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User Instruction Manual

IQSDA34

Triple Channel 3G/HD/SD-SDI Reclocking Distribution Amplifier with RollCall

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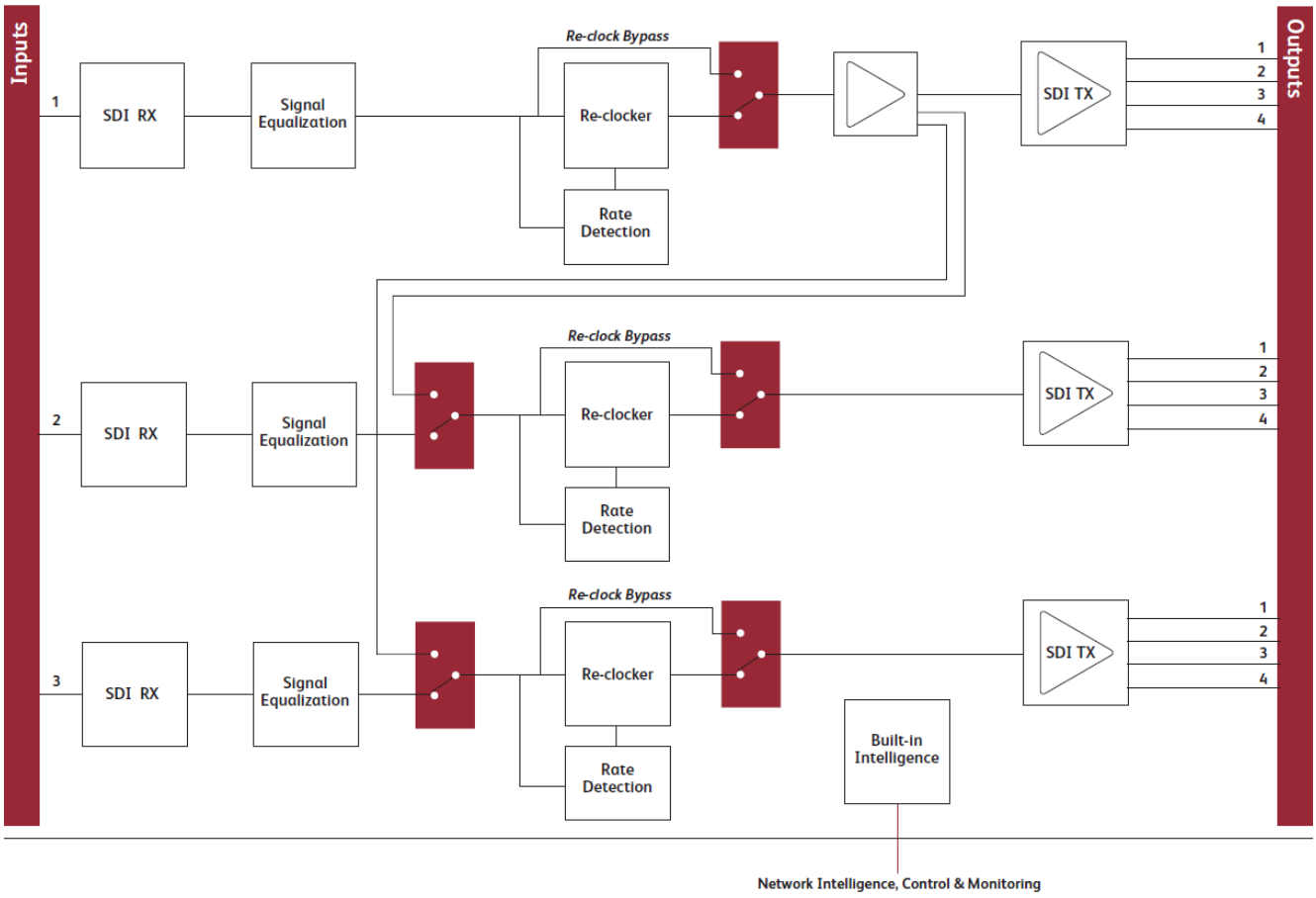
Contents

1. Introduction

1.1 Module Description

The IQSDA34 provides three inputs with 4 outputs per input for distribution of 1080p 3 Gbit/s SDI, HD-SDI 1.5 Gbit/s or 270 Mbit/s SD-SDI signals in a double width package. Its 70m 3G, 140m HD-SDI input equalization performance and non re-clocking distribution of wide-band signals makes it ideal for all current distribution applications. An HD/SD-SDI version is available for HD/SD only applications, with an option to upgrade firmware for 3 Gbit/s operation when required.



1.2 Order Codes

Note: Modules with “A” order codes (for example, IQSDA3448-2**A**) can be fitted into either A- or B-style enclosures. Modules with “B” order codes (for example, IQSDA3448-2**B**) can only be fitted into B-style enclosures. See page 6.

The following product order codes are covered by this manual:

IQSDA3448-2A **IQSDA3448-2B**	Triple Channel HD/SD-SDI Reclocking Distribution Amplifier. 3 inputs, 4 outputs per input.
IQSDA3448-2A3 **IQSDA3448-2B3**	Triple Channel 3G/HD/SD-SDI Reclocking Distribution Amplifier. 3 inputs, 4 outputs per input.
IQSDA3400-2A3 **IQSDA3400-2B3**	Triple Channel 3G/HD/SD-SDI Reclocking Distribution Amplifier with relay input bypass. 3 inputs, 3 outputs per input.
IQSDA34-3G	Upgrade for IQSDA3448-2A Triple Channel HD/SD-SDI Reclocking Distribution Amplifier to operate with 3 Gbit/s SDI signals.

