Sony Live Production Switchers
XVS Series

Quick Product Guide

Version 2.3

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Imaging Products and Solutions Sector
Sony Corporation

Table of Contents

1. Introduction

This document describes important features of the XVS-series production switchers to facilitate efficient operations, configurations and system design.

2. Scope

Features described in this document are as follows:

- Newly added features in this software version
- Specification updates from the previous software versions
- Specification restrictions in this software version
- Specification differences from the MVS-X switchers

[Notes]

- The specifications in this document are subject to change before the release of the target software.

3. Target Systems

The followings are the target systems for this document.

- XVS-8000
- XVS-7000
- XVS-6000

4. Target Software

The target software version for this document is as below.

- Ver.2.3　(Release Date : January, 2017)

5. Executive Summary

This chapter describes the executive summary for the target software version.

5.1. New Functions

The following functions are available from this software version. For more details on each function, click the hyperlink and jump to the appropriate section or subsection.

- 3840 x 2160P 59.94/50 SQD Level-A can be set as system format in 4K mode. "4K SQD System Format"
- Resource Share with 2 Logical Switchers in 3840 x 2160P and 1920 x 1080P can be configured on one Physical Switcher for targeting 4K/1080P dual simultaneous production. "Resource Share"
- FC Outputs can be utilized as Monitor Outputs with the Format Converter Board XKS-8460. "Monitor Output Expansion"
    - As a bonus feature, certain internal buses can be assigned to FC Output ports without the Format Converter Board.
- Certain buses (Background A/B, Key1-8, Aux1-48, and so forth) can be assigned to any button rows on the XPT modules in Free Assign Mode. "Free Bus Assignment to Button Rows"
- Mix transition on Aux buses is available. "Aux Mix"
- Adjustment of color correction for multiple Aux buses can be performed at one time by synchronizing the CCR parameters among the Aux buses. "Aux Bus CCR Link"
- A group of registers can be stored to 16 register groups and one of the register groups can be recalled to the active memory for fast use. "Register Group"
- Pushing the Image button can apply a pre-configured DME effect to a background bus without multiple operations. "Image Effect"
- Progressive to Interlace signal conversion is available for Assignable Outputs without the Format Converter Board XKS-8460. "P/I Conversion on Output Ports"
- Error status on PNL 3 is released via GPI Output ports. "Error Status Output via GPI"

5.2. Specification Updates

Some functions available in the previous software version have been updated as follows. For more details on each function, click the hyperlink and jump to the appropriate section or subsection.

- Frame Memory is available in all the system formats. "System Format"
- The SDI Input and FC Connector Board XKS-S8111 is available as Input Format Converter. "Format Converter"
- New format conversion types are added to Input Format Converter and Internal Format Converter. "Format Converter"
- The tables for the capacity on the SSD and the Work Memory for Frame Memory are updated along with the latest list of the system formats. "Frame Memory – Capacity in Repositories"
- Frame Memory Save and Load is available and Sony Frame Memory native files (SFH) can be transferred from the switcher processor to external devices and vice versa. "Frame Memory – Save and Load"
- Field image of incoming signals can be stored as Frame Memory in Field Freeze mode. "Frame Memory – Field Freeze"
- Audio data can be stored as part of Frame Memory and Frame Memory audio output can be controlled by the Frame Memory output. "Frame Memory – Frame Memory with Audio"
- Two separated Frame Memory (Key Fill and Key Source) can be coupled into one Frame Memory. "Frame Memory – Coupling of Two Frame Memory"
- Re-entry signals can be selected in key buses in 4K mode. "Keyers in 4K – Key Free Re-entry"
- Input color correction on the SDI Input and FC Connector Board XKS-S8111 is available. "Color Correction"
- 3840 x 2160P 59.94/50 2SI Level-A signals can be selected as Multi Viewer Output format in the system format of 3840 x 2160P 59.94/50 2SI Level-A. "Multi Viewer"
- The restrictions for Multi Viewer Outputs in 3840 x 2160P 59.94/50 SQD Level-A system format are added. "Multi Viewer"
- FM 1-20 and Clip Recall events are available. "Macro"

6. New Functions

In this chapter, the new functions in the target software version as well as its important reminders are described.

6.1. 4K SQD System Format

From this software version, 3840 x 2160P 59.94/50 SQD Level-A format is available as one of the system formats in 4K mode in the XVS switchers. To utilize this system format, the licenses for the appropriate 4K Upgrade Software must be installed into the switchers.

