datavideo

DIGITAL VIDEO SWITCHER SE-650

Instruction Manual

www.datavideo.com

Table of Contents

Disclaimer of Product & Services

The information offered in this instruction manual is intended as a guide only. At all times, Datavideo Technologies will try to give correct, complete and suitable information. However, Datavideo Technologies cannot exclude that some information in this manual, from time to time, may not be correct or may be incomplete. This manual may contain typing errors, omissions or incorrect information. Datavideo Technologies always recommend that you double check the information in this document for accuracy before making any purchase decision or using the product. Datavideo Technologies is not responsible for any omissions or errors, or for any subsequent loss or damage caused by using the information contained within this manual. Further advice on the content of this manual or on the product can be obtained by contacting your local Datavideo Office or dealer.

FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Warnings and Precautions

1. Read all of these warnings and save them for later reference.
2. Follow all warnings and instructions marked on this unit.
3. Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this unit in or near water.
5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.
6. Slots and openings on the cabinet top, back, and bottom are provided for ventilation. To ensure safe and reliable operation of this unit, and to protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult your Datavideo dealer or your local power company.
8. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.
9. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord rating.
10. Make sure that the total amperes of all the units that are plugged into a single wall outlet do not exceed 15 amperes.
11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.
12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.
13. Unplug this product from the wall outlet and refer to qualified service personnel under the following conditions:
    a. When the power cord is damaged or frayed;
    b. When liquid has spilled into the unit;
    c. When the product has been exposed to rain or water;
    d. When the product does not operate normally under normal operating conditions. Adjust only those controls that are covered by the operating instructions in this manual; improper adjustment of other controls may result in damage to the unit and may often require extensive work by a qualified technician to restore the unit to normal operation;

e. When the product has been dropped or the cabinet has been damaged;

f. When the product exhibits a distinct change in performance, indicating a need for service.

Warranty

Standard Warranty

- Datavideo equipment is guaranteed against any manufacturing defects for one year from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- Damage caused by accident, misuse, unauthorized repairs, sand, grit or water is not covered by this warranty.
- All mail or transportation costs including insurance are at the expense of the owner.
- All other claims of any nature are not covered.
- Cables & batteries are not covered under warranty.
- Warranty only valid within the country or region of purchase.
- Your statutory rights are not affected.

Two Year Warranty

- All Datavideo products purchased after 01-Oct.-2008 qualify for a free one year extension to the standard Warranty, providing the product is registered with Datavideo within 30 days of purchase. For information on how to register please visit www.datavideo.com or contact your local Datavideo office or authorized Distributors.
- Certain parts with limited lifetime expectancy such as LCD Panels, DVD Drives, Hard Drives are only covered for the first 10,000 hours, or 1 year (whichever comes first).

Any second year warranty claims must be made to your local Datavideo office or one of its authorized Distributors before the extended warranty expires.

Disposal
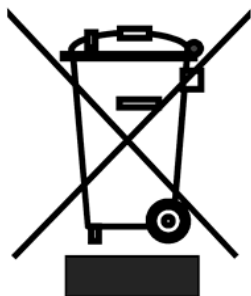
For EU Customers only - WEEE Marking

This symbol on the product indicates that it will not be treated as household waste. It must be handed over to the applicable take back scheme for the recycling of Waste Electrical and Electronic Equipment. For more detailed information about the recycling of this product, please contact your local Datavideo office.

Chapter 1   Introduction

The datavideo SE-650 is a small, cost-effective, HD digital video switcher with easy-to-use professional features. It offers two HD SDI and two HDMI inputs. Output options include one user assignable HD SDI, two HDMI outputs.

The SE-650 also features an audio mixer with microphone and unbalance RCA audio inputs; more features include Chroma Keyer, Luma Keyer, PIP, Wipe Generator, Still stores and Tally.

1.1   Features

- 4 video Input : HD-SDI x 2 + HDMI x 2
    - Frame Sync on each input
- 3 Video Outputs : HD-SDI x 1 + HDMI x 2
- Audio input : Stereo RCA (L/R) x 1 + Microphone x 2
- Audio Output : Stereo RCA (L/R) x 1 + Stereo headphone mini Jack x 1
- Audio Mixer : MIC x 2 + Stereo x 1 + internal Digital embedded x 1
- Flexible Mix/Effects Processor with
    - 1 Upstream Keyer, supporting Chroma Key & Linear/Luma Key
    - 1 Upstream PIP, supporting Chroma Key & Luma Key Modes as well as unkeyed mode
    - Wipe Generator
        - 32 Wipe Patterns, including Circle & Heart
        - Borders & Softness Control
    - Wipe, Mix & Cut Transitions
    - Full M/E Preview function
    - Logo insertion
- Any Input (1-4) can be used as a Frame store (Stills Store)
- Assignable Outputs
        Program (w/ DSK)
        Clean Program (w/o DSK)
        Clean Preview (w/o DSK)
        Multiview
        One of the input signals
- XPT (Cross Point Assignment)
- Tally Output

1.2   System Diagram
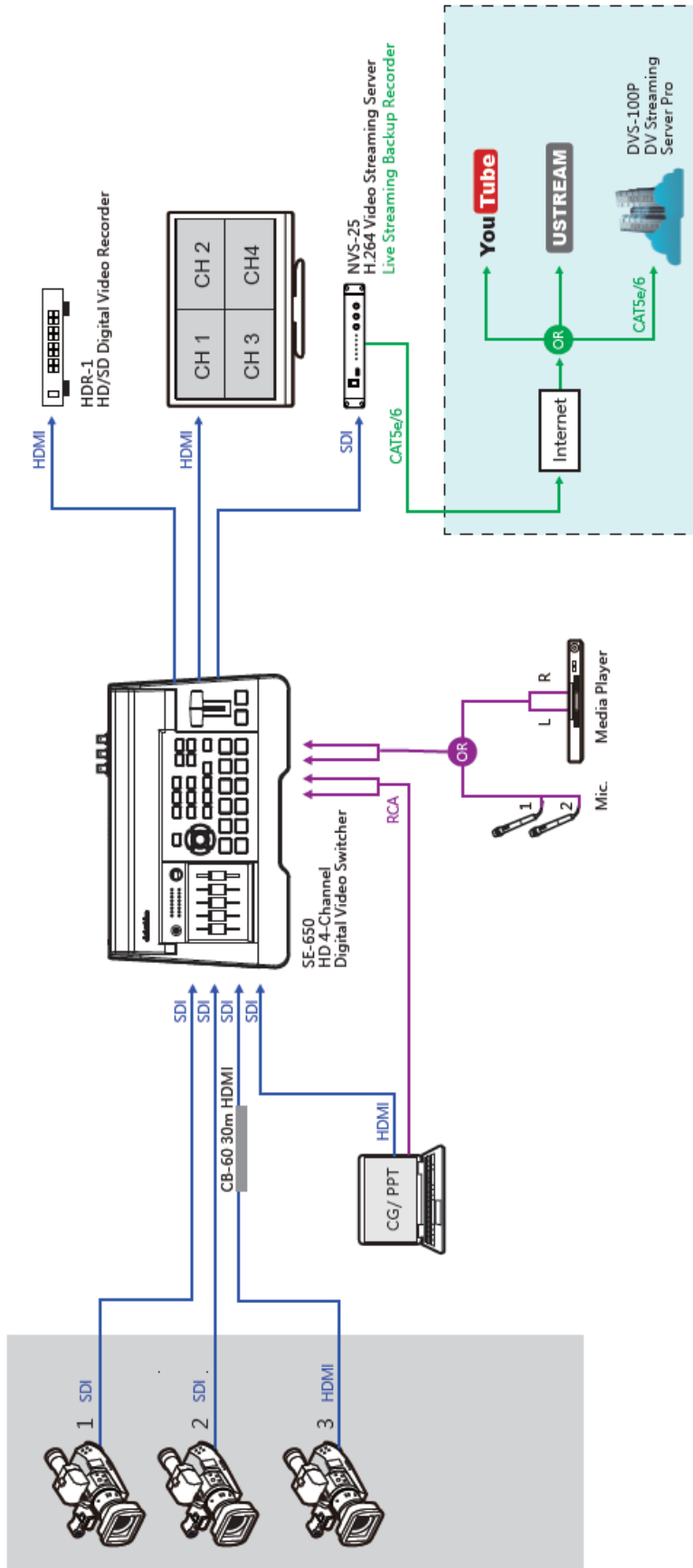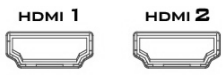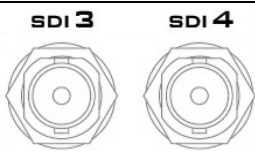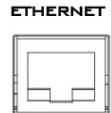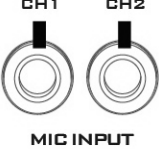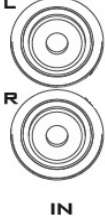
Chapter 2   Connections and Controls
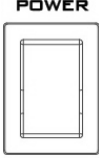
2.1   Rear Panel
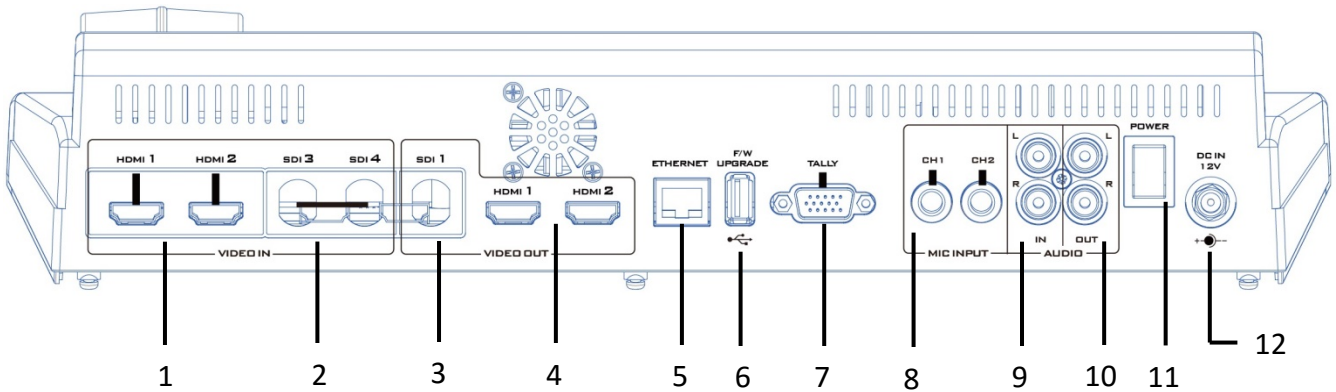
1	HDMI Video Input 1-2	7	TALLY Output Port
2	HD-SDI Video Input 3-4	8	MIC IN – CH1/CH2
3	HD-SDI Video Output 1	9	Audio Input – Stereo RCA (Left/Right)
4	HDMI Video Output 1-2	10	Audio Output – Stereo RCA (Left/Right)
5	Ethernet Port	11	Power Switch
6	USB F/W Upgrade Port	12	DC IN

