geratech®

EGE-SCA-MI-HDSDI

Multi-Input to HDMI Scaler with SDI Loop Output

DISCLAIMERS

The information in this manual has been carefully checked and is believed to be accurate. Geratech assumes no responsibility for any infringements of patents or other rights of third parties which may result from its use.

Geratech assumes no responsibility for any inaccuracies that may be contained in this document. Geratech also makes no commitment to update or to keep current the information contained in this document.

Geratech reserves the right to make improvements to this document and/or product at any time and without notice.

COPYRIGHT NOTICE

Version 1.1 August 2011

TRADEMARK ACKNOWLEDGMENTS

All products or service names mentioned in this document may be trademarks of the companies with which they are associated.

SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

REVISION HISTORY

VERSION NO.	DATE (DD/MM/YY)	SUMMARY OF CHANGE
VR0	13/11/12	Preliminary Release
VR1	18/12/12	Add D-sub to RCA adaptor
VR2	09/01/13	Add Support Timing Chart
VS3	24/06/13	Updated Format and Diagrams
VS4	29/07/13	RS-232 Command
VS5	23/01/17	Corrected diagrams and supported SDI standards

CONTENTS

1. Introduction 1
2. Applications 1
3. Package Contents 1
4. System Requirements 1
5. Features 2
6. Operation Controls and Functions 3
6.1 Front Panel 3
6.2 Rear Panel 4
6.3 Remote Control 5
6.4 OSD Menu 6
6.5 RS-232 Pin Assignment 8
6.6 RS-232 Commands 8
7. Connection Diagram 11
8. Specifications 12
8.1 Technical Specifications 12
8.2 Supported Input Resolutions 13
8.3 Supported Output Resolutions 13
9. Acronyms 14

1. INTRODUCTION

This unit is an advanced HDMI, VGA, SDI, Composite Video, S-Video, and Component Video switcher/scaler. This device can scale and switch input sources and display them to its HDMI and PC (VGA)/HD (Component Video) outputs simultaneously, with their associated audio signals, at a wide range of output resolutions up to 1080p or WUXGA (RB). It also has the added benefit of an SDI Loop-through output for monitoring or extending the SDI input signal. Control is via the IR remote, RS-232, or via front-panel buttons and includes an on-screen menu (OSD) providing settings and system information.

2. APPLICATIONS

- Digital and analog signal convergence
- Convert analog video/audio signals for use with digital displays
- Integrate multiple sources and signal types to a single display in a meeting room or conference hall environment

3. PACKAGE CONTENTS

- 1×Multi-Format to HDMI Scaler
- 1×Remote Control (CR-117)
- 1×5V/3A DC Power Adaptor
- 1×15-pin D-sub to 3 RCA Adaptor Cable
- 1×Operation Manual

4. SYSTEM REQUIREMENTS

Source equipment such as Blu-ray/DVD players or SDI camera, VGA or HDMI display and amplifier/active speakers with connection cables.

