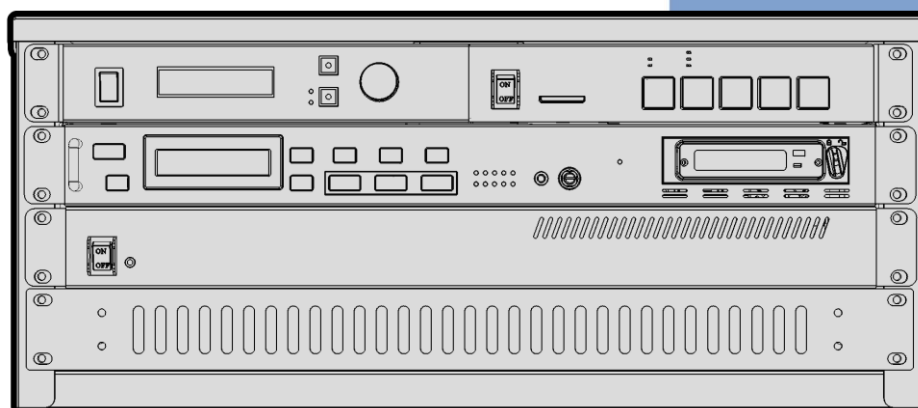


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2-CHANNEL PRO
PRESENTATION SYSTEM
VGB-2000
Instruction Manual

www.datavideo.com

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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

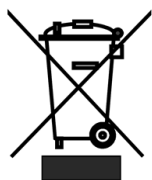
- Datavideo equipment are guaranteed against any manufacturing defects for one year from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- The product warranty period begins on the purchase date. If the purchase date is unknown, the product warranty period begins on the thirtieth day after shipment from a Datavideo office.
- All non-Datavideo manufactured products (product without Datavideo logo) have only one year warranty from the date of purchase.
- Damage caused by accident, misuse, unauthorized repairs, sand, grit or water is not covered under warranty.
- Viruses and malware infections on the computer systems are not covered under warranty.
- Any errors that are caused by unauthorized third-party software installations, which are not required by our computer systems, are not covered under warranty.
- All mail or transportation costs including insurance are at the expense of the owner.
- All other claims of any nature are not covered.
- All non-Datavideo manufactured products (product without Datavideo logo) have only one year warranty from the date of purchase.
- All accessories including headphones, cables, and batteries are not covered under warranty.
- Warranty only valid in the country or region of purchase.
- Your statutory rights are not affected.

Three Year Warranty

- All Datavideo products purchased after July 1st, 2017 are qualified for a free two years extension to the standard warranty, providing the product is registered with Datavideo within 30 days of purchase.
- Certain parts with limited lifetime expectancy such as LCD panels, DVD drives, Hard Drive, Solid State Drive, SD Card, USB Thumb Drive, Lighting, Camera module, PCIe Card are covered for 1 year.
- The three-year warranty must be registered on Datavideo's official website or with your local Datavideo office or one of its authorized distributors within 30 days of purchase.



Disposal



For EU Customers only - WEEE Marking

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



CE Marking is the symbol as shown on the left of this page. The letters "CE" are the abbreviation of French phrase "Conformité Européene" which literally means "European Conformity". The term initially used was "EC Mark" and it was officially replaced by "CE Marking" in the Directive 93/68/EEC in 1993. "CE Marking" is now used in all EU official

documents

1. Introduction

The VGB-2000 2-Channel Pro Presentation System is designed especially for the MOOC course video recording, TV station weather report and stock market analysis applications. The VGB-2000 system includes cameras, external Powerpoint slide input, chromakey and video recording functions to achieve highest video recording quality by single person operation without considering the limitation of the studio space.

The VGB-2000 2-Channel Pro Presentation System is an innovative application for the electronic green board. The VGB-2000 combines the SE-1200MU's 6-channel input signals, the multi-camera shooting in the studio, chromakey and IEPEN interactive stylus together. Teachers can write on the green board and the handwriting will be left. Moreover, the VGB-2000 combines the streaming, high-resolution video recording and real-time switching for the application scenes to be the ideal solution for the correspondence courses. Furthermore, the VGB-2000 is upgraded to combine with a 7" touch panel to trigger each application scene to achieve the virtual studio multi-camera shooting effect.

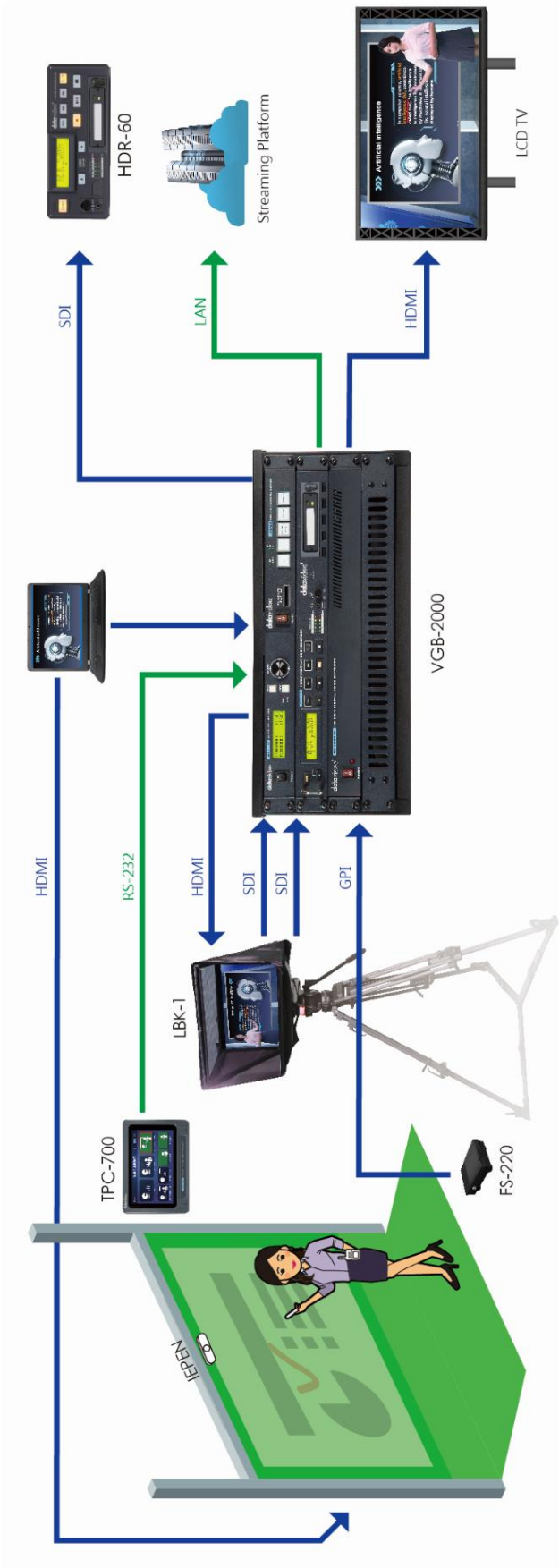
The VGB-2000 2-Channel Pro Presentation System can be connected with the IEPEN interactive stylus. The lecturer can take note while lecturing by using the IEPEN. The VGB-2000 2-Channel Pro Presentation System uses the simplest way for establishing the interactive electronic green board by mounting the short-throw projector and the green mat on the wall.

Moreover, it is easy for you to operate all devices for whole set of the VGB-2000. The Look Back kit allows you to see the real-time screen for video recording. The VGB-2000 allows you to record and stream the video simultaneously which can save more time for you.

1.1 Features

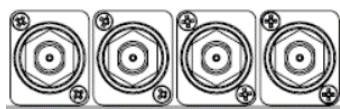
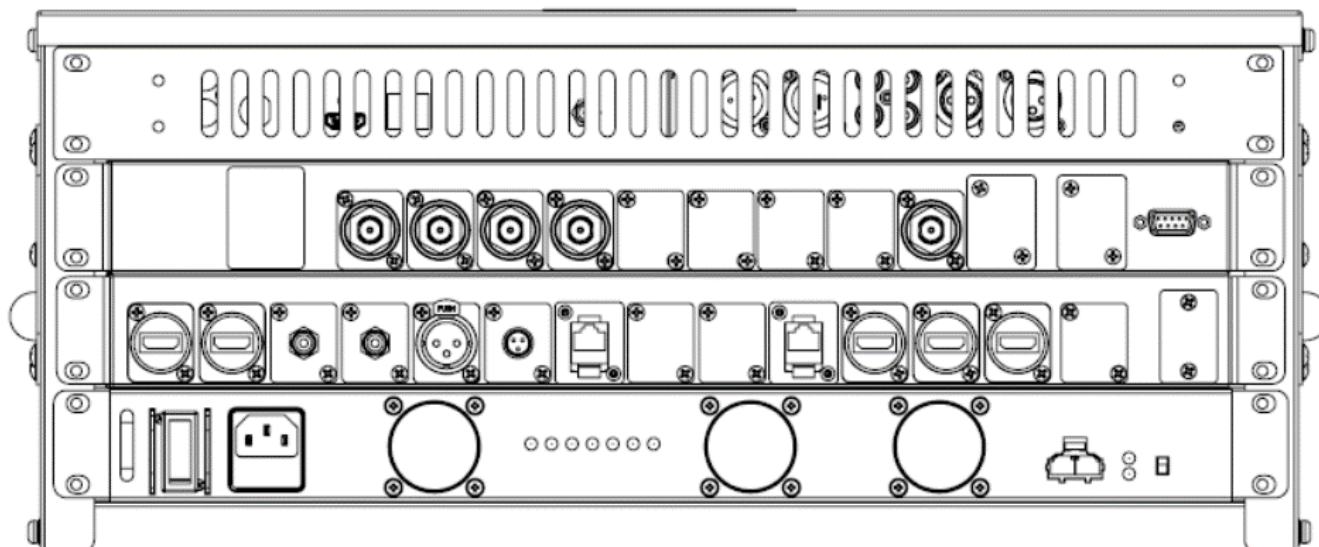
1. Supports Multiple OS Platforms. The SE-1200MU allows real-time switching by the MacOS, Windows, iOS and Android Operating systems.
2. Supports professional audio delay function for up to 700ms.
3. The handwriting on the Powerpoint slide will be recorded completely.
4. The foot switch allows teacher to control the course recording tempo by single person only.
5. Supports simultaneous streaming to main streaming platforms and backup video recording.
6. The 7" touch panel controller TPC-700 allows users to trigger different virtual scenes according to the teaching scenarios. The virtual studio scenes can be controlled by a single person.

1.2 System Diagram



2-Channel Pro Presentation System (VGB-2000)

2. Rear Panel



CAMERA1/2/3/4
(from the left side to right side)

The Camera 1 to Camera 4 SDI interface allow users to input following SDI signals.
 CAMERA 1: BC-100 camera signal (half-body screen)
 CAMERA 2: BC-100 camera signal (full-body screen)
 CAMERA 3: Still 1 (Long Shot for Virtual Scene)
 CAMERA 4: Still 2 (Close Shot for Virtual Scene)



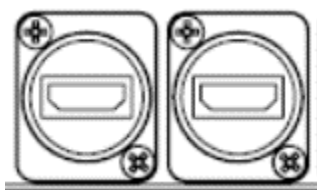
SWITCHER SDI OUT 2

This SWITCHER SDI OUT 2 interface allows users to connect to an external SDI interface device.



CHROMA CTRL RS-232

Please use an RS-232 to RJ-45 adapter cable to connect from this interface to the RJ-45 interface of the TPC-700 for applying the needed virtual scene settings by using the TPC-700.

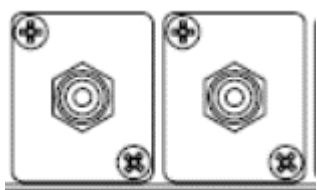


SWITCHER HDMI IN(CAM 1) & SWITCHER HDMI IN(CAM 2) (from the left side to the right side)

These SWITCHER HDMI IN (CAM1) and SWITCHER HDMI IN (CAM2) allow users to input Logo or powerpoint slide from an external connected laptop by an HDMI cable.

The SWITCHER HDMI IN (CAM 1) which is located on the right side allows users to input their desired Logo.

The SWITCHER HDMI IN (CAM2) which is located on the left side allows users to input their desired powerpoint slide.



AUDIO IN RCA(R) / AUDIO IN RCA(L)

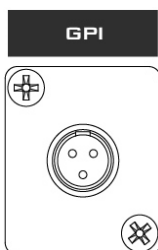
This is the RCA unbalanced audio signal input for users to input the unbalanced stereo analog audio for streaming and recording.

fo



MIC IN

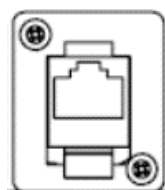
This is the balanced XLR microphone input interface.



GPI Port

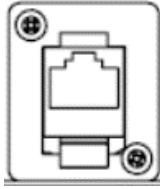
Please connect the FS-220 foot switch to this GPI port for transmitting the Tally signal to the LBK-1 and for switching between the Record and Pause modes of the HDR-70.

Note: Before using the VGB-2000, please make sure that the HDD must be inserted into the HDR-70 and the Record mode button for the HDR-70 must be initiated. For more details, please refer to the HDR-70 user manual.



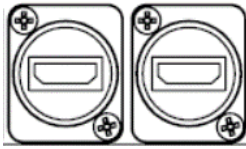
SWITCHER LAN IN

This SWITCHER LAN IN interface allows users to connect the VGB-200 and the laptop which is used to install the SE-1200MU control software. After the laptop is set within the same IP range of the SE-1200MU, users can control and set the SE-1200MU by using the software control interface.



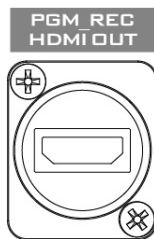
STREAMING OUT

This STREAMING OUT interface allows users to stream the video which is shot by the camera. Please use an RJ-45 Ethernet cable to connect from this interface to the external network for streaming by the NVS-33. Please set your laptop in the same IP range as the NVS-33 to control the NVS-33 by the software interface.



SWITCHER HDMI OUT 1 & SWITCHER HDMI OUT 2

These two HDMI output interfaces allow users to connect the MULTIVIEW and PROGRAM screens to external large monitor and LBK-1 Look Back Kit by HDMI cables for monitoring and Look-Back applications.

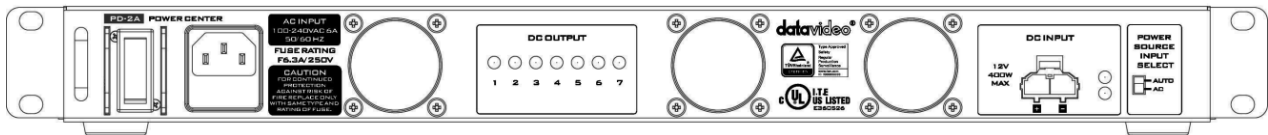


PGM_REC HDMI OUT

Please connect the HDMI monitor to this port for showing the video-playing screen for the video which is recorded by the HDR-70.

Note: Before using this port, please make sure that the “RECORD MODE” button lights up.

2.2 PD-2A Power Center



On / Off Switch

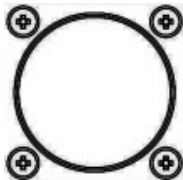
Powers the PD-2A On / Off when using AC Power.

Note: The On / Off Switch is not functional if the power input is DC.



AC In with built-in fuse

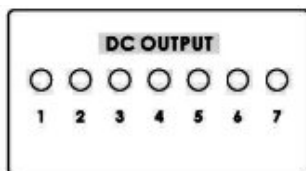
AC Inlet for connecting to suitable mains power outlet – 100-240VAC. The socket contains a fuse holder fitted with a 6.3A fuse.



Cooling Fan

The PD-2A has three built-in cooling fans; please ensure that fans are not blocked, and the air flow is available.

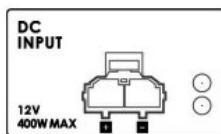
Note: The right two fans will start operation when internal ambient temperature reaches 50°C. The left fan will start operation when internal ambient temperature reaches 70°C.



DC OUTPUT LED Indicators

XLR DC OUTPUT LED Indicators (1-7)

Indicator lights **ON** during normal operation. Indicator lights **OFF** if the output is overloaded or faulty.



DC Input (Euro Type Terminal)

The PD-2A can be powered from a suitable 12V power source. When working from DC the PD-2A will not regulate the power outlets.

Please ensure that the 12V power source that you use is regulated. If you intend to run the PD-2A from a car or van power outlet, please make sure a suitable regulator is used on the power feed.

LED indicator

Green: DC input power connected

Blinking Red: Internal ambient temperature exceeds 70°C degrees.



**Power Source
Input Select Switch
(AUTO / AC)**

The **Input Select Switch** can be set to **AC** or **AUTO** depending on the power input that you intend to use.

AUTO: When AC and DC power sources are connected at the same time, the DC power source will start supplying current to the DC outputs until the AC source rises above 11.3V.

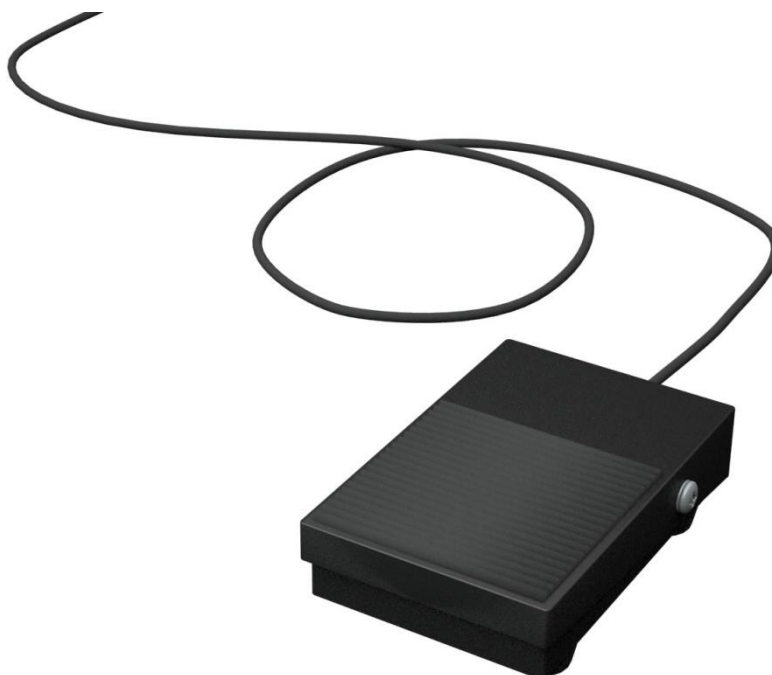
AC: Current supplied to the DC output from the AC power source **ONLY**.

