FOR.A®
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

OPERATION MANUAL

HVS-390HS
Digital Video Switcher

HVS-392OU
HVS-392ROU
HVS-392WOU
Operation Unit

3rd Edition - Rev. 7

FOR-A COMPANY LIMITED

Edition Revision History

Edit.	Rev.	Date	Description	Section, Page
1		2012/08/15		
1	1	2012/12/05	Added M/E CONTROL ON/OFF. Added WEB Browser Control. Corrected factual errors.	p43-44, 180 Appendix 3
1	2	2012/12/17	Corrected the event LAST LOAD description. Added HVS-30OU control.	p138 Appendix 4
2	-	2013/01/30	Added INPUT STILL to user button function. Added FS ENABLE to user button function. Macro assignmens to bus buttons Bitmap for control panel bus buttons 2.5M/E mode Supported HVS-39VR	p46, 181 p48, 181 Secs. 5-2 and 18-6-1 Sec. 32-4 Sec. 33-3
2	1	2013/03/04	RENAME available for output signals SNTP (Time server) synchronization added CG WIPE AUTO added for GPI OUT Contorable Menus via Brower added	Sec. 15-4-1 Sec. 21-7-1 p 191 Appendix 3
2	2	2013/05/27	Added HVS-39MB. Changed the router simultaneous switching description Corrected FTP connection description Contorable Menus via Brower added	Sec. 12-4 p5, 15, 227, 241 Sec. 26-2-6 Sec. 30-3 Appendix 3
3	-	2013/06/28	Added HVS-392WOU	Sec. 2-2, 5-2, 5-3, 7-1, 10-10 35-1and 35-2-4 Appendix 3
3	1	2013/12/18	HVS-30PCIN available format TALLY Function added Supported Files added GPI/TALLY function table	p50 p197-198 19-2, 30-3-1, App. 1 Sec. 24-1-3
3	2	2014/02/26	DC Cord Clamp Installation added SmartDirect control (option) added	Unpacking Sec. 30
3	3	2014/04/25	TALLY LINK added Option Setting Files for HVS-390HS added Corrected the Unavailable Functions with HVS-30OU	Sec. 15-4-5 Sec. 32 Appendix. 4
3	4	2014/06/17	AUX units (Ethernet type) added	Sec. 30
3	5	2015/09/30	HVS-AUX16B added	Sec. 30-2
3	6	2016/02/10	Changed VTR connection. Added VDCP control. Changed [EXT IF - VTR/VDCP] menu. Changed LOCK button settings on AUX Box.	Sec. 25-1 Sec. 25-3 Sec. 25 Sec. 30-2-5
3	7	2016/08/12	Swapping the CUT and AUTO buttons	Sec. 8-10-5

Precautions

Important Safety Warnings

[Power]

⚠ Caution	Operate unit **only** at the specified supply voltage.
(icon)	Disconnect the power cord via the power plug only. **Do not** pull on the cable portion.
🛑 Stop	**Do not** place or drop heavy or sharp-edged objects on the power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check the power cord for excessive wear or damage to avoid possible fire / electrical hazards.
❗ Caution	**Ensure** the power cord is firmly plugged into the AC outlet.

[Grounding]

❗ Caution	**Ensure** the unit is properly grounded at all times to prevent electrical shock.
⚠ Hazard	**Do not** ground the unit to gas lines, units, or fixtures of an explosive or dangerous nature.

[Operation]

⚠ Hazard	**Do not** operate the unit under hazardous or potentially explosive atmospheric conditions. Doing so could result in fire, explosion, or other hazardous results.
⚠ Hazard	**Do not** allow liquids, metal pieces, or other foreign materials to enter the unit. Doing so could result in fire, other hazards, or a unit malfunction.
(icon)	If a foreign material does enter the unit, turn the power off and **immediately** disconnect the power cord. Remove the material and contact an authorized service representative if damage has occurred.

[Transportation]

❗ Caution	**Handle** with care to avoid impact shock during transit, which may cause malfunction. When you need to transport the unit, use the original or suitable alternative packing material.

[Circuitry Access]

	Do not remove covers, panels, casing, or access the circuitry with power applied to the unit. Turn the power off and disconnect the power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.
Stop	**Do not** touch any parts / circuitry with a high heat factor. Capacitors can retain enough electric charge to cause mild to serious shock, even after the power has been disconnected. Capacitors associated with the power supply are especially hazardous.
Hazard	Unit **should not** be operated or stored with cover, panels, and / or casing removed. Operating the unit with circuitry exposed could result in electric shock / fire hazards or a unit malfunction.

[Potential Hazards]

Caution	If abnormal odors or noises are noticed coming from the unit, immediately turn the power off and disconnect the power cord to avoid potentially hazardous conditions. If problems similar to the above occur, contact an authorized service representative **before** attempting to operate the unit again.

[Rack Mount Brackets, Ground Terminal, and Rubber Feet]

Caution	To rack-mount or ground the unit, or to install rubber feet, **do not** use screws or materials other than those supplied. Doing so may cause damage to the internal circuits or components of the unit. If you remove the rubber feet that are attached to the unit, **do not** reinsert the screws that secure the rubber feet.

[Consumables]

Caution	Consumable items that are used in the unit must be periodically replaced. For further details on which parts are consumables and when they should be replaced, refer to the specifications at the end of the Operation Manual. Since the service life of the consumables varies greatly depending on the environment in which they are used, such items should be replaced at an early date. For details on replacing consumable items, contact your dealer.

Upon Receipt

Unpacking

The Hanabi Series switchers and their accessories are fully inspected and adjusted prior to shipment. Operation can be performed immediately upon completing all required connections and operational settings.

Check your received items against the packing lists below. Check to ensure no damage has occurred during shipment. If damage has occurred, or items are missing, inform your supplier immediately.

◆ HVS-390HS Box

ITEM	QTY	REMARKS
HVS-390HS	1	Main unit
AC Cord	1 set	Retaining clips included
Rack Mount Brackets	1 set	EIA standard type

Options

ITEM	QTY	REMARKS
HVS-30HSDI-A	1-2	HS/SD SDI 4-Input Expansion Card (Max. 2 cards)
HVS-30HSDI	1-2	HS/SD SDI 4-Input Expansion Card (Max. 2 cards)
HVS-30HSDO	1-2	HS/SD SDI 3-Output Expansion Card (Max. 2 cards)
HVS-30HSAI	1-2	HS/SD Analog 2-Input Expansion Card (Max. 2 cards)
HVS-30HSAO	1-2	HS/SD Analog 2-Output Expansion Card (Max. 2 cards)
HVS-30PCIN	1-2	Digital/Analog RGB 2-Input Expansion Card (Max. 2 cards)
HVS-30PCO	1-2	Digital/Analog RGB 2-Output Expansion Card (Max. 2 cards)
HVS-30TALR	1-2	Tally Output Expansion Card (Relay type, Max. 2 cards), 37-pin D-sub connector (1 set, for cable fabrication)
HVS-39EXTME	1	M/E Expansion Card for upgrading from 1 M/E to 2 M/E.
HVS-39MEM	1	Clip Memory Expansion Card
HVS-39ED	1	Editor control option (software option)
HVS-39VR	1	Virtual Link software (See "HVS-39VR Operation Manual")
HVS-39PSM	1	Redundant Power Supply Unit for HVS-390HS
HVS-39MB	1	Still and Clip data backup memory option.

* Up to 2 input cards of HVS-30HSDI-A / HSDI /HSAI / PCIN can be installed.
* Up to 2 output cards of HVS-30HSDO / HSAO / PCO can be installed.

