



User Instruction Manual

IQTDA30

3G-SDI Signal Translator

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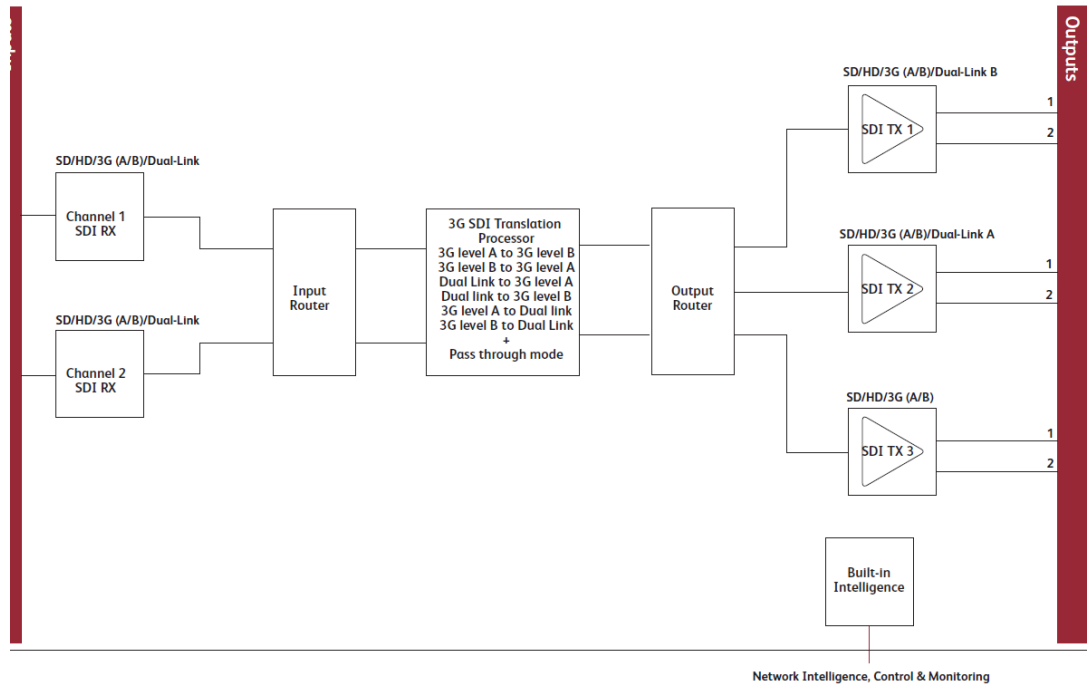
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1. Introduction

1.1 Description

The IQTDA30 provides signal translation between SMPTE 372M dual-link and SMPTE 425M level A and level B single-link standards. The module can also accept and pass-through SD and HD-SDI signals.

1.2 Block Diagram



1.3 Feature Summary

- Translates dual-link SMPTE 372M signals to 3G single-link SMPTE 425M, and vice versa.
- Translates between SMPTE 425M level A and level B formats.
- Flexible I/O allows inputs and outputs to be configured for any of the single- or dual-link standards.
- Built-in test pattern generator (1080/50p level A only).
- Equalizes up to 80 m at 3 Gbit/s, 140 m at 1.5 Gbit/s, and 300 m at 270 Mbit/s when using Belden 1694A cable.
- Standards supported:
 - SMPTE 425M 3G-SDI (level A and B)
 - SMPTE 372M HD-SDI (dual-link)
 - SMPTE 274M HD-SDI
 - SMPTE 296M HD-SDI
- RollCall monitoring allows all signal paths to be managed.

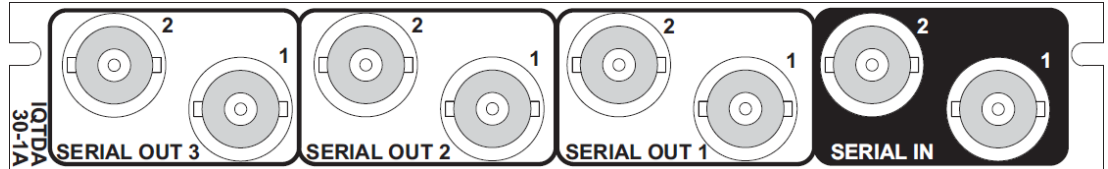
1.4 Order Codes

Note: Modules with “A” order codes (for example, IQTDA3000-1**A**) can be fitted into either A- or B-style enclosures. Modules with “B” order codes (for example, IQTDA3000-1**B**) can only be fitted into B-style enclosures. See page 7.

