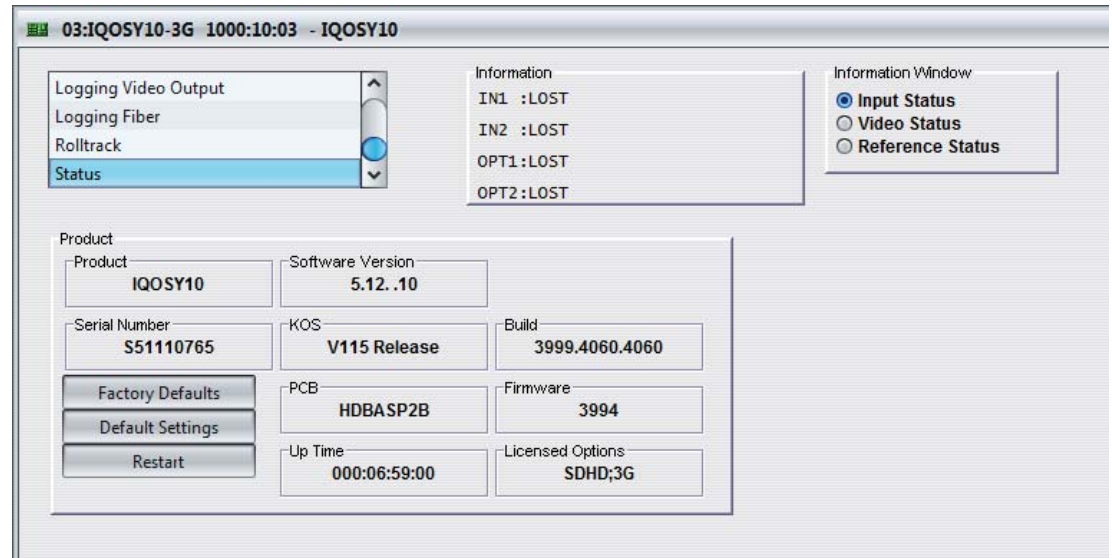
**Timeout** RollTrack message sent but acknowledgement not received. This could be because the destination unit is not at the location specified.

**Bad** RollTrack message has not been correctly acknowledged at the destination unit. This could be because the destination unit is not of the type specified.

**Disabled** RollTrack sending is disabled.

## 5.10 Status

The **Status** screen display basic information about the module, such as the serial number and software versions. Use the functions on the screen to restart the module or return all settings to their factory or default settings.



- **Product:** The name of the module.
- **Software Version:** The currently installed software version number.
- **Serial No:** The module serial number.
- **Build:** The factory build number. This number identifies all parameters of the module.
- **KOS:** The operating system version number.
- **PCB:** The Printed Circuit Board revision number.
- **Firmware:** The module firmware revision number.
- **Up Time:** The time since the module was last started.
- **Licensed Options:** The currently installed licensed options associated with the module.

### 5.10.1 Factory Defaults

The **Factory Defaults** button enables the module settings to be reset to their factory defaults.

**Note:** Resetting the module to its factory defaults also clears all the saved memory settings.

### 5.10.2 Default Settings

The **Default Settings** button enables module settings to be reset to their factory defaults, leaving user memories intact.

### 5.10.3 Restart

The **Restart** button enables the module to be rebooted, simulating a power-up/power-down cycle.