1.3 Rear Panel View

1.3.1 IQSDA3448-2A, IQSDA3448-2B, IQSDA3448-2A3 & IQSDA3448-2B3

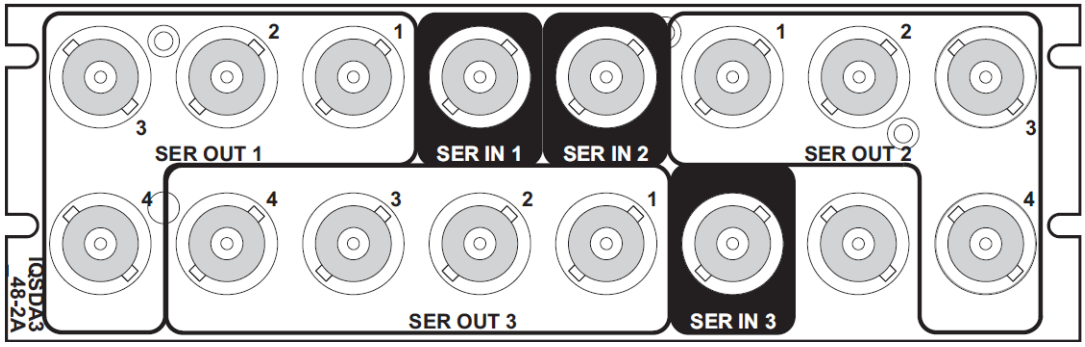


Fig 1. IQSDA3448-2A, IQSDA3448-2B, IQSDA3448-2A3 & IQSDA3448-2B3 Rear Panel

1.3.2 IQSDA3400-2A3 & IQSDA3400-2B3

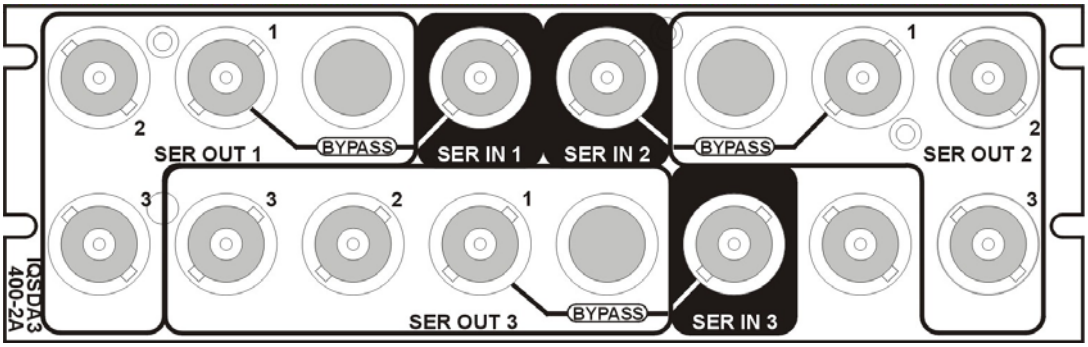


Fig 2. IQSDA3400-2A3 & IQSDA3400-2B3 Rear Panel

Note: The input signal will bypass the module and be routed to the respective output in the event of module removal or power failure.

1.4 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 5.

1.4.1 B-style Enclosure

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

1.4.2 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

1.5 Feature Summary

The IQSDA34 provides the following features:

- Triple channel Intelligent 3G-SDI, HD-SDI and SD-SDI re-clocking distribution amplifier
- Will distribute DVB-ASI and other wide-band signals
- Equalizes up to 70m at 3 Gbit/s, 140m at 1.5 Gbit/s and more than 350m at 270 Mbit/s when using Belden 1694A cable
- Standards supported:
  - 1080p SDI to SMPTE424M
  - HD-SDI to SMPTE292M
  - SD-SDI to SMPTE259M-C
  - DVB-ASI
- Switchable option to connect channels together producing 1 input to 12 outputs, or 2 inputs with 8 and 4 outputs respectively
- Relay Bypass option available
- RollCall monitoring allows all signal paths to be managed
- Extremely space efficient providing 4 outputs per input and a density of 24 channels in 3U
- Operation at SMPTE 424M data rates allows future proof system design
- Flexible output switching allows the module to adapt should distribution requirements change

2. Technical Specification

Inputs and Outputs	
Signal Inputs	
SDI Inputs	3 x
Input Cable Length	Up to 70 m Belden 1694A @ 3 Gbit/s Up to 140 m Belden 1694A @ 1.5 Gbit/s Up to 350 m Belden 1694A @ 270 Mbit/s
Note: When using mixed HD and SD inputs it is recommended that cable lengths do not exceed the HD specification of 140m.	
Signal Outputs	
SDI Outputs	x 4 per input
ASI Compatible Outputs	**IQSDA3448-2A/B**: Serial out 1/2, 1/3, Serial out 2/3, 2/4, Serial out 3/2, 3/4 **IQSDA3400-2A/B**: Serial out 1/1, 1/2, Serial out 2/2, 2/3, Serial out 3/3
Controls	
Indicators	
Power	OK (Green)
CPU	OK (Green flashing)
Input 1	OK (Green), Bypass (Orange), Loss (Red)
Input 2	OK (Green), Bypass (Orange), Loss (Red)
Input 3	OK (Green), Bypass (Orange), Loss (Red)
RollCall Features	
Input 1 (2) Rate Select	Auto, 3G, HD, SD, DVB-ASI, Bypass (reclocking off)
Input Status	Present, Loss, Unknown, Data Rate
Logging	Input 1 (2,3) Type Input 1 (2,3) Data Rate Input 1 (2,3) Present Input 1 (2,3) Error Input 1 (2,3) Loss
RollTrack Controls	On/Off, Index, Source, Address, Command, Status, Sending
Roll Track Sources	Unused Input 1 (2, 3) Present Input 1 (2, 3) Rate Unknown Input 1 (2, 3) Error Input 1 (2, 3) Loss Input 1 (2, 3) 3G Input 1 (2, 3) HD Input 1 (2, 3) SD
Other Controls	
User Memories	Name, save and recall 16 user memories