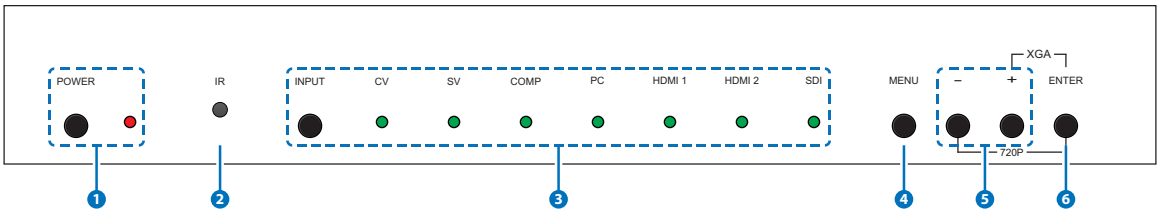
5. FEATURES

- Supports HDMI, SDI, Composite Video, S-Video, and VGA/Component Video inputs
- Supports HDMI and PC/HD (with adaptor) outputs
- Supports SDI loop-through output
- Supports analog stereo and optical digital inputs
- Supports optical digital output, analog stereo output, or embedding to HDMI output
- Supports conversion of multiple video formats and audio input to HDMI or PC/HD and analog stereo outputs
- Supports EDID and HDCP
- Supports 3D de-interlacing, noise reduction and 3D comb filter
- Supports frame rate conversion
- Supports RS-232, remote handset, and front panel control
- Supports SDI Standards of SMPTE 259M-C, SMPTE 292M, and SMPTE 424M/425M-A
- Supports SDI bit rates at 270Mbps, 2.970Gbps & 2.970/1.001Gbps, and 1.485Gbps & 1.485/1.001Gbps
- Supports SDI signal input and output distances of up to 300m for SD signals, 200m for HD signals and 100m for 3G signals

Note: The unit was tested with Belden 1694A SDI cable, results may vary with cables of a different specification.

6. OPERATION CONTROLS AND FUNCTIONS

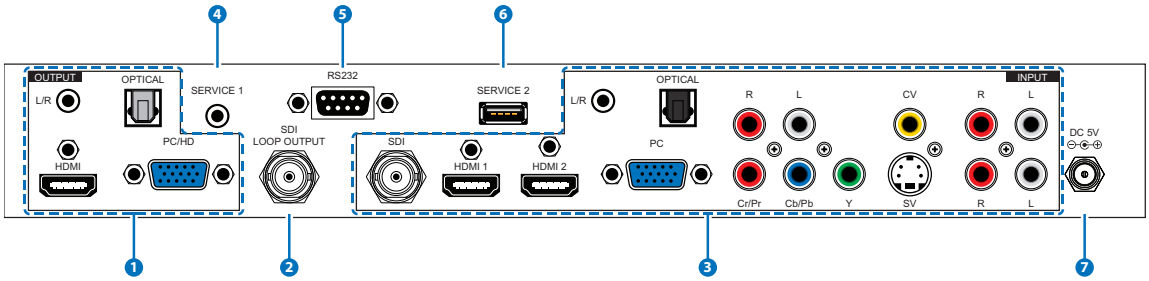
6.1 Front Panel



1. **POWER Button & LED:** Press this button to switch the device ON or to put the device into STANDBY mode. When the device is connected to an active power supply, the LED will illuminate and the device will switch ON automatically.
2. **IR Receiver Window:** Receives only the IR signal from the supplied remote control.
3. **INPUT Button & LEDs:** Press to repeatedly select the required input. An LED will illuminate to indicate the currently selected source.
4. **MENU Button:** Press this button to enter into the on-screen menu (OSD).
5. **Minus/Plus (-/+) Buttons:** Use these buttons to navigate down and up in the on-screen menu.
6. **ENTER Button:** Press this button to confirm the selection.

   Note: Pressing '–' (MINUS) and ENTER simultaneously will immediately switch the output resolution of the device to 720p60. Pressing '+' (PLUS) and ENTER simultaneously will immediately switch the output resolution of the device to XGA.

6.2 Rear Panel



1. **HDMI OUTPUT:** Connect to an HDMI display or amplifier for video and/or audio output.

   PC/HD OUTPUT: Connect to a monitor/display for video output. For HD (Component) output, use the supplied D-sub 15-pin to 3 RCA adaptor cable for HD resolutions from 480p~1080p.

   L/R OUTPUT: Connect to an amplifier or active speakers for audio output in stereo format.

   OPTICAL OUTPUT: Connect to an amplifier or active speakers for audio output in digital format.

2. **SDI LOOP OUTPUT:** Connect to an SDI display for monitoring of the SDI input signal or an SDI extender for extending the SDI signal to further areas.
3. **SDI INPUT:** Connect to an SDI camera or other SDI source for both video and audio signal conversion.