The following product order codes are covered by this manual:

IQTDA3000-1A 3G-SDI signal translator. 2 SDI inputs, 3 x 2 SDI outputs.
 IQFDA3000-1B

1.5 Rear Panel View



1.6 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.

1.6.1 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.

1.6.2 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

2. Technical Specification

2.1 Translation

The following tables summarize the behavior of the IQTDA30 for different standards.

2.1.1 3G Input Standard

	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz	Behavior
1080p (A)	-	-	-	-	-	✓	✓	✓	Bypass or converted
1080p (B)	-	-	-	-	-	✓	✓	✓	Bypass or converted
1080p (DL)	-	-	-	-	-	✓	✓	✓	Bypass or converted

2.1.2 HD Input Standard

	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz	Behavior
1080i	-	-	-	-	-	✓	✓	✓	Bypass
1080p	✓	✓	✓	✓	✓	-	-	-	Bypass
1080psf	✓	✓	✓	✓	✓	-	-	-	Bypass
720p	✓	✓	✓	✓	✓	✓	✓	✓	Bypass

2.1.3 SD Input Standard

	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz	Behavior
576	-	-	-	-	-	✓	-	-	Bypass
480i	-	-	-	-	-	-	✓	-	Bypass

2.2 General

Inputs and Outputs	
Signal Inputs	
SDI Inputs	Up to 2
Electrical	3 Gbit/s HD-SDI 1.485 Gbit/s HD-SDI 270 Mbit/s SD-SDI
Connector / Format	BNC / 75 Ohm
Conforms to	SMPTE 425M 3G-SDI (level A and B) SMPTE 372M HD-SDI (dual-link) SMPTE 274M HD-SDI SMPTE 296M HD-SDI
Video Standards	1080p50/59.94/60 Hz 1080i50/59.94/60 Hz 1080p23.98/24/25/29.97/30 Hz 1080psf23.98/24/25/29.97/30 Hz 720p23.98/24/25/29.97/30/50/59.94/60 Hz 480i59.94, 579i50 Hz
Input Cable Length	Up to 80 m Belden 1694A @ 3 Gbit/s Up to 140 m Belden 1694A @ 1.5 Gbit/s Up to 300 m Belden 1694A @ 270 Mbit/s

Signal Outputs

SDI Outputs	Up to 6, source selectable
Electrical	3 Gbit/s HD-SDI 1.485 Gbit/s HD-SDI 270 Mbit/s SD-SDI
Connector / Format	BNC / 75 Ohm
Conforms to	SMPTE 425M 3G-SDI (level A and B) SMPTE 372M HD-SDI (dual-link) SMPTE 274M HD-SDI SMPTE 296M HD-SDI
Video Standards	1080p50/59.94/60 Hz 1080i50/59.94/60 Hz 1080p23.98/24/25/29.97/30 Hz 1080psf23.98/24/25/29.97/30 Hz 720p23.98/24/25/29.97/30/50/59.94/60 Hz 480i59.94, 579i50 Hz

Controls

Indicators

Power	OK (Green)
CPU	OK (Green flashing)
Status	Booting (Blue), OK (Green), Bypass (Yellow), Loss (Red)
Channel 1–4	OK (Green), Bypass (Yellow), Loss (Red)

RollCall Functions

Input 1 (2) Rate Select	3G, HD, SD
Output 1 (2) Select	Input 1, 2 Translator Test pattern (1080/50p Level A)
Input Status	Present, Loss, Unknown, Data Rate

Other Controls

User Memories	Name, save, and recall 16 user memories
Memory Naming	User configurable naming of memories 1–16
Information Window	Video, Translate, Audio
Logging	Input Standard Input Format Input 1 (2) Ident Input 1 (2) Name Input 1 (2) State Input 1 (2) SDI rate
RollTrack Index	Up to 16 RollTrack destinations
RollTrack Controls	On/Off, Index, Source, Address, Command, Status, Sending

Roll Track Sources	Unused Input Format None Input Format Lvl A Input Format Lvl B Input Format DL Input 1 (2) OK Input 1 (2) None Input 1 (2) 3G Input 1 (2) HD Input 1 (2) SD
Factory Default	Resets all module settings to factory specified default values and clears memories
Default Settings	Resets all module settings to factory specified default values but does not clear memories
Restart	Software restart of the module
Module Information	Reports the following module information: Software Version, Serial Number, Build Number, KOS Version, Firmware Version, PCB Version