Specifications	
Electrical	3 Gbit/s SDI, SMPTE 424M 1.5 Gbit/s HD-SDI, SMPTE 292M 270 Mbit/s SDI, SMPTE 259M-C / DVB-ASI
Connector / Format	BNC/ 75 Ohm panel jack on standard Snell connector panel
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)
Power Consumption	
Module Power Consumption	**IQSDA3448-2A3**: 5 W max (A frames) **IQSDA3448-2B3**: 5 PR (B frames) **IQSDA3400-2A3**: 6 W max (A frames) **IQSDA3400-2B3**: 5 PR (B frames)

3. Connections

The IQSDA34 has 3 SDI inputs via 75ohm BNC connectors and 12 SDI outputs (3 groups of 4) via 75ohm BNC connectors.

The input signals can be routed as:

- A single input routed to all twelve outputs
- One input routed to four outputs and another routed to eight outputs
- Each of the three inputs routed to four outputs

3.1 Inputs

3.1.1 IQSDA3448-2A, IQSDA3448-2B, IQSDA3448-2A3 & IQSDA3448-2B3

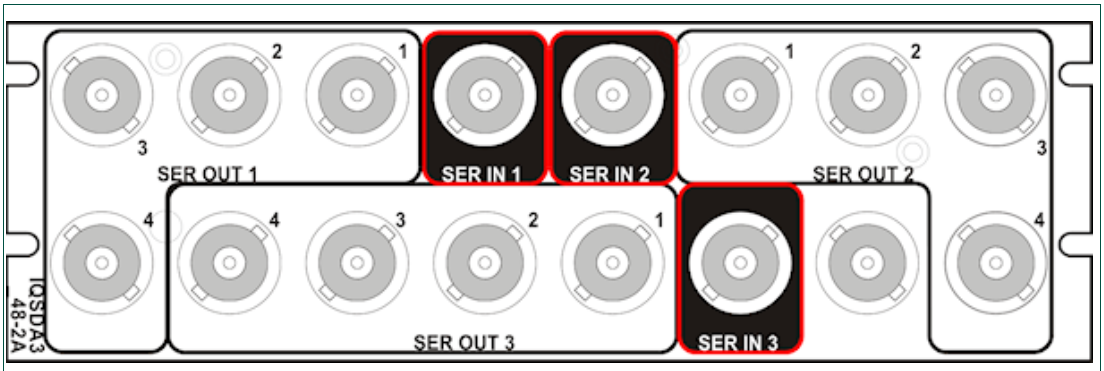


Fig 3. IQSDA3448-2A, IQSDA3448-2B, IQSDA3448-2A3 & IQSDA3448-2B3 Inputs

3.1.2 IQSDA3400-2A3 & IQSDA3400-2B3

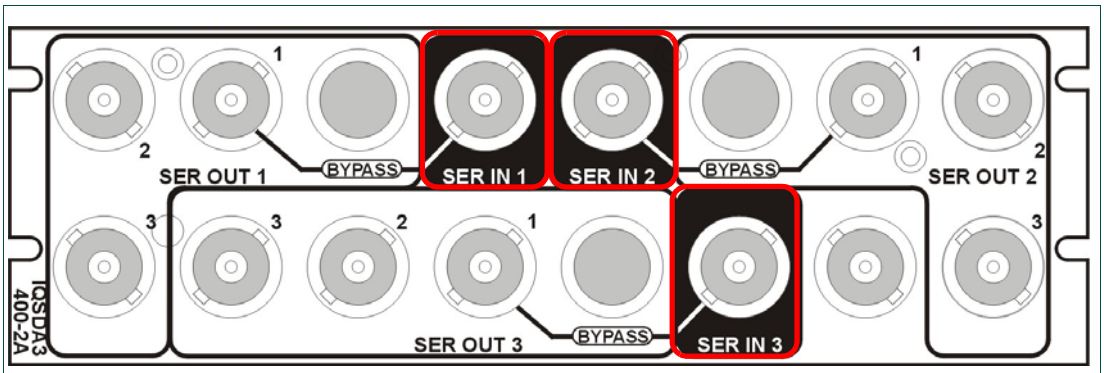


Fig 4. IQSDA3400-2A3 & IQSDA3400-2B3 Inputs

3.2 Outputs

Serial digital output from the unit is made via 12 BNC connectors, 4 per input (9 on Relay Bypass version, 3 per input), which terminate in 75 Ohms. Outputs 1 and 3 are DVB-ASI compatible (Serial Out 1, output 2, Serial Out 2, output 2 and Serial Out 3, output 2 on Relay Bypass Version).

