3G SDI to HDMI Converter and 3G SDI to HDMI Converter/Extender

PRODUCT MANUAL

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Subject: 3G SDI to HDMI Converter/ 3G SDI to HDMI Converter-Extender Product Manual
Revision: Rev D, April 2013

3G SDI to HDMI Converter

thinklogical®

Table of Contents

PREFACE

About this Product Manual

This manual is divided into five sections: **1. Introduction**, **2. System Features**, **3. Connecting the 3G SDI to HDMI Converter**, **4. Regulatory and Safety Compliance** and **5. Thinklogical Support**. These are sub-divided to help you find the topics and procedures you are looking for. This manual also contains Appendices.

Conventions Used in this Manual

As you read this manual you will notice certain conventions that bring your attention to important information. These are **Notes** and **Warnings**. Examples are shown below.

Note: Important Notes appear in blue text preceded by a yellow exclamation point symbol, as shown here.

A note is meant to call the reader's attention to helpful information at a point in the text that is relevant to the subject being discussed.

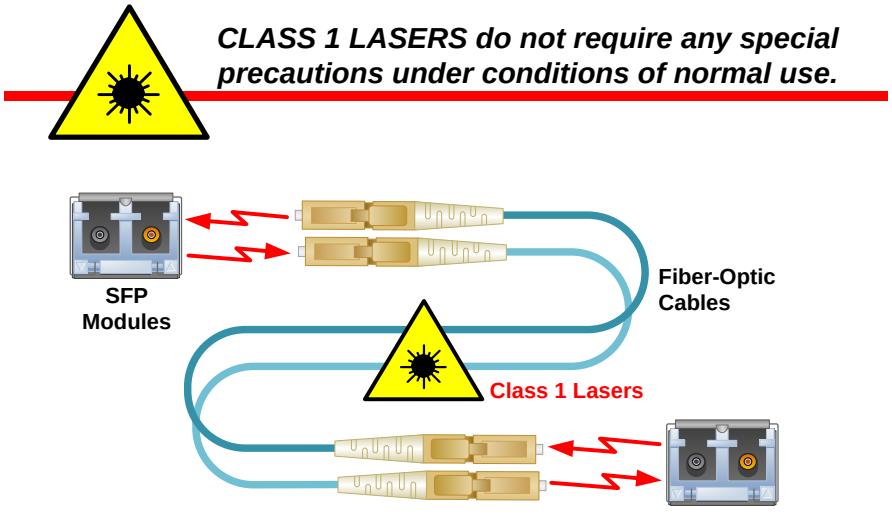
Warning! All Warnings appear in red text, followed by blue text, and preceded by a red stop sign, as shown here.

A warning is meant to call the reader's attention to critical information at a point in the text that is relevant to the subject being discussed.

BEFORE STARTING ANY PROCEDURE, IT IS RECOMMENDED THAT YOU READ THE INSTRUCTIONS THOROUGHLY!

Laser Information

Many Thinklogical® products, including 3G SDI to HDMI Converter/Extenders, are designed and identified as **Class 1 LASER products.**



1. Introduction

1.1. Contents

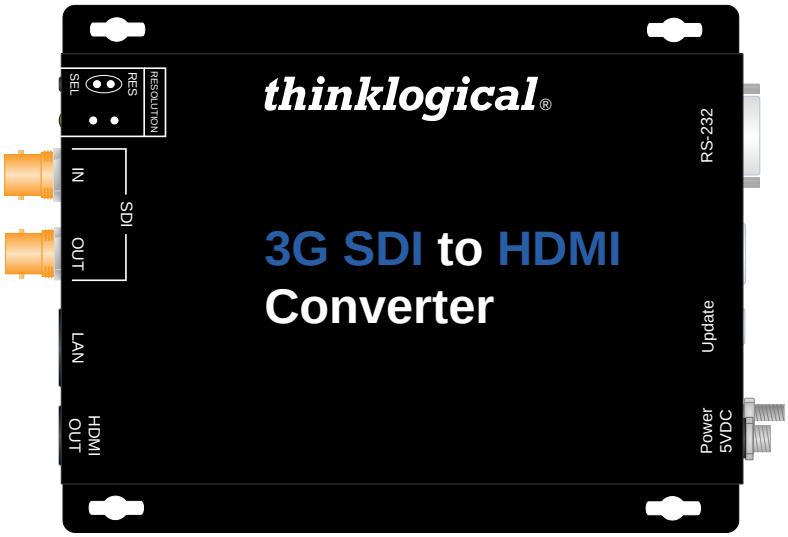
When you receive your Thinklogical® 3G SDI to HDMI Converter, you should find the following items:

- 3G SDI to HDMI Converter (SDC-000001) or
  3G SDI to HDMI Converter/Extender (SDC-000001-LC)
- AC/DC adapter universal input 90-264 VAC – PWR-000022-R
- 3G SDI to HDMI Converter product manual.

1.2. Product Overview

The Thinklogical® 3G SDI to HDMI Converter allows you to seamlessly convert a broadcast quality SDI signal to HDMI. The unit is full SMPTE compliant, including the active loop out port.

3G SDI to HDMI Converter/Extender (SDC-000001-LC)



3G SDI to HDMI Converter (SDC-000001)

2. System Features

2.1. General System Features

The Thinklogical® **3G SDI to HDMI Converter** allows users to seamlessly convert a broadcast quality SDI signal to HDMI. ***The 3G SDI to HDMI Converter is full SMPTE compliant, including the active loop out port.*** The 3G SDI to HDMI Converter/Extender has a fiber output that is fully compatible with our Velocity line of receivers as well as our VX routers for a comprehensive conversion and extension solution. ***Not only does it convert and scale video signals in real-time, it also provides the highest quality images for professional audio-visual end users.***

Each 3G SDI to HDMI Converter system includes the following features:

Conversion/Scaling:

- Input: SD, HD, 3G SDI
- Output: 1920x1200p60, 1080p50, 1080p60, 720p50, 720p60, 576p50, 480p60.
- Fiber optic output compatible with Thinklogical Velocity® Receivers
- SDI embedded audio conversion to HDMI output and compatible with Thinklogical Velocity Receivers
- User Control via RS-232 and Ethernet
- SMPTE standards supported: 259M-C, 292, 424M, 425 level A and level B
- Active SMPTE compliant loop out port
- Automatic Video Input Detection
- Additional manual resolution selection via push buttons

Video Processor Features:

- Per pixel motion-adaptive video noise reduction- removes the white Gaussian noise present in most types of video
- Content adaptive block and mosquito noise reduction- significantly reduces the blocking and mosquito noise artifacts present in compressed video
- Advanced per-pixel, motion-adaptive, edge-adaptive 3D de-interlacing with support for arbitrary film cadences- removes “jaggies” and “feathering” to produce smooth and clear images
- Adaptive scaling- produces sharp and clean images and low or high resolutions
- Natural dept expansion- enhances details and sensation of depth for greater realism and super resolution effect
- Adaptive contrast enhancement (ACE) brings out shadow detail without crushing mid-tones or highlights
- Intelligent color remapping (ICR) enables vivid color without hue shifts and clipping while maintaining accurate flesh tone
- Qdeo™ true color- a unique solution for using the full dynamic range of 10-bit and 12-bit displays which eliminates contouring seen when viewing typical 8-bit consumer video