3. FS-220 Foot Switch

The FS-220 is a Foot Switch designed specifically for use with the VGB-2000. The purpose is to allow the user to toggle between **Record** and **Record Pause** modes on the VGB-2000 Webinar Presentation System by simply stepping on the pedal. The mode that the recorder is currently in is indicated by the Tally Light on the LBK-1 Look Back Kit. In the Record Mode, the tally light displays red color; on the contrary, if the recorder is in the record pause mode, the tally light will be OFF.

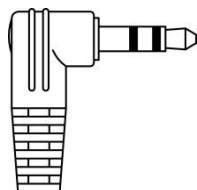
There are two connectors on the FS-220 cable end. The Mini-XLR is connected to the GPI port on the rear panel of the VGB-2000 and the 3.5mm ear phone connector is plugged into the LBK-1 Tally Light IN.

3.1 Connectors



Mini XLR

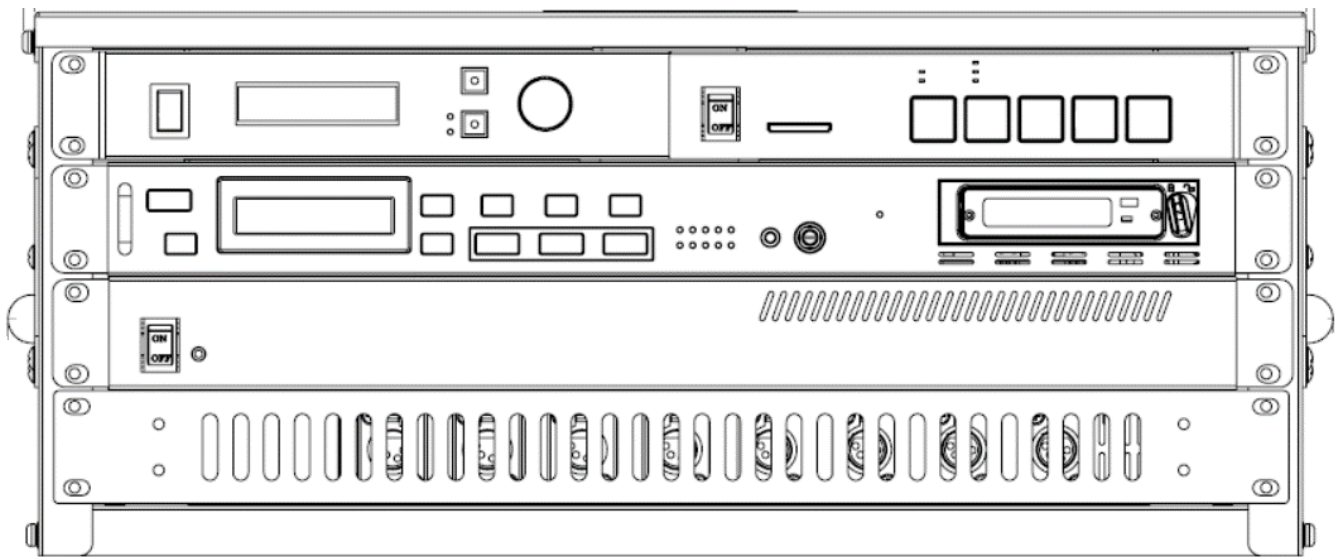
Connect to GPI port of the HDR-70 HD/SD Digital Video Recorder-1U Rackmountable (Rear Panel of the VGB-2000).



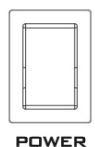
3.5mm Phone Connector

Connect to Tally Input (LBK-1 Look Back Kit)

4. Front Panel



4.1 Audio Delay Box with Microphone Input



Power On/Off Switch

Switches the power On / Off



Menu

This switch allows access to the 9 mode system settings.



Mode

Select **LEVEL** or **TIME** information on LCD Display.
LEVEL will display the audio output dBu level.

TIME will display the AUDIO DELAY & ATTENUATION settings.

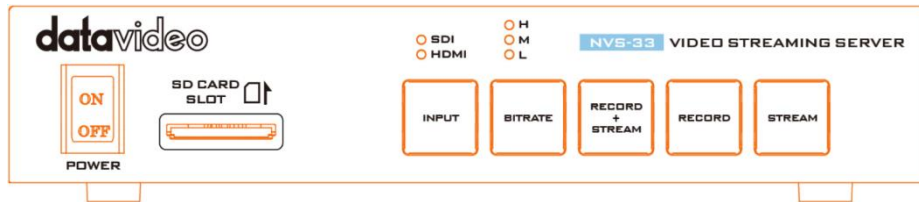


Adjust

The **ADJUST** knob is for mode select and value adjustment.

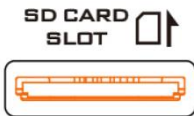
It can be rotated to display the correct menu option or value and then pressed in to select or confirm a chosen value.

4.2 NVS-33 H.264 Video Streaming Server



Power Switch

Turn on/off the device.



SD Card Slot

The SD Card Slot allows insertion of an SD Card for video recording.



INPUT Button

Press the **INPUT** button to select between SDI and HDMI input sources. The button is always in solid white.

The activated input source will be indicated by the corresponding LED.

- **Green:** Input source activated
- **Off:** Input source deactivated

Note: The Input button is disabled while streaming or recording is in progress.



BITRATE Button Switch the stream/record bitrate mode using the **BITRATE** button; follow the steps outlined below:

- Press and hold one of the **RECORD+STREAM** button, the **RECORD** button and the **STREAM** button until the pressed button starts blinking red.
- Continue holding down one of the **RECORD+STREAM** button, the **RECORD** button, and the **STREAM** button while pressing the **BITRATE** button to switch bitrate mode (H, M or L).

Note: The system will return to the previous setting if the BITRATE button push is not sensed. The default bitrate is M.

H/M/L LED Indicators

ON (Green): Bitrate mode enabled

OFF: Bitrate mode disabled



RECORD+STREAM M Button The **RECORD+STREAM** button activates and deactivates simultaneous recording and streaming; follow the steps outlined below:

Start recording/streaming simultaneously

- When idle, the **RECORD+STREAM** button is solid white.
- Press and hold the **RECORD+STREAM** button for approximately 2 seconds (**Note: the previously activated mode will be disabled**).
- When the record and stream functions are activating simultaneously, the **RECORD+STREAM** button turns from solid white, then blinking red and finally to solid red.
- When the **RECORD+STREAM** button turns solid red, this indicates that the record and stream functions have been successfully activated.

Stop recording/streaming simultaneously

- While recording and streaming simultaneously, the **RECORD+STREAM** button is solid red.
- Press and hold the **RECORD+STREAM** button for

approximately 2 seconds.

- When the record and stream functions are terminating, the **RECORD+STREAM** button turns from solid red, then blinking red and finally to solid white.

When the **RECORD+STREAM** button turns solid white, this indicates that the record and stream functions have been successfully terminated.



RECORD Button

The **RECORD** button activates and deactivates the **RECORD Only** mode; follow the steps outlined below:

Start recording

- When idle, the **RECORD** button is solid white.
- Press and hold the **RECORD** button for approximately 2 seconds.
- When the record function is activating, the **RECORD** button turns from solid white, then blinking red and finally to solid red.
- When the **RECORD** button turns solid red, this indicates that the record function has been successfully activated.

Stop recording

- While recording, the **RECORD** button is solid red.
- Press and hold the **RECORD** button for approximately 2 seconds.
- When the record function is terminating, the **RECORD** button turns from solid red, then blinking red and finally to solid white.
- When the **RECORD** button turns solid white, this indicates that the record function has been successfully terminated.

Note: The RECORD button is disabled in Stream Only mode.



STREAM Button The **STREAM** button activates and deactivates the **STREAM Only** mode; follow the steps outlined below:

Start streaming

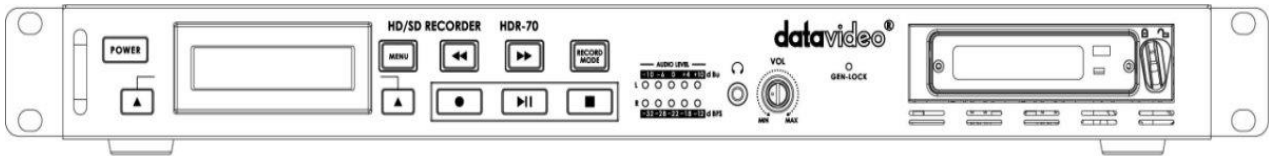
- When idle, the **STREAM** button is solid white.
- Press and hold the **STREAM** button for approximately 2 seconds.
- When the stream function is activating, the **STREAM** button turns from solid white, then blinking red and finally to solid red.
- When the **STREAM** button turns solid red, this indicates that the record function has been successfully activated.

Stop streaming

- While streaming, the **STREAM** button is solid red.
- Press and hold the **STREAM** button for approximately 2 seconds.
- When the stream function is terminating, the **STREAM** button turns from solid red, then blinking red and finally to solid white.
- When the **STREAM** button turns solid white, this indicates that the stream function has been successfully terminated.

Note: The **STREAM button is disabled in Record Only mode.**

4.3 HD/SD Digital Video Recorder-1U Rackmountable



Power On / Off Button.

This is a soft power on / off button which powers the unit on from a state of standby. The main power **on /off switch is on the rear panel.**



Display Panel.

Displays the status of the HDR-70. The display will show Bin Number, time code, or if the Menu Button is pressed the Menu Display.

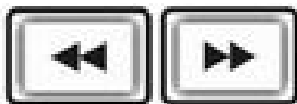


Menu Button.

This calls up the menu display which is navigated using the Previous / Next Buttons.

Note 1: When video is playing, press the MENU button can show the file message of the current playing file.

Note 2: When the device is in recording process, press the MENU button can show the file message of current recording file.



Fwd / Rew Buttons.

In playback mode these buttons will operate as Fast Forward and Rewind Buttons.

Note: When the HDR-70 is playing, press the Fwd or Rew button and then press the up/down button can switch the Fwd or Rev speed to 1 X, 3 X, 6 X, 9 X and 12 X speeds.



Record Mode Button

If users want to record the video, please press the “**RECORD MODE**” button in advance.

In Record Mode (the RECORD MODE button lights up), when users press the “Play” button, the HDR-70 must handle the internal file processing before playing the video, so, please wait for about 3 to 5 seconds.

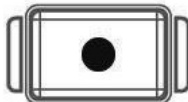
In Playing Mode (the RECORD MODE button is extinguished), when users press the “Play” button, the HDR-70 will start playing videos. So, the HDR-70 can play files as you wish in this situation.

Note: When the HDR-70 is playing videos in the “Record Mode”, if the SDI video source is disconnected, the file which is played will not be synchronized for its video and audio signals. So, please play the file in play mode.



Previous/Next Button

This button allows users to navigate the recorded bin files and options for the menu.



Record Button

Press the Record button and the play button simultaneously allow user to start video recording.

Note 1: if the video and audio signals are not existed, HDR-70’s video recording will not be started.

Note 2. If the HDR-70 is playing the video, when the record button is pressed, the Display Panel will show the volume bars for CH1 to CH4. When the Record button is pressed again, the Display Panel will show the volume bars for CH5 to CH8.



Play/ Pause Button

Starts playback of a bin, or pauses playback of video – the status will be displayed on the LCD Panel.

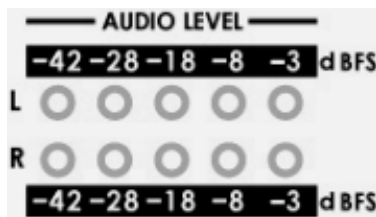
Note 1: When the HDR-70 is in playing situation, please long-press the “PLAY” button and the Fwd or Rew button simultaneously for moving the video forward or backward for 8 seconds.

Note 2: When the HDR-70 is in pause situation, please long-press the “PAUSE” button and the Fwd or Rew button simultaneously for moving to the previous or next file for playing.



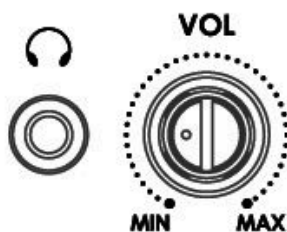
Stop Button

When the HDR-70 is in pause situation, long-press the “PLAY” button for 4 seconds and then release the button, the HDR-70 will play the last 15 seconds of the recorded video.



Audio Level / Peak Meter

The Audio Input Level LEDs show the audio input levels from the selected incoming source.



Headphone Audio Monitoring

Stereo mini jack plug for stereo headphone. The headphone audio level is controlled by the volume [VOL] adjustment.



GEN-LOCK LED

When this LED is on GEN-LOCK is present.



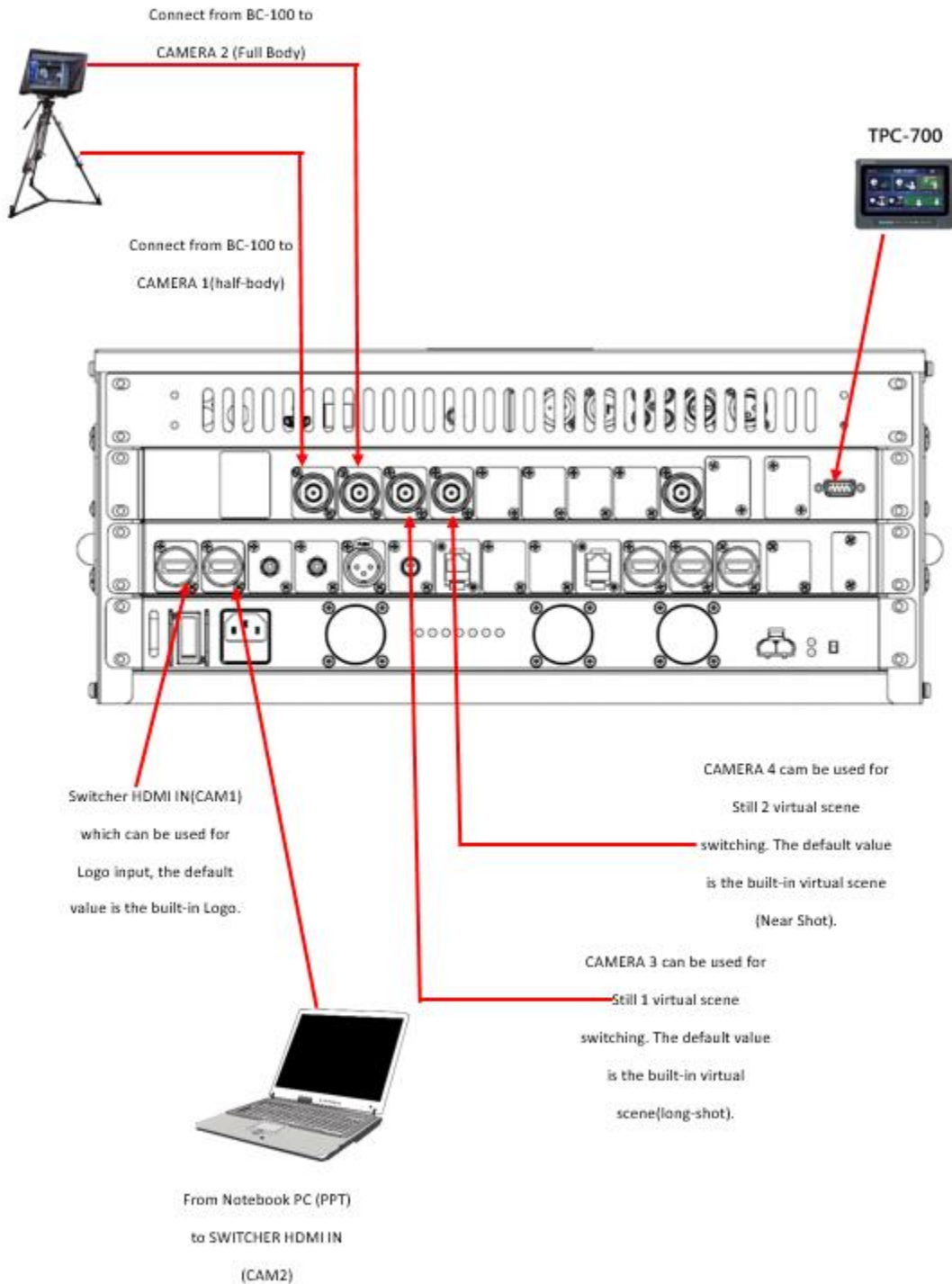
**2.5" Removable
HDD Slot.**

Removable HE-3 HDD with SATA & USB interface connection to a computer for fast copy & paste file transfer.

5. Basic Setup

For the basic setup of the VGB-2000 2-Channel Pro Presentation System, please refer to following steps. The VGB-2000 2-Channel Pro Presentation System includes VGB-2000, LBK-1, IEPEN, MAT-X green mat and short-throw projector.

Note: Please make sure that the BC-100 camera and the laptop for making the Powerpoint slide are connected to the VGB-2000 properly before operating the 8 preset modes.



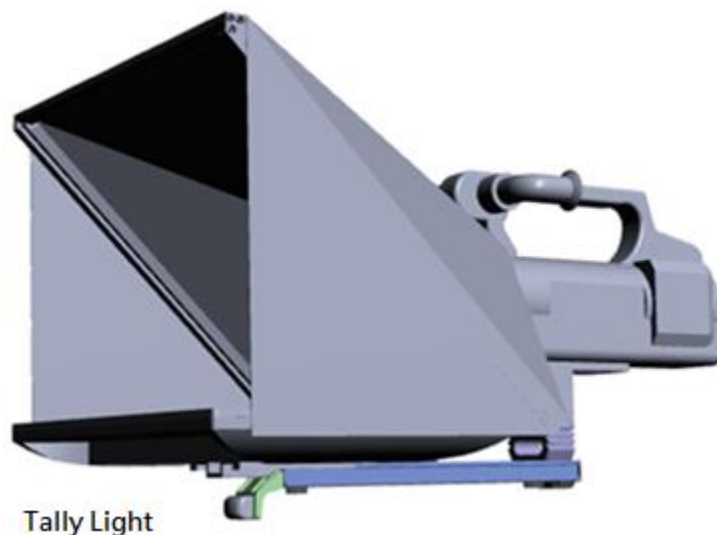
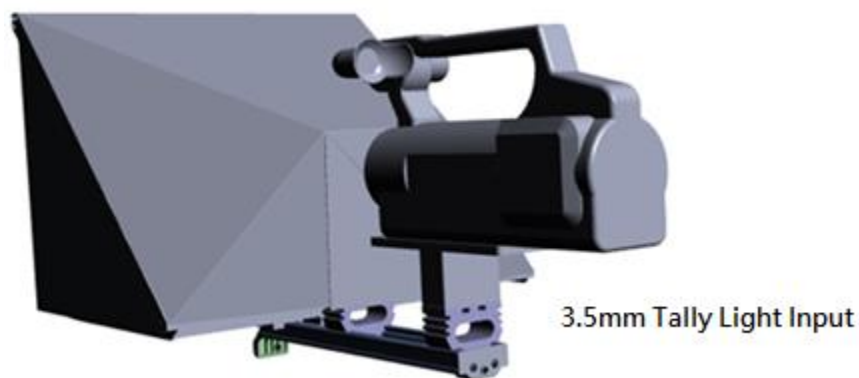
5.1 LBK-1 Look Back Kit Setup

The LBK-1 Look Back Kit can be used in any Camera Setup. The kit contains a look back mirror, which allows the user or talent to view his/her mirrored image reflected off from a 22" monitor connected to the Webinar Presentation System (MGB-2000). Hence, the LBK-1 can be used as a part of total VGB-2000 solution by mounting it to the tripod mount quick release system.