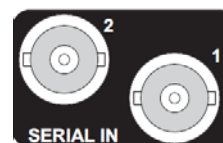
Specifications	
Electrical	3 Gbit/s SDI, SMPTE 425M 1.5 Gbit/s HD-SDI, SMPTE 292M 270 Mbit/s SDI, SMPTE 259M-C
Connector / Format	BNC/ 75 Ohm
Return Loss	>-15 dB (270 Mbit/s, 1.5 Gbit/s) >-10 dB (3 Gbit/s)
Output Jitter	SD-SDI 0.2 UI (10 Hz) / 0.2 UI (1 kHz) 3G/HD-SDI 1.0 UI (10 Hz) / 0.2 UI (100 kHz)
Start-up Time	Active video passed within 15 seconds of power-up
Power Consumption	
Module Power Consumption	9.4 W (A frames) 9.4 LU (B frames)

3. Connections

This section describes the physical input and output connections provided by the IQTDA30.

3.1 SDI Inputs

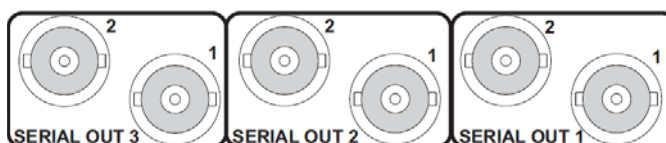
Serial digital input is made to the unit via two BNC connectors which terminate in 75 Ohms.



Note: When the input is Dual-Link, Link A must be connected to SERIAL IN 1, and Link B to SERIAL IN 2.

3.2 SDI Outputs

Serial digital outputs from the unit are made via six BNC connectors which terminate in 75 Ohms.



Note: When the output format is Dual-Link, SERIAL OUT 1 carries Link A on both connectors, SERIAL OUT 2 carries Link B on both connectors, and SERIAL OUT 3 is muted. All other output formats produce outputs on all connectors.

4. Card Edge LEDs

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



LED	Color	State	Indication
PWR	Green	Illuminated	A positive power supply is present.
CPU	Green	Flashing	The CPU is running.
STATUS	Green	Illuminated	The module is operating correctly.
	Blue	Illuminated	The module is booting.
	Yellow	Illuminated	Output = mute or test pattern.
	Red	Illuminated	Configuration error (for example, incompatible rear or hardware fault).
Ch1–Ch4 (selected input)	Green	Illuminated	Input OK.
	Yellow	Illuminated	User-defined: input results in pass or mute (for example, SD or HD input or mismatch on input format), or invalid bit rate is detected.
	Red	Illuminated	No input.
Ch1–Ch4 (non- selected input)	Blue	Illuminated	Input OK.
	Yellow	Flashing	User-defined: input present but an error or invalid bit rate is detected.
	Red	Illuminated	No input.

5. Controlling the IQTDA30 from the RollCall Control Panel

5.1 Information Window

The Information Window is displayed in the upper-right corner of each screen and displays basic information about the input and output status of the module.

5.1.1 Video

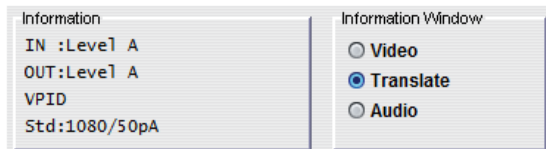
When **Video** is selected, the Information Window shows the current video input details, such as the status of Input 1 and Input 2 and the detected rate.

An asterisk (*) shows the selected input.



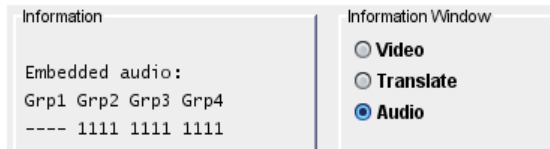
5.1.2 Translate

When **Translate** is selected, the Information Window shows the current translation configuration details such as the input and output format.



5.1.3 Audio

When **Audio** is selected, the Information Window shows the current audio details.



The audio information is derived from audio control packets in the input signal, which are mandatory for HD and 3G signals but optional for SD. If no audio control packets are present, the Information Window displays "No info available". The audio channels themselves are passed successfully whether or not audio control packets are present.