2.2 Technical Specifications

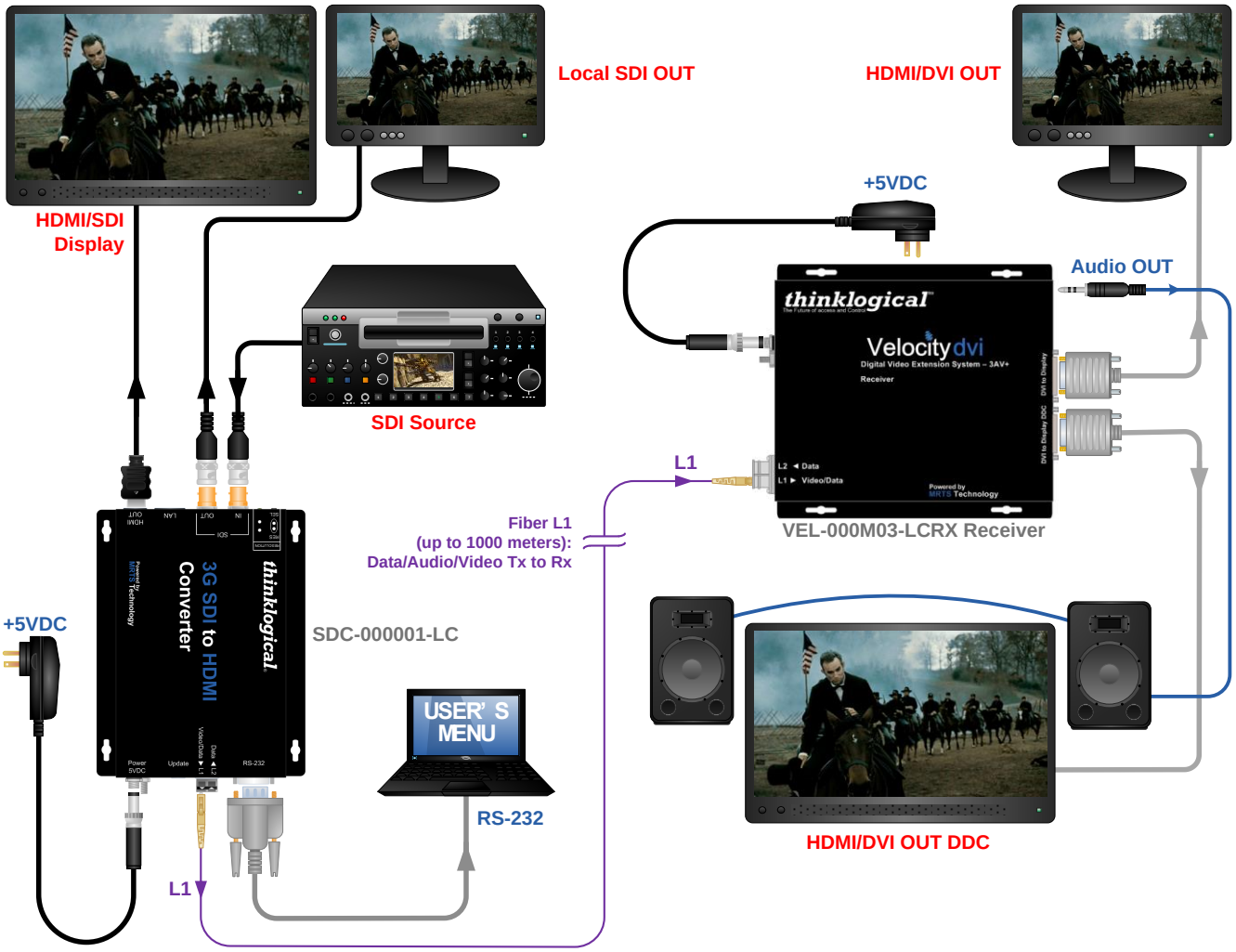
Supported Frame Rate Formats: Progressive, Interlaced, PsF		
Function	**Video Standards Supported**	**Formats**
SD-SDI	SMPTE 259M	PAL and NTSC
HD-SDI	SMPTE 292M	All standard HD-SDI compatible formats
3G SDI	SMPTE 424M, 425M, Level A and B	All SMPTE 425 level A and B compatible formats

Storage Temperature	0 to 50 deg C , 5 – 95 % RH, non condensing
Power Supply Voltage	+5.0 VDC
DC Adapter	AC/DC adapter universal input 90-264 VAC
Power Consumption	With Velocity SFP: 9.5 Watts Without Velocity SFP: 8.5 Watts
Operating Temperature and Humidity	0 to 50 °C (32 to 122 °F); 5 to 95% RH, non-condensing
Enclosure Dimensions	Height: 1.1” (27.94 mm) Depth: 7” (177.80 mm) Width: 5.375" (136.65 mm)
Weight	Actual Weight: 1 lb (0.45 kg) Shipping Weight: 9 lbs (4.08 kg)
Compliance	Pending approvals for US, Canada, and European Union

3. Connections

3.1. Connecting the 3G SDI to HDMI Converter/Extender (SDC-000001-LC)

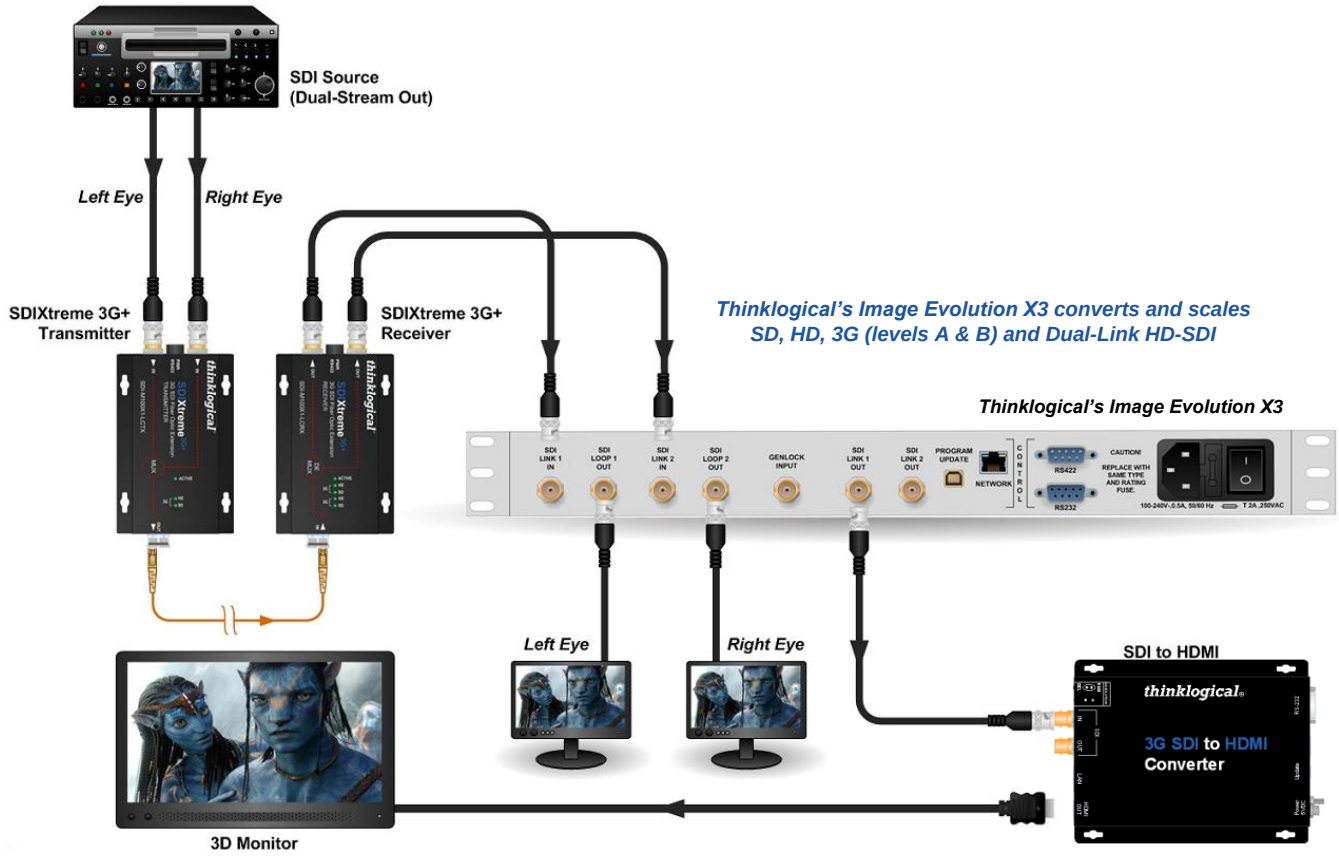
The 3G SDI to HDMI Converter/Extender (SDC-000001-LC) includes an SFP module with LC-type fiber-optic cable ports to allow a connection to a remote device up to 1000 meters away. A 3G SDI Source and local output display connect to the SDI IN & OUT ports with standard AES3, 75Ω BNC cables. The HDMI OUT port connects to an HDMI/SDI display through a standard HDMI cable. An RS-232 port is also available to connect a serial device. (See RS-232 pin-out guide, paragraph 3.3, on page 9). To extend content to a remote receiver, use multi-mode fiber-optic cable (up to 1000'). Fiber L1 carries data, audio and video from the Tx to the RX. Monitors or other viewing devices are connect to the Velocity Receiver with HDMI/DVI cables.