5.1.1. Features

- Allows mounting of a 22" monitor with 16:9 aspect ratio and four 100x100mm VESA mount holes (MIS-D/100/C), for example ACER KA220HQ.
- Large sized mirror installed with a green sticker facing outward.
- Large hood to cover 2 sides of the mirror.
- Red Tally Light

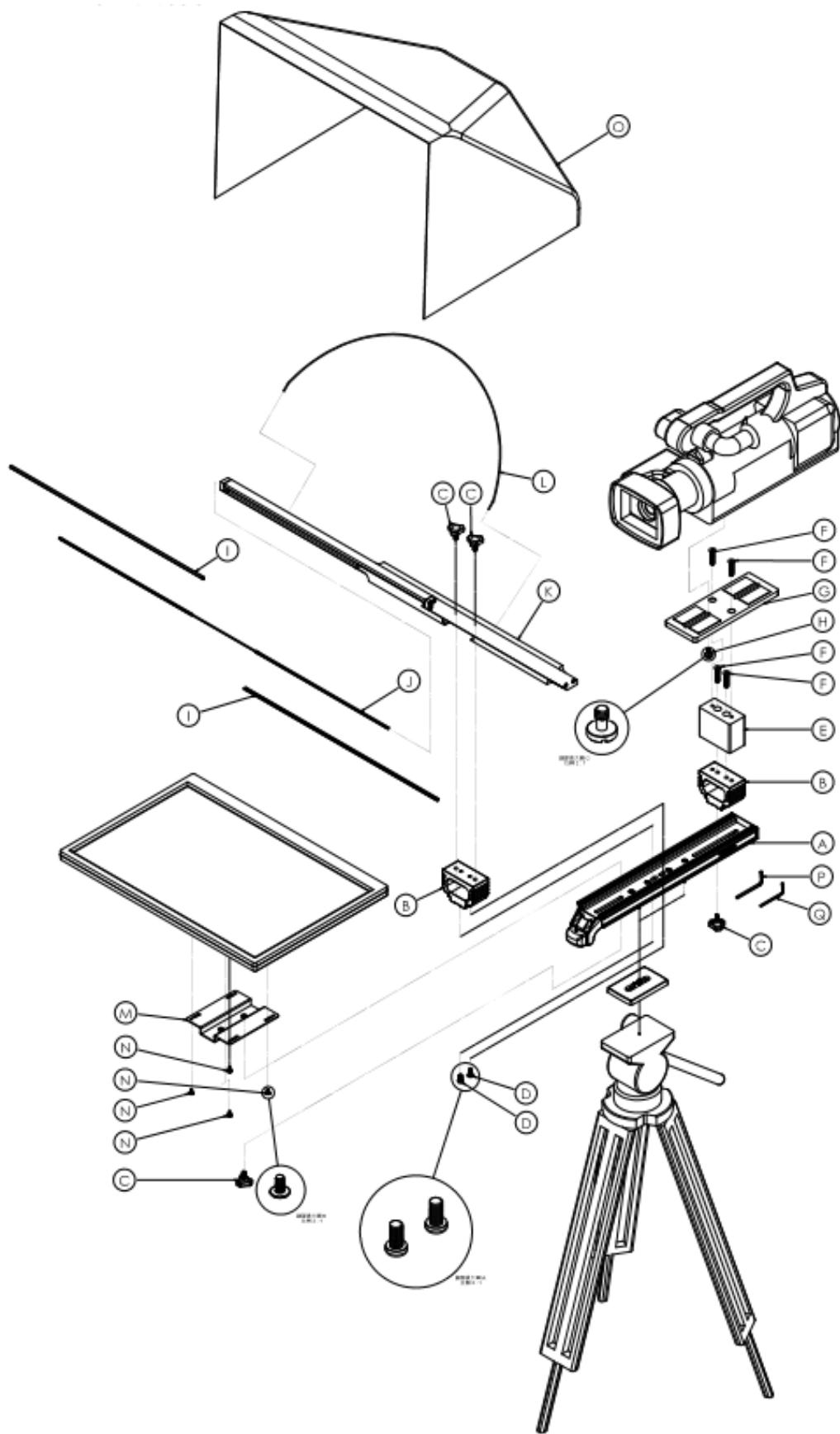
5.1.2. Tally LED and Input Phone Jack



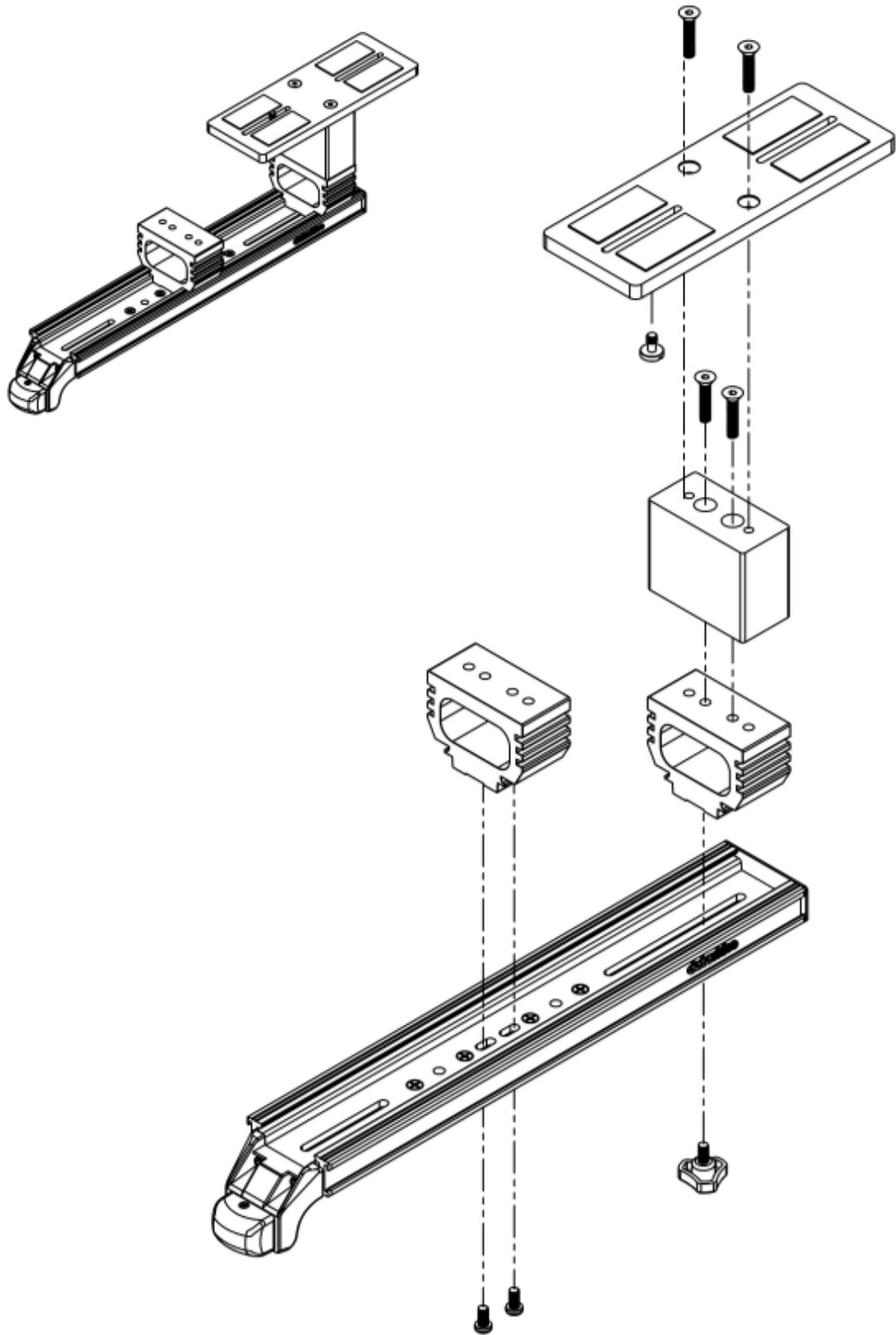
5.1.3. Parts List and Look Back Kit Exploded View

Parts List		
Label	Name	Quantity
A	Main Support Rail	1
B	Spacer Block	2
C	Screw (Wing Nut 1/4 20UNC 12.5mm Nickel Plated)	4
D	Screw (Pan-Head 1/4" 20UNC 12mm Nickel Plated)	2
E	Riser Block	1
F	Screw (1/4" 20UNC Hex Head 31mm)	4
G	Camera Dock Module	1
H	1/4 20UNC Screw	1
I	Anti-Collision Rubber Strip	2
J	Glass Sheet	1
K	Glass Frame Module	1
L	Hood Support Wire	1
M	LCD Mounting Bracket	1
N	Nyloc Screw (ISO Counter Sunk M4*8m/m Black (RoHS))	4
O	Cloth Snood/Hood	1
P	Hex Tool 4mm	1
Q	Hex Tool 3mm	1

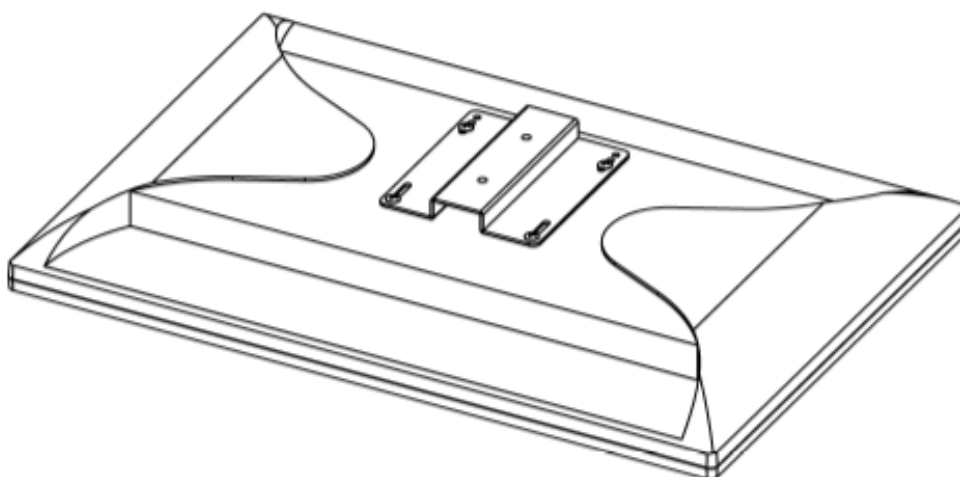
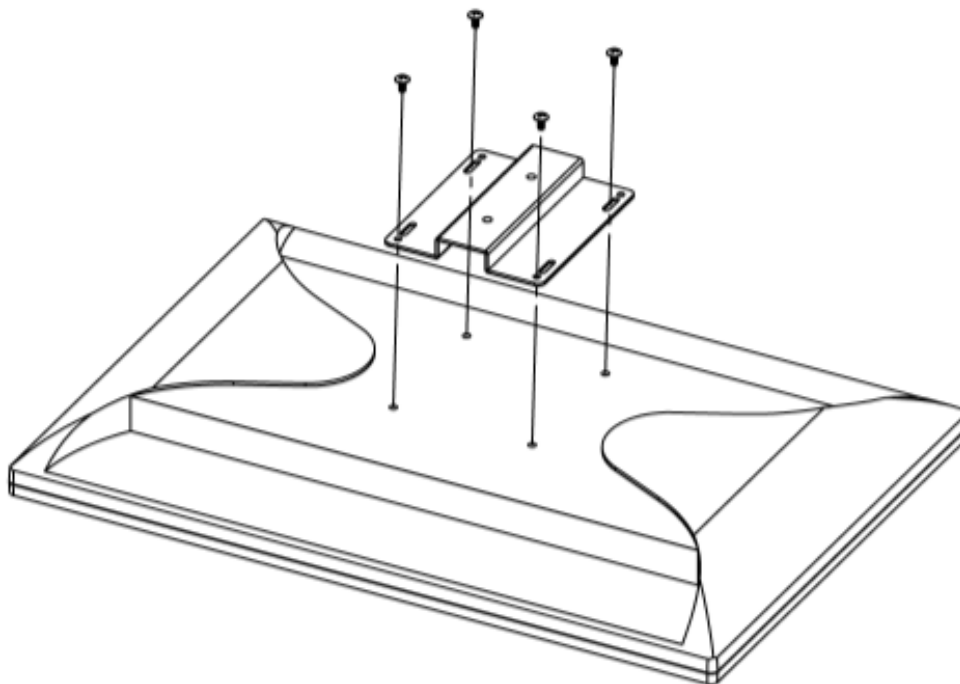
LBK-1 Look Back Kit Exploded View



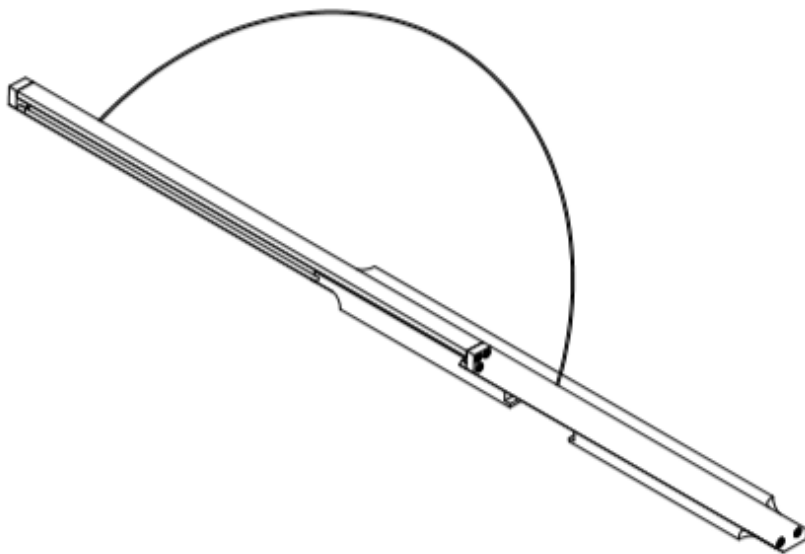
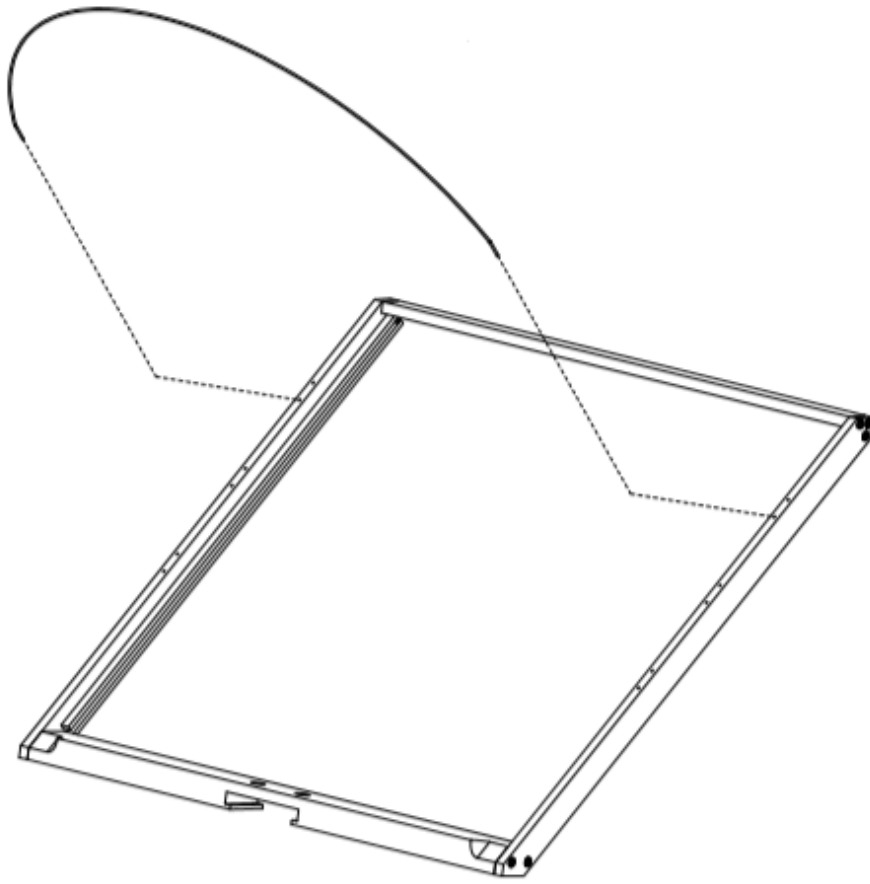
LBK1-1-1 Main Support Exploded View