   HDMI INPUT 1/2: Connect to an HDMI source such as Blu-ray/DVD player for both video and audio signal conversion.

   PC INPUT: Connect to a PC/Laptop source for video signal input with a 15-pin D-sub cable.

   L/R INPUT: Connect to source's L/R output with 3.5mm Mini-jack for audio signal conversion.

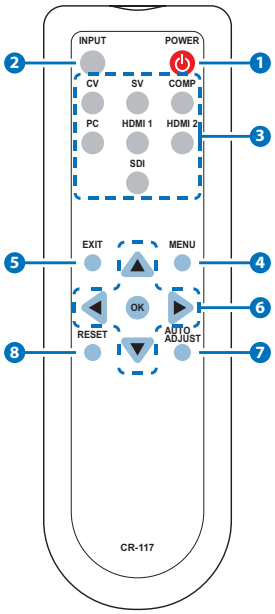
   OPTICAL INPUT: Connect to a source's optical output for audio signal conversion.

   YCbCr/YPbPr & L/R INPUTS: Connect to source equipment such as a DVD player for both video and audio signal conversion.

   CV & L/R INPUTS: Connect to a composite video source such as video/DVD player for both video and audio signal conversion.

   SV & L/R INPUTS: Connect to an S-Video source such as a video/DVD player for both video and audio signal conversion.
4. **SERVICE 1:** Reserved for manufacturer use only.
5. **RS-232:** Connect to a PC/Laptop to use RS-232 commands to control the device.
6. **SERVICE 2:** Reserved for manufacturer use only.
7. **DC 5V:** Plug the 5V DC power supply into the unit and connect the adaptor to an AC outlet.

6.3 Remote Control



1. **POWER:** Press this button to switch the device ON or to put the device into STANDBY mode.
2. **INPUT:** Press to repeatedly select the required input. An LED will illuminate to indicate the currently selected source.
3. **CV/SV/COMP/PC/HDMI 1/HDMI 2/SDI:** Press to directly select the required input.
4. **MENU:** Press this button to enter the on-screen menu.
5. **EXIT:** Press this button to exit the menu or the current selection in the on-screen menu.
6. **OK & ▲/▼/◄/►:** Press OK to confirm the selection or use the directional buttons to navigate the on-screen menus.
7. **AUTO ADJUST:** Press the button to optimize the positioning of the picture (picture centering) on the screen.
8. **RESET:** Press this button to return the device to the factory default settings.

6.4 OSD Menu

MAIN MENU	1ST LEVEL	2ND LEVEL
DISPLAY	OUTPUT	640×480@60
		800×600@60
		1024×768@60
		1280×768@60
		1360×768@60
		1280×720@60
		1280×800@60
		1280×1024@60
		1440×900@60
		1400×1050@60
		1680×1050@60
		1600×1200@60
		1920×1080@60
		1920×1200@60
		720×480P@60
		1280×720P@60
		1920×1080I@60
		1920×1080P@60
		720×576P@50
		1280×720P@50
		1920×1080I@50
		1920×1080P@50
	SIZE	OVER SCAN
		FULL
		BEST FIT
		PAN SCAN
		LETTER BOX
DISPLAY (cont.)	SIZE	UNDER 2
		UNDER 1
	MODE INFO	OFF
		INFO
		ON
	PC	AUTO SETUP
		H_POSITION
		V_POSITION
		PHASE
		CLOCK
		WXGA/**XGA**
		RESET