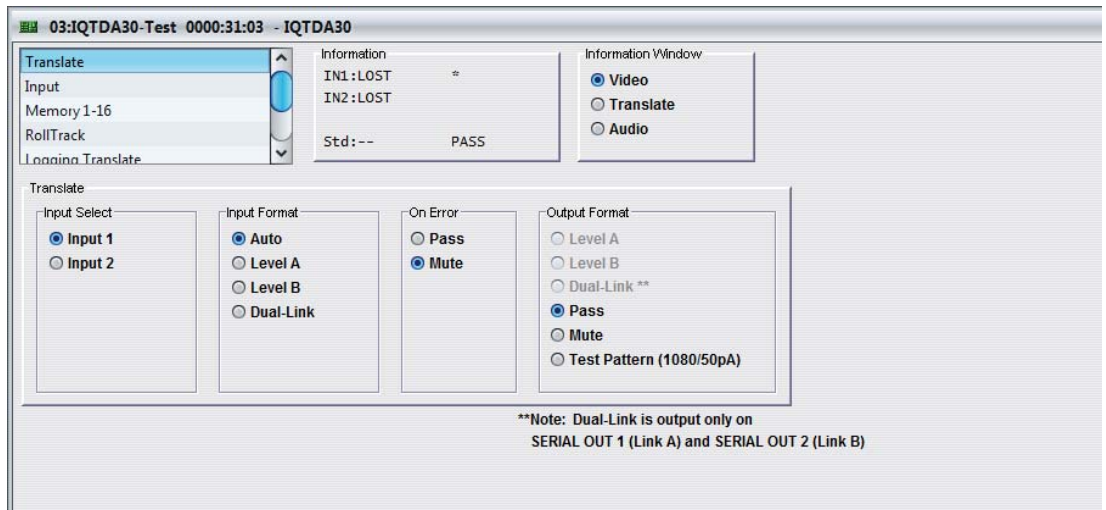
The unit can only detect the presence or absence of audio in the channel (indicated by 1 or - respectively) and not the type of the audio content, namely PCM, Dolby etc.

Only information on the first 16 audio channels is displayed. For example, Dual-Link carries 32 embedded audio channels, but only those on the first input (Link A) are displayed.

When translating Dual-Link input to Dual-Link output, only the audio from Link A is embedded in the output signal. When passing Dual-Link, the audio on both channels is passed.

5.2 Translate

The Translate screen enables the translator to be configured.



5.2.1 Input Select

This control selects which data source the translator uses, either Input 1 (SERIAL IN 1) or Input 2 (SERIAL IN 2).

Note: When the input is Dual-Link, Link A must be connected to SERIAL IN 1, and Link B to SERIAL IN 2.

5.2.2 Input Format

Input Format controls which 3G standard presented to the inputs should be translated.

- **Automatic:** Enables the module to convert whatever 3G standard is presented on the input to the desired 3G output.
- **Level A:** Accepts Level A only.
- **Level B:** Accepts Level B only.
- **Dual-Link:** Accepts Dual-Link only.

5.2.3 On Error

On Error controls how the module handles errors.

- **Pass:** Passes the incoming data source signal as is.
- **Mute:** Mutes the output.

5.2.4 Output Format

Output Format selects the output format of the module.

- **Level A:** Converts the incoming data source to 3G Level A.
- **Level B:** Converts the incoming data source to 3G Level B.
- **Dual-Link:** Converts the incoming data source to Dual-Link.
- **Pass:** Passes the incoming data source directly to the output.
- **Mute:** Mutes the output.
- **Test Pattern:** The test pattern is presented at the output.

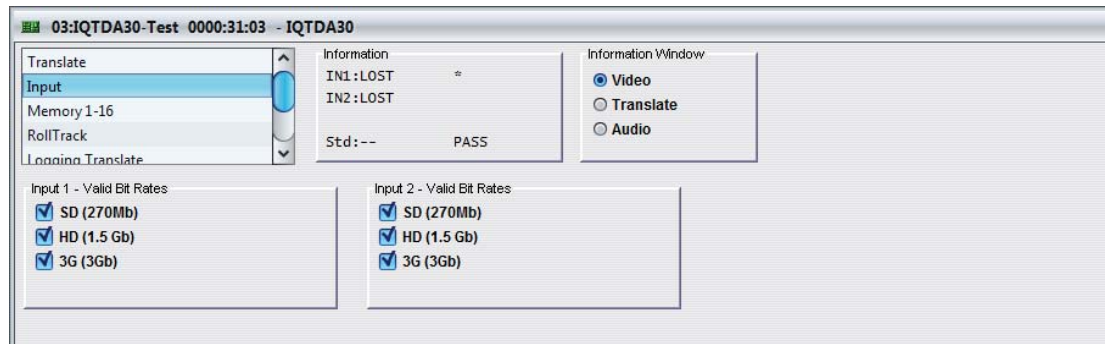
Note: Dual-Link is output on SERIAL OUT1 (Link A) and SERIAL OUT 2 (Link B)
The test pattern is 1080/50p Level A only.