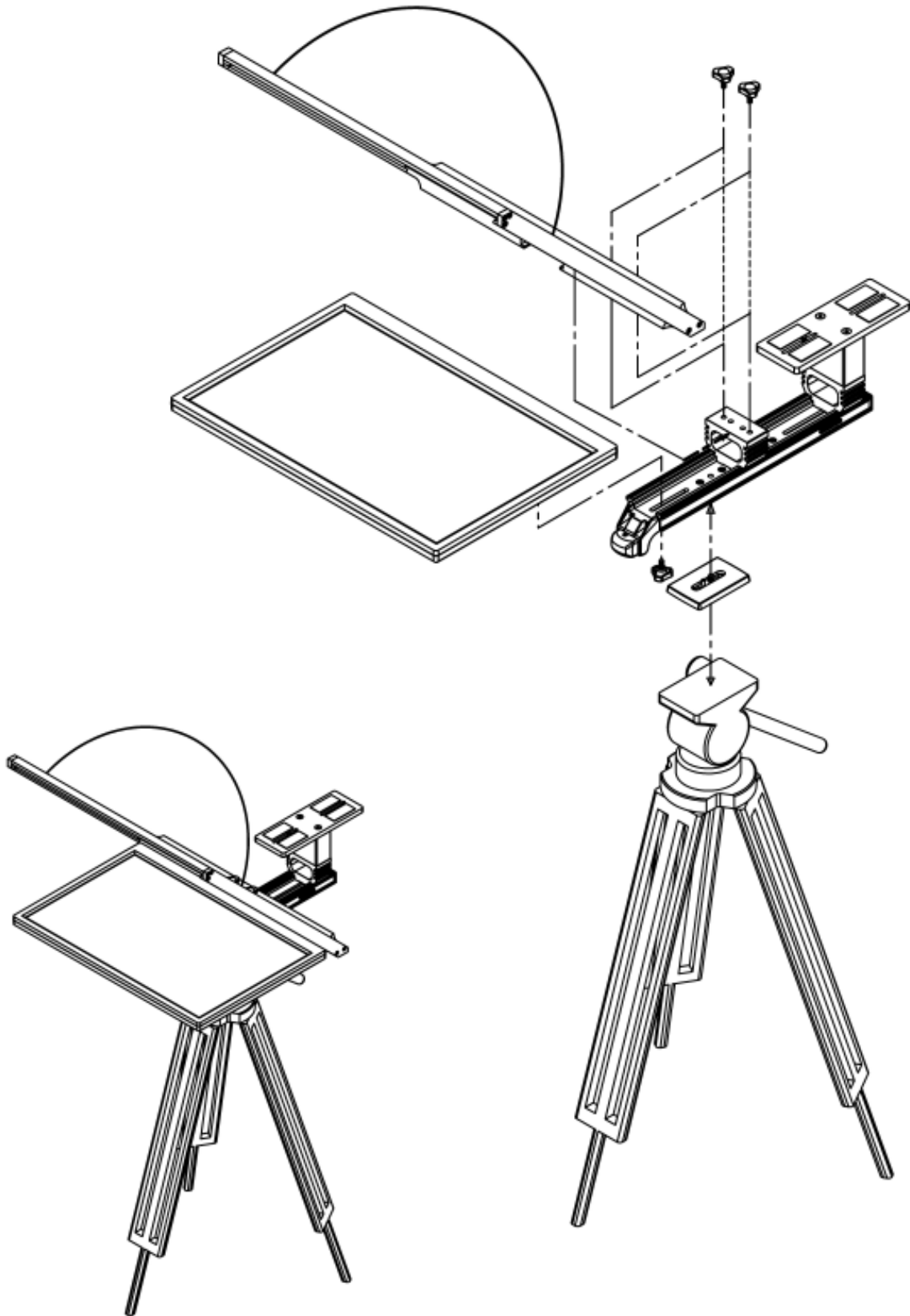
LBK1-1-2 22" Monitor and LCD Display Mount



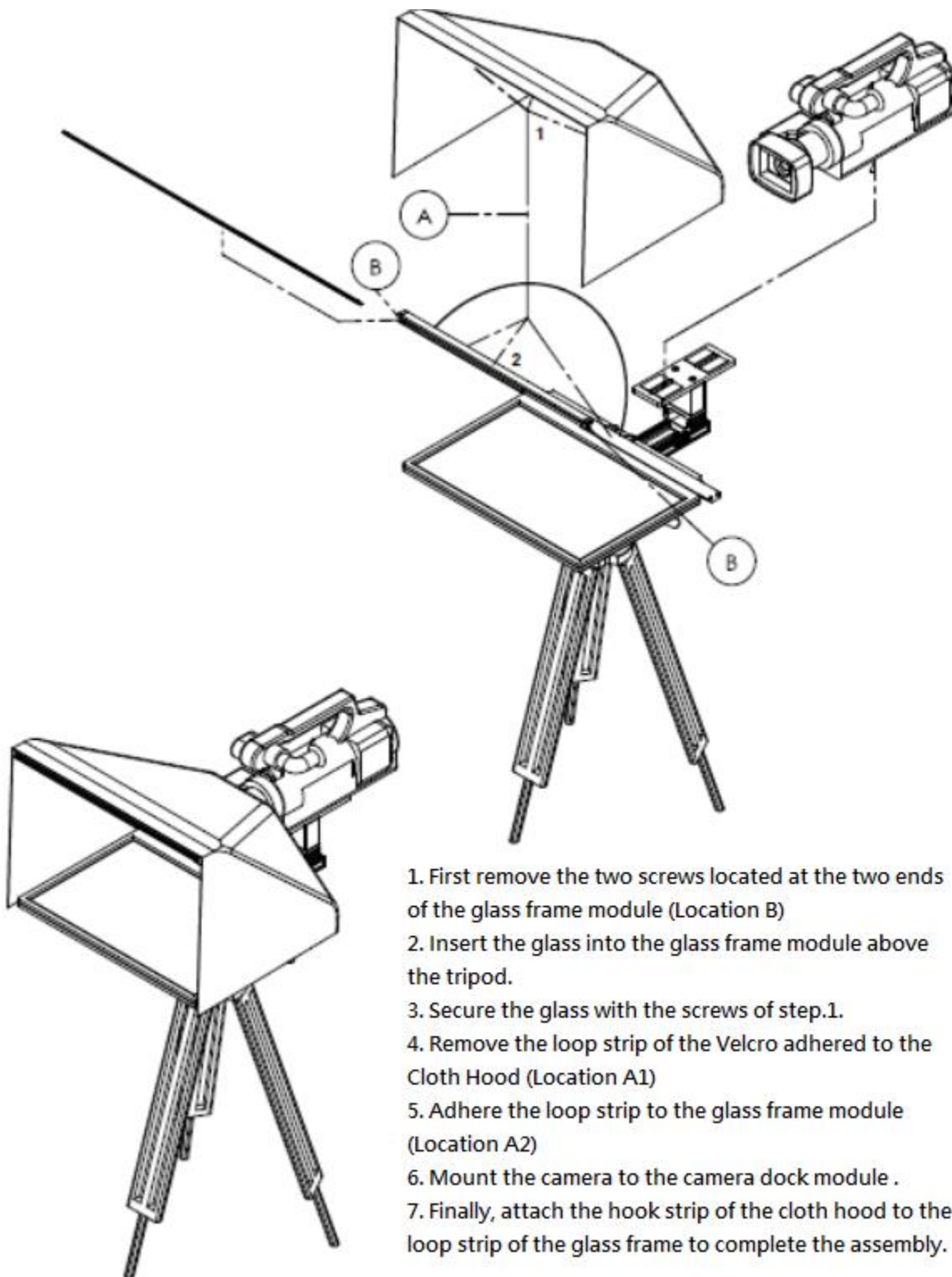
LBK1-1-3 22" Glass Frame Module and Hood Support Wire



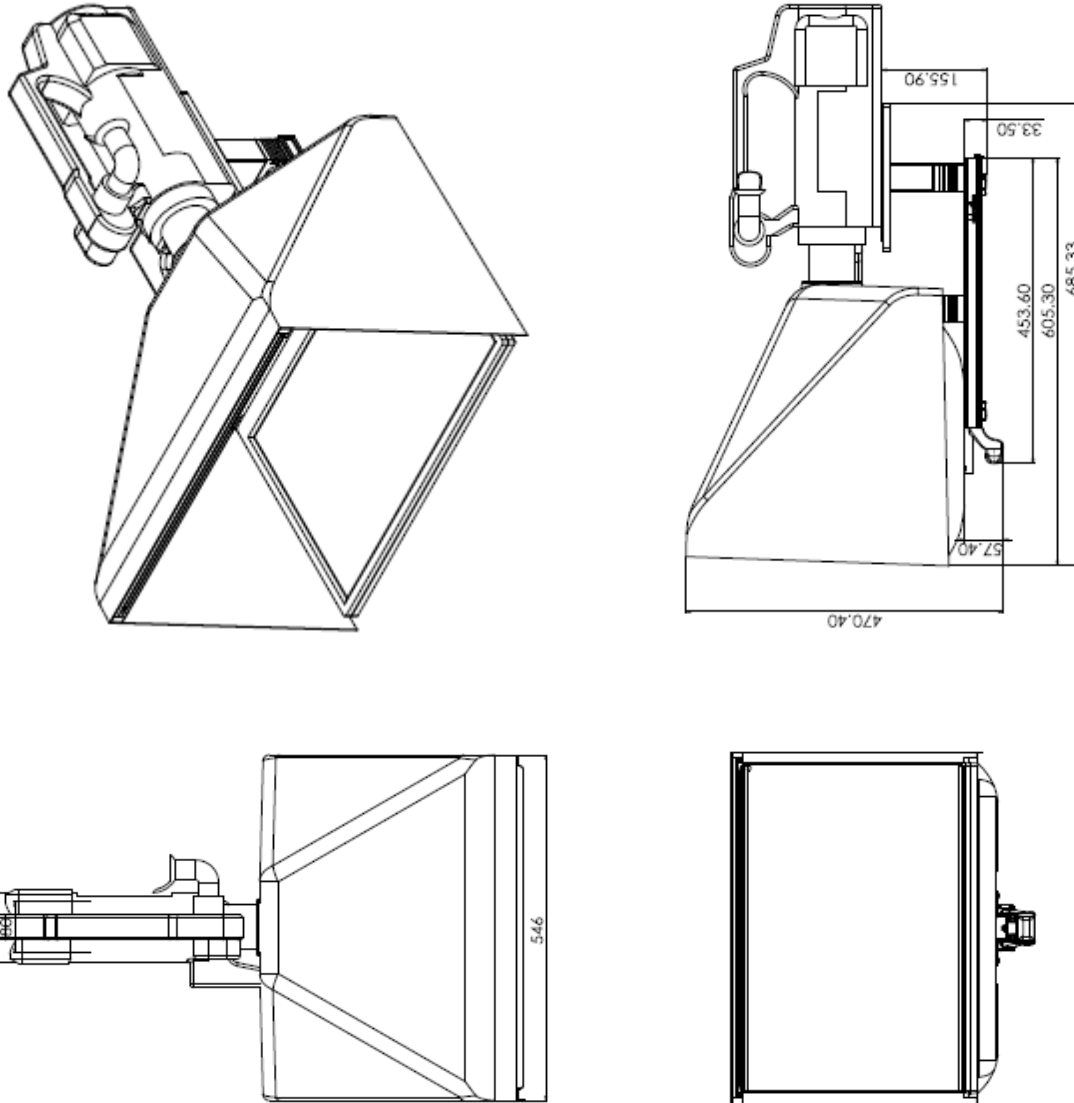
LBK1-2 Exploded View of Main Support, Glass Frame, LCD Display and Tripod



LBK1-3 Look Back Kit Assembly



5.1.4. Dimensions



5.1.5. Specifications

Tally Light	
Color	Red
Input Interface	3.5mm Phone Jack
Dimensions	
Length	685.33 mm
Width	546 mm
Height	470.4 mm
Product Weight	Approximately 5 Kg
Remarks	Not inclusive of Monitor, Camera, Tripod and Quick Release Plate

Note A: Camera and tripod are not included. Please make sure the tripod is able to sustain 10 Kg load (camera included) or 7 Kg load (camera not included).

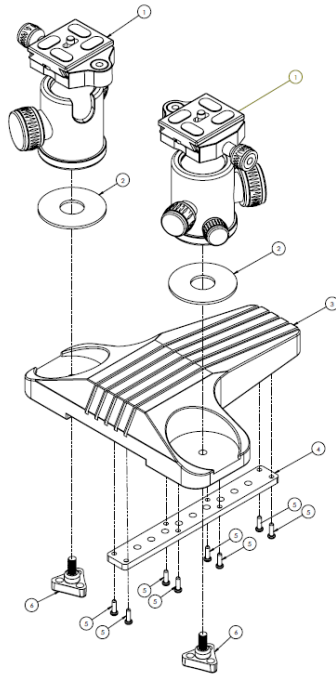
Note B: 22" 16:9 ratio PC monitor and the related cables/converters are not included. Please use a monitor with VESA mount screw holes located at four corners of a 100x100 mm rectangle on the back. The monitor should also be equipped with an HDMI input. If DVI Monitor is used, please make sure the monitor includes a DVI-D/DVI-I input, and an external HDMI to DVI-D converter/cable (Male to

Male) which converts an HDMI source (VGB-2000) to DVI-D (18+1 pin single link or 24+1 pin dual link depending on the Monitor).

Example of a 22" 16:9 Monitor is Acer KA220HQ (Ref. Price: US\$140) or other equivalent grade monitors.

5.2. Setup of the BC-100 Interchangeable Lens Camera

5.2.1. Exploded View of the BH-9 Dual Camera Bracket Mount



Item	Description	Part Number
1	Tripod ball head KWBH-2 Black KIWIFOTOS. Load capacity: 8kg/17.6 lbs.	G09G00089602
2	Rubber mat, round shape, Black, $\varnothing 50*18$ (inside diameter)*2m/m, adhesive: 3M9888	G09C05008961
3	Dual ball head bracket VP-896 ABS, Black, 3D printing.	G09F00089602
4	Ball head holder fixed base, VP-896, BH-09, SPHC 5.0t, Bake Black Texture 160*20*5mm	G09220896011
5	Screws, self-tapping round head, double teeth, $\varnothing 3.0*10m/m$, matte black	G09111301001
6	Triangular hand screw, 1/4 20UNC 12.5mm Nickel plated	G0911B601253

5.2.2. Shooting for Half-Body Screen

Step1: Please connect from the SDI OUT interface on the rear panel of the BC-100 to the CAMERA 1 SDI IN interface on the rear panel of the VGB-2000 2-Channel Pro Presentation System by an SDI cable.

Step 2. Please connect from the SDI OUT interface on the rear panel of the BC-100 to the CAMERA 2 SDI IN interface on the rear panel of the VGB-2000 2-Channel Pro Presentation System by an SDI cable.

Step 3. Please prepare a laptop and a Datavideo VP-840. After that, please connect from the HDMI interface of the laptop to the HDMI IN interface of the VP-840 by an HDMI cable.

Step 4. Please connect from the HDMI OUT interface of the VP-840 to the HDMI interface of the short-throw projector by an HDMI cable.

Step 5. Please connect from the HDMI OUT interface of the VP-840 to the SWITCHER HDMI IN (CAM2) interface of the VGB-2000 2-Channel Pro Presentation System by an HDMI cable.

Step 6. Please connect from the SWITCHER HDMI OUT 1 interface from the rear panel of the VGB-2000 to the HDNI interface on the monitor which is mounted on LBK-1 Look Back Kit.

Step 7. Users can see the screen which is shot by the BC-100 to show that the teacher is standing in front of the green mat and the Powerpoint slide is shown on the green mat.

● Important Notices for the BC-100 Setup

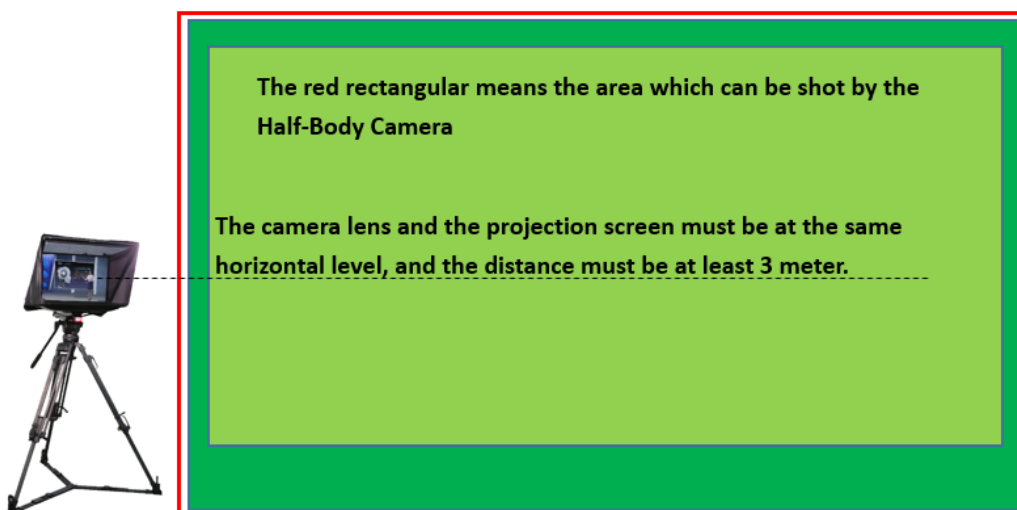
Camera Lens Brand Selection	It is recommended to use the Olympus camera lens due to that for other camera lens brands, it is easy to cause imprecise focal length when ZOOMING IN & ZOOMING OUT.
Camera Focal Length Selection	Basically, there is no special request for the camera focal length, the only request is to make sure that the whole green mat and the half-body of the teacher can be shot properly. The recommended model numbers of the Olympus camera lens are listed as following. M.Zuiko Digital ED 7-14mm f/2.8 PRO M.ZUIKO DIGITAL ED 12-100mm F4.0 IS PRO
Suggestions for the Camera Setup	1. Please set the camera in the MF mode because the focus point will not be the desired point when the camera is set in the AF mode. 2. Please turn off the Optical Image Stabilization (OIS) function due to that when the camera is mounted on the tripod, abnormal shaking will be shown on the image when the Optical Image Stabilization function is turned on.

Important Notices for Setting the Projector and Cameras for Shooting the Half-Body Image

- **Recommended Camera Lens for Shooting Half-Body Image:** Panasonic 12-60mm.
- It is a must that the aspect ratio of the projection screen for the short-throw projector must be **16:9** without skewing. If the screen is skewed, please adjust the position of the projector rather than the keystone correction of the projector. If the keystone correction is adjusted, it will cause the misalignment of the IEPEN.



- For adjusting the half-body shooting, users must adjust the height of the BC-100 camera to be equal to the center of the projection screen. The image which is shot by the camera is the screen which is projected by the short-throw projector. (To adjust the handwriting position of the IEPEN, please reduce the iris of the camera and then please see the shadows of the shot and chromakey screens from the output screen for faster and precise adjustment).



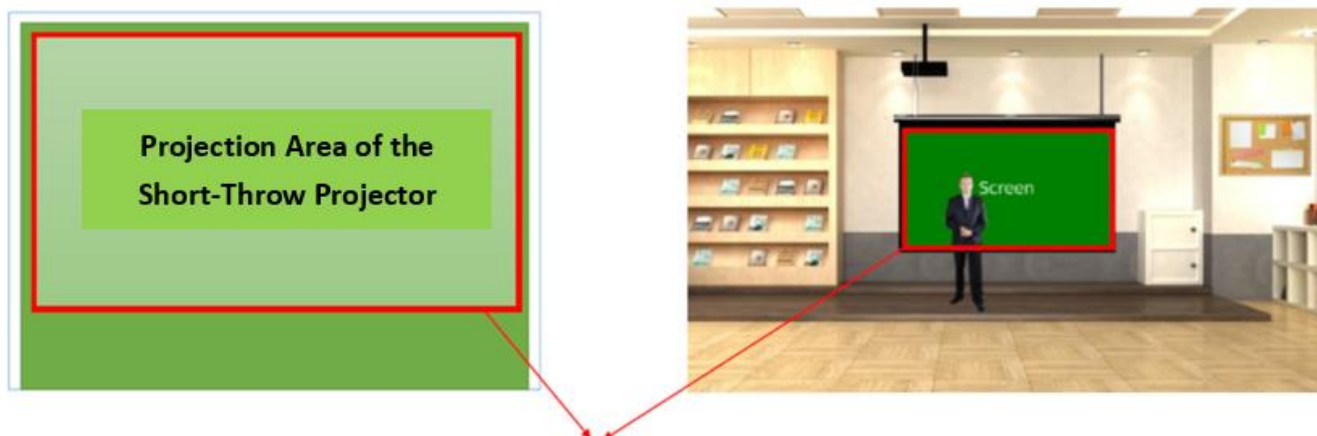
5.2.2. Shooting for Full Body Screen

For the shooting for full body screen, please refer to the step 1 to step 7 in the “Shooting for half-body screen” chapter to establish the cable connections between the two BC-100 cameras, the VGB-2000 and the laptop which is used for making the Powerpoint slide.