In this section, the specification, especially its restrictions for 3840 x 2160P 59.94/50 SQD Level-A system format are shown in comparison with 3840 x 2160P 59.94/50 2SI Level-A system format.

For the general specification and restrictions in 4K mode, please refer to the User's Guide for this software version.

[Notes]

- *The system format of 3840 x 2160PsF Quad-link 23.98/25/29.97 in 4K mode is not supported in this software version.*

6.1.1. Key Process

[Notes]

- *The sample marker of Auto Chroma Key cannot be placed beyond the borders among the sub-images.*
- *The Multi parameter is not available in Key Wipe patterns.*

6.1.2. Key Resizer

[Notes]

- *Resizer is not available at any Keyers.*

6.1.3. Wipe

[Notes]

- *Only Standard and Enhanced Wipe patterns are available.*
- *Pattern Mix is not available.*
- *Multi and Paring are not available.*
- *Only matte color in Edge Border and Soft Border is available.*

6.1.4. DME Wipe

[Notes]

- *DME Wipe is not available.*

6.1.5. Frame Memory

[Notes]

- *Please refer to the section "Frame Memory".*

6.1.6. Safe Title

[Notes]

- *Grid is not available.*

6.1.7. Color Background

[Notes]

- *The Multi parameter is not available.*

6.1.8. Multi Viewer

[Notes]

- *For details, please refer to the section "Multi Viewer".*

6.2. Resource Share

This section describes the overview of the specification for the new Resource Share feature.

The following terminologies are used.

- Physical Switcher: A physical unit which is a switcher processor itself.
- Logical Switcher: A logical unit which configures a switcher instance on the Physical Switcher.

6.2.1. Specification Overview

- Two Logical Switchers can be configured on one Physical Switcher in the Resource Share mode.
- The system formats for the first and second Logical Switchers are fixed with 3840 x 2160P and 1920 x 1080P, respectively. (Hereinafter referred to as "4K L-SWR" and "1080P L-SWR", respectively)
- The Resource Share mode is available only with the XVS-8000.
    - The Resource Share mode is not available in either XVS-7000 or XVS-6000 in this software version and will be supported in these switchers in future software upgrade.

6.2.2. Resources Assignable to Logical Switchers

The resources on the Physical Switcher can be assigned to each Logical Switcher using the Web-based menu. (Hereafter referred to as "Web Menu", whereas references to "Panel Menu" refer to the conventional menu accessed via the menu panel)

- The Web Menu is used to assign the resources on the Physical Switcher below.
    - Inputs (by 16 ports; by one slot)
    - Outputs (by 12 ports; by one slot)
    - Mix and Effects (by one M/E board)
    - Frame Memory Sources (by 2 channels : only assignable to either 4K L-SWR or 1080P L-SWR)
    - Color Backgrounds (by 2 channels : only assignable to either 4K L-SWR or 1080P L-SWR)
    - Internal Format Converters (by 16 channels : only assignable to either 4K L-SWR or 1080P L-SWR)
- The following resources on the Physical Switcher cannot be divided into any Logical Switchers.
    - DME is only available in 1080P L-SWR.
    - Frame Memory Outputs are divided into 16 channels (4 channels in 4K) for 4K L-SWR and 4 channels for 1080P L-SWR.
    - One channel of Multi Viewer is fixed-assigned to 4K L-SWR and 1080P L-SWR.

6.2.3. Resource Share Configuration

- Each Physical Switcher is configured in the setup pages in the Panel Menu.
- Each Logical Switcher has its dedicated folder for Frame Memory on the SSD storage. One Logical Switcher is not granted permission to access to the folder of another Logical Switcher.
- System reboot should be performed to validate the changes after not only enabling/disabling the Resource Share mode but also assigning the resources to Logical Switchers. Otherwise, the changes for Resource Share are not reflected in the system.

6.3. Monitor Output Expansion

This section describes the Monitor Output Expansion function using the Format Converter Board XKS-8460.

- When setting the same video format as the system format to Format Converter outgoing channels, the FC Output ports associated with the Format Converter outgoing channels become Monitor Outputs and then any internal buses in the switcher processor can be assigned to the FC Output ports.
- The menu page for Monitor Output assignment is different from the standard menu for Assignable Outputs.
- The specification differences to Assignable Outputs are as follows.
    - The output latency from Monitor Outputs is;
        - 1 frame delay for interlace signals and,
        - 1 V delay for progressive signals.
    - The following functions are not available.
        - Video Clip
        - V Blanking / Through Mode
        - Safe Title

        - 4:3 Crop
        - Aux Mix
        - Active Area Size
        - P/I Conversion
        - 120i Output (1080P Level-B Pass Through Aux Buses)
- The specification of Internal Format Converter such as the number of format conversion channels, format conversion type and so forth is referred to "Internal Format Converter".