The *3G SDI to HDMI Converter/Extender* extending video/audio over fiber to Thinklogical's VelocityDVI-3AV+® Receiver

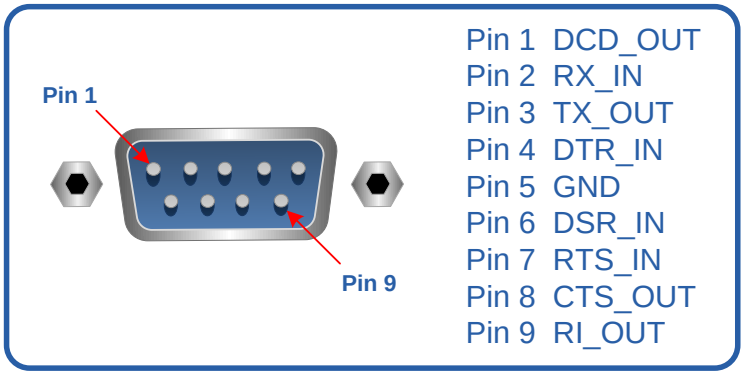
3.2 Connecting the 3G SDI to HDMI Converter (SDC-000001)

The 3G SDI to HDMI Converter can be used in a variety of applications, and with a variety of other Thinklogical products, that do not require video or data extension across large distances. A 3G SDI Source and local output display connect to the SDI IN & OUT ports with standard AES3, 75Ω BNC cables. An RS-232 port is also available to connect a serial device. (See RS-232 pin-out guide, paragraph 3.3, below).



The *3G SDI to HDMI Converter* 3D Application using Thinklogical's Image Evolution X3®

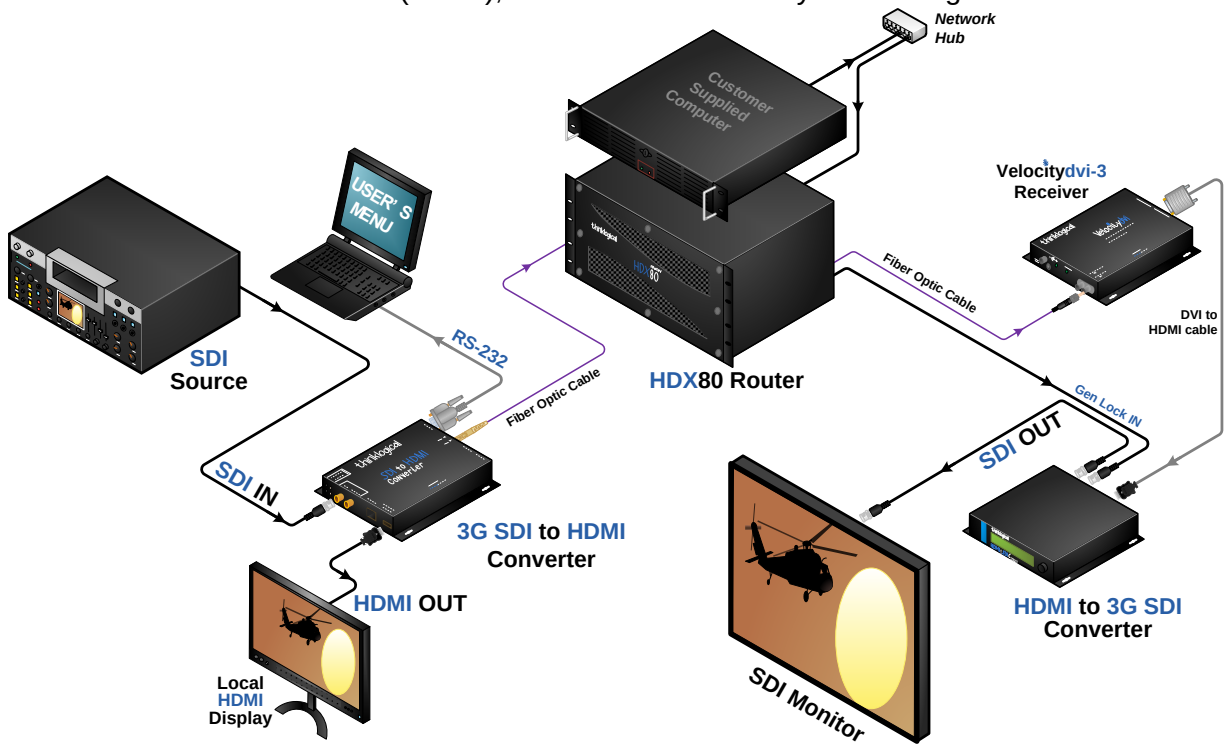
3.3 RS-232 Pin Out

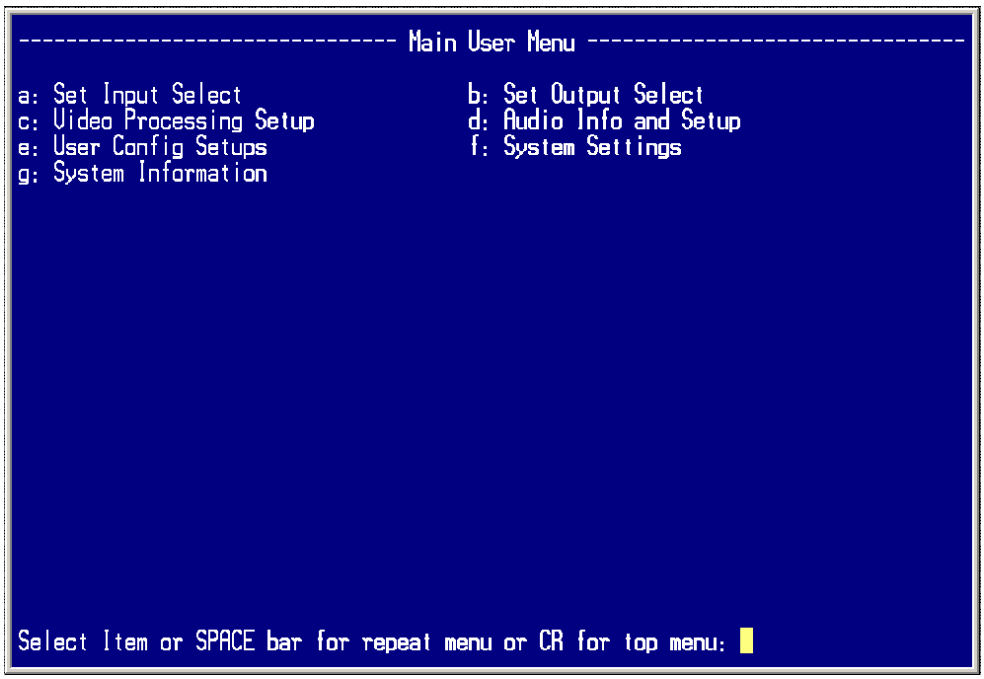


3.4 User Menu Configurations

When connecting to a network, as in the diagram below, a user interface may be connected to the 3G SDI to HDMI Converter's RS-232 port with a standard serial cable. Thinklogical's *3G SDI to HDMI Converter*, *HDMI to 3G SDI Converter* and *Image Evolution X3* are all shipped with the IP address **192.168.75.200**. (To change an IP address, go to SYSTEM SETTINGS ▶ETHERNET SETTINGS▶SET IP ADDRESS. See page 13.)

From the **Main User Menu** screen (below), follow the menus for system configuration.





The RS-232 setup and configuration is as follows:

- Use Hyperterm or similar type interface.
- Baud rate is 115200, 8 bits, no parity, 1 stop bit, no flow control
- Emulate VT-100 mode

MAIN USER MENU:

A: Set Input Select
B: Set Output Select
C: Video Processing Setup
D: Audio Info and Setup
E: User Config Setups
F: System Settings
G: System Information

MAIN MENU:
A: Set Input Select

Note: A valid input must be applied in order for the configuration to be used.

a: Single Link Input
This option forces a re-configure of the unit. A valid signal needs to be present.

b: Enable Loop Output
This will enable the video signal applied to input 1 to be looped back out of the IEX3. This is enabled as default.

c: Disable Loop Output
Turns off the BNC Loop output 1.

d: AUTO mode ON
Detects when a video source has changed format. On cable insertion, the unit performs a re-configuration of the last known output setting with the new input.

e: AUTO Mode OFF
Turns off the AUTO mode.