After that, please follow following important notices for shooting the full-body screen of the teacher and for adjusting the projecting screen and the Powerpoint slide

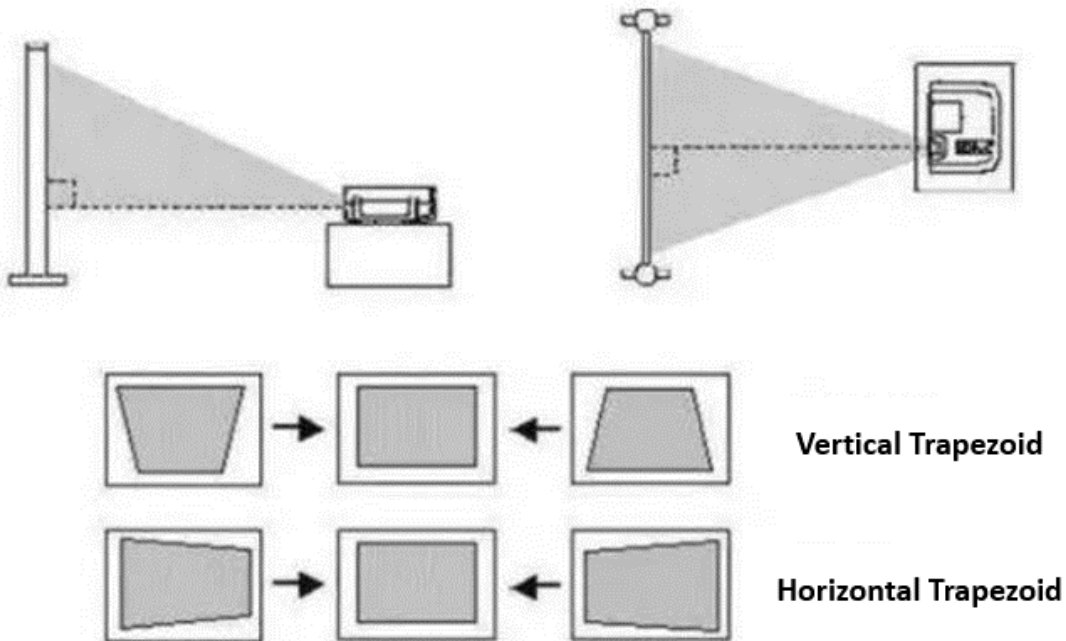
Important Notices for Shooting Teacher’s Full Body screen and for adjusting Virtual Scene & IEPEN Position for Powerpoint Slide

- **Recommended Camera Lens for Full-Body Shot:** Olympus 7-14mm F2.8 PRO Camera Lens. Please shoot teacher’s full body screen by the BC-100 camera. Moreover, please adjust the focal length of the camera lens and the camera position according to the Powerpoint slide size in the virtual scene. Please adjust the Powerpoint slide size which is shot by the camera to be the same size and the same position as the Powerpoint slide in the virtual scene. Finally, please cut the unnecessary part from the chromakey setting of the SE-1200MU and then the handwriting position of the full body shot will be the same as the final screen. (Teacher’s Full Body Shot + Virtual Scene + IEPEN position adjustment for Powerpoint slide)



<p>The Powerpoint screen is inconsistent to the virtual scene.</p>	<p>The Powerpoint screen is consistent to the virtual scene.</p>

- **Tip 1 for Calibrating the Screen: Use the projector built-in function to calibrate the screen.** Please make sure that the position for placing the projector and the BC-100 camera must be at right angles to the projection screen as much as possible during the process for using the projector. This placement can assure a square projection effect. If the right angles can not be achieved during the process, the output picture is very easy to produce a trapezoidal problem of wide upper side & narrow lower side or narrow upper side & wide lower side. Users can use the universal ball head which is mounted on the BC-100 camera or the vertical trapezoid and horizontal trapezoid for further calibration.



In this situation, users need to use the “Keystone Correction” function to adjust the projection screen to assure that the projection screen is always in a shape of standard rectangular.

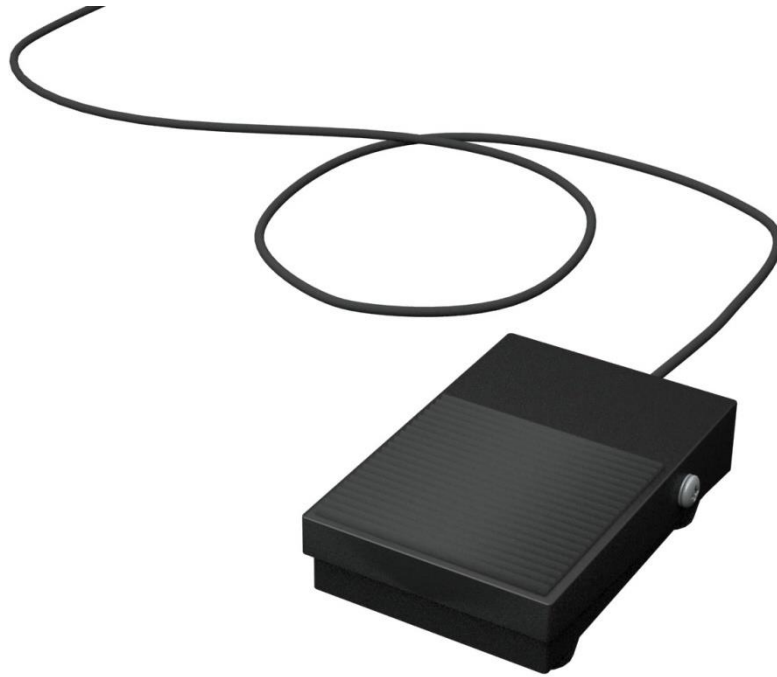
- **Tip 2 for Calibrating the Screen:** After the Full Body/Half Body calibration, when the screen which is shot by the BC-100 camera is over the range of the green mat, please use the key MASK function of the SE-1200 to eliminate extra screen.

5.3 Setup of the FS-220 Foot Switch

The FS-220 is a Foot Switch designed specifically for use with the VGB-2000. The purpose is to allow the user to toggle between **Record** and **Record Pause** modes on the VGB-2000 2-Channel Pro Presentation System by simply stepping on the pedal. The mode that the recorder is currently in is indicated by the Tally Light on the LBK-1 Look Back Kit. In the Record Mode, the tally light displays red color; on the contrary, if the recorder is in the record pause mode, the tally light will be OFF.

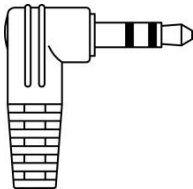
There are two connectors on the FS-220 cable end. The Mini-XLR is connected to the GPI port on the rear panel of the VGB-2000 and the 3.5mm ear phone connector is plugged into the LBK-1 Tally Light IN.

5.3.1 Connectors



Mini XLR

Connect to REC GPI port (Rear Panel of the VGB-2000)



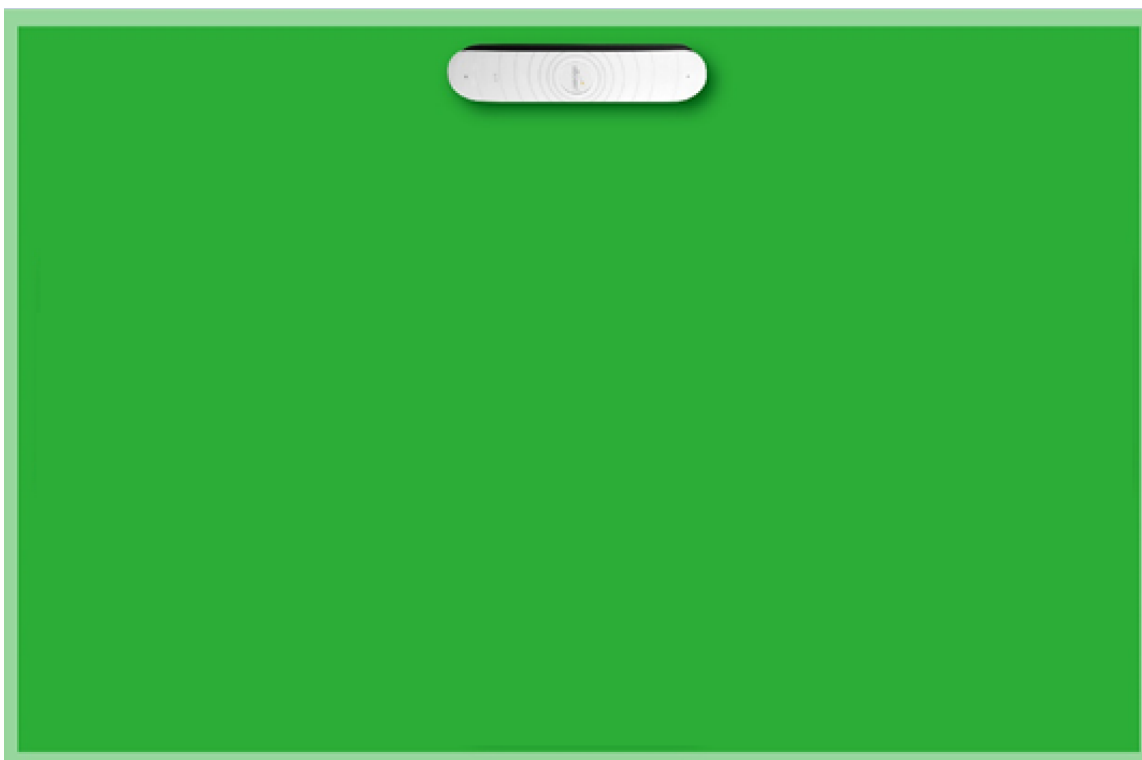
3.5mm Phone Connector

Connect to Tally Input (LBK-1 Look Back Kit)

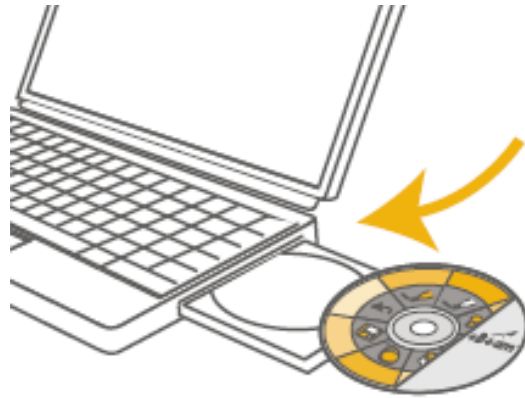
6. Quick Calibration Steps for the IEPEN

Before using the VGB-2000 system, please calibrate your VGB-2000 2-Channel Pro Presentation System by following steps in advance.

1. Please plug a power cable from the AC power socket on the rear panel of the VGB-2000 to a power outlet on the wall.
2. Please press the power switch of the PD-2A which is located at the bottom left side of the VGB-2000 rear panel.
3. Please plug the FS-220 Foot Switch to the GPI external recording control port which is located on the rear panel of the VGB-2000.
4. Please turn on the power of your laptop and then connect an HDMI cable from the HDMI port of your laptop to the HDMI port of the VP-840.
5. The range of the screen which is shot by the camera must be corresponding to the projection size of the green mat.
6. The eBeam receiver can be fixed on the top side of the green mat and then it can be connected to the laptop which is shown as following diagram.




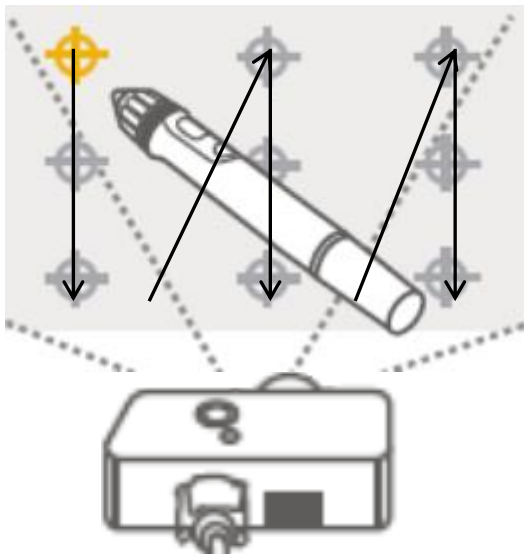
1. Please install the eBeam software on your laptop.



2. If you want to calibrate the eBeam system, please open the eBeam software and then please press the round button which is located on the center of the eBeam receiver.



3. Once the calibration matrix which is shown as following diagram is shown on the green mat, please tap the nine calibration points  by the stylus pen softly. The order is started from the top-left side calibration point to the lower side and then move to the right side line by line.



4. After the nine calibration points are tapped, the calibration matrix will disappear and then the screen will go back to the projected laptop screen.
5. The e-Beam Tool Palette will which is shown as following diagram will be shown on the green mat.



6. Users can tap the button on the Stylus Pen to open or to close the Tool Palette.



7. After the system calibration is done successfully, please insert the 2.5" SATA HDD/SSD which is installed in the removable hard disk enclosure to the hard disk slot of the HDR-70 which is located on the right side of the HDR-70 front panel.
8. Please step on the pedal of the FS-220 Foot Switch once and then the VGB-2000 will enter the standby mode.
9. Please step on the pedal once again for starting the video recording.
10. After the video recording is finished, please step on the pedal again to go back to the standby mode.
11. Finally, please remove the removable hard disk safely for further post-processing.

7. How to Use the Chromakey Function of the VGB-2000

The Datavideo VGB-2000 2-Channel Pro Presentation System allows users to do the video chromakey by using the SE-1200MU. Please follow following steps for chromakeying by the SE-1200MU.

7.1 Inputs Settings for the SE-1200MU

Before operating the VGB-2000, it is necessary for users to know the corresponding relationships between the interfaces which are located on the rear panel of the SE-1200 MU HD 6-Channel Digital Video Switcher and the interfaces which are located on the rear panel of the VGB-2000. The corresponding relationships between the interfaces of the SE-1200MU rear panel and the VGB-2000 rear panel are shown as following table.

● Dual Camera

VGB-2000 Rear Panel Interfaces= SE-1200MU Rear Panel Interface	Functions
CAMERA 1= SDI 1	Connects to Camera (for shooting half-body Screen).
CAMERA 2= SDI 2	Connects to Camera (for shooting full-body screen)
CAMERA 3= SDI 3	Inputs the Still image (Still 1)(for the long-shot of the virtual scene)
CAMERA 4= SDI 4	Inputs the Still image 2 (Still 2)(for the near-shot of the virtual scene)
HDMI 5= SWITCHER HDMI IN(CAM1)	Inputs Logo
HDMI 6= SWITCHER HDMI IN(CAM2)	Inputs Powerpoint slide

● Single Camera

VGB-2000 Rear Panel Interfaces=SE-1200MURear Panel Interfaces	Functions
CAMERA 1= SDI 1	Connects to Camera (for shooting half-body Screen).
CAMERA 2= SDI 2	N/A
CAMERA 3= SDI 3	N/A
CAMERA 4= SDI 4	Inputs the Still image 2 (Still 2)(for the near-shot of the virtual scene)
SWITCHER HDMI IN(CAM1)= HDMI 5	Inputs Logo
SWITCHER HDMI IN(CAM2)=HDMI 6	Inputs Powerpoint slide

Note: Please make sure that the two BC-100 Interchangeable Lens Cameras are connected to the CAMERA 1 and CAMERA 2 interfaces on the rear panel of the VGB-2000 simultaneously no matter for the dual-camera or single-camera shooting.

7.2. How to Use the Chromakey function of the SE-1200MU

The SE-1200 MU provides users two chromakey settings including **Key 1** and **Key 2** buttons on the AUX BUSES panel. Please see following examples for setting the Chromakey modes.

Step 1: Please make sure that the network settings for the SE-1200MU are set and the control software of the SE-1200MU is installed according to the [10.2 related chapters](#). After that, please open the software according to the 10.2 related chapters and the AUX BUSES panel will be shown as following diagram.



Step 2: Please select your desired chromakey button such as **Key 1** or **Key 2** from the **AUX BUSES** panel. In this example, you can select the Key 1 button.

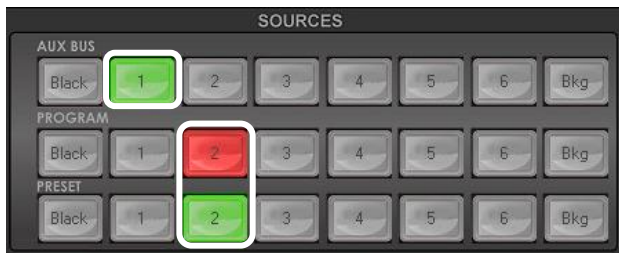


Step 3: Please select your desired Chroma type. In this example, you can select the **Chroma** button from the **KEYER CONTROLS** panel.



Step 4: Please select the foreground video source which is used for Chromakey. This video must contain the object or talent for applying the chromakey effect. In this example, the green mat source which is shot by the BC-100 is connected to the SDI 1 (Full-Body) or SDI 2 (Half-Body). After that, please select the Input 1 button (Full Body) or Input 2 (Half-Body) from the button row of the AUX BUS. After that, users can use the "Load Still" function to load the virtual scene still image and then to assign this virtual scene to the input channel of Input 3 or Input 4. After that, please select the **Input 3** or **Input 4** button which is located on the **Program button row** to load the desired virtual scene to be the background image for further synthesizing into the foreground image.

It is no need to set the Preset source at this stage, however, after the transition is finished, it will replace the background image.



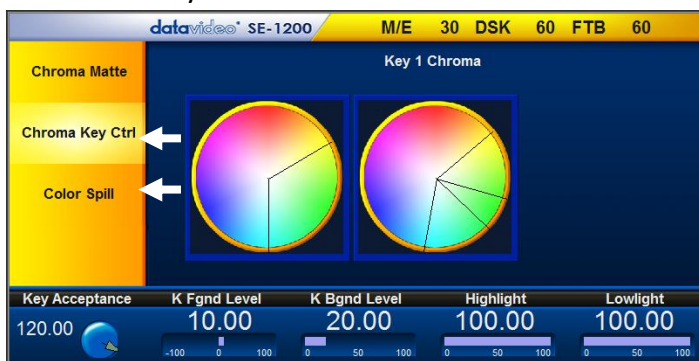
Step 5: At this time, users can see the chromakey effect from the PVW screen. If the outcome is not shown, please press the **Key 1 PVW** button (lighted in green) on the **Transition Controls** panel to open the Key 1 Preview.