1		**HDMI Video Input 1-2** The SE-650 provides two HDMI video input channels for connecting HDMI video sources.
2		**HD-SDI Video Input 3-4** The SE-650 provides two HD-SDI video input channels for connecting HD-SDI video sources.
3		**HD-SDI Video Output 1** The SE-650 provides an HD-SDI video output channels which can be connected to HD-SDI video display.
4		**HDMI Video Output 1-2** The SE-650 provides two HDMI video output channels which can be connected to HDMI video display. HDMI 1 is user assignable and HDMI 2 outputs Multiview display.
5		**Ethernet Port** Feature under development
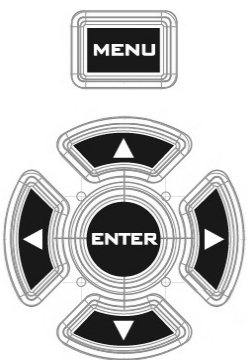
6		**USB F/W Upgrade Port** USB port for firmware upgrade. Please refer to the [Firmware Upgrade](#) section for the procedure.
7		**TALLY Output Port** Sends **Red**, and **Green** tally signals to each channel. **Red** indicates On-Air, and **Green** indicates next camera source. Tally output port can connect other Datavideo peripheral devices such as ITC-100, ITC-200, AM-100 or other monitor models, allowing the peripheral device to communicate with the SE-650 or send tally signal to be displayed on the monitor.
8		**MIC IN – CH1/CH2** Two Channels of unbalanced MIC input.

9		**Audio Input – Stereo RCA (Left/Right)**

Connects unbalanced analog audio source (stereo) for streaming and recording.

Left Channel	Right Channel	States
MIC1	MIC2	MIC 1(L) and MIC 2(R) are respectively connected to left and right channels.
MIC1	Not Connected	When MIC 1 is connected to the left channel and MIC 2 is not connected to the right channel, the right channel switch will replicate MIC 1 signal onto the right channel thus both channels are MIC 1 input signals.
Not Connected	MIC2	When no MIC signal is connected to the left channel and only MIC 2 is connected to the right channel, MIC 2 signal will not be replicated onto the left channel which will thus be grounded.
Not Connected	Not Connected	When no MIC is connected to the two channels, the left channel switch will ground the left channel to prevent noise from being generated.

10		**Audio Output – Stereo RCA (Left/Right)** Unbalanced analog audio output (stereo) for monitoring the selected audio input source.
11		**Power Switch** Power switch ON/OFF
12		**DC IN** DC in socket connects the supplied 12V / 19W PSU. The connection can be secured by screwing the outer fastening ring of the DC In plug to the socket.

2.2 Front Panel
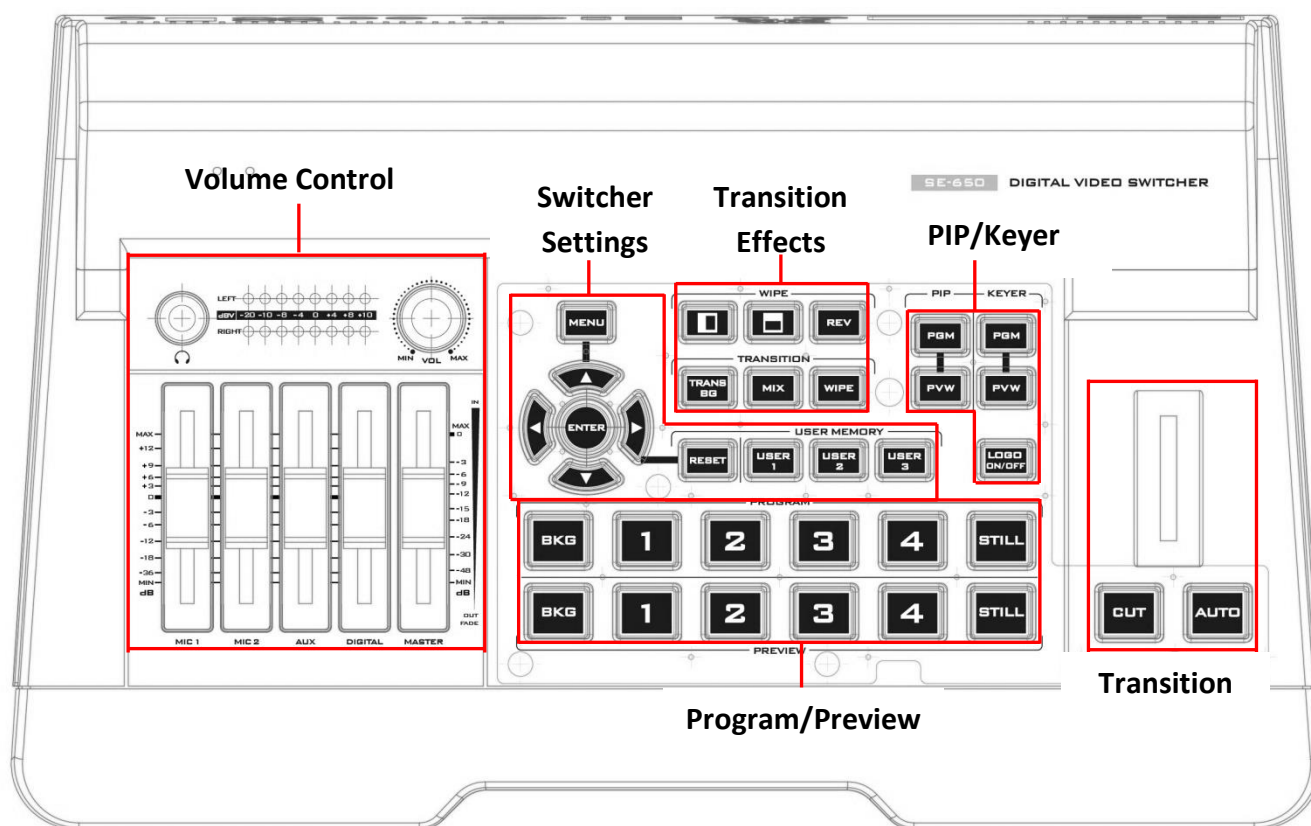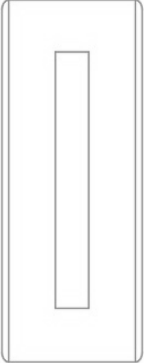
Switcher Settings		Transition Methods	
1	Menu browsing buttons	11	T-Bar (manual transition)
2	RESET button	12	CUT button
3	User Memory	13	AUTO transition button
Transition Effects		**Program / Preview Outputs**	
4	WIPE transition effect selection	14	Program row
5	TRANS BG – Background transition	15	Preview row
6	MIX Enable/Disable button	**Volume Control**	
7	WIPE transition effect Enable/Disable	16	Volume adjustment sliders
PIP/Keyer		17	Headphone jack
8	PIP Enable/Disable buttons	18	Audio meter
9	Keyer Enable/Disable buttons	19	Headphone volume control knob
10	Logo Enable/Disable button		