Note: The test pattern is 1080/50p Level A only.

5.3 Input

The Input screen enables you to select which data rates the module should support.

If a data rate is presented to the module that has been deselected, it will cause an error condition. The module uses the On Error settings defined on the Translate screen.

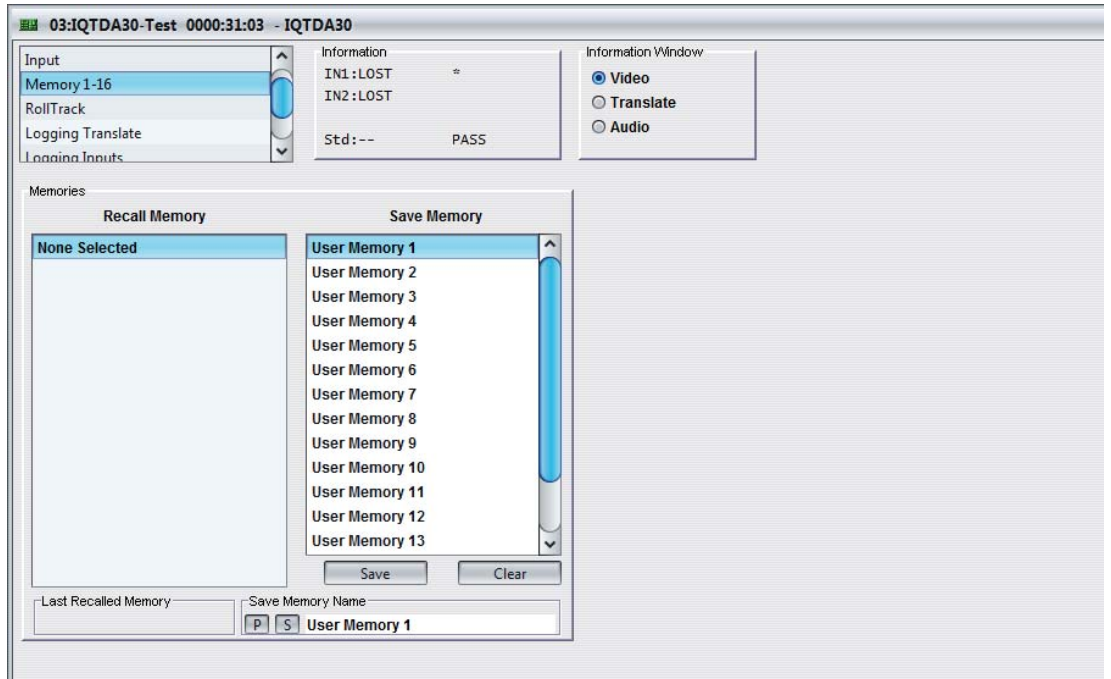


5.3.1 Input 1 and 2 Valid Bit Rates

- **SD (270 Mb):** When selected, the module will accept SD (270 Mb) signals.
- **HD (1.5 Gb):** When selected, the module will accept HD (1.5 Gb) signals.
- **3G (3 Gb):** When selected, the module will accept 3G (3 Gb) signals.

5.4 Memory 1-16

The Memory 1-16 screen enables up to 16 setups to be saved and recalled later. Default memory names can be changed to provide more meaningful descriptions.



5.4.1 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” – that is, whether a log value has been enabled or disabled.

5.4.2 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.

To clear a memory location:

- In the Save Memory column, select a memory location, and then click **Clear**. The current settings stored for that memory are cleared. After you clear a memory location, it disappears from the Recall Memory list.

5.4.3 Save Memory Name

This option enables the pre-set memory names to be changed to something more 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 the **P** button.