Step 6: Quick-Setting for the activated Chromakey button.

Please select the **Chroma** button from the MENU SELECT panel. After that, please **slightly adjust the chromakey settings** according to the **Chroma Key Ctrl** and **Color Spill** which are mentioned in Chapter [7.2.2](#) and [7.2.3](#) .

Once the chromakey settings are set, users can press the **“Auto”** button which is located at the **Transition** panel for opening the chromakey effect on the PROGRAM screen.



7.2.1 Chroma Matte Settings for the SE-1200MU

The VGB-2000 allows users to achieve the chromakey function by its built-in SE-1200MU. For how to set the chromakey function by the SE-1200MU software, please refer to following chapters.

At first, please open the SE-1200MU software and then please press the “Chroma” button, the chromakey operating interface will be shown as following diagram.



Basically, the Chroma Matte function allows users to set the center value for the chromakey color range.

The parameters and values for the “**Chroma Matte**” are shown on the bottom of the setting window. You can click the palette and then move the crosshair by moving the mouse for setting the **Hue** value. Please press the “Hue” which is located at the bottom blue column for entering corresponding Hue angle for adjusting the **Hue** value slightly.

The specific color can be obtained at certain angle of the palette. For example, red is located at the 0 degree position (12 o’clock), green is located at about 120 degree position (4 o’clock), blue is located at about the 240 degree position (8 o’clock). Secondary colors such as yellow, cyan, and purple are at 60 degrees, 180 degrees, and 300 degrees respectively.

The **Luma value (Brightness)** determines the darkness or brightness of the selected color. Please press “**Luma**” for entering the **new Luma** value. Basically, the **Bgnd Suppress** is used for suppressing the background noise of the final image, which is the brightness. If the output of the chromakey shows bright edge, the **Bgnd Suppress** can be used for suppressing the background brightness which is penetrated by the edge. **Opacity** allows users to adjust the transparency of the chromakey color for the foreground.

7.2.2 SE-1200MU's Chroma Key Ctrl Settings

The **Chroma Key Ctrl** parameters and values are shown along the bottom of the display. Two color palettes, **Main** and **Chroma**, are shown in the diagram.



The **Main** palette corresponds to values of **Key Acceptance** and **Key Lift**. The **Chroma** palette corresponds to the **Color Spill** settings.

Key Acceptance is represented on the **Main** Palette as a sector or area covering a range of hues or colors that closely match the background color to be keyed as set in **Chroma Matte**. The user can start with a value of 120 degrees and this value can be fine-tuned up or down using the **Key Acceptance** depending on the setup of the green or blue screen studio.

Key Lift is represented on the **Main** Palette as a line extending from the center point in the direction of the **Key Acceptance** sector. This value affects the performance of the Chroma key in **dark or black areas**. If the dark areas of the video are becoming too transparent, then applying more **Key Lift** may help depending on the setup of the green or blue screen studio. This value can be fine-tuned up or down by changing the **Key Lift** value.

Key Gain affects the performance of the Chroma key in **light or white areas**. If the light areas of the video are becoming too transparent then applying more **Key Gain** may help depending on the setup of the green or blue screen studio. This value can be fine-tuned up or down by changing the **Key Gain** value.

7.2.3 SE-1200MU's Color Spill Settings



The **Color Spill** parameters and values are shown along the bottom of the display below. These settings are used to control/remove any unwanted Chroma or color Spill from the background onto the foreground subject. There are two sectors drawn on the **Chroma** palette, one represents the wider **Chroma Acceptance** range and the narrower **Chroma Suppress** range.

Chroma Acceptance sets the amount of the available color range or space that should be **Chroma suppressed**. Usually starting with a large value of 120 degrees should produce reasonable results. This value can then be fine-tuned up or down using the **Chroma Acceptance value** depending on the setup of your green or blue screen studio.

Chroma Suppress, when set to 0%, removes the hues or colors that lie only on the same axis as the **Chroma Matte** Hue angle. This setting has the effect of removing Background color spill, but keeping the underlying hue. When set to 100% then all the Chroma values that are 'captured' within the **Chroma Acceptance Angle** are suppressed to greyscale – i.e. they have their Chroma removed. Usually starting with a value of 50% should produce reasonable results. This value can then be fine-tuned up or down using the **Chroma Suppress value** depending on the setup of your green or blue screen studio.

Saving the Chroma Key Setup. Remember to **save your current user setup**. In this way, several Chroma Key setups can be saved to different user memory slots, thus allowing you to switch from a Blue screen setup to a Green screen setup instantly.

8. How to Assign the Pre-saved Virtual Scene/Logo to the Input Channel by the VGB-2000

It is necessary for users to assign the pre-saved virtual scene and Logo to the specific input channel before using the SE-1200MU's User2, User3, User5 and User8 presets which are integrated in the VGB-2000.

1. Please select an input channel from the **Preset** button row for showing the pre-saved still images. The screen of the selected input channel will be shown on the MULTIVIEW preview window. Please do not worry if there is no image which is shown on the window at this time.
2. Please select the **Stills** button from the **MENU SELECT** panel.



3. Please select the **Still Load** from the vertical yellow column which is located on the left side.



4. Please modify the **Still Buf** option to the input channel that is desired for showing the still image. In the VGB-2000 operation, the Logo image must be assigned to the input 5 channel of the SE-1200MU (SWITCHER HDMI IN(CAM1)). The virtual scene image must be assigned to the SDI 3 and the SDI 4 interfaces (CAMERA 3 & CAMERA 4 interfaces which are located on the rear panel of the VGB-2000).

5. **Now select the required saved still within the stills matrix.** Use the up and down triangle buttons on the right to scroll through the matrix if necessary. Empty memory points will appear as blue thumbnail boxes without a number. Alternatively enter the **Still value** and then click **Load Still**.

The input channel will now display only the selected still image. To change the still to another repeat step 5.

9. How to Operate the Picture in Picture (PIP) function of the VGB-2000

Before using the User8 setting, users need to use the Picture in Picture (PIP) function of the SE-1200MU. For the operation of the PIP function, please refer to following paragraphs.

The SE-1200MU provides the Picture in Picture function for users to adjust the size and position of the PIP window. Moreover, it allows users to rotate the window and to crop the screen. Users can also open the border of the windows for defining the border color. Please follow following steps for setting the PIP window.

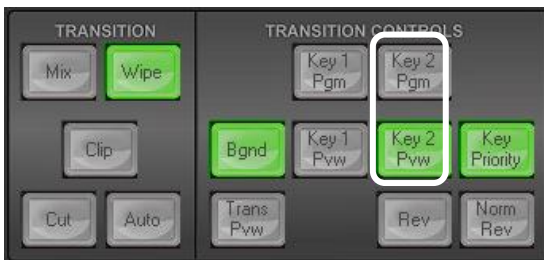
Step 1. Please select your desired chromakey button, **Key 1** or **Key 2** from the **AUX BUSES** panel. In this example, users can press the **Key 2** button to be the PIP screen.



Step 2. Please press the **P-in-P** button (lighted in green) from the **KEYER CONTROLS** panel for setting the **Key 2** as the P-in-P screen.



Step 3. If users want to open the **Key 2** P-in-P screen in the MULTIVIEW preview screen, please press the **Key 2 PVW** button (lighted in green) from the **Transition Controls** panel.



Step 4. Please select the P-in-P screen source from the **AUX BUS** button row from the **SOURCE** panel. At first, this source screen will be shown on the PVW window. After that, it can be switched to the PROGRAM screen for live-broadcasting by combining the Fad Out or WIPE transition effects. In the VGB-2000 application, the Powerpoint slide input source is connected to the SWITCHER HDMI IN (CAM2) interface which is located on the rear panel of the VGB-2000, and this SWITCHER HDMI IN (CAM2) interface is the original 6th input interface of the SE-1200MU. So, please select the No. 6 button from the AUX BUS.



Step 5. Please select the **P-in-P** button (lighted in green) from the **MENU SELECT** panel for entering the P-in-P screen setting function.



Step 6. There are “**Position**”, “**Border**” and “**Crop**” P-in-P setting options which are located at the yellow vertical column. The way for adjusting the position, border and cropping for the P-in-P window will be described in following paragraphs.

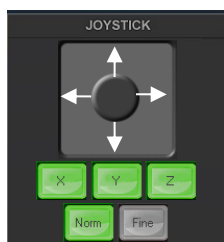


9.1 PIP Position

Values are shown along the bottom of the screen.

The **X and Y values** change the PIP image location.

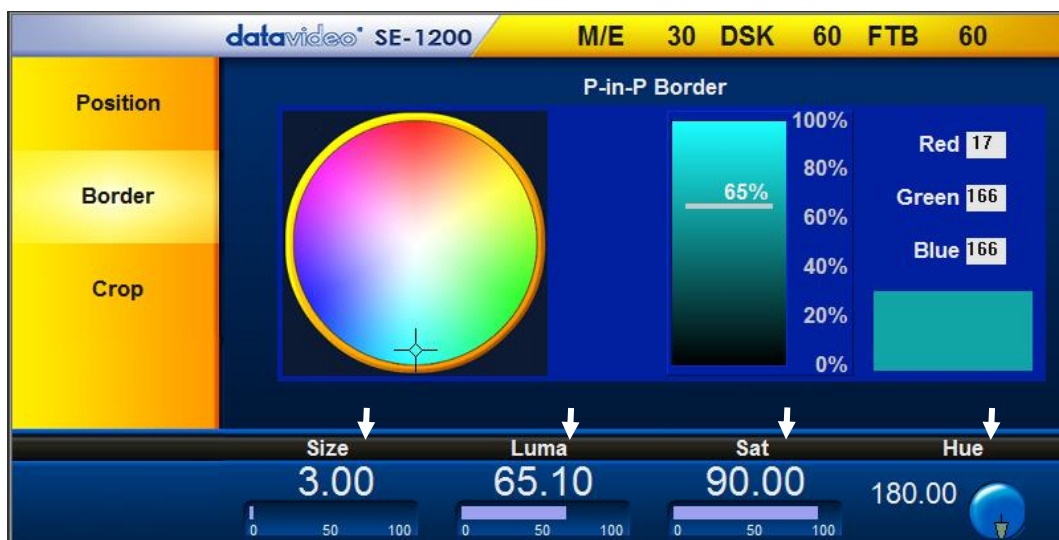
- The **X value** moves the image left and right.
- The **Y value** moves the image up and down.
- The **Z value** adjusts the image size. Where the value 1.0 makes the PIP occupy the whole screen (100%), 0.5 reduces the PIP size to half screen (50%).



- **Click and hold the joystick circle** then drag the joystick circle in the desired direction.
- Left-mouse button Joystick dragging allows the PIP to be moved in the X & Y directions.
- Right-mouse button Joystick dragging to the left and right resizes the PIP (Z value).
- Click the **FINE** button to enable/disable fine adjustment in smaller/slower steps.
- Click the **NORM** button to return the selected PIP image to the factory default position and size values as shown above. The **Norm** button default for Z value (size) is 0.40 or 40%

9.2 PIP Border

The border options and values for the PIP are shown as the blue row which is shown in following diagram.



Luma, Sat, Hue and Size values define the PIP border.

1. **The Luma value** determines how bright or dark the selected color or hue is. The **Luma** value can be adjusted by the **Luma Function keypad**.
2. **The Sat or Saturation value** moves the crosshair from the center of the color palette to the outer edge. The **Sat** value can be adjusted using the **Sat Function keypad**.
3. **The Hue parameter** moves the crosshair around the color palette in the clockwise or anti-clockwise direction. The **Hue** value/angle can be adjusted using the Hue Function dial.
4. **Size** defines the width or thickness of the color border surrounding the selected PIP. The **Size** value can be adjusted using the **Size Function Keypad**. Increasing the value makes the border thicker but less of the selected PIP image will be seen.

9.3 PIP Crop

The PIP Crop values are displayed along the bottom of the screen as shown below.



The **Left, Right, Top** and **Bottom** edge values of the crop can be adjusted individually or together using the **Size value**. Click on a single value to adjust just that edge of the PIP.

Size value evenly crops all edges of the selected PIP at the same time and to the same value.

10. How to Use User Memory Function of the VGB-2000

The Datavideo VGB-2000 built-in SE-1200MU HD 6-Channel Digital Video Switcher provides users "User" function for saving current settings in advance and then loading that User setting when it is needed.

VGB-2000 allows users to combine elements including teacher's half-body shot, teacher's full-body shot, virtual scene, Powerpoint slide and Logo to form 8 kinds of pre-saved User settings. Please refer to following table.

10.1 8 User Setting Combinations for the VGB-2000 built-in SE-1200MU

For the 8 pre-saved user settings, please refer to following table.

User No.	Screen Elements Combinations	Final Picture Presented
Half-Body		
1	Teacher's Half-Body Shot(SDI 1 foreground) + Powerpoint slide (SWITCHER HDMI IN(CAM2)background) Note: Key 1 of the SE-1200 must be set as Chroma Key	Teacher's Half-Body Shot+ Powerpoint Slide
2	Teacher's Half-Body Shot(SDI 1 foreground) + Powerpoint slide (SWITCHER HDMI IN(CAM2)background) +Logo(HDMI 5) Note: Key 1 of the SE-1200 must be set as Chroma Key. The DSK1 must be set as Luma Key(logo)	Teacher's Half-Body Shot+ Powerpoint Slide + Logo
3	Powerpoint Slide (SWITCHER HDMI IN(CAM2)background) + Logo(SWITCHER HDMI IN(CAM1)) Note: The DSK 1 of the SE-1200 must be set as Luma Key (Logo).	Powerpoint Slide + Logo
4	Powerpoint Slide (SWITCHER HDMI IN(CAM2) background)	Powerpoint Slide
5	Teacher's Half-Body (SDI 1 foreground) +Powerpoint Slide (SWITCHER HDMI IN(CAM2)background) +Virtual Background (SDI 4) Note: Key 1 of the SE-1200 must be set as Charoma Key. Key 2 must be set as Luma Key + PIP Key.	Teacher's Half-Body+ Powerpoint Slide+ Virtual Background

6	Teacher's Half-Body (SDI 1 foreground) +Virtual Background (SDI 4) Note: Key 1 of the SE-1200 must be set as Chroma Key.	
Full-Body		
7	Teacher's Full-Body (SDI 2 foreground) +Virtual Background (SDI 3) Note: Key 1 of the SE-1200 must be set as Chroma Key.	
8	Teacher's Full-Body (SDI 2 foreground) +Powerpoint Slide (SWITCHER HDMI IN(CAM2)P-in-P) +Virtual Background (SDI 3) Note: Key 1 of the SE-1200 must be set as Chroma Key, Key 2 must be set as Luma Key + PIP Key.	Teacher's Full-Body Virtual Background + Powerpoint Slide.

10.2 Network Setup for the VGB-2000 Built-in SE-1200 MU

10.2.1 Network Setup Way

Before using the SE-1200 MU, it is a must for users to do the network setup. Please follow following steps for connecting the Ethernet cable and for setting the Network related settings.

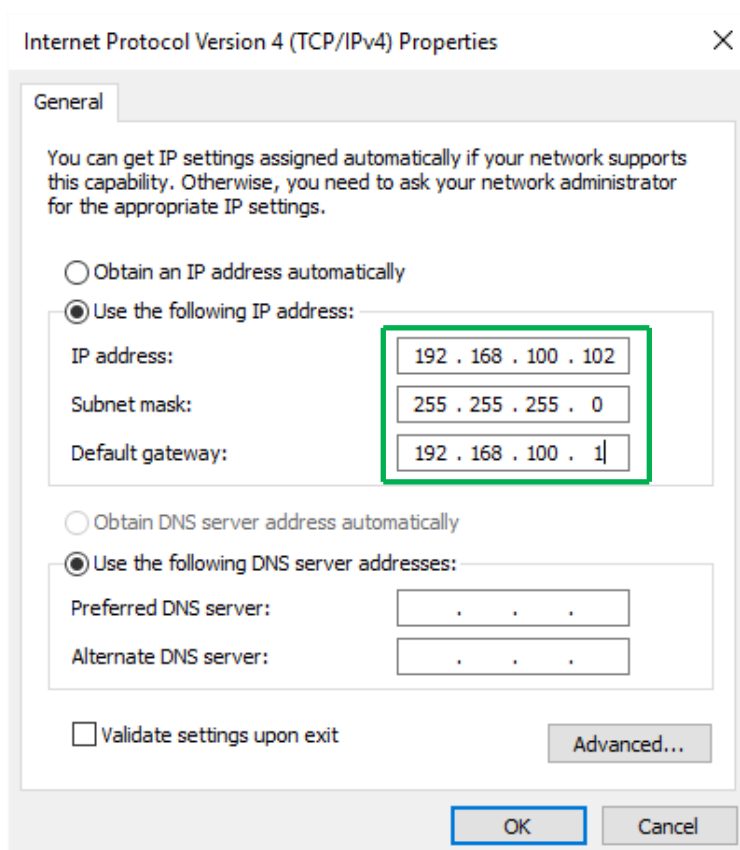
The SE-1200 MU switcher is not supplied with a traditional hardware based control panel. Instead it is controlled using a software user interface installed on your Windows-based computer. **When new from the factory the unit will initially have a static IP address of 192.168.100.101 by default.** The unit can be directly connected to a Windows-based computer using an RJ-45 ethernet cable. The following set up should allow you to initially configure the unit before moving it to an existing DHCP / LAN network.

- An RJ-45 Ethernet cable
- Windows 7/8/10 laptop or PC
- The Datavideo SE-1200 MU controller software



Instructions

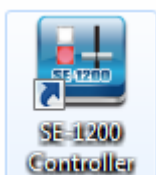
1. First connect the SE-1200 MU and the Windows computer together using an RJ-45 Ethernet cable.
2. Turn on the Windows computer and set it to **static IP set up** within the **Windows Network and Sharing Centre**. In our example the computer is given the following IP settings so that the computer matches the same IP range as the switcher.



3. Now install the supplied SE-1200 MU controller software to the computer.

10.2.2 Installing the SE-1200 MU Controller Software

Please visit SE-1200MU official website (www.datavideo.com) to download the latest control software.