Switcher Settings		
1		**Menu browsing buttons** Press the **MENU** button to gain access to the menu; use the up/down/left/right **arrow buttons** to browse through the menu and press **ENTER** button to select an option or **MENU** button again to exit.
2		**Reset Button** Mode 1 - When in Menu Select mode (left hand column of the OSD menu), pressing the 'Reset' button will reset all current menu items to their factory defaults. Mode 2 - When in a Sub-Menu, pressing the 'Reset' button will reset the current menu line only.
3		**User Memory** User Memory buttons 1-3 allow the user to quickly recall and load previously saved switcher settings with a single button press. This includes PIP, Keyer and DSK settings. The switcher loads settings saved to User Memory 0 as default settings used at boot up. See the User Memory section for more information.

Transition Effects		
4		**WIPE Transition Effect Selection** Each Wipe button consists of black and white colors. The white represents the current Program image and the black represents the WIPE-IN image. There are a total of 2 WIPE presets offered on the SE-650; the WIPE buttons allow the user to make a selection directly from the control panel for the first 2 and remaining 30 WIPE effects are selectable from the menu ([Start](#)). Pressing the **REV** button reverses the direction of the **WIPE**.
5		**TRANS BG – Background Transition** The **TRANS BG** button enables **Background Transition** between Program / Preview. This feature is primarily used in Chromakeyer effect. When enabled, foreground and background will be switched together during transition. The background will be locked when the **TRANS BG** is disabeld, thus only the foreground is switched during the transition and the background will remain unchanged. If you would like to use the switcher function, please enable the "**TRANS BG**" function.
6		**MIX Enable/Disable button** A **MIX**, also known as a dissolve, is a transition wherein the Program video is replaced by the Preview video at a smooth rate, and at the same time. Pressing the **MIX** button will enable the **MIX** transition effect and automatically disable the **WIPE** button. To activate the **MIX** effect, simply press the **AUTO** button or move the **T-Bar**.
7		**WIPE Transition Effect Enable/Disable button** Pressing the **WIPE** button enables the **WIPE** transition effect after which the **WIPE** transition effect can be selected. To trigger the **WIPE** transition effect, simply press the **AUTO** button or move the **T-Bar**. Wipe transition effect selection, border and position can be configured in the OSD menu ([Start](#)).

PIP/Keyer		
8	PIP PGM PVW	**PIP Enable/Disable buttons** Picture in Picture puts the selected Sub Video Source in a window on the Main Program view, with control over window size and placement. For PIP configuration, please refer to the PIP section. **PIP PGM:** Shows the configured PIP on multiview and PGM outputs. **PIP PVW:** Shows the configured PIP on PVW and multiview outputs. Holding down this button also allows selection of the PIP source from the Preview Source row. The selected source button will flash. **Note**: You are also allowed to apply the chromakey effect to the PIP window. Please refer to the PIP section for chromakey configurations.
9	KEYER PGM PVW	**Keyer Enable/Disable buttons** **KEYER PGM:** Enables the key (Chroma / Luma / Linear) on multiview and PGM output **KEYER PVW:** Enables Keyer on PVW and multiview outputs. Press and hold this button until the Preview Source row starts to flash and then select **Keyer KEY or FILL sources** from the Preview Source row. Please refer to the Keyer section for keyer configurations.
10	LOGO ON/OFF	**Logo Enable/Disable button** The **LOGO ON/OFF** button enables the configured Logo on PVW and PGM outputs. Please configure the logo image source in the OSD. Refer to the Logo section for configuration details.
Transition Methods		
11		**T-Bar (Manual Transition)** **T-Bar** is used to manually perform a transition. **PVW** and **PGM** views can be transitioned at your preferred speed. To include the transition effect, simply press the **WIPE** or **MIX** button, after which the **Transition Effect** will be trigger as you move the **T-Bar**.

12	CUT	**CUT button** Pressing the **Cut** button performs **i**mmediate manual switch between PVW and PGM views without any transition effect.
13	AUTO	**AUTO button** Pressing the **Auto** button automatically transitions **PVW** and **PGM** views according to the selected speed and the configured transition effect.

Program / Preview Outputs

	PROGRAM — BKG 1 2 3 4 STILL	
14	**Program Source Row** Pressing the number buttons along the **PROGRAM** row selects a video source for the **PGM** view. **BKG** button: Pressing the **BKG** button will switch the background to the **Matte** background or color bars. **Still** button: Pressing the **STILL** button will switch the Main Program view to a still picture, which can be selected in the **OSD** menu. **Note**: Pressing the **STILL** button repeatedly switches the Main Program view between Still 1 and Still 2 pictures.	
	BKG 1 2 3 4 STILL — PREVIEW	
15	**Preview Source Row** Pressing the number buttons along the **PROGRAM** row selects a video source for the **PGM** view. **BKG** button: Pressing the **BKG** button will switch the background to the **Matte** background or color bars. **Still** button: Pressing the **STILL** button will switch the Main Program view to a still picture, which can be selected in the **OSD** menu. **Note**: Pressing the **STILL** button repeatedly switches the Main Program view between Still 1 and Still 2 pictures.	
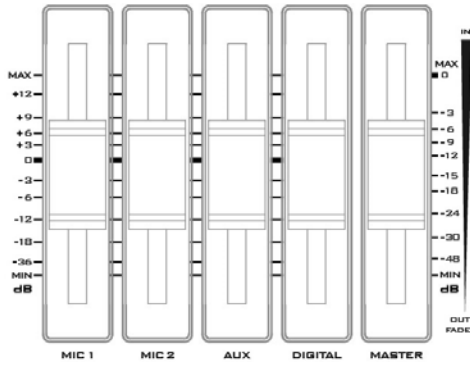
Volume Control		
16		**Volume Adjustment Sliders** Sliders to control audio levels for the Main audio mixer. **MIC 1**: Unbalanced MIC IN **MIC 2**: Unbalanced MIC IN **AUX**: RCA audio input (analog) **Digital**: HDMI or SDI audio input (digital) **Master**: Main audio output
17		**Headphone Jack** Headphones jack accepts a stereo mini jack plug for stereo headphones. The headphone volume is controlled by the Headphone volume control knob.
18		**Audio Meters** LED style meters, which show the signal strength at the Main Program Audio Output. The signal measured is determined by the level set with the Master slider. The LEDs turn red at +10 dB to indicate clipping distortion.
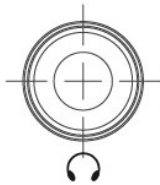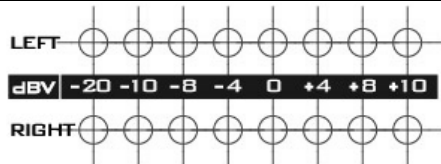
Audio Volume (dBV)	-20		-10		-8		-4		0		4		8		10
LED Color	G		G		G		G		G		Y		Y		R
Range (dBV)	-20	-12	-11	-9.5	-8.5	-6.5	-5.5	-3	-2	1	2	5.5	6.5	8	9+

G: Green   Y: Yellow   R: Red
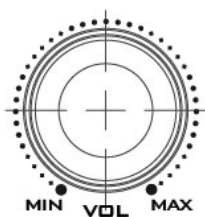
19		**Headphone Volume Control Knob** Headphone volume control knob controls Headphone level with the MIN representing the minimum volume and MAX representing the maximum volume.