[Notes]

- *The Monitor Output feature cannot be utilized in the system formats of 1080i and 720P in Ver.2.3.*

[Bonus Menu]
This allows users to assign some internal buses to the FC Output ports even without the Format Converter Board XKS-8460 (Page 7333.99).

- The FC Output ports available in this special mode are below.
    - XVS-8000 : FC Output 1-16 & Spare 1-4
    - XVS-7000 : FC Output 1-8 & Spare 1-4
    - XVS-6000 : FC Output 1-16
- Internal buses assignable to the FC Output ports are below.
    - Frame Memory buses : FM 1 – FM 20 (Available in only 1080i system)
    - Color Background 1 bus (When selecting "No Assign" in the menu)

6.4. Free Bus Assignment to Button Rows

This section describes the "Free Assign Mode" by which certain buses can be assigned to any button rows on the XPT modules.

6.4.1. Buses Assignable to Button Rows

Buses assignable to the button rows are below.

- Background A and B Buses
- Key 1 – Key 8 Buses
- Utility 1 and 2 Buses
- DME External Video Buses
- DME Utility 1 and 2 Buses
- Edit Preview Bus
- AUX 1 – AUX 48 Buses
- Frame Memory Source 1 and 2 Buses

- DME Video and Key Buses

The following buses cannot be assigned to the button rows.

- MP2 Main and Sub Background A and B Buses
- Background A and B Shift Buses
- CCR Buses
- Frame Memory Source 1 and 2 Buses

6.4.2. Operations in Free Assign Mode

- During this Free Assign mode is activated, the functions below are not available.
  - Dual Background Bus Mode
  - Utility Function on the XPT Pad
- The XPT Pad allows the users to change the assignment of buses and functions in the button rows.
- Macro events can change the assignment of buses and functions in the button rows.
- During this mode, when doing an operation changing to Key Source Bus Mode outside the XPT Pad, then the button row 1 and 2 on its XPT module will be changed to Key Fill and Key Source, respectively.

6.5. Aux Mix

This section describes the Aux Mix function. This function is same as Aux Mix in the MVS-X switchers.

- The following output ports will be coupled in Aux Mix mode.
  - All system formats except for 4K mode;
    - Adjacent odd and even output ports = 1 & 2, 3 & 4, …, 47 & 48
  - 4K mode;
    - 1-4 & 5-8, 13-16 & 17-20, 25-28 & 29-32, 37-40 & 41-44
- Mixed signal is output from the former output port in each pair.

6.6. Aux Bus CCR Link

This section describes the Aux Bus CCR Link by which the parameters of color correction (hereinafter referred to as “CCR parameters”) for multiple Aux buses can be controlled at one time.

- To adjust the CCR parameters for multiple Aux buses at one time, all of the target Aux buses can be set within one Link Group. 12 Link Groups are available in total.
- All the CCR parameters for the Aux buses in one Link Group are synchronized when the Link Enable button is activated.
- The Aux Bus CCR Link function can work in only manual operation. In Snapshot and Keyframe

operations, the Aux Bus CCR Link function does not work.

- The settings for Aux Bus CCR Link are saved in the SWR Setup files.
- A CCR parameter linked among Aux buses can make a relative adjustment keeping the difference of each parameter value of Aux bus. All the parameter values are moved towards the upper or lower limit in the parameter.
- The “Copy in Link” button can copy all the values for the CCR parameters of the selected Aux bus to the other Aux buses’ parameters in the Link Group.

6.7. Register Group

This section describes the Register Group function by which 16 register groups (hereinafter referred to as “Register Groups”) can store certain registers and quickly swap one to another.

6.7.1. Number of Registers in Register Groups

The maximum number of registers in a Register Group is same as the number in the current specification.

- Keyframe Effect : 99 (each region)
- Master Snapshot : 99 (each panel)
- Snapshot : 99 (each region)
- Wipe Snapshot : 10 (each region)
- DME Wipe Snapshot : 10 (each region)
- Key Snapshot : 4 (each region)
- DME : 99 (each region)
- Macro : 250 (each panel)
- Menu Macro : 99 (each panel)
- Macro Attach : 1 (each panel)
- Shotbox : 99 (each panel)
- Master Timeline : 99 (each panel)
- GPI Timeline : 99 (each panel)
- Macro Timeline : 99 (each panel)
- P-Bus Timeline : 250 (each panel)
- Device1-12 Timeline : 250 (each panel)

6.7.2. Operation in Register Group

- All 16 Register Groups are saved to individual files in the SCS. (Hereinafter referred to as “Register Files”)
- When one of the Register Groups is selected, all registers (Snapshots, Keyframes and so forth) in its Register File are deployed onto the active memory on the SCS. Afterwards, any register in the Register

Group can be loaded by identifying its register number in usual operation.