MAIN MENU	1ST LEVEL	2ND LEVEL
COLOR	COLOR	R
		G
		B
		R OFFSET
		G OFFSET
		B OFFSET
	CONTRAST	0~60
	BRIGHTNESS	0~60
	HUE	0~60
	SATURATION	0~60
	SHARPNESS	0~30
	NR	**OFF**
		LOW
		MIDDLE
		HIGH
AUDIO	VOLUME	0~100
	DELAY	**OFF**
		40 ms
		110 ms
		150 ms
	SOUND	**ON**
		MUTE
	SDI AUDIO	**CH1 - CH2**
		CH3 - CH4
		CH5 - CH6
		CH7 - CH8
	AUDIO SELECT	**ANALOG**
		S/PDIF
SETUP	FACTORY RESET	
	KEY LOCK	**OFF**
		ON
	POWER SAVE	**OFF**
		ON
INFORMATION	INPUT	
	OUTPUT	
	REVISION	

*Note: Default settings are marked in **Bold**.*

(1)SIZE: This function is only supported on VIDEO input.

(2)PC: This function is only supported on PC input.

(3)AUDIO SELECT: This function is suported on CV, SV, YPbPr, and VGA inputs.

6.5 RS-232 Pin Assignment

SCALER	
PIN	Assignment
1	NC
2	Tx
3	Rx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

▶
◀

REMOTE CONTROL	
PIN	Assignment
1	NC
2	Rx
3	Tx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 9600bps
Data Bits: 8
Parity: None
Flow Control: None
Stop Bits: 1

6.6 RS-232 Commands

COMMAND	DESCRIPTION	
S SOURCE 0~6	0=SDI	4=VIDEO
	1=HDMI1	5=S-VIDEO
	2=HDMI2	6=PC
	3=YPbPr	
R SOURCE	Reports the numerical equivalent for SOURCE setting (as above)	
S OUTPUT 1~25	1=640×480	12=1600×1200
	2=800×600	13=1920×1080
	3=1024×768	16=1920×1200
	4=1280×768	17=480p
	5=1360×768	18=720p@60
	6=1280×720	19=1080p@60
	7=1280×800	20=1080i@60
	8=1280×1024	22=576p
	9=1440×900	23=720p@50
	10=1400×1050	24=1080p@50
	11=1680×1050	25=1080i@50
R OUTPUT	Reports the numerical equivalent for OUTPUT setting (as above)	