Chapter 3   OSD Menu

The switcher's OSD menu allows the user to perform several configurations of image effects, such as Picture-in-Picture, keyers, downstream keys, still pictures and etc. The user can also configure the I/O by selecting the Inputs and Outputs options. In addition, in the setup option, the user is allowed to set the menu color, size, position and language.

The OSD Menu offers the user basic and advanced modes. The basic mode is generally a condensed version of the advanced menu mode. The following sub-sections will show you the various options available in these two modes.

3.1   Start

Start	Transition	M/E	60				
	Type	MIX					
	Wipe Effects	Wipe	1	Soft	0%	Width	1%
	Border	Luma	100%	Sat	80%	Hue	0
	Position	X	0%	Y	0%		
	Matte	Luma	100%	Sat	80%	Hue	0

3.1.1 Transition
The **Transition** sub-option allows the user to set the **MIX** effect duration, in frames. If the **M/E** is set to a value of 50 then the transition will take effect over a period of 50 frames or roughly 2 seconds. When the **AUTO button** is pressed, the transition will take the current M/E value defined by the user setting.

3.1.2 Type
The SE-650 provides three major types of transition effect, which are MIX, Clip and WIPE.

- If **MIX** is selected, set the transition duration in the "**Transition**" sub-option.
- If **WIPE** is selected, set the relevant WIPE settings in the "**WIPE Effects**" sub-option.
- If **Clip** is selected, please load the clip in the "**User Mems**" sub-option.

3.1.3 Wipe Effects
This sub-option allows the user to select the Wipe Effect and configure the wipe's border softness and width.

- **Wipe** – Selection of a WIPE effect from a set of 32 WIPE transition effects.
- **Soft** – A low value results in a solid edge border and a high value gives a soft diffused border.
- **Width** – A low value results in a thin border and a high value gives a wide border.

3.1.4 Border
In this sub-option, the user will be allowed to fine-tune the border color by adjusting the **Luma**, **Saturation** and **Hue** values.

3.1.5 Position

Position allows the user to adjust the center position of some wipes (e.g Circle & Elipse). **X** represents the horizontal position and **Y** is the vertical position.

Horizontal Position (X)

Positive value moves the wipe center to the right.

Negative value moves the wipe center to the left.

Zero value positions the wipe center at the screen center

Vertical Position (Y)

Positive value moves the wipe center up.

Negative value moves the wipe center down.

Zero value positions the wipe center at the screen center.

3.1.6 Matte

The user can configure the Matte by adjusting **Luma**, **Saturation** and **Hue** in this sub-option.

3.2 Keyer

Keyer of the SE-650 provides the user with the capability of image keying.

Advanced mode options

Keyer	Keyer	Chroma		Self		Priority	Top
	Keyer Ctrl	**Lift**	0%	**Gain**	1.0	**Opac**	100%
	Key Source	**Input 1**		**Fill**	Black		
	CK Setup	**CK Auto**		**Hue**	140	**Luma**	101%
		K Range	160	**K Fgnd**	10%	**K Bgnd**	90%
		Hi-Light	0%	**Lo-Light**	0%	**Bg-Supp**	OFF
	Mask	**Left**	0%	**Right**	0%		
		Top	0%	**Bot**	0%		

3.2.1 Keyer

There are three keying modes available: **Linear**, **Luma**, and **Chroma**.

Linear keying mode is usually chosen for sharp images. For non-sharp images, please select **Luma** keying. **Chroma** keying mode allows you to remove the green or blue backdrop from the image.

After the keying mode is chosen, select **Self** if only one source is enabled for the keyer, which is Key source. Select **Split** if two sources are enabled for the keyer, which are Key and Fill sources.

Priority sets the key image to either the top layer or bottom layer.

3.2.2 Keyer Control

"**Keyer Control**" adjusts **lift**, **gain** and **opacity** of the key image.

Lift adjusts the dark/black areas of the key image.

Gain adjusts the light/white areas of the key image.

Opac adjusts the transparency of the overall foreground key image.

3.2.3 Key Source

This sub-option allows the user to assign the key source; various options are listed below:

- Bars
- Matte – Set in Start/Matte
- Freeze
- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1
- Black

3.2.4 Fill Source

This sub-option allows the user to assign the fill source; various options are listed below:

- Bars
- Matte – Set in Start/Matte
- Freeze
- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1
- Black

3.2.5 CK Setup

In this sub-option, the user will be able to find all the parameters needed to perform chromakeying of the green or blue backdrop.

CK Auto: This function automatically calculates the best Hue & Luma values for the current Keyer source.

Hue: This parameter adjusts the color of the chroma key. A typical green screen value will be around 120. Blue screen value will be around 240.

Luma: This parameter adjusts the luma value of the chroma key

K Range (Key Range): Key Acceptance sets the range of hues or colors (0 – 360 degrees) that closely match the background color to be keyed. The user can start with a value of 120 degrees and this value can be fine-tuned up or down depending on the setup of the green or blue screen studio.

K Fgnd (Key Foreground): **Key Foreground** adjusts the performance of the chroma key in light or white areas. Apply more **Key Foreground** if the light areas are becoming too transparent.

K Bgnd (Key Background): **Key Background** adjusts the performance of the chroma key in dark or black areas. Apply more **Key Background** if the dark areas are becoming too transparent.

Hi-Light: Hi-light boosts the foreground key in high luminance area.

Lo-Light: Lo-light boosts the foreground key in low luminance area.

Bg-Supp: Background Suppress removes the Luma (Brightness) of the background from the final image. **Bg-Supp** turns ON/OFF background suppression.

3.2.6 Mask

The Mask feature basically shrinks the camera image by removing the borders from the final image. This feature allows the user to configure the Mask in chroma, luma or linear mode.

- **Left** – Left sets the left edge of the keyer mask.
- **Right** – Right sets the right edge of the keyer mask.
- **Top** – Top sets the top edge of the keyer mask.
- **Bottom** – Bottom sets the bottom edge of the keyer mask.

3.3 P-In-P

Picture-In-Picture (P-In-P) places a sub window on the PGM or PVW screens and allows you to configure various parameters of the PIP window.

Advanced mode options

P-in-P	P-in-P Src	Input 2					
	Position	**X**	-31%	**Y**	-14%	**Size**	32%
	Border	**Luma**	100%	**Sat**	80%	**Hue**	0
	Border	**Width**	2%				
	Crop	**Left**	0%	**Right**	0%	**Size**	0%
		Top	0%	**Bot**	0%		

3.3.1 P-In-P Source

This sub-option allows the user to assign the P-In-P source; various options are listed below:

- Bars
- Matte – Set in Start/Matte
- Freeze
- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1
- Black

3.3.1 Position

The user can adjust the position of the PIP screen by adjusting values of **X**, **Y** and **SIZE**, where X is the horizontal position, Y is the vertical position and Size is the PIP screen size.

Horizontal Position (X)

Positive value moves the PIP window to the right.
Negative value moves the PIP window to the left.