MAIN MENU:
B: Set Output Select

Sets the output video resolution. A valid input video signal needs to be present.

a: 480p @ 60
b: 576p @ 50
c: 720p @ 50
d: 720p @ 60
e: 1080p @ 50
f: 1080p @ 60 (default)

MAIN MENU:
C: Video Processing Setup

a: Comp. Artifact Reducer
Selects menu for Component Artifact Reducer (CAR) video processing functions.

b: **DeInterlacer**
Selects the menus for the DeInterlacer (DEINT) video processing functions.

c: **Noise Reducer**
Selects the menus for the Noise Reduction (NR) video processing functions.

d: **Picture Control**
Selects the menus for Picture Control (PC) video processing functions.

e: **Edge Enhancer**
Selects the menus for Edge Enhancement (EE) video processing functions.

f: **Color Management Unit**
Selects menus for Color Management Unit (CMU) video processing functions.

g: **Adapt. Contrast Enhancer**
Selects the menus for the Adaptive Contrast Enhancer (ACE) video processing functions.

h: **3D Control Menu**
Selects the menu for output 3D processing formats.

MAIN MENU:
D: Audio Info and Setup

a: **Enable Audio Output**
Enables the embedded audio output from the selected input.

b: **Disable Audio Output**
Mutes all embedded audio output channels.

c: **Get Audio Info Input**
Get Audio information from BNC Input.

d: **Set Audio Delay**
Audio Delay range is from -50 - +50 in mS with the default being 0.

e: **Get Audio Delay**
The programmed Audio Delay in mS.

f: **Get Audio Channel Cfg.**
Get the audio channel mapping.

g: **Assign Audio Channels**
Configure input to output channel configuration.

MAIN MENU:
E: User Config Setups

a: **Save Current Config**
Saves the current system settings to the non-volatile Memory. Maximum of 20 characters for the record name.

b: **Set Power On Config**
This option will set the current configuration to the user in an accessible region of flash. This configuration is restored during power up.

c: **Restore Config Record**
Recall any one of the current saved configuration records.

d: **Restore Factory Config**

This selection will delete the stored power on configuration and will re-configure to the factory default on the next power cycle (1080i @ 60 Hz).

e: Erase Record(s)
Erase a particular record or all records.

MAIN MENU:
F: System Settings

a: Ethernet Settings
Settings for the network interface.

Default Settings:
IP Address - 192.168.75.200
Mask - 255.255.255.0
Gateway - 0.0.0.0

Note: To change the IP address of a device: From the SYSTEM MENU, go to ETHERNET SETTINGS, then to SET IP ADDRESS.

b: Enable HDMI Output Video Mode
Enables the HDMI output to be in true HDMI mode.

c: Enable DVI Output Video Mode
Enable this option if the sink device is a true DVI monitor/projector.

NOTE: If output appears to be noisy, enable DVI Output Video Mode. HDMI mode carries video along with audio information. Choose this mode for video-only applications.

d: Get Video Mode
This will return current video mode.

MAIN MENU:
G: System Information

The following is used for retrieving information regarding current setup and signal detection information.

a: Get Software Version
Displays the System's software version number.

b: Get FPGA Version
Displays FPGA 1 version number

c: Get Linux Version
Displays version of software currently running on ethernet interface.

d: Get Local Temperature
Displays the temperature inside the box

e: Get Input Info
Displays Information about the video and embedded audio signal on BNC Input 1

f: Get Output Info
Displays Information about the video and embedded audio signal on BNC Outputs

MAIN MENU:
C: Video Processing Setup

SUB-MENU:
a: Comp. Artifact Reducer

This feature is used to reduce compression artifacts that are caused by video compression schemes such as MPEG2. Mostly used on YCbCr 4:2:2 interlaced or progressive input video.

a: Comp. Arti. Reducer EN
Enables the Compression Artifact Reducer.

b: Mosq. Noise Reducer EN
Enables the Mosquito (Ringing) Noise Reducer.

c: Block Noise Reducer EN
Enables the Block (8x8) Noise Reducer.

d: Non Std Block Noise Det EN
Enables the Non-Standard Block Detection.

e: Enable All CAR Blocks
Enables All the above (A,B,C,D) Noise Reduction Blocks.

f: Disable All CAR Blocks
Disables All the Noise Reduction Blocks.

MAIN MENU:
C: Video Processing Setup
SUB-MENU:
b: DeInterlacer

Selects the menu for the DeInterlacer (DEINT) video processing functions.

a: Deinterlacer BYPASS
Bypasses the deinterlacer (input is progressive).

b: Deint 2D VECTOR
Sets the Interlacer for 2D Vector mode (Interlaced input DEFAULT mode).

c: Deint 2D VECTOR AGGRES.
Sets the Interlacer for 2D Aggressive mode (Interlaced input).

d: Deint 3D FIXED
Sets the Interlacer for 3D fixed mode (Interlaced input).

e: Deint 3D Mo Adpt Vector
Sets the Interlacer for 3D Motion Adaptive Vector mode.

f: Deint 3D MA Vect Aggres
Sets the Interlacer for 3D Motion Adaptive Vector Aggressive mode.

g: Deint 3D MA Vect Linear
Sets the Interlacer for 3D Motion Adaptive Vector Linear mode.

h: DEINTERLACER DEFAULT
Sets the Interlacer for DEFAULT mode.

MAIN MENU:
C: Video Processing Setup
SUB-MENU:
c: Noise Reducer

Selects the menus for the Video Noise Reduction (NR) video processing functions. Used mostly on YCbCr 4:2:2 Input video.

a: Noise Reducer DISABLE
Disables the Noise Reduction block.

b: Noise Reducer 2D
Sets the Noise Reducer for 2D (Spatial) mode.

c: Noise Reducer 3D Fixed
Sets the Noise Reducer for 3D Fixed (Temporal) mode.

d: Noise Reducer 3D Adapt
Sets the Noise Reducer for 3D Adaptive (Temporal) mode.

e: Noise Reducer Default
Sets the Noise Reducer for Default mode.

f: Noise Reducer Automatic
Sets the Noise Reducer for Automatic mode.

MAIN MENU:
C: Video Processing Setup
SUB-MENU:
d: Picture Control

a: Set All Levels Default
Restores Contrast, Brightness, Tint, Black, Color Temp levels to defaults.

b: Set Contrast Level
Enter the Contrast Level 0 to +10. The Default value is 10.

c: Set Brightness Level
Enter the Brightness Level -100 to +100. The Default value is 0.

d: Set Tint Level
Enter the Tint Level -180 to +180. The Default value is 5.

e: Set Black Level
Enter the Black Level 0 to +100. The Default value is 0.

f: Set Color Temperature

SUB MENU : Video Set Color Temperature Menu

a: Color Temperature NORMAL
Sets the color temp to 6500.

b: Set Color Temperature COOL
Sets the color temp to 8000.

c: Color Temperature WARM
Sets the color temp to 6000.

d: Color Temperature CUSTOM
Enter Color Temp Level 6000 to 8000 (Normal = 6500)

MAIN MENU:
C: Video Processing Setup
SUB-MENU:
e: Edge Enhancer

Selects the menus for Edge Enhancement (EE) video processing functions.

a: Edge Enhancer OFF
b: Edge Enhancer LOW
c: Edge Enhancer MED
d: Edge Enhancer HIGH

MAIN MENU:
C: Video Processing Setup
SUB-MENU:
f: Color Management Unit

Selects the menus for Color Management Unit (CMU) video processing functions.

a: Hue Saturation Menu

Video Hue Saturation Menu

a: Hue Saturation ENABLE
b: Hue Saturation DISABLE
c: Intelligent Saturation ENABLE
d: Intelligent Saturation DISABLE
e: Set HUE Saturation Level
f: Set HUE Global Sat. Level
g: ICR Advanced Menu

Note: Hue saturation needs to be enabled (selection 'a') in order for 'Set HUE Saturation Level' (selection 'e') to be valid.

b: Qdeo True Color Menu

Video Qdeo Menu

a: Qdeo True Color OFF
b: Qdeo True Color SOFT
c: Qdeo True Color GENTILE
d: Qdeo True Color MEDIUM
e: Qdeo True Color HIGH

c: Film Grain Gain Menu

Video Film Grain Gain MENU

a: Disable Film Grain Gain
b: Set Film Grain Gain
Range is 0 - 255. Default is 0.
c: Set FGG Temporal Freq.
Range is 0 - 255. Default is 0.