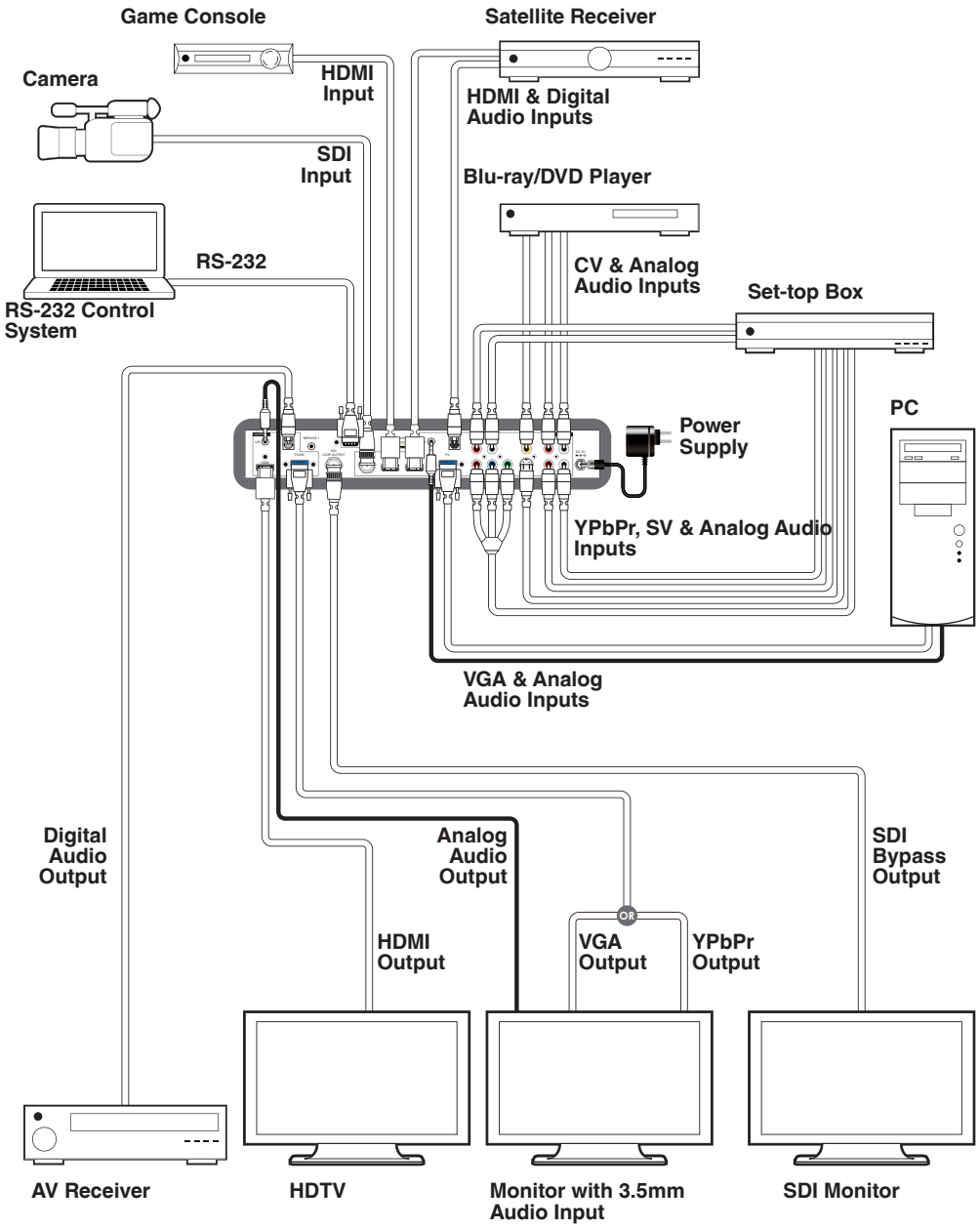
COMMAND	DESCRIPTION	
S SIZE 0~6	0=OVERSCAN 1=FULL 2=BEST FIT 3=PAN SCAN	4=LETTER BOX 5=UNDER 2 6=UNDER 1
R SIZE	Reports the numerical equivalent for SIZE setting (as above)	
S CONTRAST 0~60	Setups the numerical equivalent for CONTRAST setting (as left)	
R CONTRAST	Reports the numerical equivalent for CONTRAST setting	
S BRIGHTNESS 0~60	Setups the numerical equivalent for BRIGHTNESS setting (as left)	
R BRIGHTNESS	Reports the numerical equivalent for BRIGHTNESS setting	
S HUE 0~60	Setups the numerical equivalent for HUE setting (as left)	
R HUE	Reports the numerical equivalent for HUE setting	
S SATURATION 0~60	Setups the numerical equivalent for SATURATION setting (as left)	
R SATURATION	Reports the numerical equivalent for SATURATION setting	
S SHARPNESS 0~30	Setups the numerical equivalent for SHARPNESS setting (as left)	
R SHARPNESS	Reports the numerical equivalent for SHARPNESS setting	
S NR 0~3	0=OFF 1=LOW	2=MIDDLE 3=HIGH
R NR	Reports the numerical equivalent for the NOISE REDUCTION setting (as above)	
S AUDIO DELAY 0~3	0=OFF 1=40ms	2=110ms 3=150ms
R AUDIO DELAY	Reports the numeric equivalent for AUDIO DELAY setting (as above)	
S AUDIO MUTE 0/1	0=ON	1=MUTE
R AUDIO MUTE	Reports the numeric equivalent for AUDIO MUTE setting (as above)	
S SDI AUDIO 0~3	0=CH1CH2 1=CH3CH4	2=CH5CH6 3=CH7CH8
R SDI AUDIO	Reports the numeric equivalent for SDI AUDIO setting (as above)	
S AUDIO SELECT 0/1	0=ANALOG	1=SPDIF
R AUDIO SELECT	Reports the numeric equivalent for AUDIO SELECT setting (as above)	