[Notes]

- *When changing the Register Groups, all the information on Store/Recall/Undo created while the previous Register Group was activated are removed from the system.*
- *If the Register Groups are changed during Keyframe edit, all the editing data created before activating the current Register Group are removed.*
- *Keyframe Recall cannot be performed while changing the Register Groups.*
- *When changing one Register Group to another during Keyframe is running, Keyframe will stop.*
- *When changing one Register Group to another, the transition type in M/Es will return to "MIX" if it has been set with "DME WIPE".*

6.7.3. Register File Import and Export

- Only the Register File deployed in the active memory can be exported to external storage such as USB flash memory. If all the Register Files need to be exported to external storage, export operation needs to be carried out 16 times, one by one.
- To register a Register File from external storage to one of the Register Groups, firstly the Register File should be imported from the external storage to the SSD on the menu panel and then the imported Register File on the SSD can be loaded to the active memory after activating the target Register Group.

6.7.4. Restart and All Clear in Register Group

- Behaviors when resetting the system are different between PNL and SWR.
    - PNL : The Register Group selected last time will become active.
    - SWR : Depends on the Startup mode as follows;
        - Factory : Register Group #1 will become active,
        - User : The Register Group defined as User Define will become active, or
        - Resume : The Register Group selected last time will become active.
- When executing All Clear, all the data in 16 Register Groups are removed from the SCS and then Register Group #1 is selected.

6.7.5. Compatibility of Register Files

- After upgrading XVS switchers with Ver.2.3 software supporting Register Group, any registers which are loaded to the active memory before software upgrade do NOT have any compatibility with the upgraded system (Ver.2.3).
- Whereas, Register Files which are saved to the SSD on the menu or exported to external USB storage from the previous version have a compatibility with the upgraded system.

[Notes]

- *Before upgrading the system, the registers in necessary Register Groups should be saved to the SSD on the menu or exported to external USB storage as Register Files.*

6.8. Image Effect

The new function “Image Effect” is available.

- This is a new function for XVS switchers.
- A new “Image” button has been created. When the Image button is activated, the DME effects pre-assigned to the Background A and/or B buses on an M/E bank will be applied to the buses.
- The DME resources in the XVS switcher are shared with other functions.

[Notes]

- *No DME resources are available in 4K.*
- *This function is excluded with Background DME Wipe.*

6.9. New Display Items and Zabuton on XPT Modules

This section describes the new features in the Cross-point bus control block and the Aux bus control block of the control panel.

6.9.1. Selected Source Name Display on Aux Bus

- The following items are added to the display item table of Display Mode Setting.
    - Row-1 Selected Source
    - Row-2 Selected Source
- With setting a display item above, the name of a selected source selected in each destination in the 1st row or 2nd row can be shown on the display area of the Aux bus control block.

6.9.2. Enabling Zabuton

- On the display area of the cross-point and Aux bus control blocks, Zabuton can be set onto both the upper area and the lower area of the display area in the menu of Display Mode Setting.
- Even if Zabuton is enabled, Zabuton is not shown unless no name is displayed on the display area.

[Notes]

- *Zabuto for macro register name of macro attachment assigned to the row buttons was automatically shown in Ver.2.2, but displaying Zabuton for macro register can be linked to this setting.*

6.10.P/I Conversion on Output Ports

This section describes Progressive to Interlace conversion (P/I conversion) on output ports regardless of the installation of the Format Converter Board XKS-8460.

- When the system format is 1080P Level-A, any outgoing signals in 1080P can be converted to 1080i signals without any format conversion.
- The output ports where this function is available are OUT 1 through OUT 48.
- P/I conversion can be set by every 4 output ports.
- The output latency for P/I conversion is 1H in 1080i.

[Notes]

- *FC Outputs and Multi Viewer Outputs are out of scope.*

6.11.Error Status Output via GPI

Error status from PNL3 is available.

- System errors gathered in the SCS are output via GPI Output ports on the SIU.
- Error status comes from the SWR and DCU units only.
- Error items are same as the ones in the menu.
- GPI Output ports of the DCU are set by PNL 1- 3 as source.