d: Flesh Tone Correction

a: Set FTDC Preset Enable
b: Set FTDC Preset Level 1
c: Set FTDC Preset Level 2
d: Set FTDC Preset Level 3
e: Set FTDC Preset Level 4
f: Set FTDC Preset Level 5
g: Set FTDC Preset Level 6
h: Set FTDC Preset Disable

e: Set GAMMA Menu

a: GAMMA Disable
b: GAMMA 1.8
c: GAMMA 2.5

d: GAMMA S-Curve Light
e: GAMMA S-Curve Dark

MAIN MENU:
C: Video Processing Setup
SUB-MENU:
g: Adapt. Contrast Enhancer

Selects the menus for Adaptive Contrast Enhancer (ACE) video processing functions.

a: ACE PRESET OFF
b: ACE PRESET LOW
c: ACE PRESET MEDIUM
d: ACE PRESET HIGH
e: ACE PRESET RANGE 0-255
f: ACE PRESET RANGE 16-235
g: ACE Brightness Menu

a: Brightness DISABLE
b: Brightness DEFAULT
c: Brightness Taper Size
Enter Taper Size (16, 32, 64, 128, 256, 512).

d: Brightness Taper Side
Enter Taper Side Select (1,2).

e: Brightness Enhancement
Enter Enhancement Level (1 - 15).

f: Brightness Threshold 1
Enter Threshold 1 Level (0 - 1023).

g: Brightness Threshold 2
Enter Threshold 2 Level (0 - 1023).

MAIN MENU:
C: Video Processing Setup
SUB-MENU:
h: 3D Control Menu

a: Left/Right Frame Menu
Menu to functions that will allow the zooming in of an incoming 3D side-by-side signal and display one half as a 2D image (left eye or right eye).

b: Line-By-Line Output Menu
Select output format of a line-by-line signal.

c: Disable Line-By-Line Output
Turns off the line-by-line feature.

d: Side-By-Side Output Menu
Select output format of a side-by-side signal.

e: Disable Side-By-Side Output
Turns off the side-by-side feature.

f: Dual Stream Output Menu Select output format of a dual stream signal.

g: Enable Adaptive Clock Factory Use.

h: Disable Enable Adaptive Clock Factory Use.

4. Regulatory & Safety Compliance

4.1. Symbols Found on Our Products

Markings and labels on our products follow industry-standard conventions. Regulatory markings found on our products comply with domestic and many international requirements.

4.2 Regulatory Compliance

Thinklogical® products are designed and made in the U.S.A. Products have been tested by a nationally recognized testing laboratory and found to be compliant with the following standards (both domestic USA and many international locations).

North America

These products comply with the following standards:

Safety
ANSI/UL60950-1: 1st Edition (2003)
CAN/CSA C22.2 No. 60950-1-03

LASER Safety
CDRH 21CFR 1040.10
Class 1 LASER Product

Electromagnetic Interference
FCC CFR47, Part 15, Class A
Industry Canada ICES-003 Issue 2, Revision 1

Australia & New Zealand

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

European Union

Declaration of Conformity
Manufacturer's Name & Address: **Thinklogical, LLC®**
100 Washington Street
Milford, Connecticut 06460 USA
Telephone: 1-203-647-8700

Product Name

Models: 3GSDI to HDMI Converter, 3GSDI to HDMI Converter/Extender

These products comply with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.

4.3. Standards with Which Our Products Comply

Safety
CENELEC EN 60950-1, (2006)

LASER Safety
IEC60825:2001 Parts 1 and 2
Class 1 LASER Product

Electromagnetic Emissions
EN55022: 1994 (IEC/CSPIR22: 1993)
EN61000-3-2/A14: 2000
EN61000-3-3: 1994

Electromagnetic Immunity
EN55024: 1998 Information Technology Equipment-Immunity Characteristics
EN61000-4-2: 1995 Electro-Static Discharge Test
EN61000-4-3: 1996 Radiated Immunity Field Test
EN61000-4-4: 1995 Electrical Fast Transient Test
EN61000-4-5: 1995 Power Supply Surge Test
EN61000-4-6: 1996 Conducted Immunity Test
EN61000-4-8: 1993 Magnetic Field Test
EN61000-4-11: 1994 Voltage Dips & Interrupts Test

4.4. Supplementary Information

The following statements may be appropriate for certain geographical regions and might not apply to your location.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

***Cet appareil numérique de la classe A respecte toutes les exigencies du Règlement sur le matérial brouilleur du Canada*.**

Warning! This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate corrective measures.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications in which case the user may be required to take adequate corrective measures at their own expense.

Note: This Class A digital apparatus complies with Canadian ICES-003 and has been verified as being compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS 1), measured to CISPR 22: 1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment.

Note: The user may notice degraded audio performance in the presence of electromagnetic fields.

Note: If using a keyboard that is noise susceptible, a ferrite ring on the keyboard cable may be needed to comply with Immunity Requirements

4.5. Product Serial Number

Thinklogical® products have a unique serial number printed on an adhesive label that is fixed to the bottom of the chassis. The serial number includes a date-code. The format for the date-code is 2 digits for the week, 2 digits for the year, plus two or three digits for a unique unit number. This serial number is also found on the original shipping carton.

4.6. Connection to the Product

Connections and installation hardware for our products use industry-standard devices and methods. All wiring connections to the customer equipment are designed to minimize proprietary or customized connectors and cabling. Power connections are made with regionally appropriate power cords and approved methods.

5. Thinklogical® Support

5.1. Customer Support

Thinklogical® is an engineering company and you will receive any information you require directly from our most knowledgeable engineers. We believe that the first lines of support are design engineers that developed each particular product. Therefore, your questions will be handled promptly by our in-house engineers who are most familiar with your products.

Thank you for choosing Thinklogical® products for your application.

We appreciate your business and are dedicated to helping you successfully use our products.

thinklogical® is always here to help you.

To contact us, please use the following telephone numbers and internet-based methods:

5.1.1. Website

Check out our website for current product offerings, support information and general information about all of the products we offer.

Our internet website offers product information on all current systems, including technical specification sheets and installation guides (for viewing online or for download), product diagrams showing physical connections and other information you might need.

Internet: **www.thinklogical.com**

Note: Most online documents are stored as Adobe Acrobat "PDF" files. If you do not have the Adobe Acrobat reader needed to view PDF files, visit www.adobe.com for a download.

5.1.2. Email

Thinklogical® is staffed Monday through Friday from **8:30am to 5:00pm**, Eastern Time Zone. We will do our best to respond to your email inquiries promptly. Please use one of the following email addresses:

info@thinklogical.com – Information on Thinklogical® and our products.

sales@thinklogical.com – Sales Department - orders, questions or issues.

support@thinklogical.com – Product support, technical issues or questions, product repairs and request for Return Authorization.

5.1.3. Telephone

Sales: Please contact our expert sales staff in Milford, CT at **1-203-647-8700** or, if in the continental U.S., use our **toll-free number 1-800-291-3211**. We are here Monday through Friday from 8:30am to 5:00pm, Eastern Time Zone. Ask a sales rep for a direct dial phone number when you call.

Product Support: Contact Product Support in Milford, Connecticut at **1-203-647-8700**. The support lines are manned Monday through Friday, 8:30am to 5:00pm, Eastern Time Zone.

International Sales: Please contact our U.S. sales staff in Milford, CT at **1-203-647-8700**. We are here Monday through Friday, 8:30am to 5:00pm, Eastern Time Zone (same as New York City). If leaving a voice message, please provide a preferred time to call back so we may reach you at your convenience.

Our switchboard attendant will direct your call during regular business hours. We have an automated attendant answering our main telephone switchboard after regular business hours and holidays. You may leave voice messages for individuals at any time. Our Sales Representatives have direct numbers to facilitate your next call to us.

5.1.4. Fax

Our company facsimile number is **1-203-783-9949**. Please indicate the nature of the fax on your cover sheet and provide return contact information.

5.2 Product Support

Thinklogical's® support personnel are available Monday through Friday from 8:30am to 5:00pm, Eastern Time Zone. If your application might require assistance at some time outside of our normal business hours, please contact us beforehand and we will do our best to make arrangements to help you with your Thinklogical® products.

5.2.1. Warranty

Thinklogical® warrants this product against defects in materials and workmanship for a period of one year from the date of delivery. Thinklogical® and its suppliers disclaim any and all other warranties.

Note: *Thinklogical*® Inc. products carry a one year warranty, with longer term available at time of purchase on most products. Please refer to your product invoice for your products Warranty Terms & Conditions.