◆ HVS-392OU Box

ITEM	QTY	REMARKS
HVS-392OU	1	Operation Unit (2 M/E, 20-button type)
HVS-39PSO	1	Redundant Power Supply Unit (Option)
Control Cable	1	BNC cable for ARCNET connection (10 m)
AC Cord	1 set	Power cord with retaining clips
Rack Mount Brackets	1 set	Optional
CD-ROM	1	User manuals (PDF)

◆ HVS-392ROU Box

ITEM	QTY	REMARKS
HVS-392ROU	1	Operation Unit (2 M/E, 12-button type)
HVS-39PSO	1	Redundant Power Supply Unit (Option)
Control Cable	1	BNC cable for ARCNET connection (10 m)
AC Cord	1 set	Power cord with retaining clips
Rack Mount Brackets	1 set	Optional
CD-ROM	1	User manuals (PDF)

◆ **HVS-392WOU Box**

ITEM	QTY	REMARKS
HVS-392WOU	1	Operation Unit (2 M/E, 28-button type)
HVS-39PSO	1	Redundant Power Supply Unit (Option)
Control Cable	1	BNC cable for ARCNET connection (10 m)
AC Cord	1 set	Power cord with retaining clips
Rack Mount Brackets	1 set	Optional
CD-ROM	1	User manuals (PDF)

About HVS-390 series system configuration

The HVS-390HS is the main unit for HVS-390 series systems. The following standard control panels are available. (HVS-30OU and HVS-30RU can also be used.) These control panels can exist together in the same system.

HVS-391OU: A full-featured 1 M/E control panel.

HVS-392OU: A full-featured 2 M/E 20-button control panel.

HVS-392ROU: A compact 2 M/E control panel (designed for rack mount use)

HVS-392WOU: A full-featured 2 M/E 28-button control panel.

◆ **Other Options**

◆ ITEM	QTY	REMARKS
HVS-30RU	1-2	Remote Control Unit
HVS-AUX8 HVS-AUX16 HVS-AUX32	1-5	AUX bus Control unit (Hanabi Series Option) Arcnet type
HVS-AUX8RK, HVS-AUXRK	1	Remote Kit for Aux bus Control Box (Hanabi Series Option)
HVS-AUX16A HVS-AUX16B HVS-AUX32A HVS-AUX64A	1-10	AUX bus Control Box (Hanabi Series Option) Ethernet type
HVS-TALR20/32 (*1)	1-3	Tally Control Unit (Relay type) (Hanabi Series Option) (RS-422 connection)
HVS-TALOC20/32 (*1)		Tally Control Unit (Open Collector type) (Hanabi Series Option) (RS-422 connection)
Control Cable	1	BNC cable for ARCNET connection (10 m) , (BNC 5C2V 75Ω)

(*1) Multiple HVS-TALOC / HVS-TALR configurations possible; up to 3 units max.

Optional devices or software are basically provided with the installation manuals (except factory- installed ones) or specific operation manuals.

DC Cord Clamp Installation (HVS-30OU)

Insert the DC cord into the DC IN connector, then secure the cord with the DC cord clamp attached to the hole as shown in the figure. (S/N:13131691-)
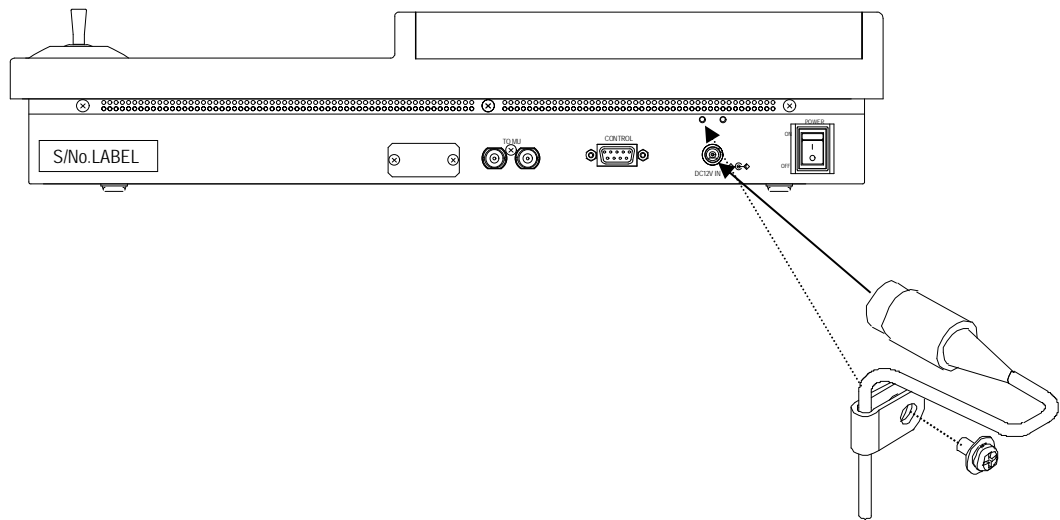
About This Manual

This manual is intended to help the user easily operate Hanabi series switchers and make full use of their functions during operation. Before configuring or operating your system, read this operation manual thoroughly to ensure you understand the product. Afterwards, it is important to keep this manual in a safe place and available for future reference.

Font Conventions
The following conventions are used throughout this manual:
- Boxed text (for example MATT, F1, TRANS, and AUX1) is used to indicate control panel **buttons**.
- Bold text (such as **SIGNAL**, **TYPE** and **COLOR**) is used to indicate **setting parameters** in menus.
- Shaded text (such as MATT, ON, OFF, 50.0, 30, and PGM) is used to indicate **setting values** in the menus.
- Text enclosed by square brackets (such as [SETUP - SYSTEM]) indicate **menu names**.

Table of Contents

1. Prior to Starting

1-1. Welcome

Congratulations! By purchasing HVS-390 series Hanabi Switcher you have entered the world of FOR-A and it's many innovative products. Thank you for your patronage and we hope you will turn to FOR-A products again and again to satisfy your video and audio needs.
FOR-A provides a wide range of products, from basic support units to complex system controllers, which have been increasingly joined by products for computer video based systems. Whatever your needs, talk to your FOR-A representative. We will do our best to be of continuing service to you.

1-2. Features

The HVS-390HS video switcher come in 1M/E or 2M/E configuration.
This switcher is more powerful and easier to use, while maintaining all of the highly acclaimed functionality of the HVS-300 series.

<Standard features>
● Compact HD/SD switcher main unit (3U high)
● 1 M/E standard, expandable to 2 M/E with HVS-39EXTME
● 4 types of control panels
   HVS-391OU: 1 M/E Control Panel
   HVS-392OU: 2 M/E 20-button Control Panel
   HVS-392ROU: 2 M/E 12-button Control Panel (for rack mount use)
   HVS-392WOU: 2 M/E 28-button Control Panel
● Two control panels (HVS-30OU/RU) for HVS-300HS are also available.
● HD/SD-SDI 16-input/8-output and an HDMI output, Max. 24-input/13-output
● Variety of I/O options such as HD/SD-SDI, analog/digital RGB (VGA, DVI-D), HD/SD analog component, analog composite
● Frame synchronizer on each input and up-resize engine on IN13 to IN16 (standard), which enables both HD and SD inputs.
● Built-in multiviewer output: 2 channels, supporting 4, 10 or 16-way split views with title, tally and audio meter display
● 4 keys on each M/E (Chroma Key available on 2 of 4 keys). 2.5D DVE on each key channel
● More than 150 of various 2D and 3D DVE transition patterns
● 10 sequence memories (max. 60 steps for each)
● Transition effects available when loading events and switching AUX signals
● 4-channel still memory and 4- channel clip memory
● Safety area markers
● Internal color-bar generator