5.5 Logging

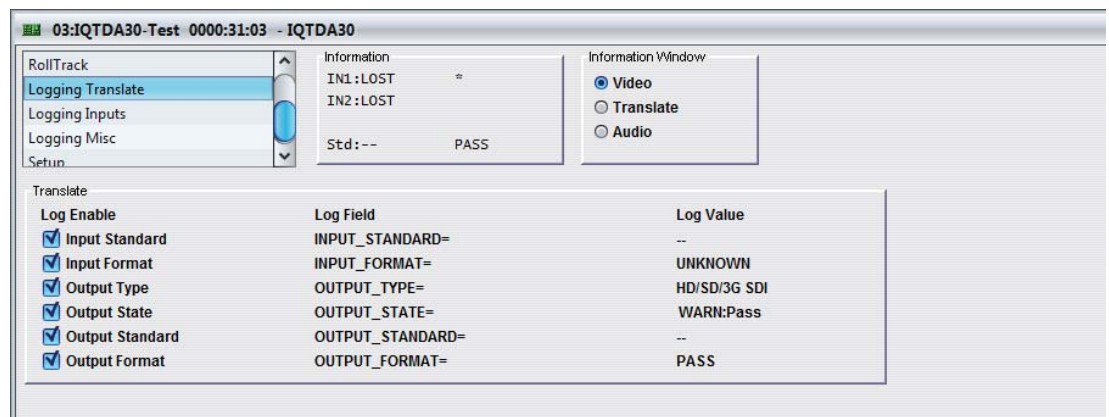
Information about several parameters can be made available to a logging device that is connected to the RollCall network.

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.

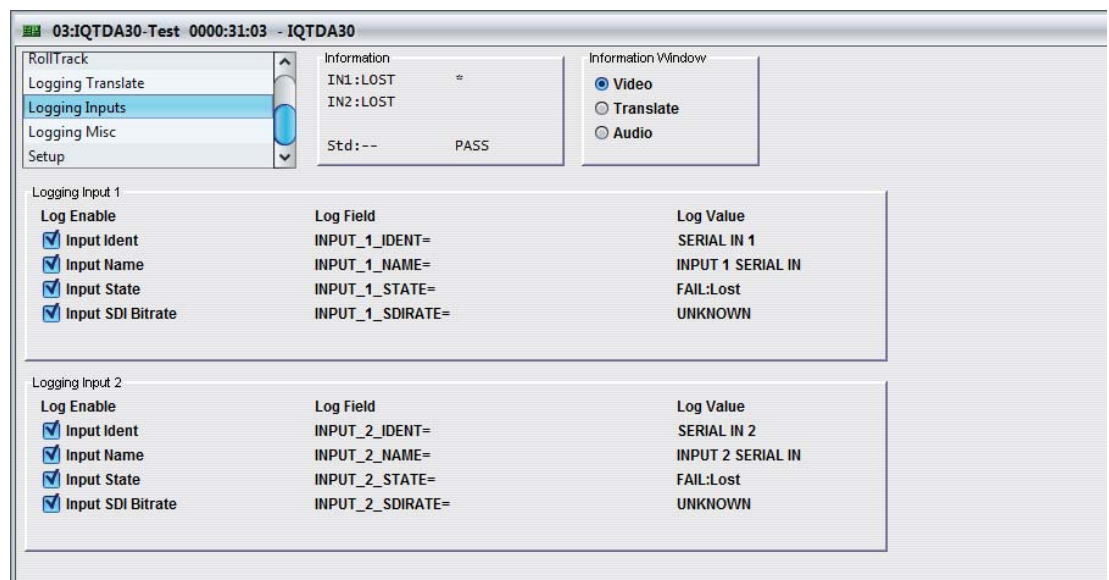
5.5.1 Logging Translate

The Logging Translate screen displays the current log information about the module's basic parameters.