Zero value positions the PIP window at the screen center.

Vertical Position (Y)

Positive value moves the PIP window up.
Negative value moves the PIP window down.
Zero value positions the PIP window at the screen center.

PIP Window Size (Size)

This parameter ranges from 0 to 100 with 1% being the smallest and 100 being the largest. Therefore 50% would represent a PIP image which is half the size of the background image. 100% would see the PIP image totally cover the background image unless offset to one side.

3.3.2 Border
PIP border color can be set by adjusting the **Luma**, **Saturation** and **Hue** values. The **Width** of the border can also be adjusted. A width of zero (0) will turn the PIP border off.

3.3.3 Crop
The PIP image crop can be adjusted by modifying the following parameters:

- **Left** – Adjusts the position of the left edge of the PIP image.
- **Right** – Adjusts the position of the right edge of the PIP image.
- **Size** – Adjusts the PIP image crop size.
- **Top** – Adjusts the position of the top edge of the PIP image.
- **Bot** – Adjusts the position of the bottom edge of the PIP image.

3.4   P-In-P Keyer

P-In-P Keyer basically allows you to remove the green backdrop from the PIP image by adjusting Chromakeyer parameters. The OSD menu options for P-In-P Keyer are shown below.

Advanced mode options

P-in-P Keyer	P-in-P Src	Input 2		Priority	Bot		
	Keyer	**Full**					
	Keyer Ctrl	Lift	0%	Gain	1.0	**Opac**	100%
	CK Setup	CK Auto		Hue	110	**Luma**	80%
		K Range	160	**K Fgnd**	10%	**K Bgnd**	20%
		Hi-Light	0%	**Lo-Light**	0%		
	Mask	Left	0%	**Right**	0%		
		Top	0%	**Bot**	0%		

3.4.1 P-In-P Source
This sub-option allows the user to assign the **P-In-P source**; various options are listed below:

- Bars
- Matte – Set in Start/Matte
- Freeze
- Still 1

- Still 2
- Input 4
- Input 3
- Input 2
- Input 1
- Black

Priority sets the key image to either the **top** layer or **bottom** layer.

3.4.2 Keyer

The "**Keyer**" option defines the keyer mode, which is either **Chroma** or **Full** mode.

Chroma Mode: Chromakeying on PIP screen

Full Mode: Enabling of full PIP screen mode with the PIP window covering the entire screen.

3.4.3 Keyer Control

Keyer Control adjusts lift, gain and opacity of the key image.

Lift adjusts the dark/black areas of the key image.

Gain adjusts the light/white areas of the key image.

Opacity adjusts the transparency of the overall foreground key image.

3.4.4 CK Setup

CK Auto: This function calculates the best Hue & Luma values for the current Keyer source.

Hue: This parameter adjusts the color of the chroma key. A typical green screen value will be around 120. Blue screen value will be around 240.

Luma: This parameter adjusts the luma value of the chroma key.

Key Range (K Range): Key Range sets the range of hues or colors (0 – 360 degrees) that closely match the background color to be keyed. The user can start with a value of 120 degrees and this value can be fine-tuned up or down depending on the setup of the green or blue screen studio.

Key Foreground (K Fgnd): This parameter adjusts the performance of the chroma key in light or white areas. Apply more Key Gain if the light areas are becoming too transparent.

Key Background (K Bgnd): This parameter adjusts the performance of the chroma key in dark or black areas. Apply more Key Lift if the dark areas are becoming too transparent.

Hi-Light: Hi-light boosts the foreground key in high luminance area.

Lo-Light: Lo-light boosts the foreground key in low luminance area.

3.4.5 Mask

The Mask feature shrinks the camera image by removing the borders from the final image. This feature allows the user to configure the Mask in chroma or full mode.

- **Left** – Left sets the left edge of the P-in-P keyer mask.
- **Right** – Right sets the right edge of the P-in-P keyer mask.
- **Top** – Top sets the top edge of the P-in-P keyer mask.

- **Bottom** – Bottom sets the bottom edge of the P-in-P keyer mask.

3.5 Logo

The user is allowed to use the Logo option to set the logo image signal source. The OSD menu options for logo are shown below.

Logo	Logo	Luma		Self			
	Logo Ctrl	**Lift**	0%	**Gain**	16.0	**Opac**	100%
	Logo Src	**Still 2**		**Fill**	**Still 1**		
	Mask	**Left**	0%	**Right**	0%		
		Top	0%	**Bot**	0%		

3.5.1 Logo Image

You may apply linear or luma keyer to the logo image. **Linear** keying mode is usually chosen for sharp images. For non-sharp images, please select **Luma** keying.

After the keying mode is chosen, select **Self** if only one source is enabled for the logo, which can be set in the **Logo Src** option. Select **Split** if two sources are enabled for the logo, which can be respectively set in the **Logo Src** and **Fill** options.

Note: We do not recommend using the two-source logo (Split) as it requires two physical connection ports.

An example of Linear Keyer in Self mode: HDMI input port is connected to a Windows notebook running Datavideo's CG-200 software.

3.5.2 Logo Control

Logo Control adjusts lift, gain and opacity of the logo image.

Lift adjusts the dark/black areas of the logo image.

Gain adjusts the light/white areas of the logo image.

Opacity adjusts the transparency of the overall foreground logo image.

3.5.3 Logo Source (Logo Src)

Select **Logo Source** from the list below.

- Bars
- Matte – Set in Start/Matte
- Freeze
- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1
- Black

3.5.4 Fill Source

Select the **Fill Source** from the list below.

- Bars
- Matte – Set in Start/Matte
- Freeze
- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1
- Black

3.5.5 Mask

The Mask feature removes unnecessary borders of the Logo image. The user is allowed to configure the Mask in **Luma** or **Linear** mode.

- **Left** – sets the left edge of the logo image.
- **Right** – sets the right edge of the logo image.
- **Top** – sets the top edge of the logo image.
- **Bottom** – sets the bottom edge of the logo image.

3.6 Stills

Still allows the user to load images from the memory, save images to the memory, and save the images captured.

Advanced mode options

Stills	Load Still	Load	Still Num 10	Still 1
		Thumbnail Picture - 1	Thumbnail Picture	Thumbnail Picture + 1
	Save Still	Save	Still 1	Still Num 10
	Grab Still	Grab	Still 1	
	Freeze	1 Live	2 Live	3 Live
		4 Live		

3.6.1 Load Still

Upon selecting "Load Still", the user can then choose the memory location from which the still image is loaded. The system memory can store up to 500 still images. The following are the destinations to which the still image can be loaded:

- Still 1
- Still 2
- Input 4
- Input 3
- Input 2

- Input 1

Select "Load" to load the still image to the determined destination.

Image Preview is available below the "**Load Still**" row. "**Image Preview – 1**" allows the user to preview the previous image, "**Image Preview**" displays the image that will be loaded when "**Load**" is selected, and "**Image Preview + 1**" shows the next image.

3.6.2 Save Still

"**Save Still**" allows the user to save the still image to a specific memory location. The user should determine the source of the still image first. The available sources are listed below:

- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1

To complete the save, the user can simply select "**Save**" after determining the memory location.

Note: Pressing the STILL button repeatedly switches between Still 1 and Still 2 pictures.

3.6.3 Grab Still

"**Grab Still**" function grabs an instant of the video image on the Program view to the destinations listed as follows.

- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1

After determining the destination to which an instant of the video image is captured, simply select "**Grab**" to trigger the image grab.

3.6.4 Freeze

"**Freeze**" function allows the user to select an image source in **Input 1-4 windows** from one of the four sources listed as follows:
- Still – A still picture must be loaded to Inputs 1-4 first.
- Freeze – Freezes the videos in the Input 1-4 windows.
- Live – Playback of videos in the Input 1-4 windows.
  HDMI 1 video is displayed in the Input 1 window.
  HDMI 2 video is displayed in the Input 2 window.
  SDI 3 video is displayed in the Input 3 window.
  SDI 4 video is displayed in the Input 4 window.

3.7   User Mems

In this option, the user is allowed to **load** previously saved settings and **save** the currently configured settings.