<Optional features>
● Input/output options
   HVS-30HSDI / HSDI-A / HSAI / PCIN
   HVS-30HSDO / HSAO / PCO
● HVS-39ED: Editor Interface software
● HVS-30TALR: Tally Relay Output card
● HVS-39PSM: Redundant Power Supply Unit for Main Unit
● HVS-39PSO: Redundant Power Supply Unit for Operation Unit
● HVS-39MEM:Clip Memory Expansion Card
● HVS-39MB: Still and Clip data backup memory option

2. Panel Descriptions

2-1. HVS-390HS

◆ **Front Panel**

No.	Name	Description	
1	Power switch 1	For Power 1 ON/OFF.	
	POWER 1 indicator	Lit green	Power is supplied to the unit.
		Unlit	Power is not supplied to the unit. Or power unit is not installed.
	ALARM 1 indicator	Lit red when a cooling fan fails. In such a case, power off the unit and consult your FOR-A supplier. The indicator is normally unlit. This indicator works the same as the ALARM indicator located on the Control panel.	
2	Power switch 2	For Power 2 ON/OFF (option).	
	POWER 2 indicator	Lit green	Power is supplied to the unit.
		Unlit	Power is not supplied to the unit. Or power unit is not installed.
	ALARM 2 indicator	Lit red when a cooling fan fails. In such a case, power off the unit and consult your FOR-A supplier. The indicator is normally unlit. This indicator works the same as the ALARM indicator located on the Control panel.	

◆ **Rear Panel**
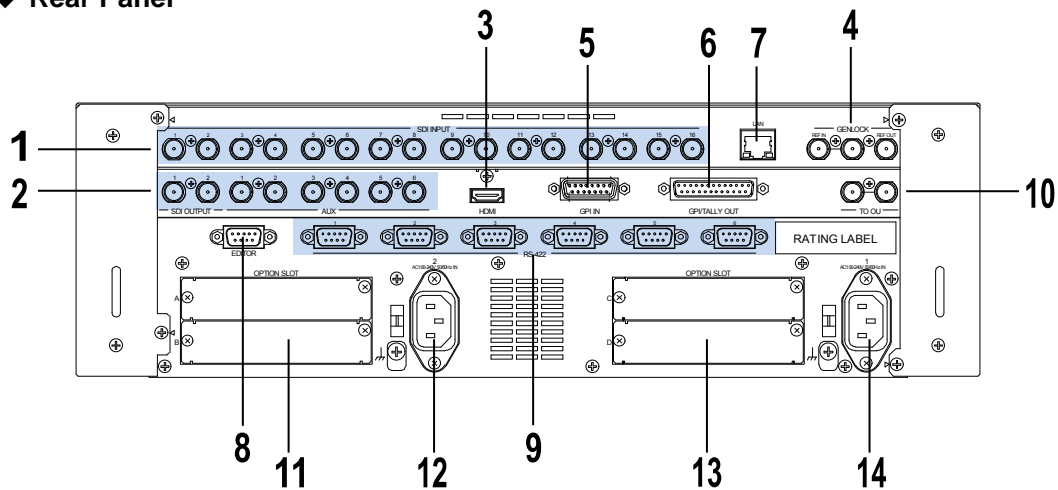
No.	Name	Description	Refer to sec.
1	SDI INPUT	Used to input HD/SD SDI video signal. 16 inputs (BNC)	5
2	SDI OUTPUT	Used to output HD/SD SDI video signal. 8 outputs (M/E1 PGM, M/E2 PGM and 6 auxiliary outputs) (BNC)	6
3	HDMI	Used to output an HDMI output.	6-5
4	REF IN REF OUT	Used to input and output a genlock signal; tri-level sync or black burst. (BNC) The center terminal is used for loopthrough connection. It must be 75-ohm terminated if not looped-through.	3
5	GPI IN	Used for GPI input. (15-pin D-sub, female)	2-4-3
6	GPI /TALLY OUT	Used for GPI output and Tally output. (25-pin D-sub, female)	2-4-3
7	LAN	Used for 100BASE-TX/1000BASE-T Ethernet connection. (RJ-45)	2-4-1
8	EDITOR	Used for editor connection. (9-pin D-sub, female)	21-3
9	RS-422	6 ports (9-pin D-sub, female) Used to connect external devices such as Hanabi tally units, HVS-30RU, VTR/VDCP devices, routers and audio mixers.	2-4-2
10	TO OU	Used for control panel (HVS-391OU and HVS-392OU/ROU/WOU) connection via Arcnet. It can also be used to connect the Hanabi AUX control boxes. (BNC) One of two terminals is used for loop-through connection. It must be 75-ohm terminated if not looped-through.	2-3
11	Option Slots	Used to install optional input expansion cards.	3
12	AC IN2	Power 2 connection with ground terminal for redundant power configuration. (option) (AC100V-240V 50/60 Hz)	
13	Option Slots	Used to install optional output expansion cards.	3
14	AC IN1	Power 1 connection with ground terminal (AC100V-240V 50/60 Hz)	