3.2.1 IQSDA3448-2A, IQSDA3448-2B, IQSDA3448-2A3 & IQSDA3448-2B3

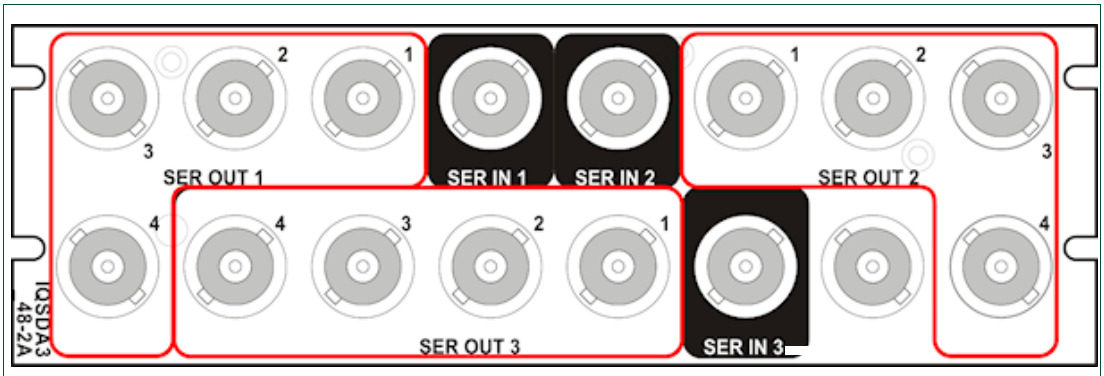


Fig 5. IQSDA3448-2A, IQSDA3448-2B, IQSDA3448-2A3 & IQSDA3448-2B3 Outputs

3.2.2 IQSDA3400-2A3 & IQSDA3400-2B3

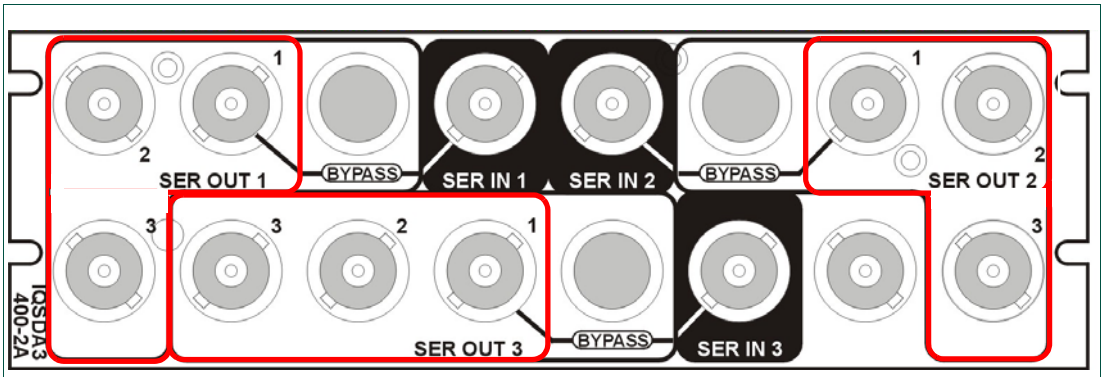
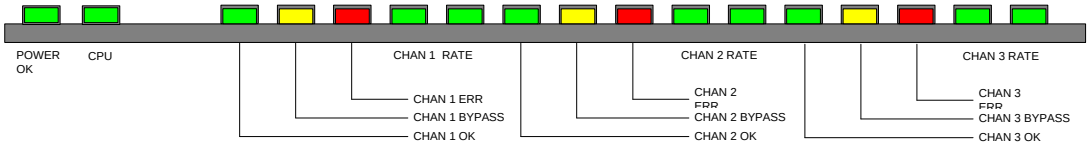