Advanced mode options

User Mems	Load Mem	Memory	13	Load	
	Save Mem	Memory	13	Save	
	Load Clip	Load		Clip	0
		Thumbnail Picture - 1		Thumbnail Picture	Thumbnail Picture + 1

3.7.1 Load Memory

Use the up/down arrow to scroll to the desired memory location and load the saved setting by selecting "**Load**".

Note: The user can also press one of the USER memory shortcut buttons (1-3) on the control panel as a quick way of loading those previously saved User configurations.

3.7.2 Save Memory

Use the up/down arrow to scroll to the desired memory location and save the current setting by selecting "**Save**".

3.7.3 Load Clip

In this sub-option, use the Up/Down arrows on the physical keyboard of the switcher to browse the clip files. The memory can save at most 500 clip files. Once "Load" is pressed, the selected clip will be loaded into the Still 2 window and replace the previously displayed video or image.

Preview of clip videos is below the "**Load Clip"** sub-option. You can preview three clip videos at the same time.

3.8   Inputs

This feature allows the user to configure the color of the Inputs 1-4. In addition, the user can shuffle the contents of Inputs 1-4 and Stills.

Advanced mode options

Inputs	Input 1	Black	0	White	100	Chrom	1.0
	Input 2	Black	0	White	100	Chrom	1.0
	Input 3	Black	0	White	100	Chrom	1.0
	Input 4	Black	0	White	100	Chrom	1.0
	Freeze	1	Live	2	Live	3	Live
		4	Live				
	Crosspoint	1	Input 1	2	Input 2	3	Input 3
		4	Input 4	5	Still 1	6	Still 2

3.8.1 Input 1-4

By selecting the corresponding input (Inputs 1-4), the user will then be allowed to configure the colour of the input 1-4 by adjusting its Black Level, White Clip and Chroma Gain parameters.

3.8.2 Freeze

"**Freeze**" function allows the user to select an image source in **Input 1-4 windows** from one of the sources listed as follows:

- Still – A still picture must be loaded to Inputs 1-4 first.
- Freeze – Freezes the videos in the Input 1-4 windows.
- Live – Playback of videos in the Input 1-4 windows. When Crosspoint is in its default settings,
  HDMI 1 video is displayed in the Input 1 window.
  HDMI 2 video is displayed in the Input 2 window.
  SDI 3 video is displayed in the Input 3 window.
  SDI 4 video is displayed in the Input 4 window.

3.8.3 Crosspoint

Crosspoint gives the user the ability to shuffle the contents of Inputs 1-4 and Stills. In other words, the user will be able to flexibly assign any of the sources of Inputs 1-4 and Stills to the 5 input buttons (1, 2, 3, 4, and Still) of the Program and Preview rows as desired.

3.9   Outputs

This option allows the user to configure various output settings such as video output, audio output, and Tally mode.

Advanced mode options

Outputs	Outputs	Sdi	Pgm			HDMI	MultiV
						HDMI	1080P
	Audio	Mode	Analog	Level	Auto	Src	Follow
		Sdi	On			HDMI	On
	Tally Mode	Normal					
	Multiviewer	AutoNum	Off	Label Inf	Off	Trns Lab	Off

3.9.1 Outputs

In general, there are three output ports (**SDI 1**, **HDMI 1** and **HDMI 2**) available, wherein SDI 1 and HDMI 1 can be configured to output one of the following:

- Still 1
- Still 2
- Input 4
- Input 3
- Input 2
- Input 1
- CLN PVW (Clean PVW)
- CLN PGM (Clean PGM)
- PG + DSK (LOGO)
- PV + DSK (LOGO)
- PVW
- PGM

- MultiV (Multi view)

In addition to selecting your output source, you are also allowed to set different resolutions to the HDMI output port. The two available resolutions are 1080i and 1080p.

Note: Currently there is no configuration option for HDMI 2 as it has been hard coded as Multiview output.

Please note that when HDMI OUT is set to 1080i, image will be enlarged on the DELL 24" monitor (Wide Mode = 1:1), exceeding the viewable screen area (overscan). In 1080p and 720p modes, image overscan and shifts are seen on BENQ 37"/SONY 42" TV.

3.9.2 Audio

In this sub-option, you can turn ON/OFF the embedded audio component at the **SDI-out** and **HDMI-out**.

Mode (Off/Analog): The SE-650 can only accept external audio using the analogue RCA inputs on the rear panel. By changing the **Mode** sub option from Analogue to OFF will mute the incoming RCA audio.

Level (EBU/SMPTE/AUTO): There are two different audio standards available for selection. The user can either select the EBU or SMPTE standard. By selecting AUTO allows the device to automatically detect the audio standard. When the image is 50 Hz, the audio follows EBU standard and when the image is 59.94/60 Hz, the audio follows SMPTE standard.

Src: If "**Follow**" is selected, the audio will enter Audio follow Video mode, i.e. playback of the audio of the output video. If "**Src**" is selected, the SE-650 will play all enabled audio sources.

3.9.3 Tally Mode

Tally output port generally sends two tally signals to each channel. In Datavideo products, **Red** indicates On-Air, and **Green** indicates next camera source.

The SE-650 provides two tally modes:

Normal: If in normal mode, tally lights of all camera sources displayed on the PGM monitor will be turned ON (Red). These sources include PGM, PIP and Key sources. While transition is in progress, the next video will be seen on the PGM monitor, tally light of the PVW source camera will thus also be turned ON (**Red**).

Audio Mixer: If Audio Mixer mode is selected, tally light of the PGM source camera selected on the keyboard panel will be turned ON (Red). While transition is in progress, the tally light color will remain unchanged. The tally light color will only change (red/green) after the transition of PGM and PVW views is complete.

3.9.4 Multiviewer

AutoNum: The Multiview windows can be automatically numbered, and this sub-option turns ON/OFF automatic numbering.

Label Inf: This sub-option turns ON/OFF Label information. Input label is followed by information which describes the input as still, live or frozen image.

Trns Lab: This sub-option turns ON/OFF Label Transparency. Once enabled, the background of the label is then turned from a solid colour to transparent.

3.10 Setup

In the "Setup" menu, the user can change the **resolution**, switch between full and simplified menu versions, reset the SE-650 to its **Factory Default** values, adjust the **menu preferences**, enable/disable **Auto Save**, choose the preferred OSD menu **language**, **upgrade firmware** and view the **current firmware versions** (Interface, Mainboard and Keyboard).

Advanced mode options

Setup	Standard	1080i/50	Save Setup		
	Menu Mode	Advanced			
	Menu Pref	Blue	**Transp** 1	**Size**	Normal
	Menu Pos	Bot			
	Auto Save	Off			
	Factory Def	Reset	Reset Names		
	Language	English			
	Software	Upgrade	**(Available only when the USB storage device containing the latest firmware file is inserted)**		
	s/w: v1.1.1.1	f/w: 2015-08-03		Kbd: v2.15	

3.10.1   Standard
This option allows the user to choose the appropriate output resolution such as 1080i/50. Once done, simply select "Save" to confirm the selected output resolution. The available resolutions are 1080i/50/59.94/60, 720p/60/59.94/50.

3.10.2   Menu Mode
The user is allowed to switch between full and simplified menu versions. Select "Advanced" for full menu display or "Basic" to display a condensed version of the OSD menu.

3.10.3   Menu Preference
In menu preference, the user is allowed to set the menu color, menu transparency level, menu size and the display position.

Menu color: the available options are blue and grey
Options of **Menu Transparency** are listed below:

0: No Transparency

1: Background 50% Transparent (buttons not Transparent)

2: All Menu 50% Transparent

Menu Size
The menu size options are:

1. Normal

2. Small (1080i Mode)

3. Large (720p Mode)

Menu Position

Menu Position gives the user ability to select several positions for the Menu area on the Screen. The current options are Centre, Top, Left, Right and Bottom.

3.10.4   Auto Save

When enabled, your last settings will be automatically saved before the machine is shut down. At the next boot, the machine will automatically load the last saved settings. In addition, a Still Load will cause the auto save to occur.