2-2. Control Panel

◆ **HVS-392OU Control Panel**
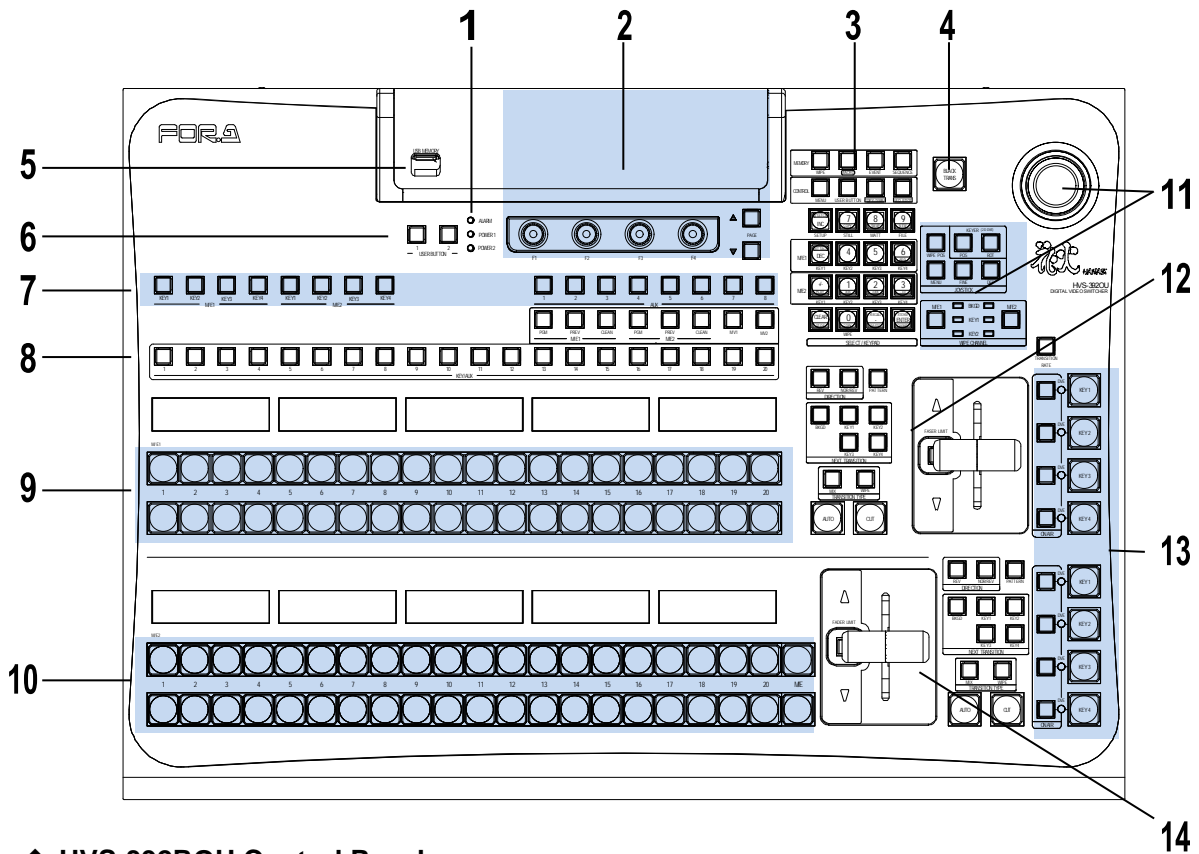
◆ **HVS-392ROU Control Panel**
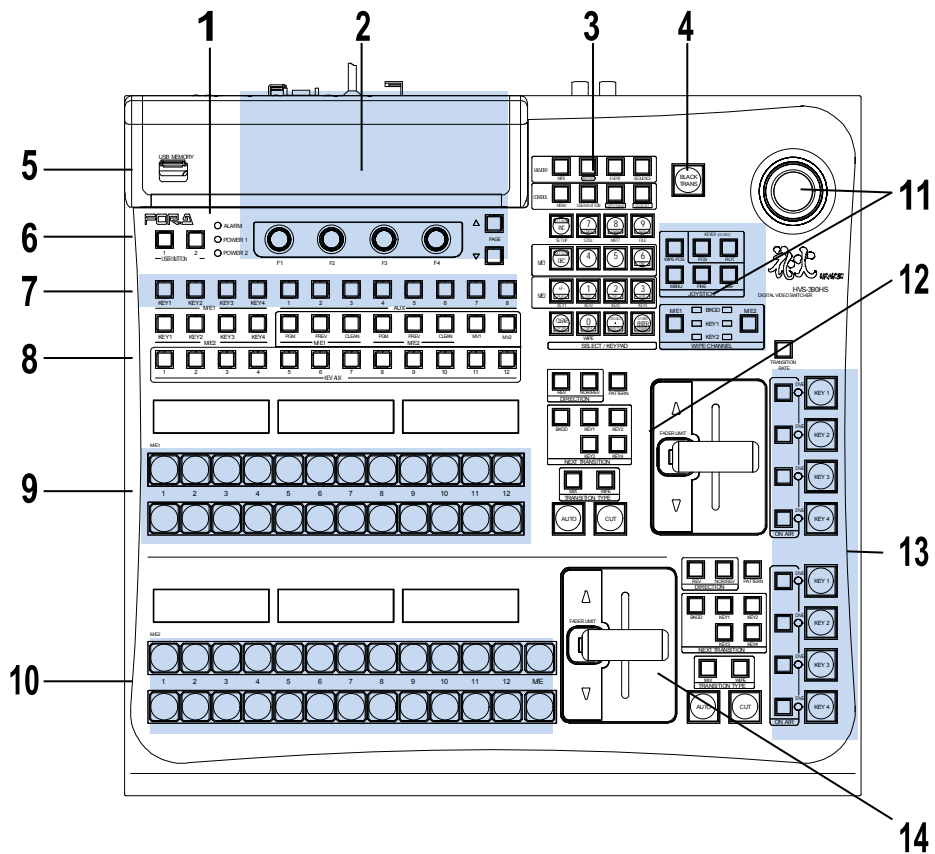
◆ **HVS-392WOU Control Panel**

No.	Name	Description	Refer to sec.
1	ALARM indicator POWER 1 indicator POWER 2 indicator	**ALARM** indicates the fan alarm status in the main unit. The indicator blinks red when an alarm occurs. In such a case, power off the system and consult your FOR-A supplier. The indicator is normally unlit. **POWER 1 and 2** indicators light up green when the power is properly supplied. * The indicators work the same as those located on the HVS-390HS front panel.	33-1
2	Menu Control Block	The menu control block is composed of the menu display, menu control push-buttons (F1 to F4) and page up/down buttons.	4
3	SELECT/KEYPAD	Multi-function keypad Four memory buttons (WIPE, MACRO, EVENT, and SEQUENCE) and four control buttons (MENU, USER BUTTON, COPY/SWAP and SEQ EDIT) above the keypad change the keypad mode. The following functions are available.	
		Menu setting	4-1-1
		Number input	4-2-3
		Copying/swapping setting values	4-3
		Transition pattern selection	8-8-2
		Event control	16
		Sequence operation	17
		User button operation	22
4	BLACK TRANS	Used to perform black transitions.	8-3
5	USB MEMORY	Used to connect a USB flash memory for image file import and export or system setting backup. (USB1.1, Type-A)	19
6	USER BUTTON	User assignable buttons. Menu shortcuts or functions can be assigned to these buttons.	22
7	BUS SELECT Block	Used to select a bus, then to select a video in the KEY/AUX bus (No 8).	6-2-1

8	KEY/AUX Bus	Used to select video for the bus selected in the BUS SELECT block (No. 7). The video can be selected from KEY/AUX bus buttons, PGM, PREV, CLEAN and MV.	10 15-1
9	M/E1 Bus	Used to select video for M/E1 background.	5
10	M/E2 Bus	Used to select video for M/E2 background.	5
11	Joystick Block	Used to set position, size or color settings in the specific menu parameters.	4-2-4
12	M/E1 Transition Block	Used to perform transitions for M/E1 background and keys.	8
13	KEY Transition Block	Used to perform key transitions	8-9
14	M/E2 Transition Block	Used to perform transitions for M/E2 background and keys.	8