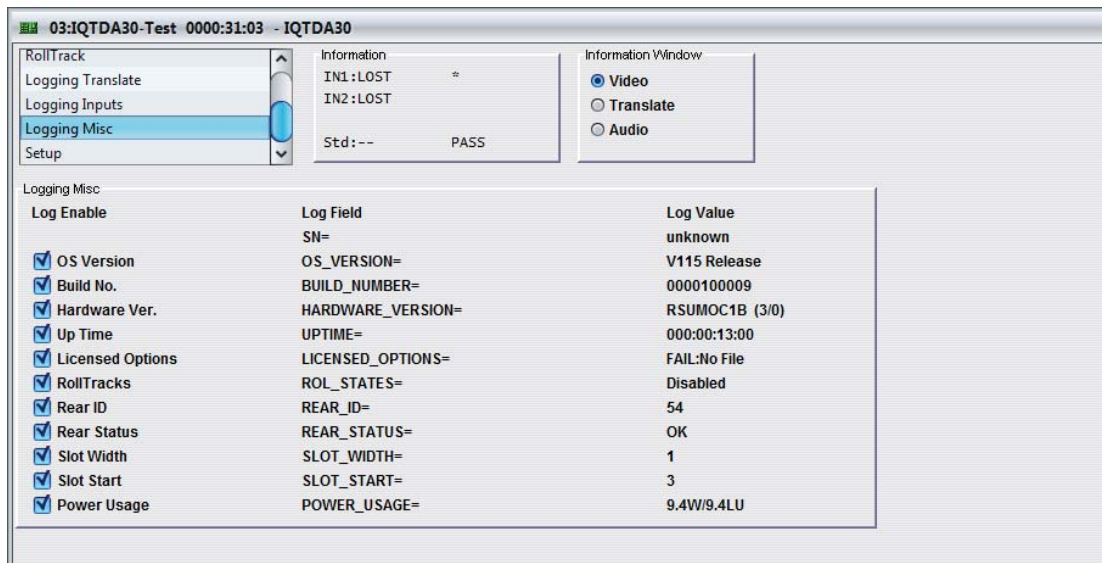
5.5.2 Logging Inputs

The Logging Inputs screen is used to select which fields should be enabled for each of the serial inputs.



5.5.3 Logging Misc

The Logging Misc screen is used to select which fields should be enabled for the basic information about the module, such as the serial number, and software versions.

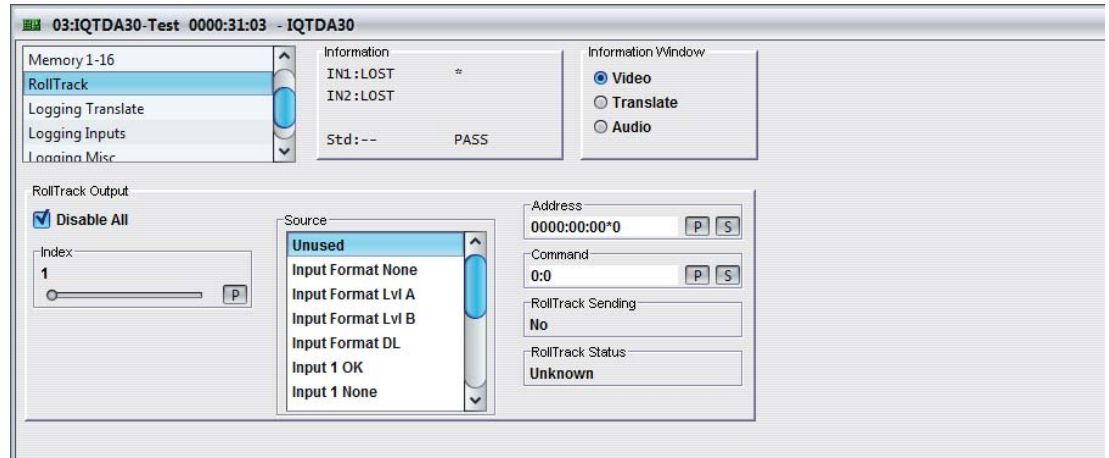


5.5.4 Log Field Descriptions

Log Field	Description
INPUT_STANDARD=	The current input standard.
INPUT_FORMAT=	The current input format. If no signal is present, the field displays Unknown.
OUTPUT_TYPE=	The output type. For this product, this is always HD/SD/3G SDI
OUTPUT_STATE=	The output state. Valid values are: <ul style="list-style-type: none"> • OK (translated OK) • WARN:Pass (passed through) • WARN:Mute (ouput is muted) • WARN:Pattern (output is test pattern)
OUTPUT_STANDARD-	The current output video standard.
OUTPUT_FORMAT=	The current output format. If no signal is present, the field displays Unknown.
INPUT_N_IDENT=	The identifier of the serial data input.
INPUT_N_NAME=	The name of the serial data input, as defined in the Setup screen.
INPUT_N_STATE=	Displays the current input state. Valid values are: <ul style="list-style-type: none"> • OK • WARN:Error • FAIL:Lost
INPUT_N_SDIRATE=	The current bit rate for the serial data input.
OS_VERSION=	The operating system version.
BUILD_NUMBER=	The software build number.
HARDWARE_VERSION	The hardware build version.
UPTIME=	Shows the time since the last restart (format ddd:hh:mm:ss).
LICENSED_OPTIONS=	The licensed features installed in the module.
ROL_STATES=	The status of any RollTracks that have been enabled.
REAR_ID=	The rear panel type.
REAR_STATUS=	The status of the rear panel.
SLOT_WIDTH=	The number of slots used by rear and module.1 or 2.
SLOT_START=	The first slot number the rear occupies. Use in conjunction with SLOT_WIDTH to determine the slots that the module occupies.
LAST_RECALLED_MEMORY=	The last recalled memory.
POWER USAGE=	The power rating for the module. Note: this is not a live power reading.