3.10.5   Factory Default

Reset: This option resets the machine to the factory default settings.

3.10.6   Reset Names

This resets the Multiviewer labels (Input 1-4) to their default settings.

3.10.7   Language

The available languages for OSD menu are English, Traditional Chinese and Simplified Chinese.

3.10.8   Software

This option is only available when the USB storage device containing the latest firmware file is inserted. Select Upgrade to start the firmware upgrade process. Refer to the FIRMWARE UPGRADE section for more details.

At the bottom of the menu, you will be able to view the version number of the latest firmware installed.

Chapter 4   Applications

4.1   Chromakeyer

Performing the configuration steps below will allow you to press KEYER PGM or KEYER PVW buttons to directly preview the keyer effect.

1. Set up studio equipment including lights and the backdrop (Green/Blue).
2. Press the "**MENU**" button to open the Keyer Setting Menu.

Keyer	Keyer	Chroma		Self		Priority	Top
	Keyer Ctrl	**Lift**	0%	**Gain**	1.0	**Opac**	100%
	Key Source	**Input 1**		**Fill**	Black		
	CK Setup	**CK Auto**		**Hue**	140	**Luma**	101%
		K Range	160	**K Fgnd**	10%	**K Bgnd**	90%
		Hi-Light	0%	**Lo-Light**	0%	**Bg-Supp**	OFF
	Mask	**Left**	0%	**Right**	0%		
		Top	0%	**Bot**	0%		

3. Select "**Chroma**" and "**Split**" under the "**Keyer**" sub-option.
4. Select the camera signal to be chromakeyed under the "**Key Source**" sub-option.
5. Adjust the left, right, top and bottom values of the "**Mask**" sub-option to set the chroma key range based on the green or blue backdrop size.
6. CK Setup
    *   Key Range defines a color range close to the color (blue/green) of the studio backdrop.
    *   Key Foreground adjusts the opaqueness and transparency.
    *   Key Background adjusts the chromakey performance to achieve perfect chromakeying.
    *   Hi-Light and Lo-Light adjust luma value of the chroma key.
    *   Bg-Supp removes foreground and background luma (brightness) from the final image.
7. Chroma Key setting is complete.

Remarks: The SE-650 is equipped with auto chromakeying function so if after following the above steps, a clean chromakeying effect cannot be achieved, you may first use the CK Auto function under the CK Setup sub-option and then fine-tune other parameters to achieve perfect chromakeying.

4.2   Logo and PIP

Hardware Installation
1. Open CG-250 on the notebook computer and use an HDMI cable to connect the HDMI ports of the notebook and the TC-200 Title Creator.
2. Locate SE-650's four input ports, which are HDMI1, HDMI2, SDI3 and SDI4.
3. CG image can be sent to the SE-650 via TC-200.
4. The two SDI output ports on the TC-200 are set to Fill Source and Key Source, which are respectively connected to the SE-650's SDI3 input and SDI4 input ports.
5. Camera is connected to the SE-650's HDMI1 input.
6. iPad is connected to APPLE TV box via Wi-Fi and the APPLE TV box is connected to SE-650's HDMI2 input.

7. Locate SE-650's three output ports and connect HDMI 2 output port to the Multiview monitor.
8. Switch on the SE-650's power.

Configuration
1. After the SE-650 is powered on, Multiview will be displayed on the monitor. Input 3 window displays the Fill Source, Input 4 window displays the Key Source, Input 1 window displays the camera image and Input 2 window displays the iPad screen (inputs can be configured under the "**Inputs**" option).
2. Press the "**MENU**" button on the SE-650 Control Panel to open the OSD menu on the Multiview monitor and then select "**LOGO**" option.
3. CG Overlay input setting (Input 3 / Input 4): Set the "**Logo Src**" to Input 4 and Fill Source to Input 3.

Logo	Logo	Luma		Self			
	Logo Ctrl	**Lift**	0%	**Gain**	16.0	**Opac**	100%
	Logo Src	**Still 2**		**Fill**	**Still 1**		
	Mask	**Left**	0%	**Right**	0%		
		Top	0%	**Bot**	0%		

4. Select a background image under the "**Stills**" option before performing Chromakey configuration.

Stills	Load Still	Load		Still Num	10	Still 1	
		Thumbnail Picture - 1		**Thumbnail Picture**		**Thumbnail Picture + 1**	
	Save Still	**Save**		**Still 1**		**Still Num**	10
	Grab Still	**Grab**		**Still 1**			
	Freeze	**1**	Live	**2**	Live	**3**	Live
		4	Live				

5. After a background image is chosen, select "**Load Still**".
6. Enter the "**Keyer**" option to configure Chromakey.
7. Set Key Source to Input 1 and Fill to reference to Still 1.
8. Select "**CK Auto**" to trigger auto chromakeying, which automatically sets the chromakey settings to a basis point and then manually fine tune "**K Fgnd**" or "**K Bgnd**" to adjust the chromakeying effect.

| Keyer	Keyer	Chroma		Self		Priority	Top
	Keyer Ctrl	**Lift**	0%	**Gain**	1.0	**Opac**	100%
	Key Source	**Input 1**		**Fill**	Black		
	CK Setup	**CK Auto**		**Hue**	140	**Luma**	101%
		K Range	160	**K Fgnd**	10%	**K Bgnd**	90%
		Hi-Light	0%	**Lo-Light**	0%	**Bg-Supp**	OFF
	Mask	**Left**	0%	**Right**	0%		
		Top	0%	**Bot**	0%		

9. Finally enter the "P-in-P" option and set P-in-P source to Input 4.
10. Confirm the P-in-P location by adjusting the X and Y values first and then modify its size.

P-in-P	P-in-P Src	Input 2				
	Position	X	-31%	Y	-14%	Size	32%
	Border	Luma	100%	Sat	80%	Hue	0
	Border	Width	2%				
	Crop	Left	0%	Right	0%	Size	0%
		Top	0%	Bot	0%		

11. Exit the OSD menu to complete the configurations. When in use, make sure PIP and Keyer effects are applied to the PGM View, and check if the final image view is the desired style. After everything is finalized, enable Logo to display the logo.

Chapter 5: Appendices

Appendix 1: Tally Outputs
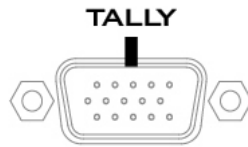
The SE-650 has a D-sub 15 pin female tally output port. These connections provide bi-colour tally information to a number of other Datavideo products, such as the ITC-100 eight channel talkback system and the TLM range of LCD Monitors. The ports are open collector ports and as such do not provide power to tally light circuits.

The pin outputs are defined as follows:

PIN No.	Signal Name	Input/Output	Description of Signal
1	Program 1	Open collector output	Tally output of input video Program 1
2	--	--	No Function
3	Preview 1	Open collector output	Tally output of input video Preview 1
4	RCOM (GND)	Ground	Ground
5	Program 4	Open collector output	Tally output of input video Program 4
6	Program 2	Open collector output	Tally output of input video Program 2
7	--	--	No Function
8	Preview 2	Open collector output	Tally output of input video Preview 2
9	GND	Ground	Ground
10	--	--	No Function
11	Program 3	Open collector output	Tally output of input video Program 3
12	--	--	No Function
13	Preview 3	Open collector output	Tally output of input video Preview 3
14	YCOM (GND)	Ground	Ground
15	Preview 4	Open collector output	Tally output of input video Preview 4

Appendix 2: Firmware Upgrade

Datavideo usually releases new firmware containing new features or reported bug fixes from time to time. Customers can either download the SE-650 firmware as they wish or contact their local dealer or reseller for assistance.

This section outlines the firmware upgrade process which should take *approximately 10 minutes to complete*.

The existing SE-650 settings should persist through the *firmware upgrade process, which should not be interrupted once started* as this could result in a non-responsive unit.

1. Please visit www.datavideo.com and download the latest version of firmware.
2. Save the latest version of firmware in the root directory of the thumb drive.
3. Connect the thumb drive containing the latest SE-650 firmware to the **F/W UPGRADE** Port.
4. Enter "**MENU**" and select "**SETUP**" option.
5. In the "**SETUP**" option, select "**UPGRADE**" and press the "**ENTER**" button to start the upgrade.
6. When the "**UPGRADE**" sub-option turns to green from red, it indicates that the firmware upgrade is complete.
7. Reboot SE-650 to complete the firmware upgrade.