◆ **Rear Panels**

HVS-392OU

HVS-392ROU

HVS-392WOU
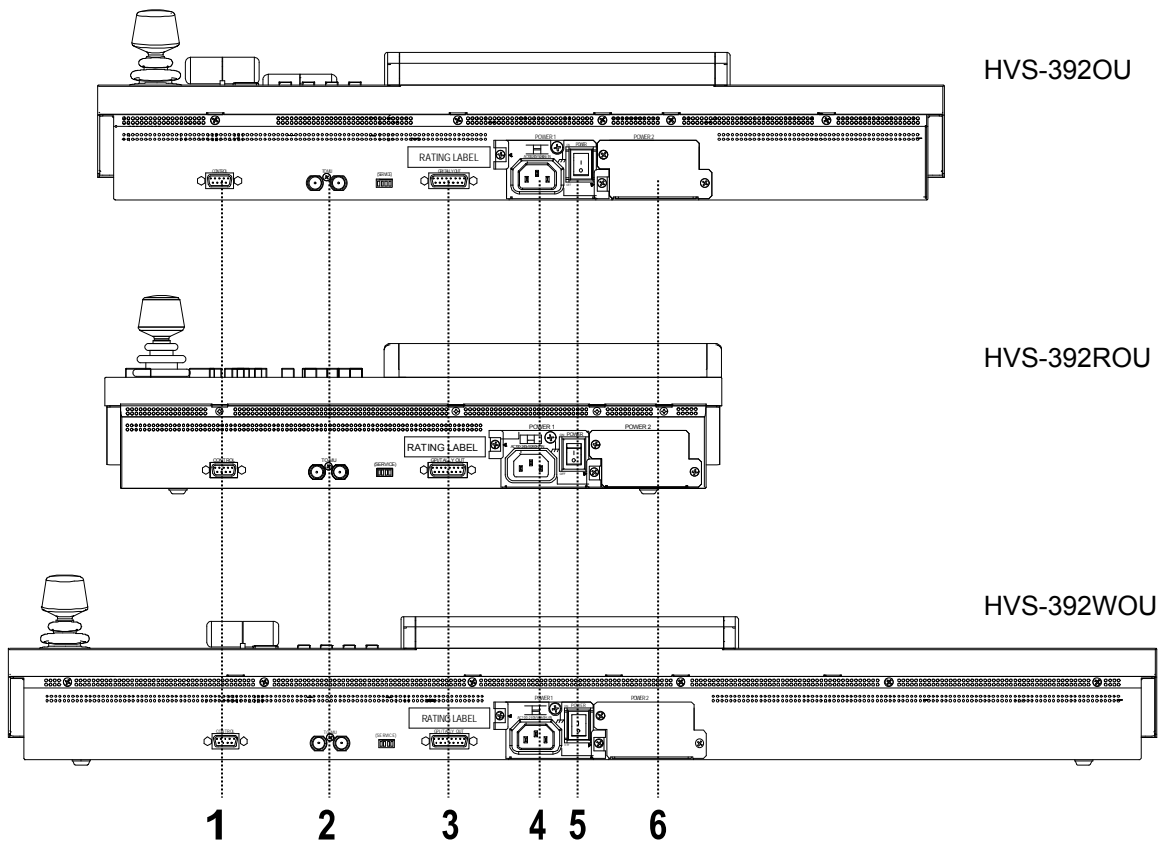
No.	Name	Description	Refer to sec.
1	CONTROL	Used for service purposes. Do not use.	
2	TO MU	Arcnet port. Used for the main unit connection. The other connector (loopthrough) can be used for AUX unit connection. The loopthrough connector must be 75 ohm terminated if it is not connected to other system equipment. (BNC)	32-1 35-2
3	GPI/TALLY OUT	Used for GPI input/output and tally output. (15-pin D-sub, female)	2-4-5 24-1-3
4	AC IN	Used to supply AC power. (100 VAC - 240 VAC 50/60 Hz)	
5	POWER 1	Used to power the unit On/Off.	
6	POWER 2	Used for installing redundant power supply. (HVS-39PSO option)	

2-3. Option Slots

All expansion cards can be fitted via the rear of the main unit. The bottom 4 slots are dedicated to these optional cards.

IMPORTANT
For further details on system expansion (optional cards) and fan replacement, contact your FOR-A supplier.
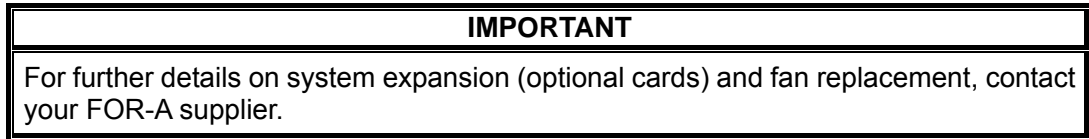
◆ **Slots for Option Cards at Main Unit Rear Panel**
Two input expansion cards can be installed into Slot A and B.
Two output expansion cards can be installed in slot OUT 1 to 2 (E and F).
Two tally relay expansion cards (HVS-30TALR) can be installed in Slot A to F.

A (IN 1)   B (IN 2)   C (OUT 1)   D (OUT 2)
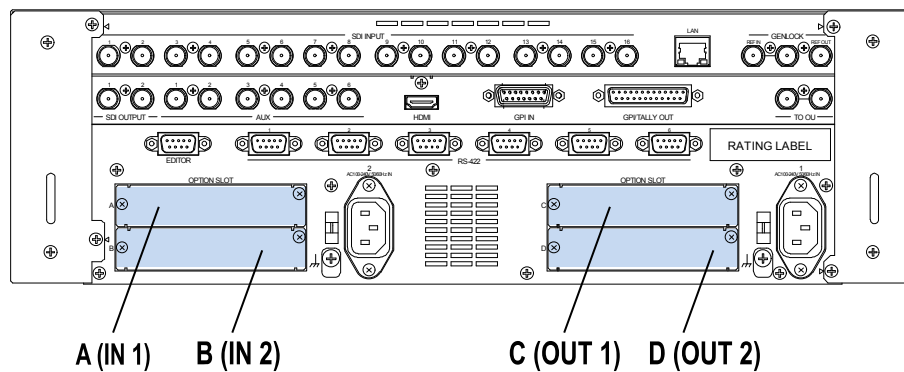
Option Slot	Available card	Available Video Signal (Connector)	Number of input/output per card	Refer to sec.
A (IN 1) B (IN 2)	HVS-30HSDI-A	HD/SD SDI (BNC) (w/o resize function)	4 inputs	5-10
	HVS-30HSDI	HD/SD SDI (BNC) (w/ resize function)	4 inputs	
	HVS-30HSAI	HD/SD analog component or Analog composite (BNC)	2 inputs	
	HVS-30PCIN	Digital RGB (DVI-D) and Analog RGB (VGA)	2 inputs	
C (OUT 1) C (OUT 2)	HVS-30HSDO	HD/SD SDI (BNC)	3 outputs	6-7
	HVS-30HSAO	HD/SD analog component or Analog composite (BNC)	2 outputs	6-7
	HVS-30PCO	Digital RGB (DVI-D) and Analog RGB (VGA)	2 outputs	6-7
A to D	HVS-30TALR	Tally Relay Output (37-pin D-sub)	18 outputs	2-4-6 24-2-3

2-4. Interfaces

2-4-1. EDITOR Connector
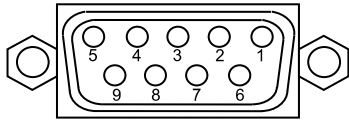
9-pin D-sub (male)
with inch screws

◆ **Pin Assignment Table**

Pin No.	Signal Name	In/Out	Description
1	FG		Frame ground
2	T-	Out	Transmit data (-)
3	R+	In	Receive data (+)
4	SG		Signal ground
5	NC		Not used
6	SG		Signal ground
7	T+	Out	Transmit data (+)
8	R-	In	Receive data (-)
9	FG		Frame ground

2-4-2. RS-422 Connector 1-6
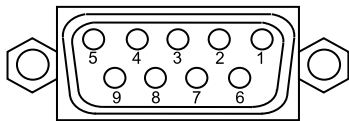
9-pin D-sub (female)
with inch screws

◆ **Pin Assignment Table**

Pin No.	Signal Name	In/Out	Description
1	FG		Frame ground
2	R-	In	Receive data (-)
3	T+	Out	Transmit data (+)
4	SG		Signal ground
5	NC		Not used
6	SG		Signal ground
7	R+	In	Receive data (+)
8	T-	Out	Transmit data (-)
9	FG		Frame ground

RS-422 ports are used for the following device connections. See the related chapters to configure the connections.

HVS-30RU: See section 35-1. "Connecting Remote Panels (HVS-30RU)."
Tally Units: See section 24-2. "Tally Output."
VTR/VDCP devices: See section 25. "VTR / VDCP Control."
Routers: See sections 26 and 27.