Fig 6. IQSDA3400-2A3 & IQSDA3400-2B3 Outputs

4. Card Edge LEDs

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

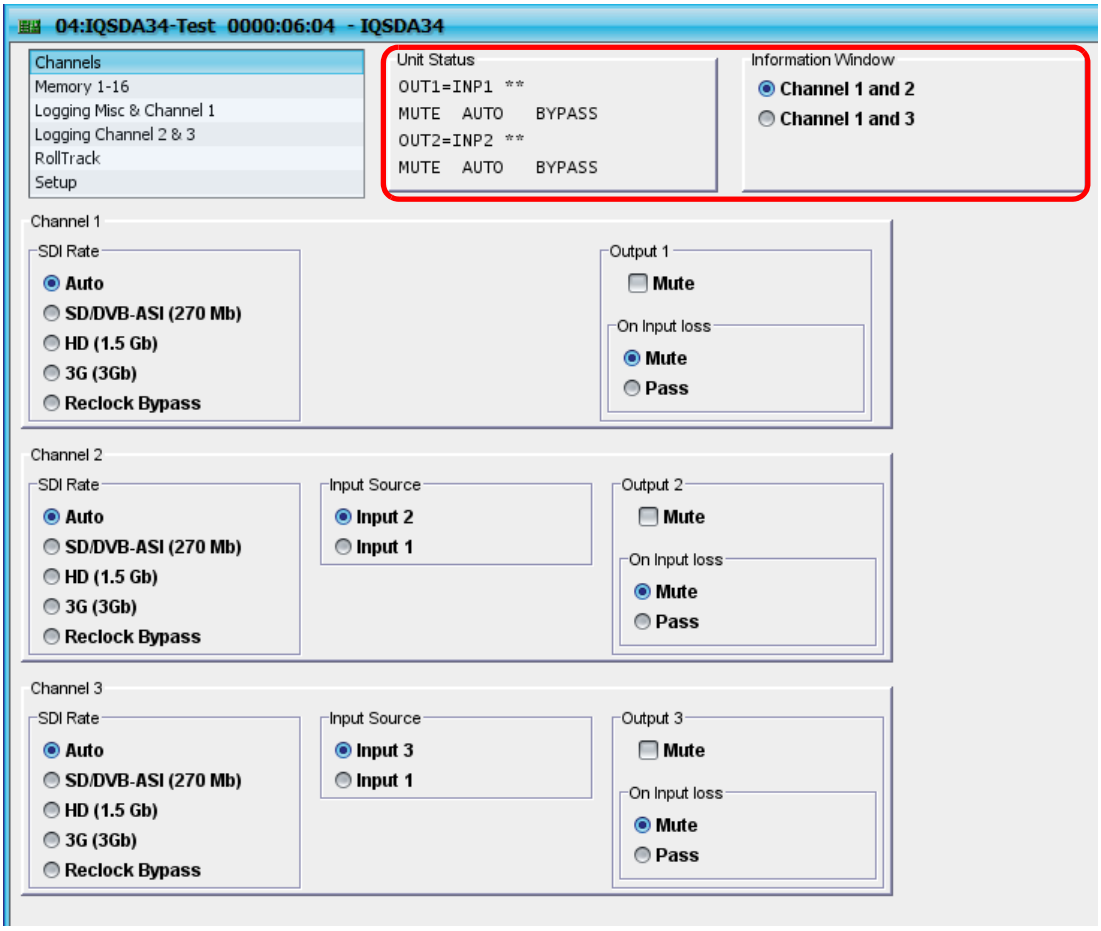


LED	Color	Description
Power OK	Green	This indicator is illuminated when a positive power supply is present.
CPU	Green	This indicator will blink to indicate CPU activity.
Channel *N* OK	Green	This indicator is illuminated when the input channel is locked to the input signal.
Channel *N* Bypass	Yellow	This indicator is illuminated when the signal on the input channel is not being reclocked. That is, in reclock bypass mode.
Channel *N* Error	Red	This indicator is illuminated when there is unknown or no input on the input channel.
Channel *N* Rate	Green	This indicator pair shows the rate on the input channel as follows: • Both LEDs illuminated – 3 Gbit/s • Left LED only illuminated – 1.5 Gbit/s • Right LED only illuminated – 270 Mbit/s • Both LEDs off – Rate unknown

5. Controlling the IQSDA34 from the RollCall Control Panel

5.1 Unit Status

Information about the status of the unit is displayed in the Unit Status section on each RollCall Control Panel screen.

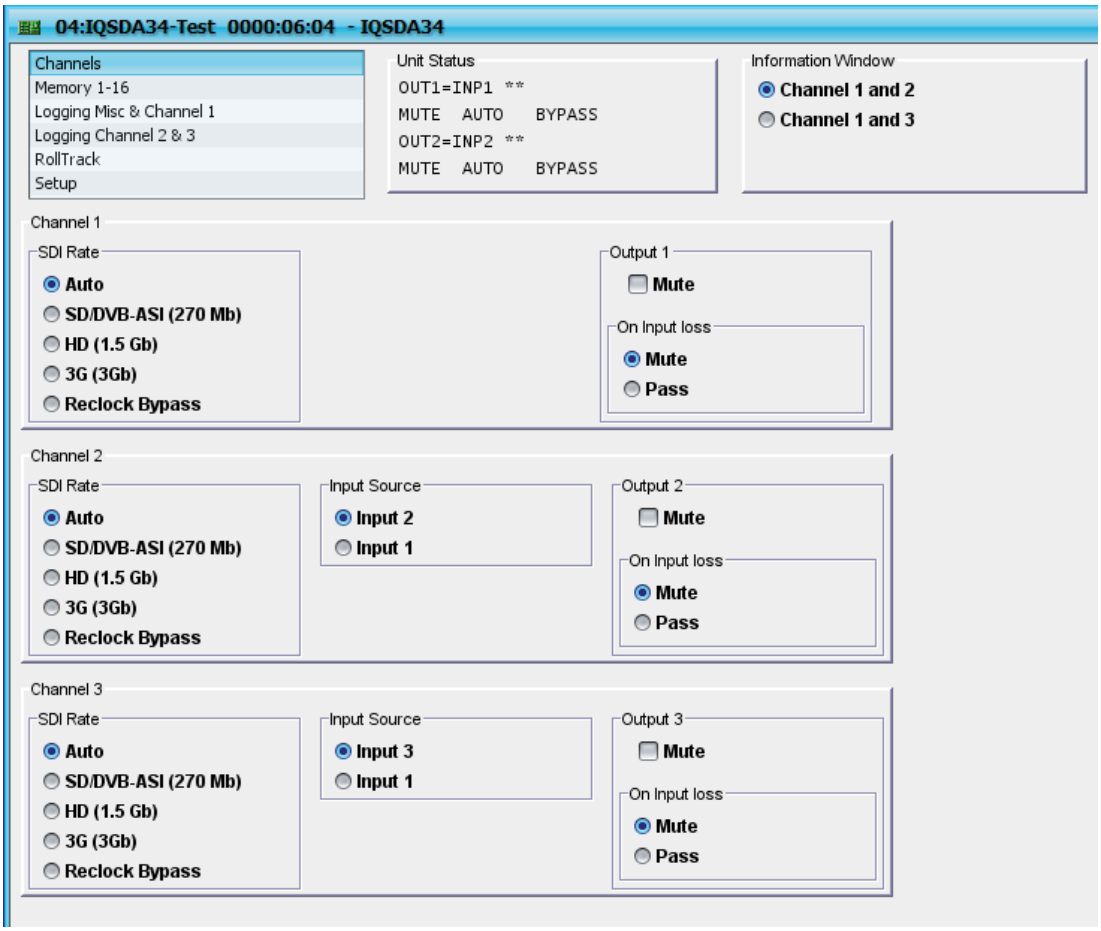


Use the Information Window radio buttons to select which two channel combinations are displayed in the Unit Status. Either Channels 1 and 2, or Channels 1 and 3 may be displayed.