[Notes]

- *Errors of the SCS are out of scope.*

7. Specification Updates

This chapter shows not only the specification updates from the previous software version but also provides updated reminders in the target software version as well.

7.1. System Format

The following system formats can be configured into the XVS switchers in this software version.

a. 720P/50
b. 720P/59.94
c. 1080i/50
d. 1080i/59.94
e. 1080PsF/23.98
f. 1080PsF/24
g. 1080PsF/25
h. 1080PsF/29.97
i. 1080P/50 Level-A
j. 1080P/59.94 Level-A
k. 3840 x 2160P/50 2SI Level-A
l. 3840 x 2160P/59.94 2SI Level-A
m. 3840 x 2160P/50 SQD Level-A
n. 3840 x 2160P/59.94 SQD Level-A

[Updates]

- *3840 x 2160P/59.94, 50 SQD Level-A is available.*
- *The Frame Memory function is available in all system formats.*
- *In Resource Share, the system formats for Logical Switchers are fixed in 3840 x 2160P and 1920 x 1080P.*
- *There are some restrictions in basic functions if the system format is 3840 x 2160P SQD Level-A, Please refer to "4K SQD System Format".*
- *The 4K upgrade software should be installed into the systems when 3840 x 2160P 2SI/SQD is set as system format in 4K mode.*

[Notes]

The following system formats are being planned..

o. 576i/50
p. 480i/59.94
q. 3840 x 2160PsF/23.98 SQD Level-A

r. 3840 x 2160PsF/24 SQD Level-A

s. 3840 x 2160PsF/25 SQD Level-A

t. 3840 x 2160PsF/29.97 SQD Level-A

7.2. Format Converter

7.2.1. Input Format Converter

[Updates]

- *Input format conversions are available in the SDI Input and FC Connector Board XKS-S8111.*

[Notes]

- *The availability of input format conversion on the QSFP Input/Output and FC Connector Board XKS-Q8111/Q8166 are now being planned*

[Specifications]

- *Enabling and disabling format conversion on the input side (Input FC Enable and Input FC Disable) are carried out by the input slot.*
- *When Input FC is enabled, the specification for each system format is as follows.*
- *When Input FC is disabled, no input format conversion on any input port is available. Whereas, both frame delay and primary color correction for incoming signals are available in Input FC Disable.*

Input FC Enable

		System Format				
		720P (*1)	1080i (*1)	1080P (Level-A)	4K 2SI (Level-A)	4K SQD (Level-A)
Input Signal	480i/576i	Yes	Yes	No	No	No
	720P	No	Yes	No	No	No
	1080i	Yes	No	Yes	Yes	Yes
	1080P (Level-A)	No	No	Yes (*2)	Yes	Yes
	1080P (Level-B)	No	No	Yes	Yes	Yes
	4K 2SI (Level-A)	No	No	No	Yes (*2)	Yes
	4K 2SI (Level-B)	No	No	No	Yes	Yes
	4K SQD (Level-A)	No	No	No	Yes	Yes (*2)
	4K SQD (Level-B)	No	No	No	Yes	Yes

# of Channels	Input FC channels per slot	12ch (*1)	12ch (*1)	16ch	4ch	4ch
	Individual unit of FC ports (Range of # of input ports)	IN 1 - 8, IN 9 - 12	IN 1 - 8, IN 9 - 12	IN 1 - 4, IN 5 - 8 IN 9 - 12, IN 13 - 16	IN 1 - 4, IN 5 - 8 IN 9 - 12, IN 13 - 16	IN 1 - 4, IN 5 - 8 IN 9 - 12, IN 13 - 16
Additional Function	Frame delay	Yes	Yes	Yes	Yes	Yes
	Primary color correction	No	No	Yes	Yes	Yes

(*1) Incoming signals can feed the input ports IN 13 to IN 16 as normal input without any input format conversion function. Therefore, neither frame delay nor primary color correction is available on these input ports.

(*2) When setting the same video format as the system format to Format Converter incoming channels, incoming signals can be passed through to the processor without any format conversion and no latency of the signals passed through occurs unless frame delay to the signals is applied.