2-4-3. GPI IN Connector
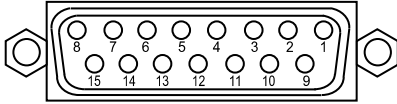
15-pin D-sub (female)
with inch screws

◆ **Pin Assignment Table**

Pin No.	Description
1	M/E1 BKGD AUTO TRANS (default setting)
2	M/E1 KEY1 AUTO TRANS (default setting)
3	M/E1 KEY2 AUTO TRANS (default setting)
4	M/E1 KEY3 AUTO TRANS (default setting)
5	M/E1 KEY4 AUTO TRANS (default setting)
6	M/E2 BKGD AUTO TRANS (default setting)
7	M/E2 KEY1 AUTO TRANS (default setting)
8	M/E2 KEY2 AUTO TRANS (default setting)
9	M/E2 KEY3 AUTO TRANS (default setting)
10	M/E2 KEY4 AUTO TRANS (default setting)
11	Not used
12	Not used
13	Signal ground
14	Signal ground
15	Signal ground

The pin assignment shown above is the factory default assignment. Pin assignments can be changed via operational menus. See section 24-1-1 "GPI IN."

◆ **GPI IN Circuit**

Switch or Relay
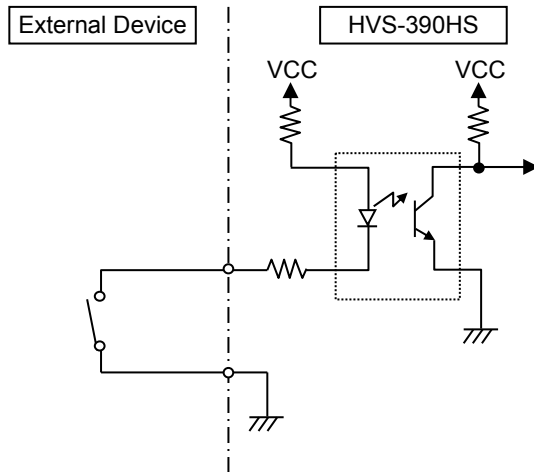
Open collector
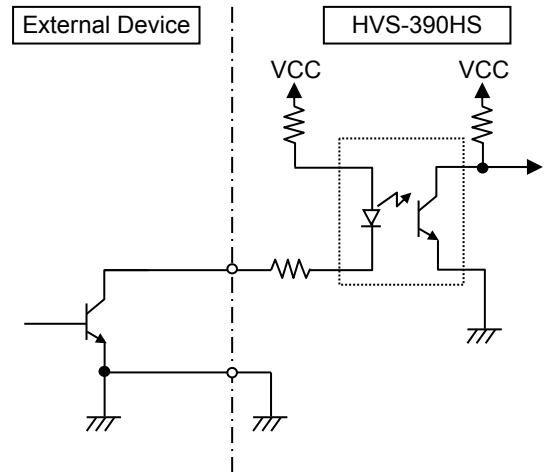
2-4-4. GPI/TALLY OUT Connector
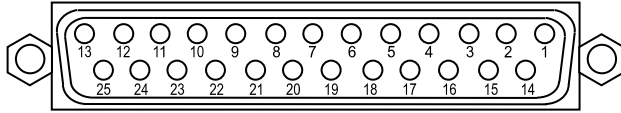
25-pin D-sub (female)
with inch screws

◆ **Pin Assignment Table**

Pin No.	Description
1	RED TALLY-IN01 (default setting)
2	RED TALLY-IN02 (default setting)
3	RED TALLY-IN03 (default setting)
4	RED TALLY-IN04 (default setting)
5	RED TALLY-IN05 (default setting)
6	RED TALLY-IN06 (default setting)
7	RED TALLY-IN07 (default setting)
8	RED TALLY-IN08 (default setting)
9	RED TALLY-IN09 (default setting)
10	RED TALLY-IN10 (default setting)
11	RED TALLY-IN11 (default setting)
12	RED TALLY-IN12 (default setting)
13	RED TALLY-IN13 (default setting)
14	RED TALLY-IN14 (default setting)
15	RED TALLY-IN15 (default setting)
16	RED TALLY-IN16 (default setting)
17	RED TALLY-IN17 (default setting)
18	RED TALLY-IN18 (default setting)
19	RED TALLY-IN19 (default setting)
20	RED TALLY-IN20 (default setting)
21	Frame ground
22	Frame ground
23	Frame ground
24	Frame ground
25	+5 V output (MAX 0.5 A)

The pin assignments shown above are the factory default assignments. Pin
assignments can be changed via operational menus. See section 24-1-2 "GPI OUT"
and 24-2-2 "Tally Output Settings (GPI/TALLY OUT)."

◆ **GPI OUT/ TALLY Out Circuit**
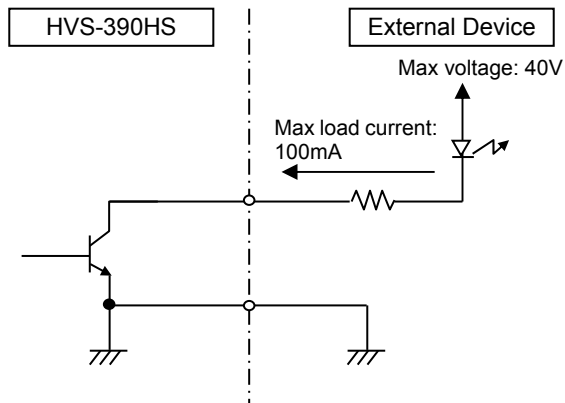
2-4-5. GPI/TALLY OUT Connector (HVS-392OU/ROU/WOU)
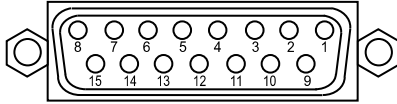
15-pin D-sub (female)
with inch screws

◆ **Pin Assignment Table**

Pin No.	IN/OUT	Description
1	IN	M/E1 BKGD AUTO TRANS (default setting)
2	IN	M/E1 KEY1 AUTO TRANS (default setting)
3	IN	M/E1 KEY2 AUTO TRANS (default setting)
4	IN	M/E1 KEY3 AUTO TRANS (default setting)
5	IN	M/E1 KEY4 AUTO TRANS (default setting)
6	IN	Not Used (default setting)
7	-	Signal ground
8	-	Signal ground
9	OUT	M/E1 BKGD TRANS STS (default setting)
10	OUT	M/E1 KEY1 TRANS STS (default setting)
11	OUT	M/E1 KEY2 TRANS STS (default setting)
12	OUT	M/E1 KEY3 KEY2 TRANS STS (default setting)
13	OUT	M/E1 KEY4 TRANS STS (default setting)
14	OUT	Not Used (default setting)
15	-	+5 V output (MAX 0.5 A)

The pin assignments shown above are the factory default assignments. Pin
assignments can be changed via operational menus. See section 24-1-3 "OU
GPI/O." See the previous sections for the GPI IN and GPI/TALLY OUT circuits.