For each selected channel the input status, detected rate and input selection method are displayed.

5.2 Channels

The Channels screen enables the input type and signal routing to be specified.



5.2.1 SDI Rate

- **Auto:** When selected, the unit will automatically detect and reclock any valid input signal, and the detected rate will be displayed in the Unit Status.

  If anything else is detected, the output will not be reclocked. If the On **Input Loss / Mute** option is selected, the output will be muted; or, if the **On Input Loss / Pass** option is selected, the output will be passed through.

- **SD/DVB-ASI (270 Mb):** When selected, the unit will reclock only SD/DVB-ASI (270 Mb) signals.

  When selected, the **On Input Loss** controls are greyed out and are inactive. If any other standard is applied to the unit the output will be muted.

- **HD (1.5 Gb):** When selected, the unit will reclock only HD (1.5 Gb) signals.

  When selected, the **On Input Loss** controls are greyed out and are inactive. If any other standard is applied to the unit the output will be muted.

- **3G (3 Gb):** When selected, the unit will reclock only 3G (3 Gb) signals.

  When selected, the **On Input Loss** controls are greyed out and are inactive. If any other standard is applied to the unit the output will be muted.

- **Reclock Bypass:** When selected, the unit will not reclock the input signal. If a supported rate is detected, the Unit Status will display the detected rate, otherwise, *** will be displayed.

  Note: When Bypass is selected the output drivers' slew rate will default to the faster HD/3G mode.

If the **On Input Loss / Mute** option is selected, the output will be muted whenever a recognized rate is not detected; or, if the On **Input Loss / Pass** option is selected, any signal standard, frequency, etc... will pass through.

5.2.2 Input Source

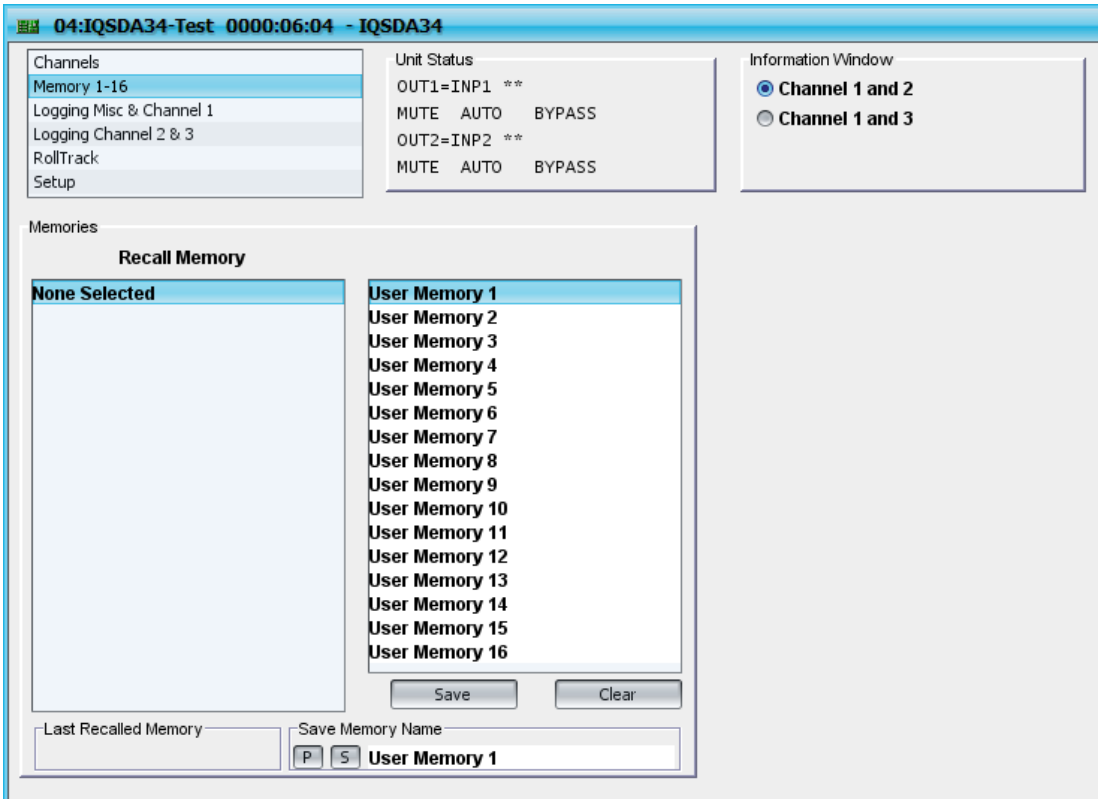
On channels 2 and 3, the Input Source selection enables the input sources for outputs 2 and 3 to be specified.

5.2.3 Output 1, Output 2, Output 3

- **Mute:** When selected, this option applies a mute on the output.
- **On Input loss / Mute:** When selected, if the Input signal is lost, the output signal will be muted.
- **On Input loss / Pass:** When selected, if the input signal is lost, it will be passed unchanged.

5.3 Memory 1-16

Use the Memory function to save up to 16 setups to be recalled later. Default memory names can be changed to provide more meaningful descriptions.



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 change a memory name:

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

Use the **Recall Memory** function to recall the settings saved in a memory location. **Last Recalled Memory** displays the most recently recalled memory. If a control is changed after a has been recalled **Last Recalled Memory** will display an asterisk behind the memory name.