COMMAND	DESCRIPTION	
S KEY LOCK 0/1	0=ENABLE	1=DISABLE
R KEY LOCK	Reports the numeric equivalent for KEY LOCK setting (as above)	
FW	Checks the FIRMWARE version	
S RESET 1	Setups the numerical equivalent for RESET setting (as left)	
S POWER 0/1	0=OFF	1=ON
R POWER	Reports the numeric equivalent for POWER setting (as above)	

Note: RS-232 commands will be not executed unless followed with a carriage return and LF. Commands are case-insensitive.

- Audio Delay is only supported on Analog Stereo output.
- When the HDMI input is encoded with HDCP, no image will be output from the PC/HD output.
- Only LPCM 2 channel digital audio is supported, please ensure that the source audio is set to LPCM 2 channel audio in order to avoid unnecessary audio noise.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

Video Bandwidth	340 MHz/10.2 Gbps
Input Ports	1×SDI, 2×HDMI, 1×VGA, 1×Component Video, 1×Composite Video, 1×S-Video, 1×TOSLINK (S/PDIF), 6×RCA (Analog Stereo), 1×3.5mm (Analog Stereo)
Output Ports	1× SDI (Loop-through), 1×HDMI, 1×VGA, 1×TOSLINK (S/PDIF), 1×3.5mm (Analog Stereo)
Control Port	1×RS-232
Service Ports	1×3.5mm, 1×USB
Power Supply	5V/3A DC (US/EU standards, CE/FCC/UL certified)
Dimensions	320mm (W)×182mm (D)×44mm (H)
Weight	1,600g
Chassis Material	Metal
Color	Black
Operating Temperature	0˚C - 40˚C/32˚F - 104˚F
Storage Temperature	–20˚C - 60˚C/–4˚F - 140˚F
Relative Humidity	20 - 90% RH (No-condensing)
Power Consumption	10.5W

8.2 Supported Input Resolutions

Resolution (Hz)	CV/SV	COMP	PC	HDMI
NTSC/PAL	✓			
480i/576i		✓		✓
480p/576p		✓		✓
720p@50/60		✓		✓
1080i@50/60		✓		✓
1080p@50/60		✓		✓
VGA@60/72/75			✓	✓
SVGA@56/60/72/75			✓	✓
XGA@60/70/75			✓	✓
SXGA@60/75			✓	✓
UXGA@60			✓	✓
1280×800@60			✓	✓
1680×1050@60 (RB)			✓	✓
1920×1080@60			✓	✓

8.3 Supported Output Resolutions

Resolution (Hz)	PC	HD	HDMI
480p/576p		✓	✓
720p@50/60		✓	✓
1080i@50/60		✓	✓
1080p@50/60		✓	✓
VGA@60	✓		✓
SVGA@60	✓		✓
XGA@60	✓		✓
SXGA@60	✓		✓
UXGA@60	✓		✓
1280×768@60	✓		✓
1280×800@60	✓		✓
1360×768@60	✓		✓
1400×1050@60	✓		✓
1440×900@60	✓		✓
1680×1050@60	✓		✓
1920×1200@60	✓		✓

9. ACRONYMS

ACRONYM	COMPLETE TERM
COMP	Component Video
CV	Composite Video
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
HDCP	High-Bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
IR	Infrared
NR	Noise Reduction
NTSC	National Television System Committee
OSD	On-screen Display (Menu)
PAL	Phase Alternating Line
RGB	Red Green Blue
SDI	Serial Digital Interface
SV	S-Video
USB	Universal Serial Bus
UXGA	Ultra Extended Graphics Array
VGA	Video Graphics Array
XGA	Extended Graphics Array
WUXGA	Wide Ultra Extended Graphics Array

EGERATE

www.egerate.com www.geratech.eu