Appendix 3: Frequently-Asked Questions

This section describes problems that you may encounter while using SE-650. If you have any questions, please refer to related sections and follow all suggested solutions. If problem still exists, please contact your distributor or the service center.

No.	Problems	Solutions
1.	Exiting MENU right after the MENU is opened will cause slow button responsiveness.	Basically only the first menu exit after the menu is opened will cause slow button responsiveness. Exiting MENU right after the MENU is opened approximately 30 seconds after the machine is powered ON will **NOT** cause slow button responsiveness. If slow button responsiveness is encountered, wait for about 10 seconds for the system to restore normal operation. It is expected that the new version of firmware will correct this issue.

Appendix 4: Dimensions
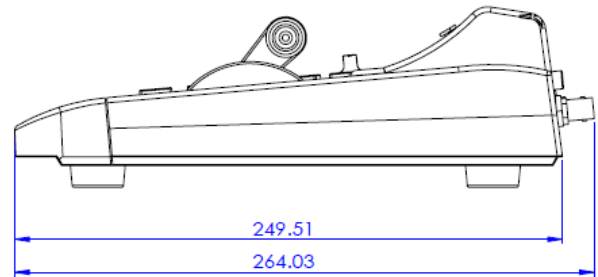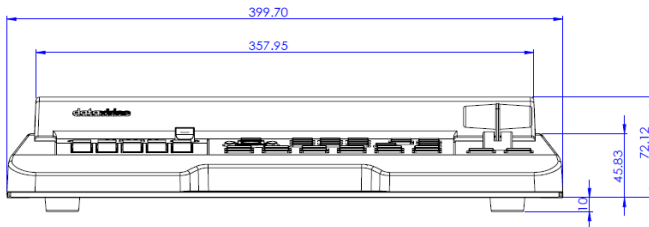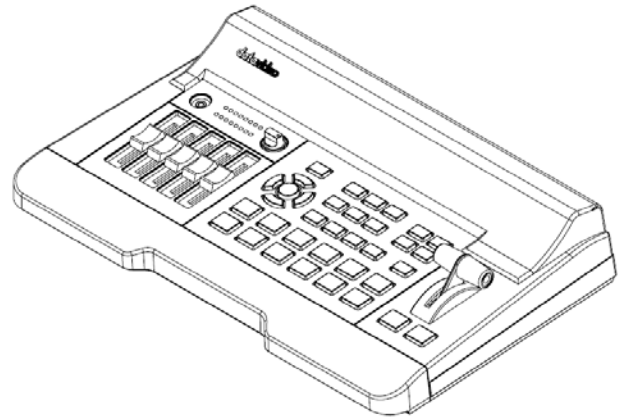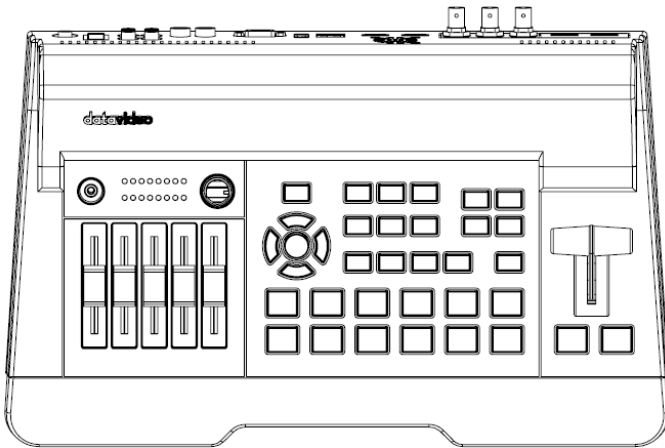
Unit: Millimeters (mm)

Appendix 5: Specifications

Interfaces	
Video Inputs	4 sets of input 2 x HDMI 2 x HD-SDI
Video Outputs	2 x HDMI (HDMI 1 is user assignable / HDMI 2 is Multiview) 1 x HD-SDI (User assignable)
Audio Inputs	1 x Stereo RCA (L/R) 2 x Mono Microphone De-embedded Digital Audio (2 CH)
Audio Outputs	1 x Stereo RCA (L/R) 1 x Stereo headphone (Mini Jack with volume control) Embedded Digital Audio (2 CH / Channel 1 & 2)
Tally	Yes / D-Sub 15 male connector
Software Update	USB Port
Audio Mixer	
Audio Fader	5 VR (Variable Resistor) 6 Channel (3 Pair) Audio Mixer
Audio LED Meter	2 Rows (Left/Right)
Standards	
Supported Resolution	1080i/50, 1080i/59.94, 1080i/60 720p/50, 720p/59.94, 720p/60
Internal Processing	YUV 4:2:2 10-bit
Extras	
Keyers	2 Keyers (2 Chroma Keyers); linear and luma keyers
Upstream Keyers	2 (M/E Keyer & PIP)
Chroma Keyers	2 High Quality Chroma Keyers; available in Keyer and PIP
PIP	1 x PIP with adjustable size, position, and crop. Border with adjustable width & color
WIPES	32 Wipe Patterns such as Circle and Heart. Variable border width with Softness control.
Stills	Any unused channel can also be used as a still buffer. Stills can be stored internally
Stinger Transitions	Yes
Logo	1

Service & Support

It is our goal to make your products ownership a satisfying experience. Our supporting staff is available to assist you in setting up and operating your system. Please refer to our web site www.datavideo.com for answers to common questions, support requests or contact your local office below.

Datavideo Taiwan
Datavideo Technologies Co. Ltd
10F. No. 176, Jian 1st Rd.,Chung Ho
District, New Taipei City 235, Taiwan,
R.O.C.
Tel: +886-2-8227-2888
Fax: +886-2-8227-2777
E-mail:service@datavideo.com.tw

Datavideo Europe
Datavideo Technologies Europe BV
Floridadreef 106
3565 AM Utrecht,
The Netherlands
Tel:+31-30-261-96-56
Fax:+31-30-261-96-57
E-mail:info@datavideo.nl

Datavideo United Kingdom
Datavideo UK Limited
Units1 & 2 Waterside Business Park
Hadfield, Glossop, Derbyshire
SK13 1BE, UK
Tel:+44-1457 851 000
Fax:+44-1457 850 964
E-mail:sales@datavideo.co.uk

Datavideo USA
Datavideo Corporation
7048 Elmer Avenue.
Whittier, CA 90602,
U.S.A.
Tel:+1-562-696 2324
Fax:+1-562-698 6930
E-mail:sales@datavideo.us

Datavideo China
Datavideo Technologies China Co
601,Building 10,No.1228,
Rd.Jiangchang,
Jingan District,Shanghai
Tel: +86 21-5603 6599
Fax: +86 21-5603 6770
E-mail:service@datavideo.cn

Datavideo Singapore
Datavideo Technologies (S) PTE Ltd
No. 178 Paya Lebar Road #06-03
Singapore 409030

Tel:+65-6749 6866
Fax:+65-6749 3266
E-mail:sales@datavideo.sg

Datavideo Hong Kong
Datavideo Hong Kong Ltd
G/F.,26 Cross Lane
Wanchai, Hong Kong
Tel: +852-2833-1981
Fax: +852-2833-9916
E-mail:info@datavideo.com.hk

Datavideo France
Datavideo France s.a.r.l
Cité Descartes 1,rue Albert Einstein
Champs sur Marne
774477-Marne la Vallée cedex 2
Tel:+33-1-60370246
E-mail: info@datavideo.fr

Datavideo India
Datavideo Technologies India Pvt Ltd
A-132, Sec-63,Noida-201307,
Uttar Pradesh (UP), India.
Tel:+91-0120-2427337
Fax:+91-0120-2427338
E-mail: sales@datavideo.in

Please refer to our website for update the latest version manual.
www.datavideo.com/product/SE-650

datavideo
www.datavideo.com