To recall a memory:

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

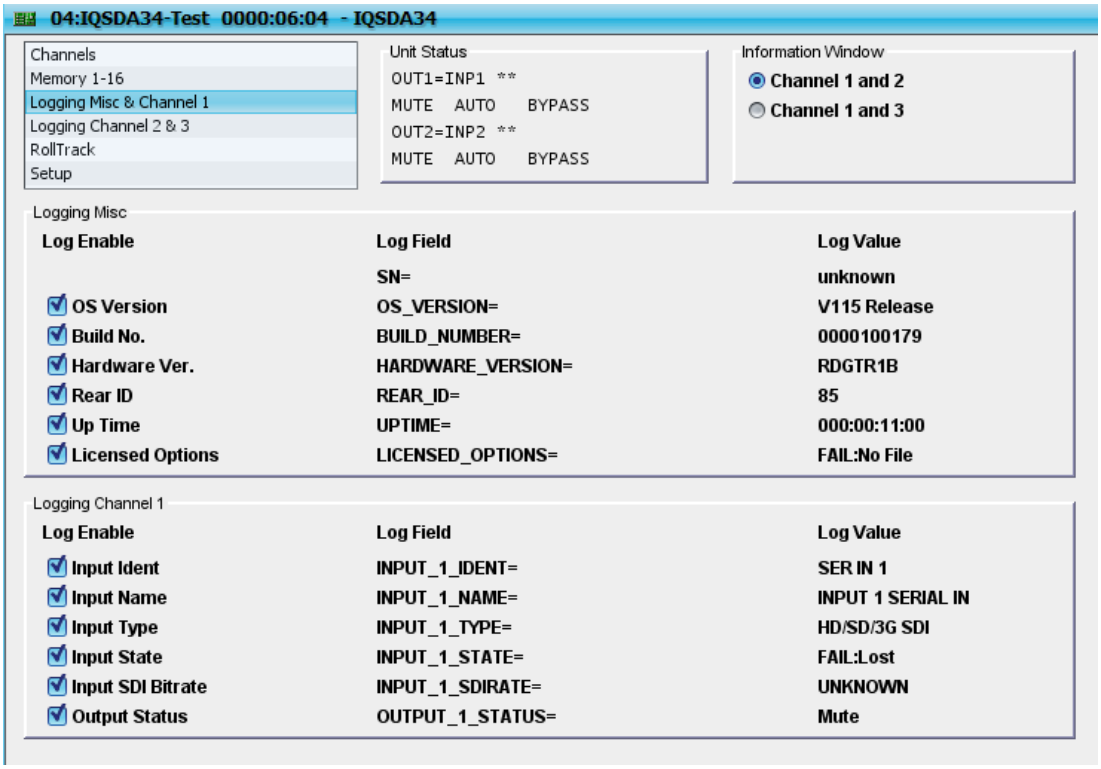
5.4 Logging

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

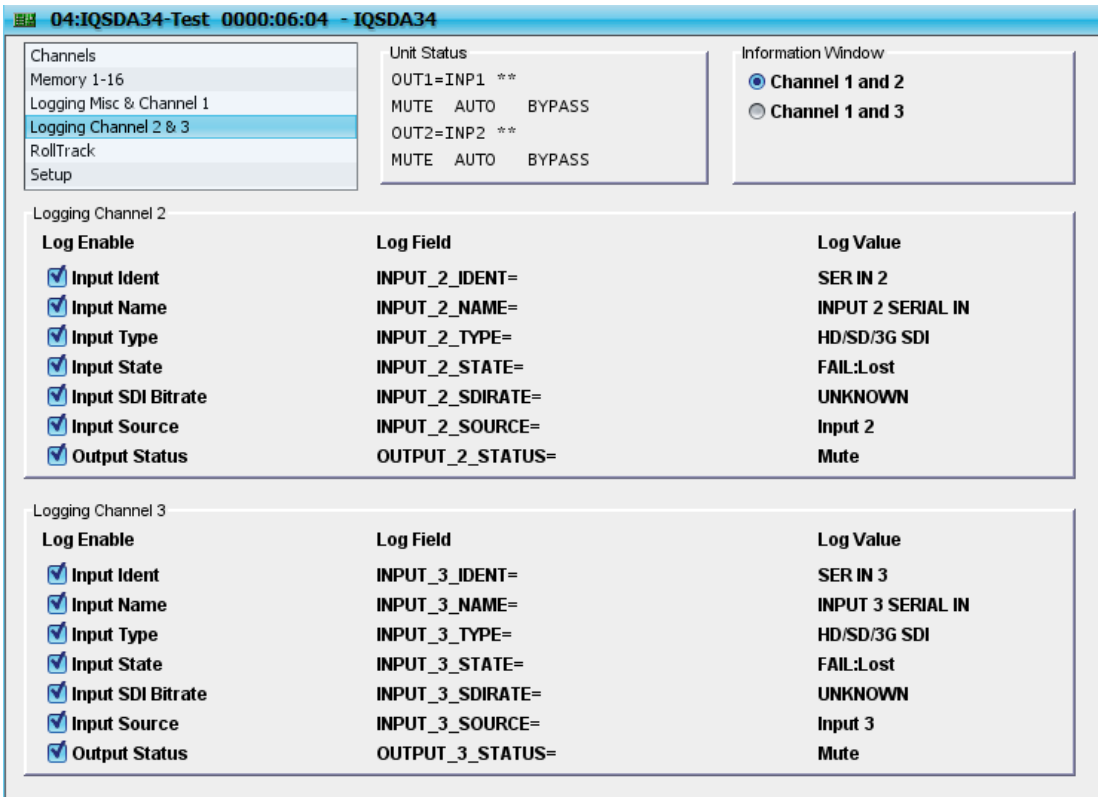
Each logging screen comprises three columns:

- **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.