Defect remedy shall be, repair or replacement of the product, provided that the defective product is returned to the authorized dealer within a year from the date of delivery.

If you wish to return your device, contact the *Thinklogical*® authorized dealer where you purchased the device, or if you purchased directly, call Thinklogical at 1-800-291-3211 (USA).

5.2.2. Return Authorization

If you have any issue with any Thinklogical product, have product questions or need technical assistance with your Thinklogical system, please contact **Customer Support** at **1-800-291-3211 (USA only)** or **1-203-647-8700** and let us help.

If you must return a product to *Thinklogical®* directly, Customer Support will ask you to describe the problem and will issue you a **R**eturn **M**erchandise **A**uthorization number (RMA#).

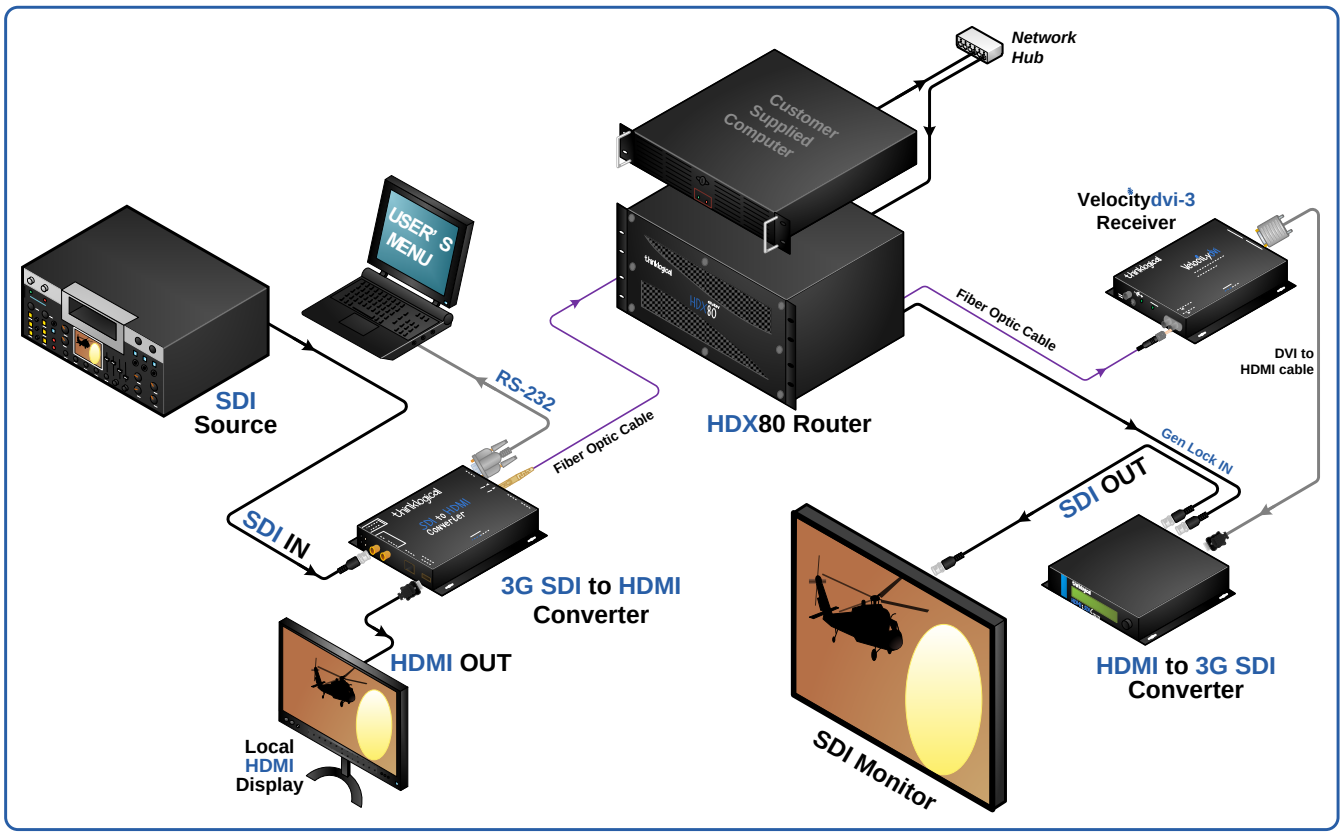
Pack the device in its original box, if possible, and return it with the RMA# on the box.

Note: Do not return a product to Thinklogical® without a *Return Material Authorization Number.*

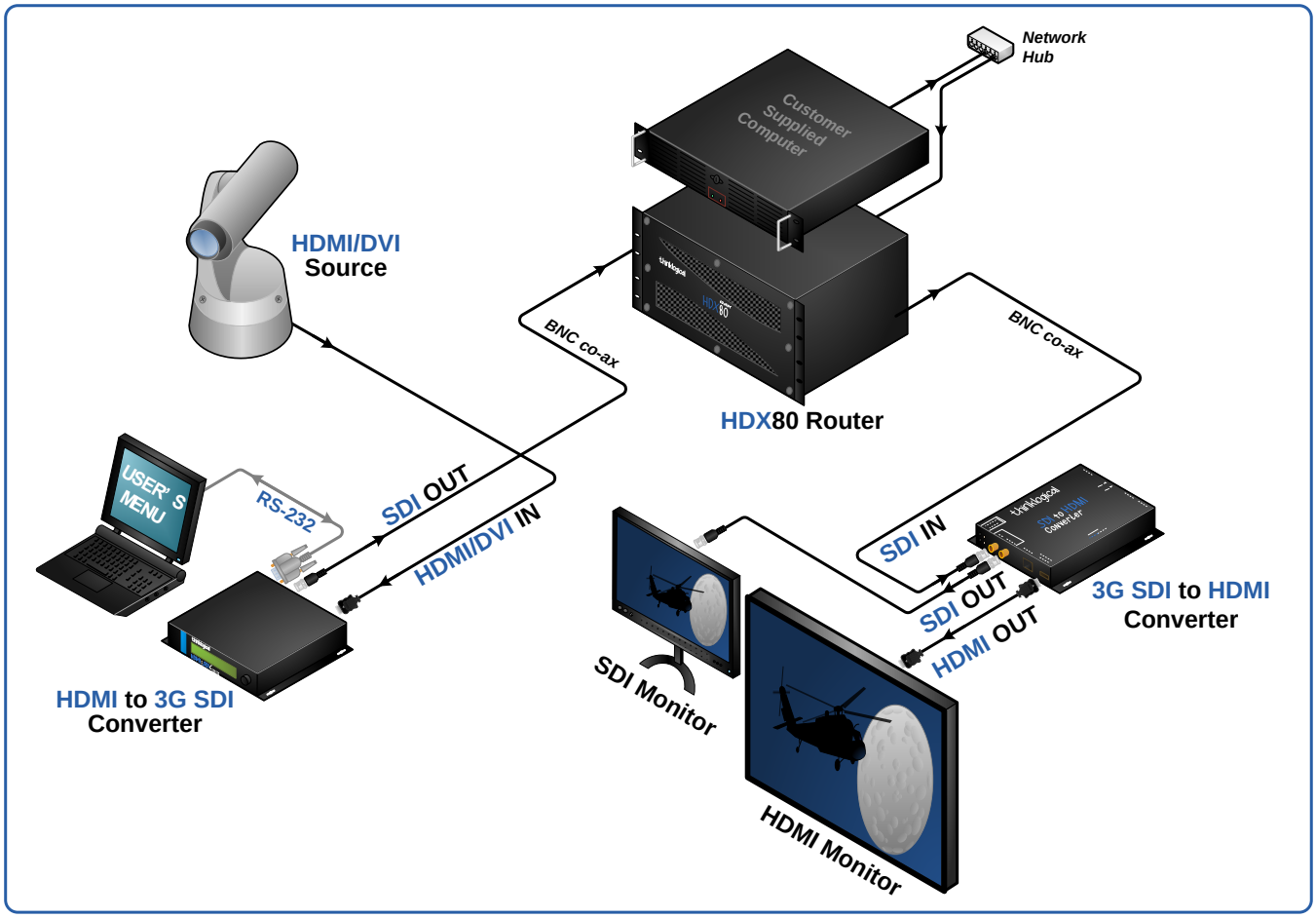
Return address for products with Return Material Authorization:

Thinklogical, LLC®
Attn: RMA#
100 Washington Street
Milford, CT 06460 USA
PH: 800-291-3211 (USA only)