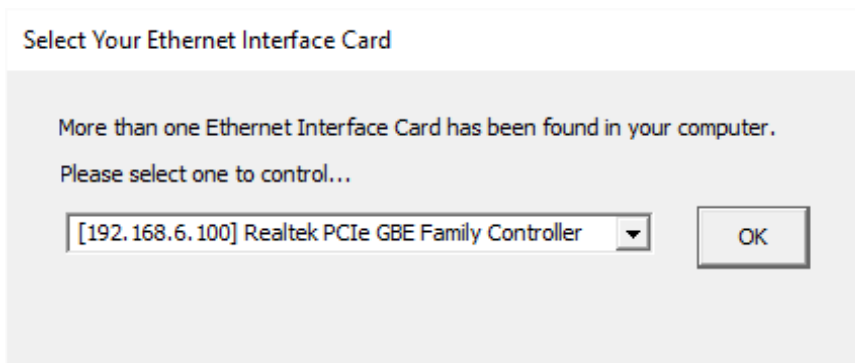
The install executable file [.exe] will be called **SE1200 Control v.x.x.x.x**

The v.x.x.x.x represents the latest version number.

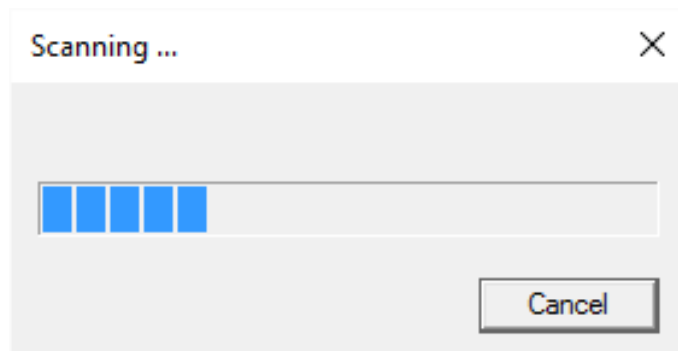
Double click this .exe file then **follow the on screen install wizard prompts**.

Once installed launch the **SE-1200 MU controller software**.

The SE-1200 MU controller software has a built-in IP finder, which is designed for computer with multiple Ethernet cards or DHCP network environment. Please note IP finder can only find devices that are on the same network domain as the computer. If you cannot remember your device IP, please contact your local Datavideo distributor for assistance as there is currently no reset function for network settings. Upon launch of the SE-1200 MU controller software, you will be prompted to select one Ethernet Interface Card.



Once selected, click OK to start the scanning process.



If the SE-1200 MU control software cannot find the SE-1200 MU device, the software will continuously prompt you for an appropriate interface card. Again, please make sure the selected interface card is on the same network domain as the SE-1200 MU device.

Once the SE-1200 MU device is found, the software will connect with the switcher hardware over the IP set up described on the previous page.

As the software opens, you should be able to see the interface shown below. As the program buttons are clicked the SE-1200 MU program output and multi view output will show changes.



10.3 Connecting Ways for 8 User Pre-Saved Settings for the VGB-2000 built-in SE-1200MU

The pre-saved presets are set in advance before shipping of the VGB-2000. If users need to adjust those values, please follow following steps for setting different default values for shooting teacher's teaching effects.

User 1: Teacher's Half-Body Shot + Powerpoint Slide



Step 1: Please open the SE-1200 MU control interface and then please select the "Key 1" button from the AUX BUSES panel.

Step 2: Please select the "Chroma" button from the "KEYERS CONTROLS" panel.

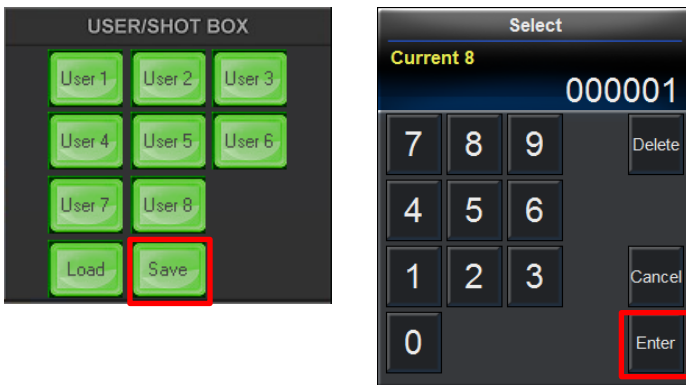
Step 3. Please select "1" from the "AUX BUS" button row which is located on the SOURCES panel (Because the half-body screen is shot by the CAMERA1 interface).

Step 4: Please press the "Setup" button which is located on the "MENU SELECT" panel for entering the Chromakey detailed setting interface.

Step 5. Please select the "1" button from the "PROGRAM" button row which is located on the SOURCES panel for setting the detailed Chromakey settings for the source from the CAMERA1 interface.

Step 6. Please tap the "Save" button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the "Enter" button and then the current setting can be saved successfully. If users want

to apply the “User 1” settings, please press the “User 1” button directly for applying the User 1 settings. (Teacher’s Half-Body Shot + Powerpoint Slide).



User 2: Teacher’s Half-Body Shot + Powerpoint Slide + Logo



Step 1: Please open the SE-1200 control interface and then please select “Key 1” from the AUX BUSES panel.

Step 2: Please select the “Chroma” button from the “KEYERS CONTROLS” panel.

Step 3. Please select the “1” button from the “AUX BUSES” button row which is located on the SOURCES panel (Because the half-body screen is shot by the CAMERA1 interface).

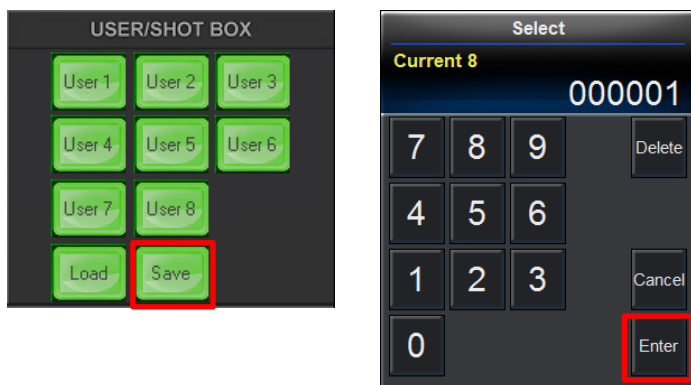
Step 4. Please press the “Setup” button which is located on the “MENU SELECT” panel for entering the Chromakey detailed setting interface.

Step 5: Please select the “1” button from the “PROGRAM” button row which is located on the SOURCES panel for setting the detailed Chromakey settings for the source from the CAMERA1 interface.

Step 6. At first, please press the “DSK1” button which is located on the “AUX BUSES” panel. After that, please select the “Keyer” button from the “MENU SELECT” panel and then please set the KEYER CONTROLS option to be Luma + Self.

Step 7. Please press the “Setup” button which is located on the “MENU SELECT” panel for entering the detailed setting interface of the Lumakey.

Step 8. Please tap the “Save” button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the “Enter” button and then the current setting can be saved successfully. If users want to apply the “User 2” settings, please press the “User 2” button directly for applying the User 2 settings. (Teacher’s Half-Body Shot + Powerpoint Slide +Logo).

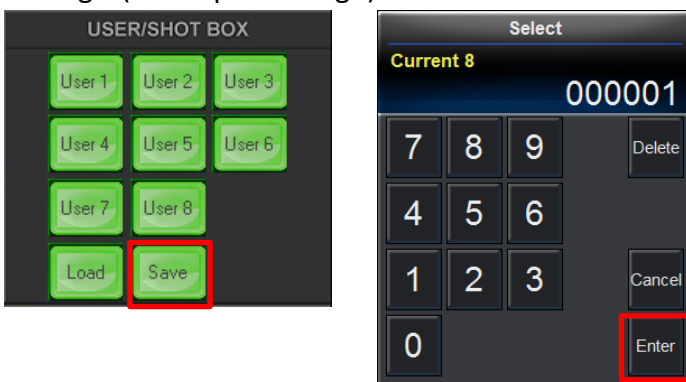




Step 1. At first, please press the “DSK1” button which is located on the “AUX BUSES” panel. After that, please select the “Keyer” button from the “MENU SELECT” panel and then please set the KEYER CONTROLS option to be Luma + Self.

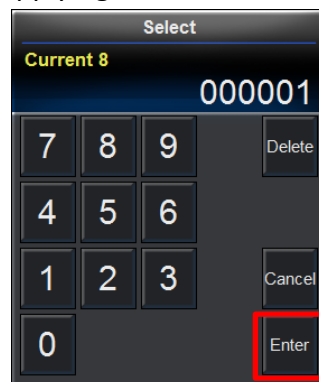
Step 2. Please press the “Setup” button which is located on the “MENU SELECT” panel for entering the detailed setting interface of the Lumakey.

Step 3. Please tap the “Save” button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the “Enter” button and then the current setting can be saved successfully. If users want to apply the “User 3” settings, please press the “User 3” button directly for applying the User 3 settings. (Powerpoint +Logo).





Step 1. After the Powerpoint slide is shown normally, please tap the “Save” button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the “Enter” button and then the current setting can be saved successfully. If users want to apply the “User 4” settings, please press the “User 4” button directly for applying the User 4 settings. (Powerpoint Only).



User 5: Teacher's Half-Body Shot +Powerpoint Slide + Virtual Background



Step 1. Please refer to chapter 8 to assign the pre-saved virtual background image to the SDI 4 input interface of the SE-1200MU.

Step 2. Please open the SE-1200 control interface and then please select the "Key 1" button from the "AUX BUSES" panel.

Step 3. Please select the "Chroma" button from the "KEYERS CONTROLS" panel.

Step 4. Please select the "1" button from the "AUX BUS" button row which is located on the "SOURCES" panel (Because the half-body screen is shot by the CAMERA1 interface).

Step 5. Please press the "Setup" button which is located on the "MENU SELECT" panel for entering the Chromakey detailed setting interface.

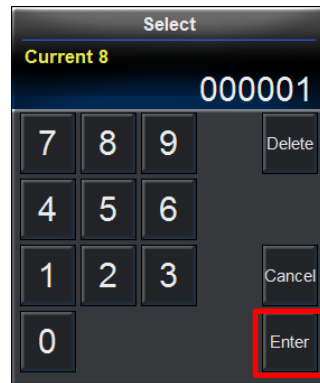
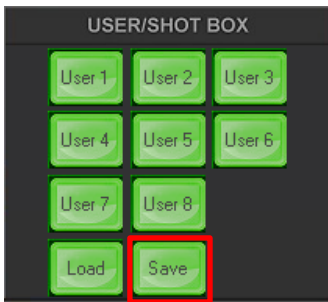
Step 6. Please select the "1" button from the "PROGRAM" button row which is located on the SOURCES panel for setting the detailed Chromakey settings for the source from the CAMERA1 interface.

Step 7. At first, please select the "Key 2" button from the "AUX BUSES" panel. After that, please select the "Luma + PIP" buttons which are located on the "KEYER CONTROLS" panel.

Step 8. Please select the "6" button from the "AUX BUS" button row which is located on the "SOURCES" panel (Because the Powerpoint Slide source is provided by the HDMI IN (CAM 2 interface)).

Step 9. Please press the "Setup" button which is located on the "MENU SELECT" panel for entering the detailed setting interface of the Lumakey.

Step 10. Please tap the “Save” button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the “Enter” button and then the current setting can be saved successfully. If users want to apply the “User 5” settings, please press the “User 5” button directly for applying the User 5 settings. (Teacher’s Half-Body Shot + Powerpoint Slide + Virtual Background).



User 6: Teacher's Half-Body Shot + Virtual Background



Step 1. Please refer to chapter 8 to assign the pre-saved virtual background image to the SDI 4 input interface of the SE-1200MU.

Step 2. Please open the SE-1200 control interface and then please select the “Key 1” button from the “AUX BUSES” panel.

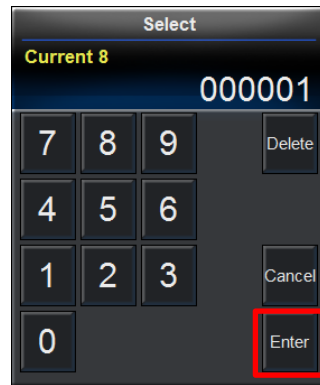
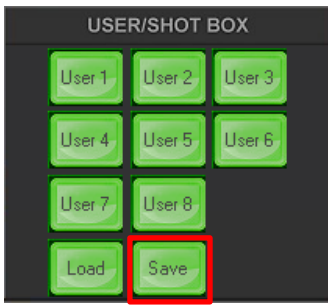
Step 3. Please select the “Chroma” button from the “KEYERS CONTROLS” panel.

Step 4. Please select the “1” button from the “AUX BUS” button row which is located on the “SOURCES” panel (Because the half-body screen is shot by the CAMERA1 interface).

Step 5. Please press the “Setup” button which is located on the “MENU SELECT” panel for entering the Chromakey detailed setting interface.

Step 6. Please select the “1” button from the “PROGRAM” button row which is located on the “SOURCES” panel for setting the detailed Chromakey settings for the source of the CAMERA1 interface.

Step 7. Please tap the “Save” button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the “Enter” button and then the current setting can be saved successfully. If users want to apply the “User 6” settings, please press the “User 6” button directly for applying the User 6 settings. (Teacher's Half-Body Shot + Virtual Background).



User 7: Teacher's Full-Body Shot +Virtual Background



Step 1. Please refer to chapter 8 to assign the pre-saved virtual background image to the SDI 3 input interface of the SE-1200MU.

Step 2. Please open the SE-1200 control interface and then please select the “Key 1” button from the “AUX BUSES” panel.

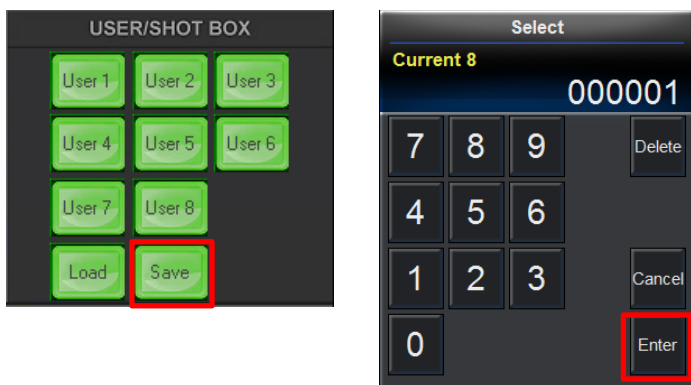
Step 3. Please select the “Chroma” button from the “KEYERS CONTROLS” panel.

Step 4. Please select the “2” button from the “AUX BUS” button row which is located on the “SOURCES” panel (Because the full-body screen is shot by the CAMERA2 interface).

Step 5. Please press the “Setup” button which is located on the “MENU SELECT” panel for entering the Chromakey detailed setting interface.

Step 6. Please select the “2” button from the “PROGRAM” button row which is located on the “SOURCES” panel for setting the detailed Chromakey settings for the source of the CAMERA2 interface.

Step 7. Please tap the “Save” button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the “Enter” button and then the current setting can be saved successfully. If users want to apply the “User 7” settings, please press the “User 7” button directly for applying the User 7 settings. (Teacher’s Full-Body Shot + Virtual Background).



User 8: Teacher’s Full-Body Shot + Virtual Background+ Powerpoint Slide



Step 1. Step 1. Please refer to chapter 8 to assign the pre-saved virtual background image to the SDI 3 input interface of the SE-1200MU.

Step 2. Please open the SE-1200 control interface and then please select the “Key 1” button from the “AUX BUSES” panel.

Step 3. Please select the “Chroma” button from the “KEYERS CONTROLS” panel.

Step 4. Please select the “2” button from the “AUX BUS” button row which is located on the “SOURCES” panel (Because the full-body screen is shot by the CAMERA2 interface).

Step 5. Please press the “Setup” button which is located on the “MENU SELECT” panel for entering the Chromakey detailed setting interface.

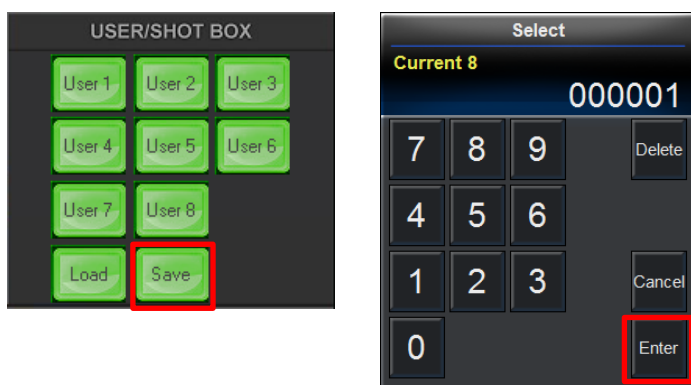
Step 6. Please select the “2” button from the “PROGRAM” button row which is located on the “SOURCES” panel for setting the detailed Chromakey settings for the source of the CAMERA2 interface.

Step 7. At first, please select the “Key 2” button from the “AUX BUSES” panel. After that, please select the “Luma + PIP” buttons which are located on the “KEYER CONTROLS” panel.

Step 8. Please select the “6” button from the “AUX BUS” button row which is located on the “SOURCES” panel (Because the Powerpoint slide screen is provided by the HDMI IN (CAM2) interface).

Step 9. Please press the “Setup” button which is located on the “MENU SELECT” panel for entering the detailed setting interface of the Lumakey.

Step 10. Please tap the “Save” button from the USER/SHOTBOX keyboard and then there is a pop-up numeric keypad that will be shown for users to enter their desired User default number. After that, please press the “Enter” button and then the current setting can be saved successfully. If users want to apply the “User 8” settings, please press the “User 8” button directly for applying the User 8 settings. (Teacher’s Full-Body Shot + Virtual Background + Powerpoint Slide).



11. How to Use SE-1200MU's User Memory Function by the TPC-700

When the User Memory of the SE-1200MU is set, users can use the TPC-700 Touch Panel Controller to apply their needed default mode directly.

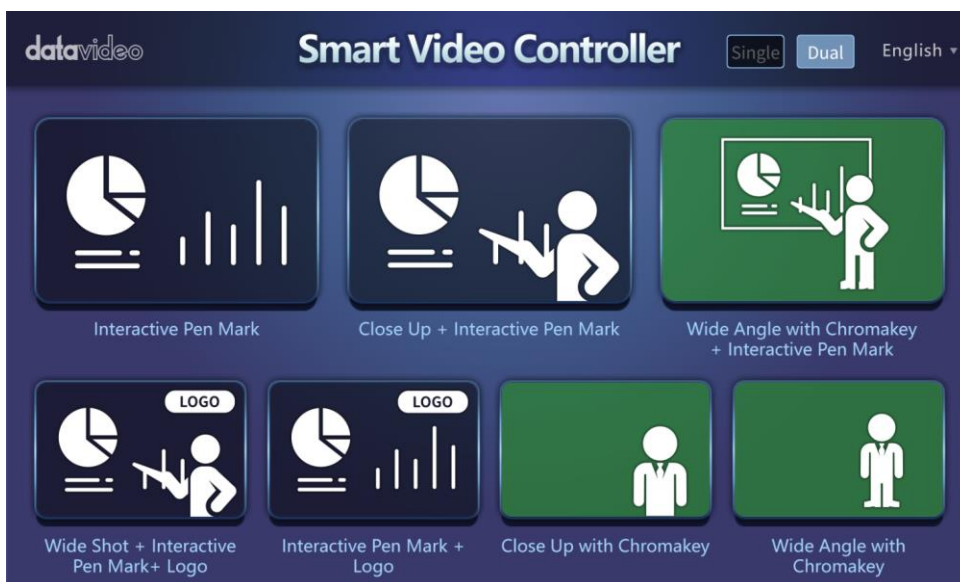
11.1 Main Interface of the TPC-700 App-Single & Dual

Please see following diagram for the Single & Dual Camera interface for the TPC-700 App.