5.4.1 Logging Misc & Channel 1



5.4.2 Logging Channel 2 & 3



5.4.3 Log Field Descriptions

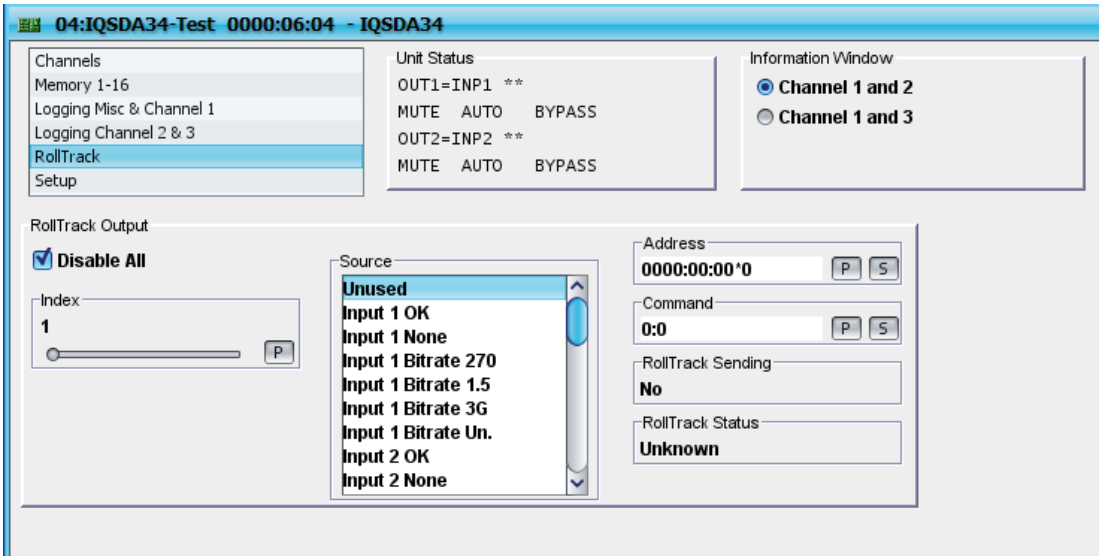
Log Field	Description
SN=	Displays the module serial number.
OS_VERSION=	Displays the operating system name and version.
BUILD_NUMBER=	Displays the build number.
HARDWARE_VERSION=	Displays the hardware version number.
REAR_ID=	Displays the rear panel type.
UPTIME=	Displays the time since the last restart in the format ddd:hh:mm:ss.
LICENSED_OPTIONS=	Displays the licensed features installed in the module.
INPUT_*N*_IDENT=	Displays the identifier of the serial data input.
INPUT_*N*_NAME=	Displays the name of the serial data input.
INPUT_*N*_TYPE=	This displays the type of input as specified by the unit's configuration. Valid values are HD/SD/3G SDI.
INPUT_*N*_STATE=	Displays the current input state. Valid values are: • OK • WARN • FAIL
INPUT_*N*_SDRATE=	Displays the current bit rate for the serial data input.
OUTPUT_*N*_STATUS	Displays the current output status.

5.5 RollTrack

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

Use the settings on the RollTrack screen to:

- Enable or disable the RollTrack functions.
- Configure up to 16 RollTrack outputs.
- Specify the conditions that trigger RollTrack data transmission.
- Set RollTrack destinations.
- Specify the RollTrack commands to be sent.



5.5.1 Disable All

When checked, all RollTrack items are disabled.

5.5.2 RollTrack Index

The slider enables up to 16 RollTrack outputs to be set up. Dragging the slider selects the RollTrack Index number. Clicking the **P** button selects the default preset value.

5.5.3 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. If no source is selected, **Unused** is displayed.

Unused	No RollTracks sent.
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.
Input *N* Bitrate Un.	Received bitrate is unknown.
Using Config 1	Configuration 1 is selected.
Using Config 2	Configuration 2 is selected.
Using Restart Conf	Restart configuration (3) is selected.

5.5.4 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.

5.5.5 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.

5.5.6 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.

5.5.7 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.

5.6 Setup

The Setup screen displays basic information about the unit. Use the functions on the screen to restart the unit, return all settings to their factory defaults, and to change the names of the inputs.

5.6.1 Product Information

On the Setup screen, the following information is displayed:

- **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.
- **Licensed Options:** The installed licensed options.

5.6.2 Default Settings

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

5.6.3 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.

5.6.4 Restart

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

5.6.5 Input 1/2 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**.

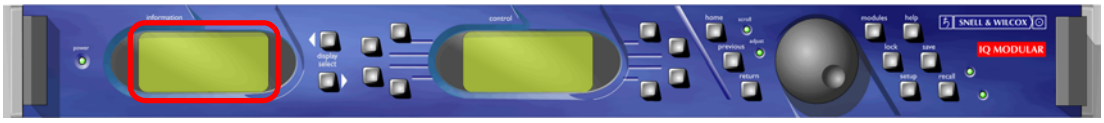
6. Controlling the IQSDA34 from an Active Front Panel

The module can be operated from an active control panel 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 Information Window

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



6.2 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: Where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.

Whenever a menu item is selected the parameters of that selection will be displayed in the Information window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode is not available for selection the text will remain normal.