5.6 RollTrack

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



5.6.1 Disable All

When checked, all RollTrack items are disabled.

5.6.2 Index

This slider enables up to 16 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.

5.6.3 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.

Unused	No RollTracks sent.
Input Format None	Incoming signal is absent.
Input Format Lvl A	Incoming signal is 3G Level A
Input Format Lvl B	Incoming signal is 3G Level B
Input Format DL	Incoming signal is Dual-Link
Input N OK	Valid serial data input received.
Input N None	No serial data input received.
Input N Bitrate 270	Received bitrate is 270 Mbit/s.
Input Bitrate 1.5	Received bitrate is 1.5 Gbit/s.
Input N Bitrate 3G	Received bitrate is 3 Gbit/s.

5.6.4 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-defined 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 unexpectedly.

5.6.5 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.

5.6.6 RollTrack Sending

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

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

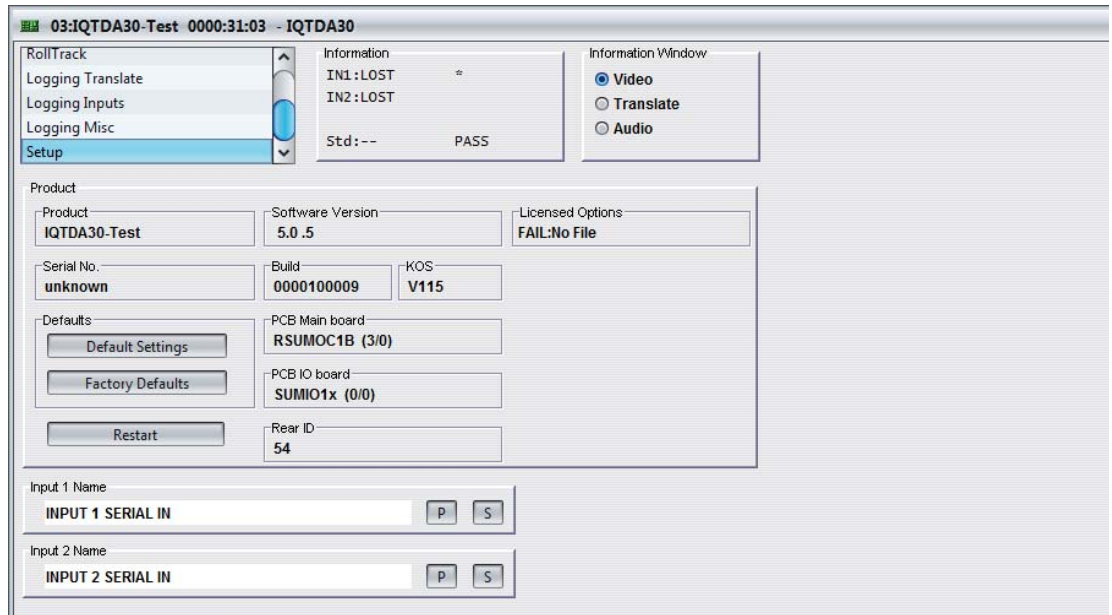
5.6.7 RollTrack Status

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.

5.7 Setup

The Setup 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 Main/IO Boards:** The Printed Circuit Board revision numbers.
- **Rear ID:** The rear panel type.
- **Licensed Options:** The installed licensed options.

5.7.1 Default Settings

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

5.7.2 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.

5.7.3 Restart

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

5.7.4 Input Name

These are the input names displayed in logging.

To change the name of Input 1 or Input 2, type the name in the text field and click **S**. To return the name to its factory default, click **P**.