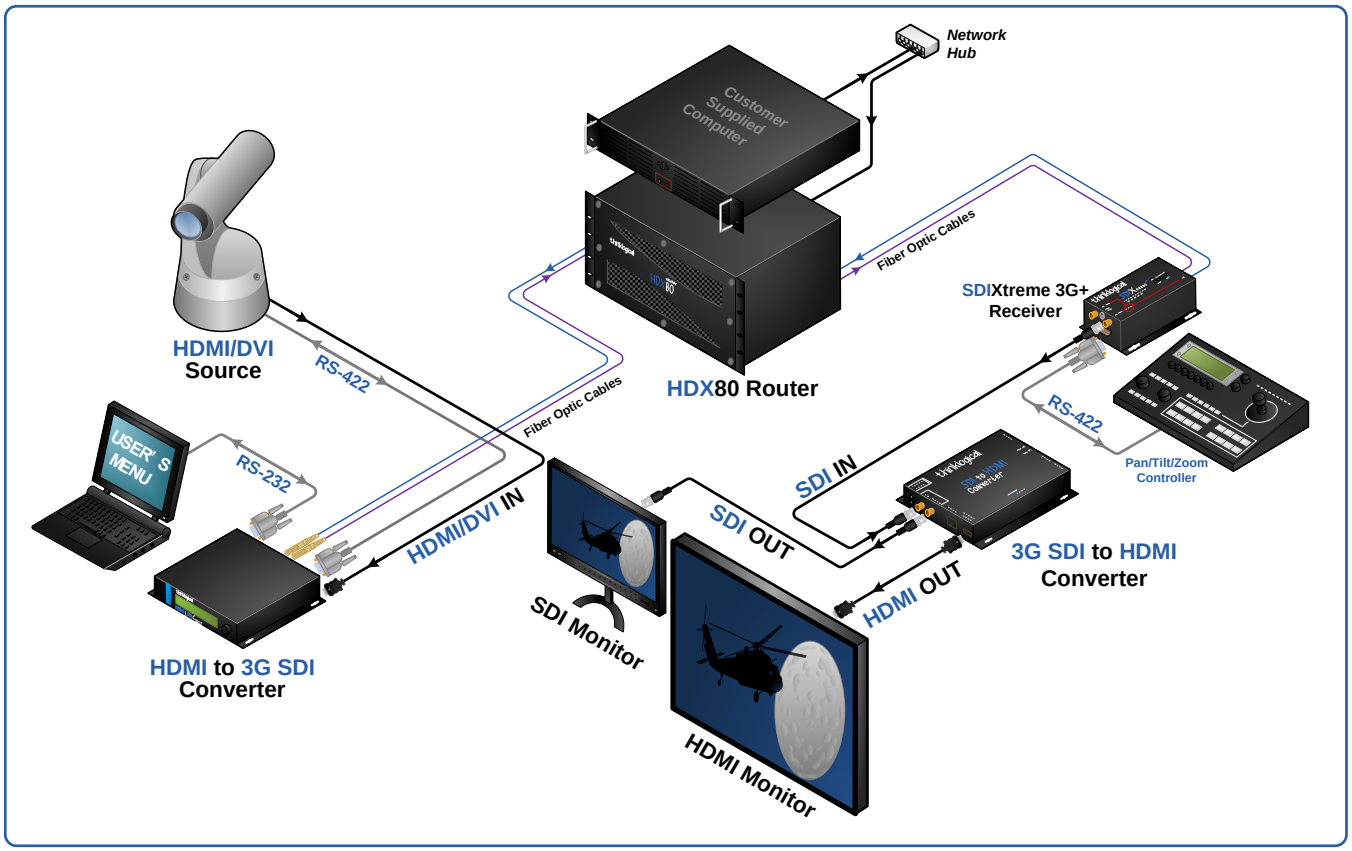
Appendix A- Application Diagrams



Thinklogical® conversion application using a **3G SDI to HDMI Converter** with fiber extension, **HDX80 Router**, **VelocityDVI-3AV+ Receiver** and **HDMI to SDI Converter**.

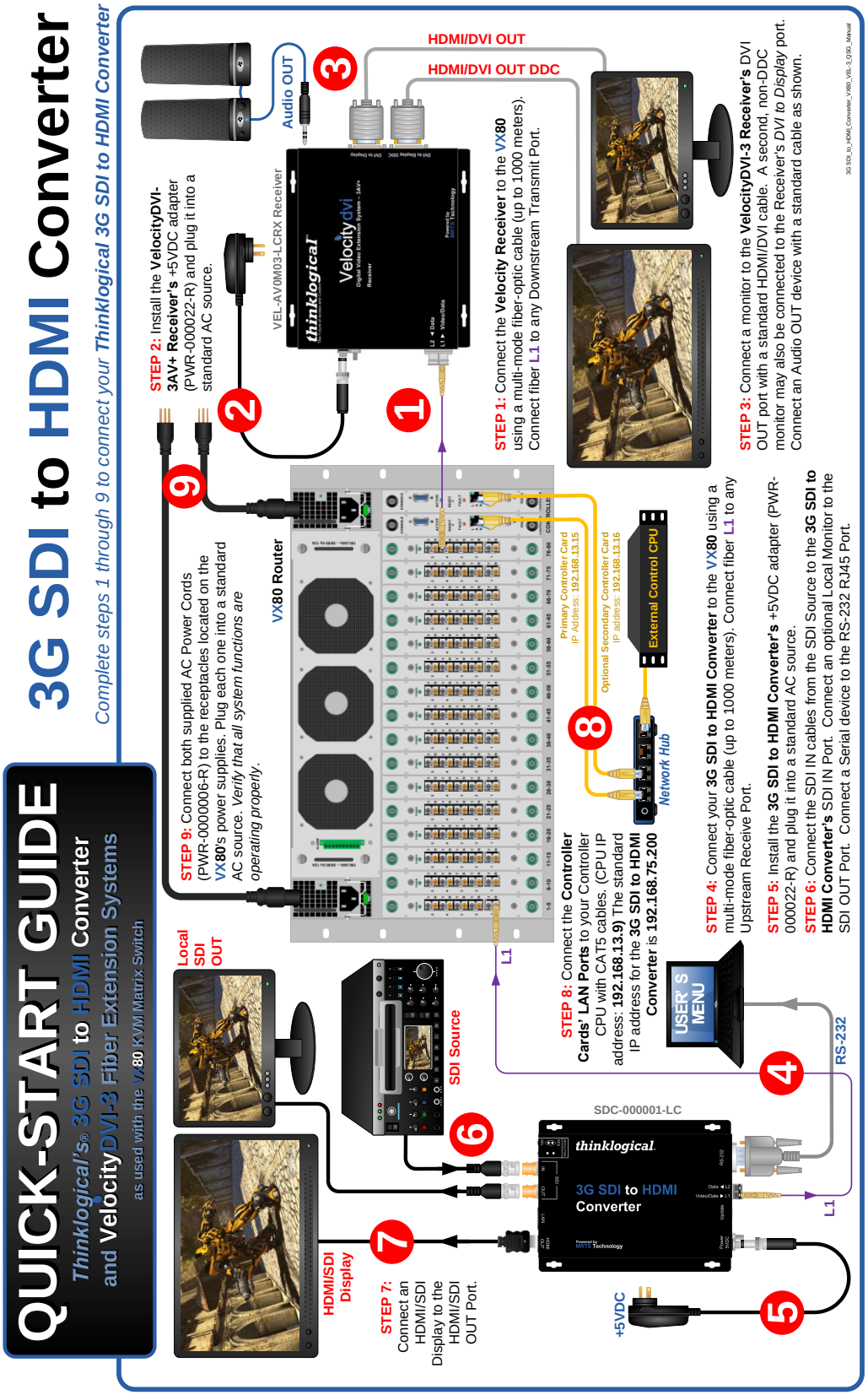


Thinklogical® conversion application using an **HDMI to 3G SDI Converter**, **HDX80 Router** and **3G SDI to HDMI Converter**



Thinklogical® conversion application using an **HDMI to 3G SDI Converter** with fiber output, **HDX80 Router**, **SDI 3G+ Receiver** and **3G SDI to HDMI Converter.**