7.2.2. Internal Format Converter

[Updates]

- *Internal format conversions in the table below are available on the Format Converter Board XKS-8460.*

[Specifications]

- *The Format Converter Board can convert both incoming signals to the processor and outgoing signals from the processor along with system settings.*

Internal FC for Incoming Signals		System Format				
		720P	1080i	1080P (Level-A)	4K 2SI (Level-A)	4K SQD (Level-A)
Incoming Signal	480i/576i	Yes	Yes	No	No	No
	720P	No	Yes	No	No	No
	1080i	Yes	No	Yes	Yes	Yes
	1080P (Level-A)	No	No	Yes (*1)	Yes	Yes
	1080P (Level-B)	No	No	Yes	Yes	Yes
	4K 2SI (Level-A)	No	No	No	Yes (*1)	Yes
	4K 2SI (Level-B)	No	No	No	Yes	Yes
	4K SQD (Level-A)	No	No	No	Yes	Yes (*1)

	4K SQD (Level-B)	No	No	No	Yes	Yes
# of Channels	# of internal format conversion channels	12ch	12ch	16ch	4ch	4ch
	Individual unit for Internal FC	1-8ch, 9-12ch	1-8ch, 9-12ch	By 4ch	By 1ch	By 1ch
Additional Function	Frame delay	Yes	Yes	Yes	Yes	Yes

(*1) When setting the same video format as the system format to Format Converter incoming channels, incoming signals can be passed through to the processor without any format conversion and no latency of the signals passed through occurs unless frame delay to the signals is applied.

Internal FC for Outgoing Signals

		System Format				
		720P	1080i	1080P (Level-A)	4K 2SI (Level-A)	4K SQD (Level-A)
Outgoing Signal	480i/576i	Yes	Yes	No	No	No
	720P	No	Yes	No	No	No
	1080i	Yes	No	Yes	Yes	No
	1080P (Level-A)	No	No	Yes (*1)	Yes	No
	1080P (Level-B)	No	No	Yes	Yes	No
	4K 2SI (Level-A)	No	No	No	Yes (*1)	Yes
	4K 2SI (Level-B)	No	No	No	Yes	Yes
	4K SQD (Level-A)	No	No	No	Yes	Yes (*1)
	4K SQD (Level-B)	No	No	No	Yes	Yes
# of Channels	# of internal format conversion channels	12ch	12ch	16ch	4ch	4ch
	Individual unit for Internal FC	1-8ch, 9-12ch	1-8ch, 9-12ch	By 4ch	By 1ch	By 1ch

(*1) When setting the same video format as the system format to Format Converter outgoing channels, the FC Output ports associated with the Format Converter outgoing channels become Monitor Outputs. The latency of outgoing signals from Monitor Outputs is either 1 frame in interlace format or 1V in progressive format. (For details on Monitor Outputs, please refer to "Monitor Output Expansion".

7.3. Mix and Effect

- All system formats except for 4K mode;
  - Up to 2 Splits per M/E board by the Split M/E mode, up to 6M/E banks per frame in total. (The maximum number of M/E banks is different among the XVS switchers)
- 4K mode;
  - The Split M/E mode is not available, up to 5M/E banks per frame in total. (The maximum number of M/E banks is different among the XVS switchers)

[Notes]

- *The total number of M/E banks will be increased in future software upgrade for Resource Share.*

7.4. Frame Memory

7.4.1. System Format in Frame Memory

[Updates]

- *Frame Memory function is available in every system format.*

7.4.2. Internal Repositories for Frame Memory

- Frame Memory consists of two separate repositories; "SSD" for saving Frame Memory and "Work Memory (RAM)" for Frame Memory as sources (20ch).
- The capacities for SSD and Work Memory are as below.

Repository	Capacity
SSD	480GB (Non-volatile)
Work Memory	32GB (Volatile)

- Any Frame Memory in SSD can be loaded to Work Memory anytime very quickly.

7.4.3. Capacity in Repositories

[Updates]

- *Capacity on Work Memory for each system format.*

4K	Capacity
50P	Approx. 1,150 frames, 20 sec

59.94P	Approx. 1,380 frames,	20 sec
3G		Capacity
1080P/50	Approx. 4,600 frames,	90 sec
1080P/59.94	Approx. 5,500 frames,	90 sec
HD		Capacity
1080i/50	Approx. 4,600 frames,	180 sec
1080i/59.94	Approx. 5,500 frames,	180 sec
1080PsF/23.98	Approx. 4,400 frames,	180 sec
1080PsF/24	Approx. 4,400 frames,	180 sec
1080PsF/25	Approx. 4,600 frames,	180 sec
1080PsF/29.98	Approx. 5,500 frames,	180 sec
720P/50	Approx. 5,500 frames,	110 sec
720P/59.94	Approx. 5,500 frames,	90 sec