2-4-6. TALLY OUT Connector (HVS-30TALR)

The TALLY OUT connectors are available only when HVS-30TALR cards are installed.
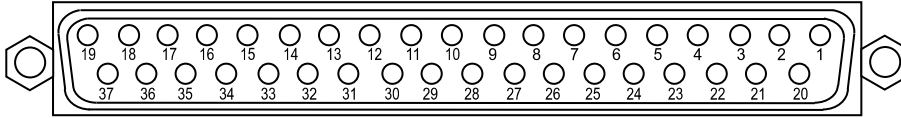
◆ **Pin Assignment Table (37-pin D-sub, female, with inch screws)**

Pin No.	Output signal	Channel No.	Pin No.	Output signal	Channel No.
1	TALLY OUT1 Normally Open	1	20	TALLY OUT10 Normally Open	10
2	TALLY OUT1 COMMON		21	TALLY OUT10 COMMON	
3	TALLY OUT2 Normally Open	2	22	TALLY OUT11 Normally Open	11
4	TALLY OUT2 COMMON		23	TALLY OUT11 COMMON	
5	TALLY OUT3 Normally Open	3	24	TALLY OUT12 Normally Open	12
6	TALLY OUT3 COMMON		25	TALLY OUT12 COMMON	
7	TALLY OUT4 Normally Open	4	26	TALLY OUT13 Normally Open	13
8	TALLY OUT4 COMMON		27	TALLY OUT13 COMMON	
9	TALLY OUT5 Normally Open	5	28	TALLY OUT14 Normally Open	14
10	TALLY OUT5 COMMON		29	TALLY OUT14 COMMON	
11	TALLY OUT6 Normally Open	6	30	TALLY OUT15 Normally Open	15
12	TALLY OUT6 COMMON		31	TALLY OUT15 COMMON	
13	TALLY OUT7 Normally Open	7	32	TALLY OUT16 Normally Open	16
14	TALLY OUT7 COMMON		33	TALLY OUT16 COMMON	
15	TALLY OUT8 Normally Open	8	34	TALLY OUT17 Normally Open	17
16	TALLY OUT8 COMMON		35	TALLY OUT17 COMMON	
17	TALLY OUT9 Normally Open	9	36	TALLY OUT18 Normally Open	18
18	TALLY OUT9 COMMON		37	TALLY OUT18 COMMON	
19	Reserved				

* Normally Open: Open when a tally is present and closed with COMMON pin when no tally is present.
* Do not connect Pin 19.

Channel No.	Tally Output for **Card 1**	Tally Output for **Card 2**
1	RED TALLY-IN01 (default)	GREEN TALLY-IN01 (default)
2	RED TALLY-IN02 (default)	GREEN TALLY-IN02 (default)
3	RED TALLY-IN03 (default)	GREEN TALLY-IN03 (default)
4	RED TALLY-IN04 (default)	GREEN TALLY-IN04 (default)
5	RED TALLY-IN05 (default)	GREEN TALLY-IN05 (default)
6	RED TALLY-IN06 (default)	GREEN TALLY-IN06 (default)
7	RED TALLY-IN07 (default)	GREEN TALLY-IN07 (default)
8	RED TALLY-IN08 (default)	GREEN TALLY-IN08 (default)
9	RED TALLY-IN09 (default)	GREEN TALLY-IN09 (default)
10	RED TALLY-IN10 (default)	GREEN TALLY-IN10 (default)
11	RED TALLY-IN11 (default)	GREEN TALLY-IN11 (default)
12	RED TALLY-IN12 (default)	GREEN TALLY-IN12 (default)
13	RED TALLY-IN13 (default)	GREEN TALLY-IN13 (default)
14	RED TALLY-IN14 (default)	GREEN TALLY-IN14 (default)
15	RED TALLY-IN15 (default)	GREEN TALLY-IN15 (default)
16	RED TALLY-IN16 (default)	GREEN TALLY-IN16 (default)
17-18	Do not use. (default)	Do not use. (default)

* Whether **Card 1** or **Card 2** is chosen on a dipswitch on the HVS-30TALR card.
 Tally outputs can be freely assigned. (See section 24-2-3. "Tally Output Settings (HVS-30TALR).")

◆ TALLY OUT circuit (Relay output)

| HVS-30TALR side | TALLY OUT connector | External device |

COM

I_A → **VCC**

C.

VCC = 24 VDC
I_A = 400 mA (max)
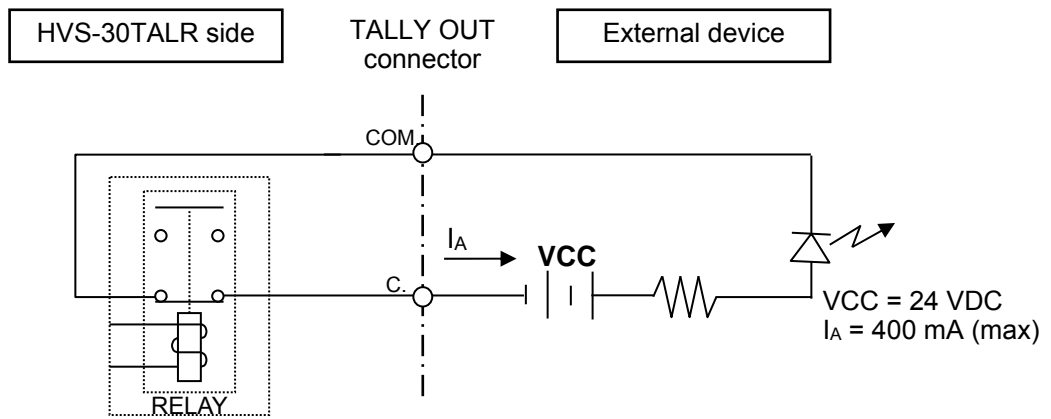
RELAY

- The maximum switching current for each output is 400 mA.
- The HVS-30TALR is a relay board. Use the supplied or commercially-prepared 37-pin D-sub male connector (with #4-40 inch screws) for making a connection cable.

3. Connection

3-1. Basic Configuration

HD/SD SDI

VIDEO SERVER
VCR, etc.

Reference

TSG (Reference)

75 Ω termination

RATING LABEL

To AC
power
source

ARCNET (BNC)

Reference

Preview
(AUX1)

HD/SD SDI (M/E2 PGM)

HD/SD SDI (M/E1 PGM)

75 Ω termination

RATING LABEL

To AC
power
source
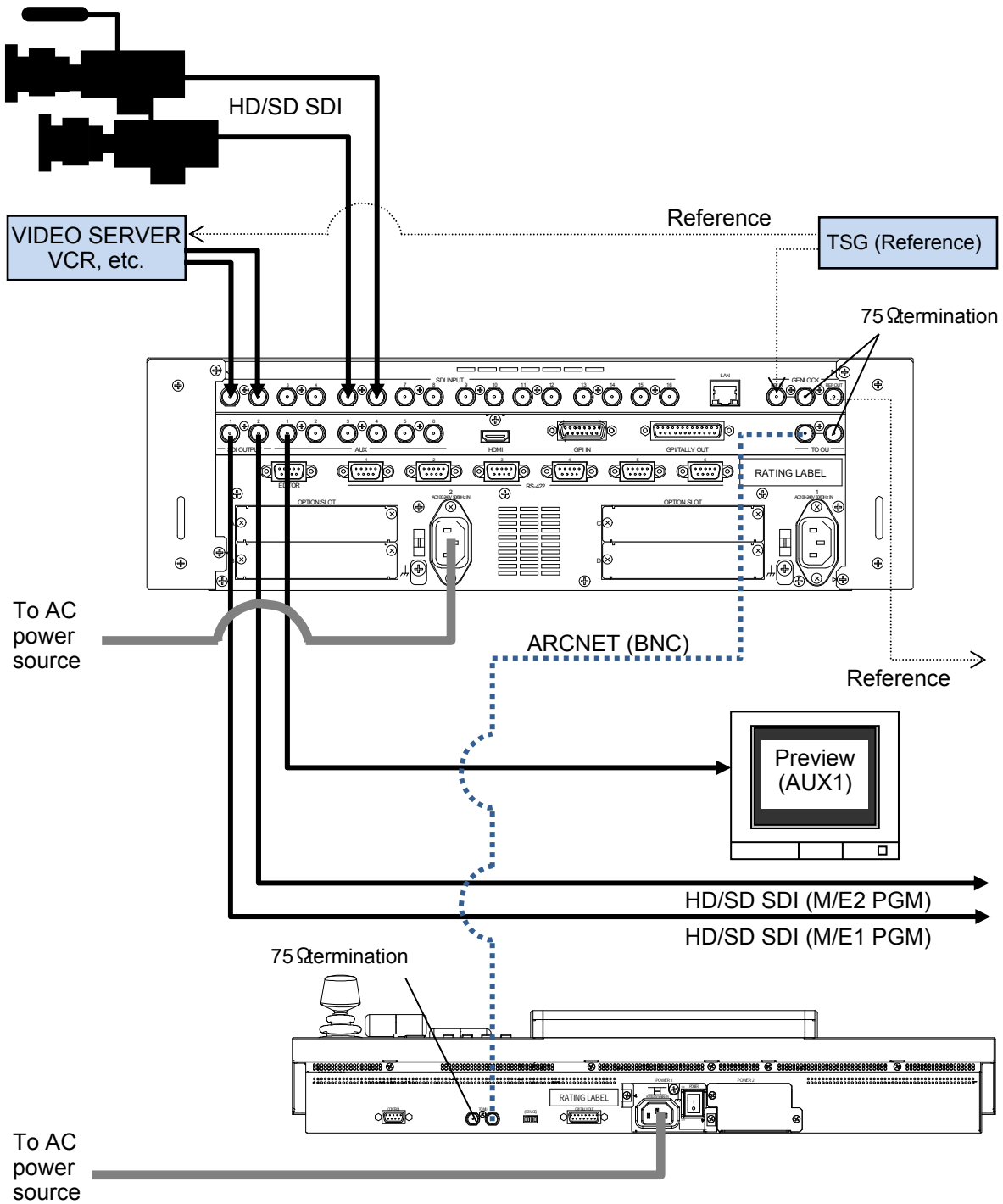
NOTE
See section 32-1. "ARCNET" for connecting between the main unit and control panel(s) via Arcnet. See section 21-3. "Selecting Reference Signal" for reference signal setting. See section 6-3. "Preview Set Up" for how to display the preview image.