Appendix B- Quick Start Guide



APPENDIX C: GUI

The **G**raphical **U**ser **I**nterface (GUI) for the 3G SDI to HDMI Converter was developed to easily create, set and recall custom configurations. There are 6 main menus that allow you to configure the **Input/Output, Video Processor, Audio, User Configurations, Xtreme 3G** and **System Information**. There are sub-menus under the video processor menu for **Video Control** and **Picture Control.**

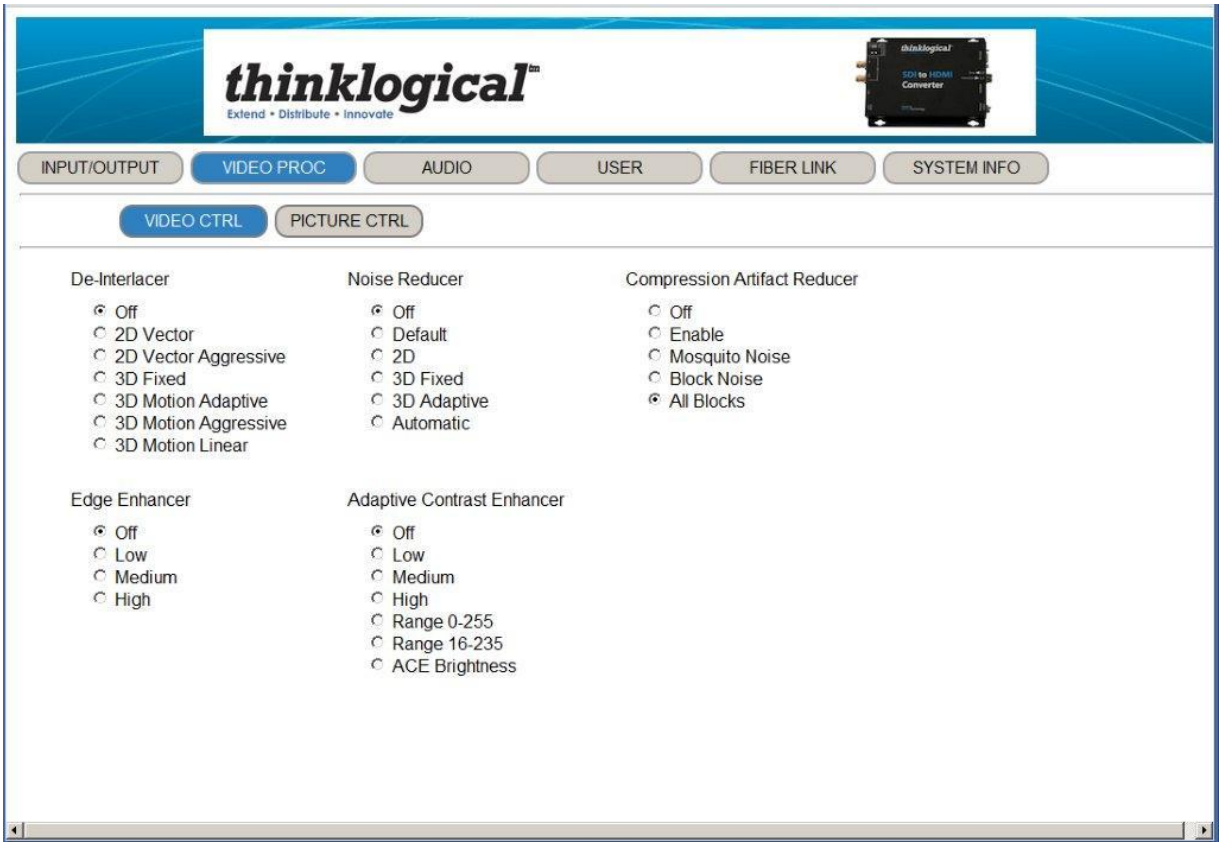
Note: When power has been cycled on a unit it will reset to factory settings unless the "Set Power On Config" has been set in the User Menu.

Input/Output Menu

This menu allows you to select the input and the format of the output. By clicking the "Take" button at the bottom of the screen you are able to commit the output format that you have selected.

Video Processor > Video Control

The Video Control sub-menu allows you to control DeInterlacer, Noise Reducer, Compression Artifact Reducer, Edge Enhancer, and Adaptive Contrast Enhancer.

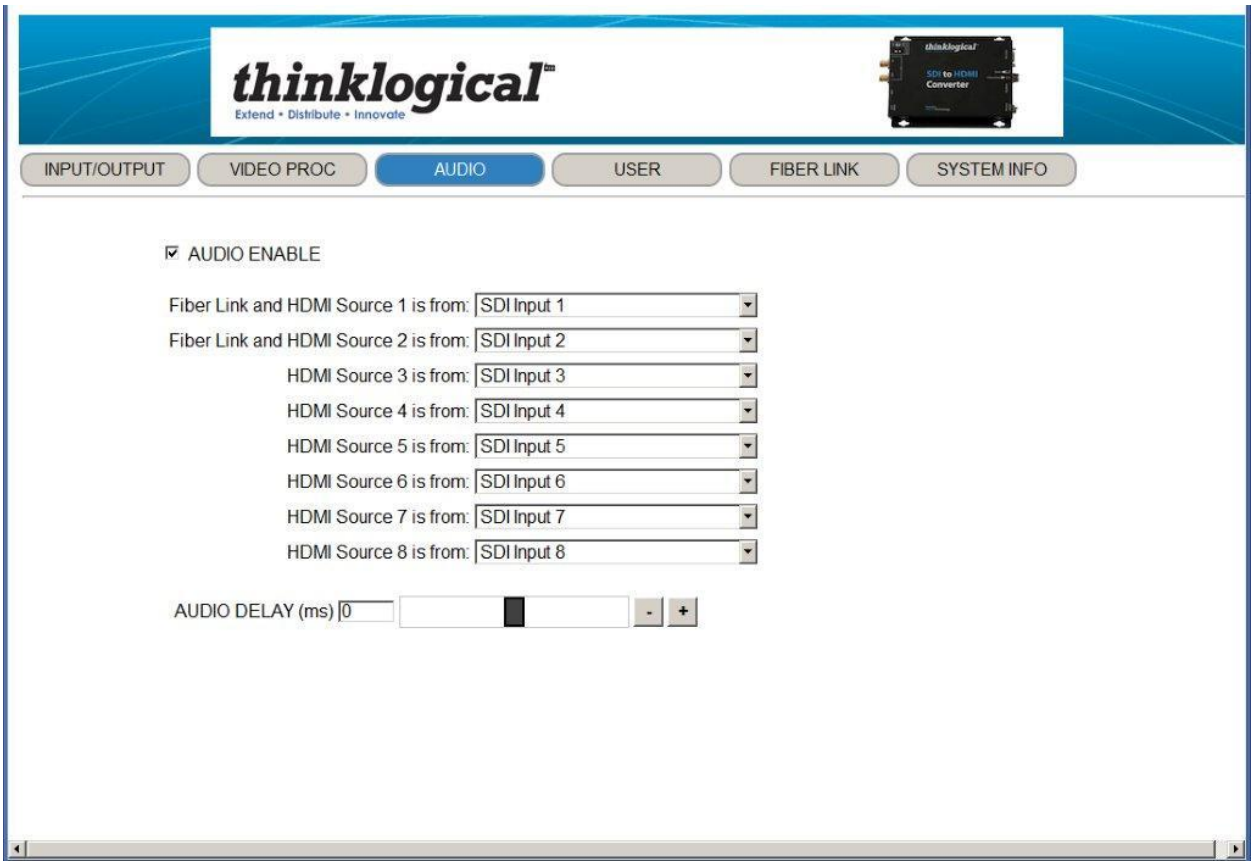


Video Processor > Picture Control

The Picture Control sub-menu allows you to control Hue Saturation, Advanced Color Remapping, Flesh Tone Correction and Color Temperature. You can also reset all levels back to the factory default.

Audio

The Audio menu allows you to select which output audio channel is sourced with any input audio channel. It also allows you to enter an audio delay (from -50 ms to +50 ms) when needed.



User

The User menu allows you to save your current configuration by name or restore factory configuration. You can also use the drop down menu to “Select Config Name” and set power on configuration (which sets the current configuration to be the default power on configuration), restore factory configuration and delete the selected configuration.

Fiber Link

The Fiber Link menu is valid only if the Optical Module Option is installed. This menu allows you to view the Thinklogical Velocity Module and SFP information of the unit in use.

System Info

The System Info menu allows you to view information for the inputs and outputs as well as Genlock and software and firmware versions.