- *Capacity on SSD for each system format.*

4K		**Capacity**
50P	Approx. 13,000 frames,	260 sec
59.94P	Approx. 16,000 frames,	260 sec
3G		Capacity
1080P/50	Approx. 53,000 frames,	1,060 sec
1080P/59.94	Approx. 64,000 frames,	1,060 sec
HD		Capacity
1080i/50	Approx. 53,000 frames,	2,130 sec
1080i/59.94	Approx. 64,000 frames,	2,130 sec
1080PsF/23.98	Approx. 51,000 frames,	2,130 sec
1080PsF/24	Approx. 51,000 frames,	2,130 sec
1080PsF/25	Approx. 53,000 frames,	2,130 sec
1080PsF/29.98	Approx. 64,000 frames,	2,130 sec
720P/50	Approx. 106,000 frames,	2,100 sec
720P/59.94	Approx. 126,000 frames,	2,100 sec

7.4.4. Folder Structure

- Both SSD and Work Memory have the same folder structure.
- Folder structure (Tree type): /root + 3 layers

7.4.5. Naming Rules

- The name of Frame Memory can be set with up to 32 characters.
- The folder name can be set with up to 16 characters.

7.4.6. Clip Transition

- Ping Pong and Variable Speed (0-200%) are available.

7.4.7. Import and Export

- General image files (TIF/PNG/BMP/TGA) can be imported from and exported to an external storage like USB flash memory.

[Notes]

- *Import and export process from/to TIF/PNG/BMP/TGA incurs color space conversion between RGB and YUV.*

7.4.8. Save and Load

[Updates]

- *Frame Memory Save and Load function is available.*
- *With this function, Sony Frame Memory native files (SFH) can be imported and exported from/to an external storage such as USB flash memory without any transcoding to general image files (TIF/PNG/BMP/TGA) for data transfer and backup.*

7.4.9. Number of Frame Memory Output Channels

- All system formats except for 4K mode : 20ch (FM 1 – FM 20)
- 4K mode : 4ch (FM 1 – FM 4)

7.4.10. Snapshots

[Notes]

- *Attribute setting is no longer needed when storing a Clip in a Snapshot.*
- *Clip Event is Auto Play only.*
- *GPI attribute is no longer available.*

7.4.11. Field Freeze

[Updates]

- *Field Freeze is available when the system format is in interlace mode.*
- *Both Field 1 and Field 2 images are stored into one Frame Memory native file.*

- *The indicator which indicates whether or not a Frame Memory is stored in Field Freeze mode (hereinafter referred to as "Field Freeze Indicator") is shown on the thumbnail of the Frame Memory.*
- *When a Frame Memory with Field Freeze Indicator is recalled, the system creates an entire frame picture based on either Field 1 or Field 2 .*

7.4.12. Frame Memory with Audio

[Updates]

- *Frame Memory can store audio data in its ancillary area.*
- *Each Frame Memory output (FM 1 – FM 20) has Audio Enable/Disable function. Regardless of whether Frame Memory has audio data or not, turning audio output on and off can be controlled by the Frame Memory output.*
- *Audio is automatically muted when the Frame Memory is processed in both variable play mode and manual transition.*
- *The status of Audio Enable/Disable is saved in both Snapshots and Macros.*

[Notes]

- *Sony Frame Memory native files (SFH) for the XVS switchers always have areas dedicated to audio data, whereas the MVS switchers have two types of Frame Memory native files; SFM for video and SFA for audio.*

7.4.13. Coupling of Two Frame Memories

[Updates]

- *Two Frame Memories imported or recorded separately (Key Fill and Key Source) can be combined as one Frame Memory.*

[Notes]

- *The thumbnail of coupled Key Fill is displayed not only in the Key Fill thumbnail but also in the Key Source thumbnail. Displaying the thumbnail of Key Source will be supported in a future software upgrade.*
- *Once Frame Memories are coupled, there is no way to divide them back into two Frame Memories. (Irreversible)*

7.4.14. Data Compatibility

[Notes]

- *No data compatibility with the MVS switchers is available in this software version. Data compatibility features between MVS and XVS will be supported in a future software upgrade.*
    - *Please use Import/Export function when moving Frame Memory between MVS and XVS.*

7.4.15. Removed Functions from MVS

The following functions have been removed from the specification of Frame Memory for the XVS switchers along with the fully reform of Frame Memory feature.