- **Single Camera**



- **Dual Camera**



11.2 Operation Steps for the TPC-700

The Datavideo TPC-700 Touch Panel Controller allows users to tap the option which is shown on the screen for applying the pre-saved effects that are set by the SE-1200MU. This allows users to use more simple way for applying their desired effects when shooting the teaching videos. For the operation of the TPC-700, please see following steps.

Step 1. At first, please use a D-Sub 9 pin to RJ-45 adapter cable to connect from the RS-232 interface which is on the rear panel of the VGB-2000 to the RJ-45 interface of the TPC-700.

Step 2. After the preset settings of the SE-1200MU are set, users can apply their desired effects by tapping the option which is shown on the TPC-700 screen directly.

- Single Camera Effects
- Interactive Pen Mark



Varvid Produces and Streams Facebook Careers Panel Using Datavideo Products

- Varvid is a Seattle based, growing live event and streaming production company whose primary business is serving the needs of corporate clients. Varvid started when CEO and founder Aaron Booker used his IT expertise to help filmmaking friends webcast a local rock concert in Bellingham, WA in 2002. Since then, they have served clients such as Wizards of the Coast, BMW, NewBay, as well as provide media production services internationally for events in the accounting, entertainment, eSports, healthcare, IT, and non-profit industries.
- Recently, Varvid was contacted by Facebook Seattle to help them produce and stream a live interactive discussion panel that shared real-world experiences of what it is like working for the tech giant Facebook as a recruiting tool. A panel of four team members from various job functions within Facebook's software development team shared their experience, culture and real-world experiences of what it is like working for Facebook and used chat to answer questions from prospective employees.

➤ Close Up with Chromakey + Slides



➤ Close Up + Interactive Pen Mark



➤ Wide Shot + Interactive Pen Mark + Logo



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➤ Interactive Pen Mark + Logo



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- Dual Camera Effects
- Interactive Pen Mark

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- Close Up + Interactive Pen Mark

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➤ Wide Angle with Chromakey + Interactive Pen Mark



➤ Wide Shot + Interactive Pen Mark + Logo



➤ Interactive Pen Mark + Logo



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➤ Close Up with Chromakey



➤ Wide Angle with Chromakey



12. Operations for the BC-100, AD-100M, HDR-70 and NVS-33

Due to the length limitation, for the detailed operation instructions for the devices which are integrated in the VGB-2000 system including AD-100M, HDR-70, NVS-33 and BC-100 camera, please go to Datavideo official website www.datavideo.com for downloading the latest version user manuals for above-mentioned devices.

12.1 How to Get the Latest User Manuals for SE-1200MU/BC-100/HDR-70/AD-100M/NVS-33/PD-2

For the detailed ways for using the SE-1200MU HD 6-Channel Digital Video Switcher, HDR-70 HD/SD Digital Video Recorder-1U Rackmountable, AD-100M Audio Delay Box with Microphone Input, NVS-33 H.264 Video Streaming Server, BC-100 Interchangeable Lens Camera and PD-2 Power Center which are integrated in the VGB-2000 2-Channel Pro Presentation System, please refer to the latest user manuals. For the ways for obtaining the user manuals, please go to product pages on the Datavideo official website which are listed as following links.

SE-1200MU: <https://www.datavideo.com/product/SE-1200MU>

HDR-70: <https://www.datavideo.com/product/HDR-70>

AD-100M: <https://www.datavideo.com/product/AD-100M>

NVS-33: <https://www.datavideo.com/product/NVS-33>

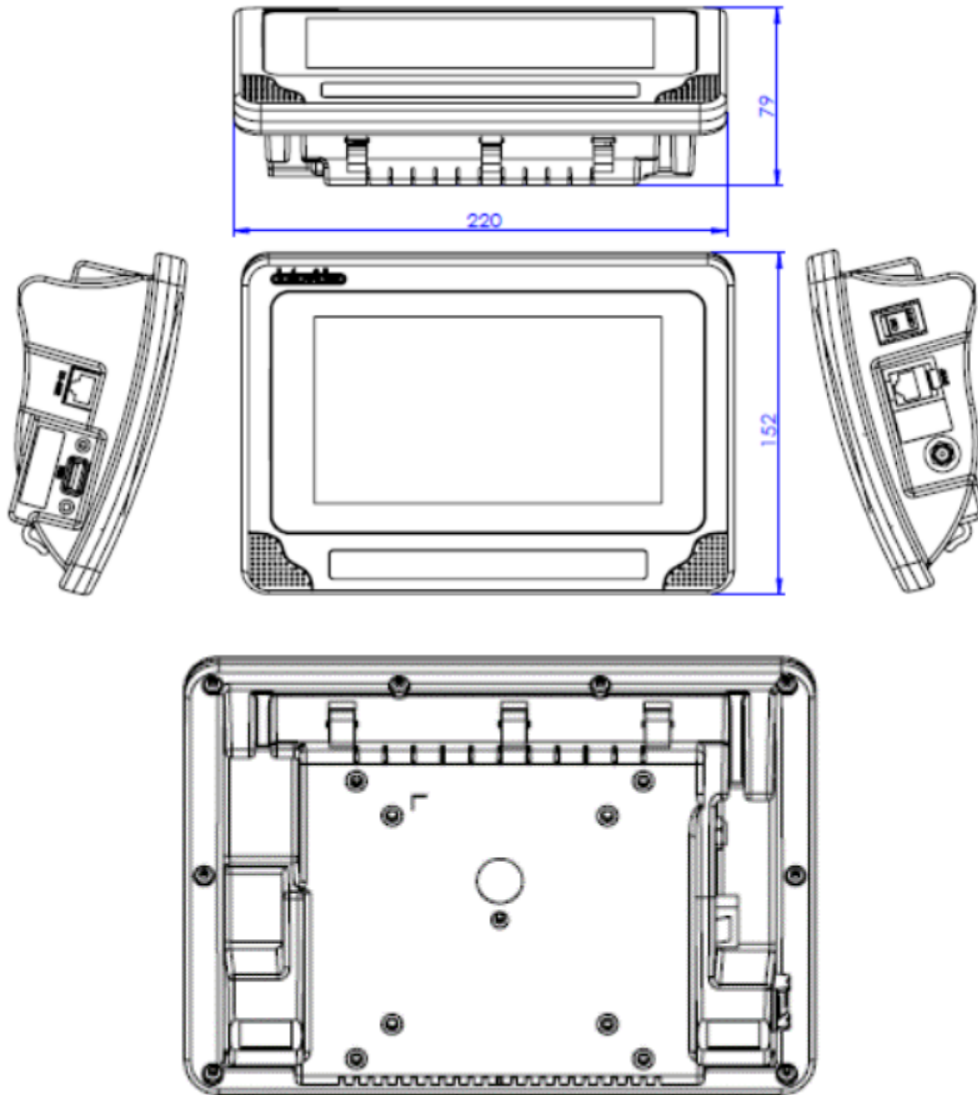
BC-100: <https://www.datavideo.com/product/BC-100>

PD-2: <https://www.datavideo.com/product/PD-2A>

13. How to Install the TPC-700 Touch Panel Controller

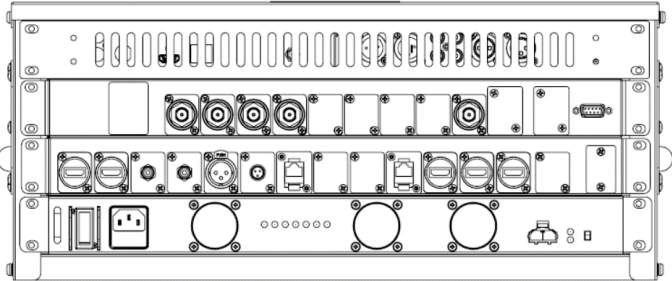
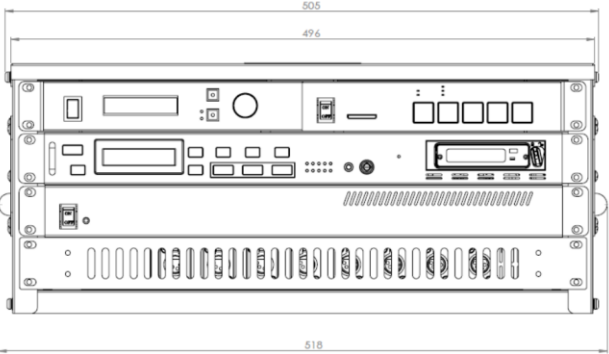
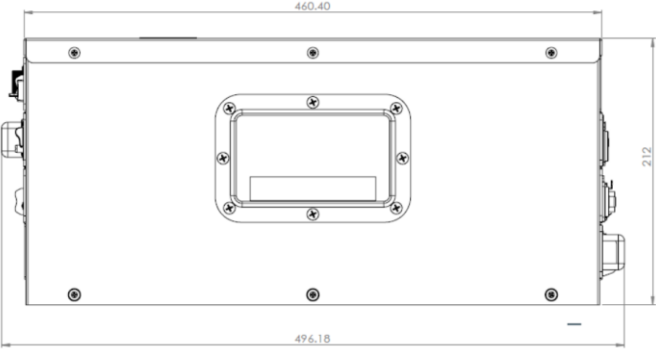
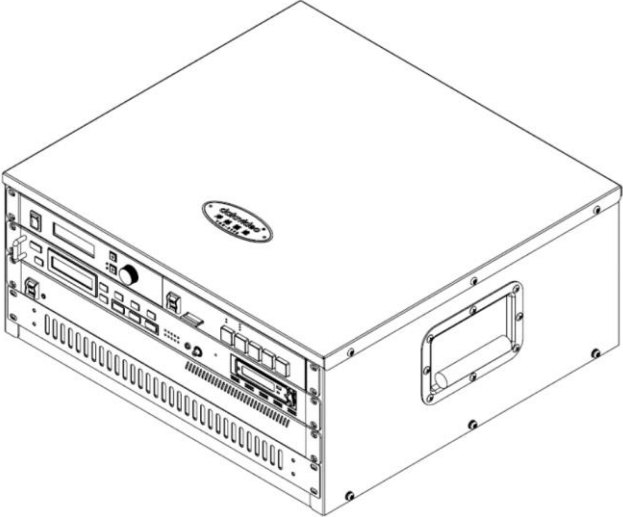
The 7 inch TPC-700 Touch Panel Controller is shown as following diagram.

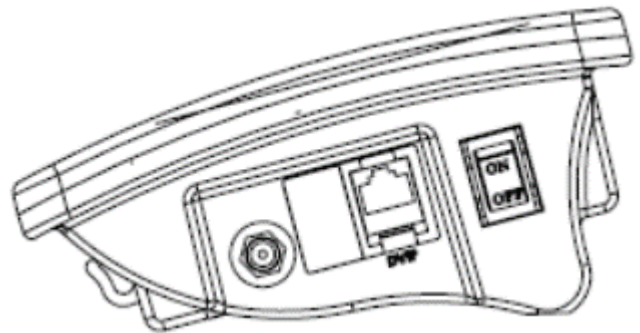
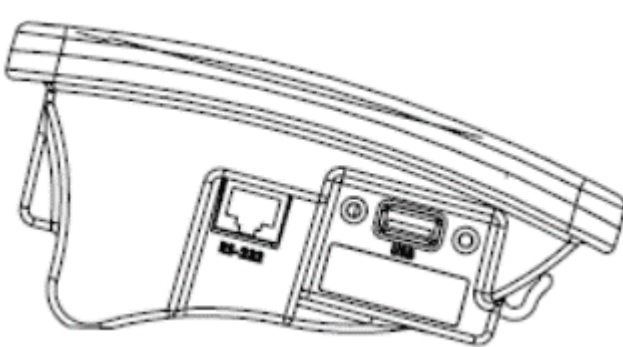
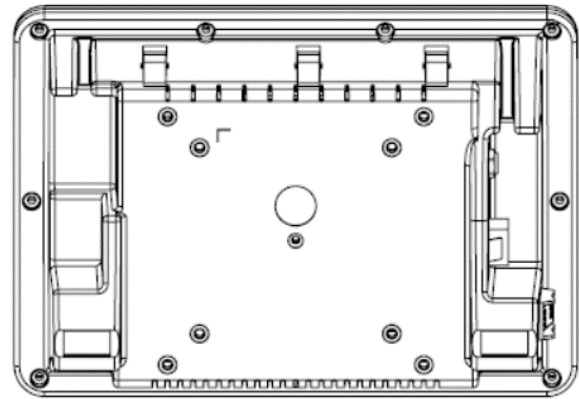
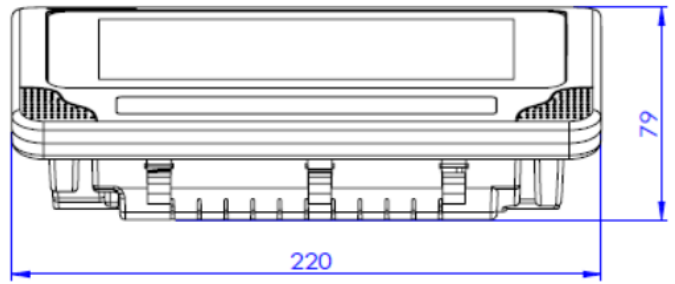
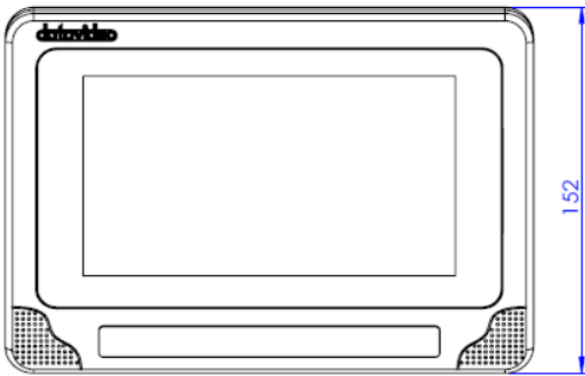
Note: The D-sub 9 pin to RJ-45 adapter cable must be connected from the D-sub 9 pin interface on the rear panel of the VGB-2000 to the RJ-45 interface on the left side of the TPC-700.



TPC-700 provides standard VESA holes including 10cm x 10cm and 7.5cm x 7.5cm. Moreover, it can be mounted on small wall mount.

14. Dimensions





Unit: mm

15. Specifications

Video Input (SE-1200MU)	SE-1200MU Foreground	SDI 1080i 50/59.94/60 720p 50/59.94/60
	SE-1200MU Background	HDMI 1280 x 720 59.94Hz 50Hz (720P) 1920 x 1080 59.94Hz 50Hz (1080p & 1080i)
ChromaKey Control (SE-1200MU)	SE-1200MU Control Interface	The LAN/RJ-45 interfaces on the rear panel can be connected to PC/Laptop for Chromakeyng. Please go to official website www.datavideo.com for downloading software.
Video Recording (HDR-70)	Capacities of Storage Media	HDD: 250/320/500/750 GB SSD: 120/128/240/256/480/512 GB
	Video Recording Formats	HD 720P 50/59.94/60 1080i 50/59.94/60 1080P 23.976/24 SD 480i 59.94, 576i 50
	Encoding	MPEG2 Long GOP: HD 1. 10Mbps 4:2:0 1440x1080/1280x720 2. 25Mbps 4:2:0 1440x1080/1280x720 3. 35Mbps 4:2:2 1920x1080/1280x720 4. 50 Mbps 4:2:2 1920x1080/1280x720 5. 65Mbps 4:2:2 1920x1080/1280x720 6. 120Mbps 4:2:2 1920x1080/1280x720 SD 1. 8Mbps 4:2:0 720x480/720x576 2. 15Mbps 4:2:2 720x480/720x576 3. 30Mbps 4:2:2 720x480/720x576 4. 50Mbps 4:2:2 720x480/720x576 MPEG-2 I frame Only: HD 1. 100Mbps 4:2:2 1920x1080/1280x720 2. 125Mbps 4:2:2 1920x1080/1280x720 SD 1. 25Mbps 4:2:2 720x480/720x576 2. 50Mbps 4:2:2 720x480/720x576
Audio Input (AD-100M)	Microphone	The XLR balanced MIC IN x 1 on the RP-77 panel. AD-100M: 48V on/off, Mic off, Gain 20/40/60 dB
	RCA Line-in	2 unbalanced RCA IN channels on the RP-77 panel

Streaming (NVS-33)	Streaming Video Output	RJ-45(10/100 Ethernet) interface x 1 on the RP-77 panel. The SD Card slot allows NVS-33 to output the recorded file to the SD Card storage media.
	Video Encoding	H.264
	Supported input video resolution	1080p 60/59.94/50/30/29.97/25/24/23.98 1080i 60/59.94/50 720p 60/59.94/50 480i 59.94, 576i50
	Audio Encoding	AAC-LC Configurable bitrate range from 32Kbps to 384Kbps Sample rate : 48KHz, 16bit
	Network Function	TS over TCP/UDP (unicast & multicast) RTSP over HTTP/TCP/UDP (RTSP Elementary Stream) RTMP/RTMPS (Publish)
Video Output	SE-1200MU HDMI Output	HDMI interface x 1 on the RP-77 panel (connect to LBK-1 Look-Back Kit).
	PGM_REC_OUT	HDMI interface x 1 and SDI interface x 1 on the RP-77 panel. (connect to monitor with HDMI or SDI interface)
Foot-Switch	Mini XLR interface on RP-77 panel	1 x FS-220 Foot-Switch for connecting to the Mini XLR interface of the RP-77 and the 3.5mm jack on the LBK-1.
<p>Note: For detailed operations, please refer to the user manual for SE-1200MU、HDR-70、AD-100M、NVS-33、PD-2A、RMK-5 and FS-220 respectively</p>		

Note

Service & Support

It is our goal to make owning and using Datavideo products a satisfying experience. Our support staff is available to assist you to set up and operate your system. Contact your local office for specific support requests. Plus, please visit www.datavideo.com to access our FAQ section.



Please visit our website for latest manual update.

<https://www.datavideo.com/product/VGB-2000>

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