- Freeze Enable
- Record Enable
- Composite
- Animation (Create Keyframe)
- Reposition/Lock
- Auto Extraction
- VTR/DDR Backup/Restore
- Freeze Undo
- GPI to trigger “Freeze”, “Clip Record/Cue-up/Play/Stop”
- Video Process

7.5. Keyers in 4K

7.5.1. Key Types in 4K

- In 4K mode, 2 Full Keys and 2 Sub Keys are available.
  - Full Keys (Key1, Key2) : Basically the same key features as provided in HD.
  - Sub Keys (Key3, Key4) : Please refer to the subsection “Sub Key”.

7.5.2. Key Free Re-entry

[Updates]

- *Every re-entry signal can be selected as key source when Key Free Re-entry mode is enabled.*
- *In Key Free Re-entry mode, re-entry signals may be dropped downwards a few lines.*

7.5.3. Sub Keys

- 2 types of Sub Key modes are supported. One of the modes can be selected in each M/E.
  - Key 3 + Key PVW Mode
  - Key 3 and Key 4 Mode
- Cut and mix transition, and luminance and linear keying are available in Sub Keys.
- Key Priority of Sub Keys is always fixed on the downstream side.
  - Key 1, 2 < Key 4 < Key 3

[Notes]

- *Key PVW is not available in Key 3 and Key 4 mode.*

- *Sub Keys can be controlled from Local Transition area (Right side of Fader bar), but can't be used in the Next Transition area (Left side of Fader bar).*
- *Resizer and Mask features are not available for Sub Keys.*
- *Neither FM nor FC can be selected for Sub Keys.*
- *IP (RJ45) sources can't be selected as Sub Key sources.*
    - *IP (QSFP+) sources can be selected as Sub Key sources.*

7.6. Color Correction

- Output Color Correction is available for Aux outputs.

[Updates]

- *Input Color Correction with the SDI Input and FC Connector Board XKS-S8111 is available.*

[Notes]

- *Input Color Correction with the QSFP IP Input and FC Connector Board XKS-Q8111 will be supported in future software upgrade.*
- *Secondary Color Correction with the Format Converter Board XKS-8460 will be supported in future software upgrade.*

7.7. DME

[Notes]

- *DME is not available in 4K mode. Please utilize 2.5D Resizer in Full Keyers.*
- *Spot Lighting – Texture is not supported.*
- *External DME, such as MVS-8000A, is not supported.*
- *Only Primary inputs and Color BKGD-1/2 can be selected for DME Ext-In.*
    - *IP (RJ45) sources can't be selected for DME-Ext In.*

7.8. Multi Viewer

- 4, 10, 13, and 16 splits are available in each Multi Viewer Output. (2ch in total)
- Both input sources and output buses can be assigned to each window in the Multi Viewer Outputs.

[Updates]

- *While the system format is 3840 x 2160P 59.94/50 2SI Level-A, the Multi Viewer Outputs can be*

individually selected from either 3840 x 2160 2SI Level-A or 1080P Level-A.

- *No display disturbance occurs even if no signal is fed to a Multi Viewer source.*

[Notes]

- *While the system format is 3840 x 2160P 59.94/50 SQD Level-A, both the Multi Viewer Outputs can be set with only 4 split mode in 1080P Level-A.*

7.9. IP Interfaces

- The number of inputs and outputs in 3G is halved when utilizing the IP interfaces with the IP Input/Output Connector Boards XKS-T8110/T8165.

[Updates]

- *The number of inputs and outputs in 3G is halved when utilizing the QSFP IP Input/Output and FC Connector Boards XKS-Q8111/Q8166.*

7.10.Macro

[Updates]

- *FM 1 – FM 20 and Clip Recall events are available.*

7.11.File Load Lock and Setup Lock

[Notes]

- *Neither File Load Lock nor Setup Lock is supported.*
    - *Menu7317.2 Eng Setup > System > Maintenance > File Load Lock, Setup Operation Lock*

7.12.Device Control

The following devices are not supported.

- Plug-in Editor (PIE)
- Universal Control Panel (UCP)
- System Manager
- ELC

[Notes]

- *ELC integration will be supported in future software upgrade.*

7.13.GPIO

- GPIO ports are available in the SIUs (MKS-X2700 and MKS-X7700) only, and not available in XVS processor.

7.14.Control Panel

[Updates]

- *In 2nd Delegation mode, holding the shift button on the 3rd row can keep showing the source names on the shift side.*

Revision History

Revision No	Release Date	Description
1.1	14th December, 2016	First release of XVS Quick Product Guide for Ver.2.3
1.2	21st December, 2016	Minor amendments; ▪ Behaviors for input and internal Format Converter in FC Enable are amended. (Format Converter) ▪ The capacity of 4K Frame Memory on SSD is amended. (Frame Memory – Capacity in Repositories)