3-2. Optional Configuration
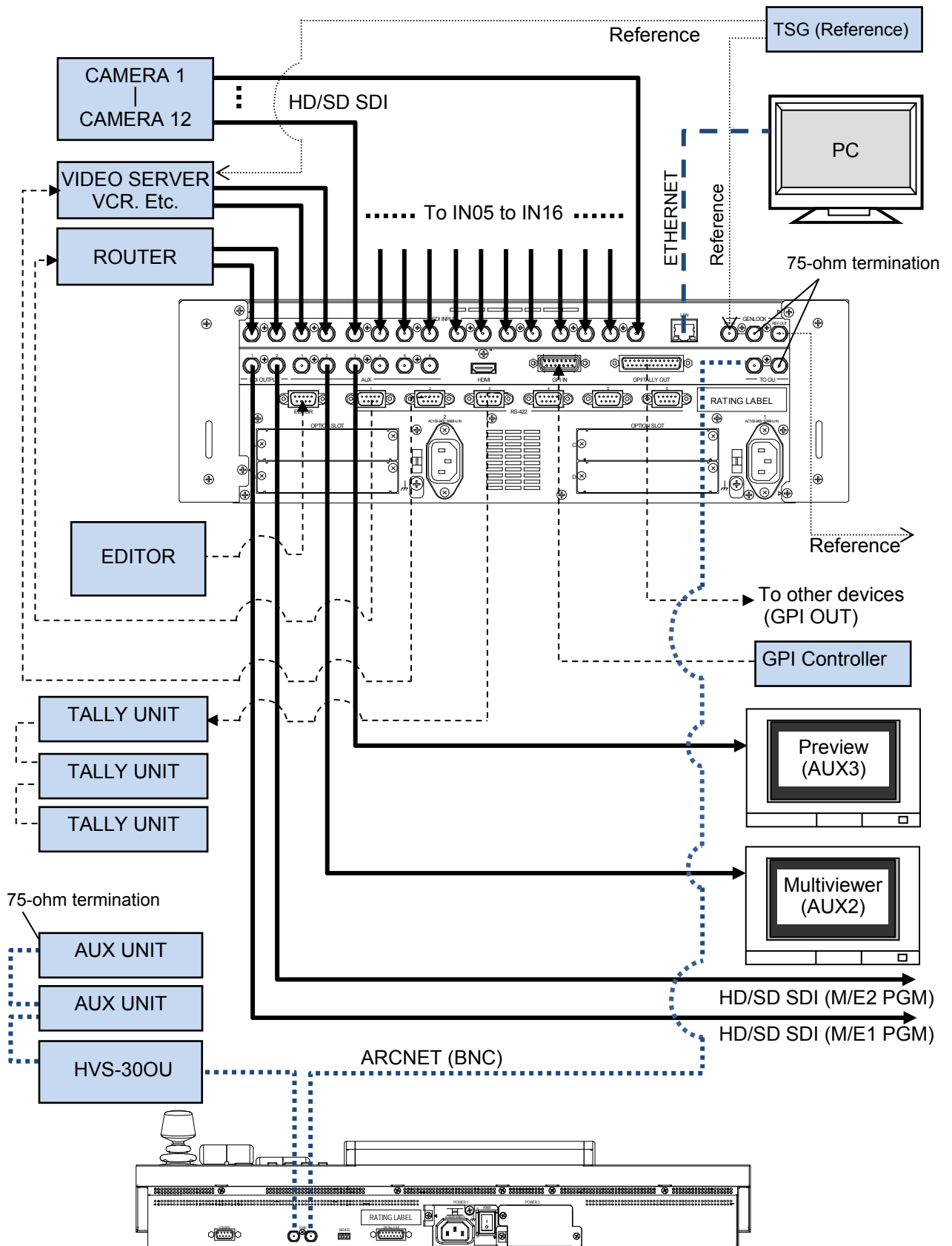
NOTE
The HVS-AUX8/16/32 units (Hanabi series option), which are used for selecting AUX signals, can be deployed in the same Arcnet LAN as control panels. See section 32-1. "ARCNET" for Arcnet connection. See the operation manual of the Auxiliary Unit for how to connect the AUX units to the switcher. See section 15. "Multiviewer" for multi-display connection and setup. See section 24-1. "GPI Control" and section 24-2-2. "Tally Output Settings (GPI/TALLY OUT)" for setting up GPI input, GPI output and tally output. See section 24-2-4. "Sending Tally Signals to Tally Units", if you configure the tally units (Hanabi series option). See section 29. "Editor Control (Option)" for editor control.

3-3. How to Connect between MU and OU Units

The multiple control panels (OU) and remote units (RU) can be connected to single HVS-390HS (MU). The maximum system configuration is:

MU (HVS-390HS)	1
OU (HVS-391OU, HVS-392OU/ROU/WOU)	3 (Multiple of same model is possible.)
RU (HVS-30RU)	2

MU and OU units communicate via Arcnet. If your MU and OU connection is a one-to-one connection: an HVS-390HS and HVS-392OU/ROU/WOU, setup is very easy. Just connect the MU and OU. Any additional network setting is not necessary.
However, if your HVS-390 series system has two or three OU units, the Arcnet ID of devices should be changed before configuring the system, because the Arcnet does not work if two devices with the same ID exist in the network. (The remote control units connect to the MU via RS-422.)

Model	Arcnet ID (default setting)
HVS-391OU	1
HVS-392OU	1
HVS-392ROU	1
HVS-392WOU	1
HVS-390HS	250

To Change the Arcnet OU ID
(1) Connect the MU (HVS-390HS) and an OU (HVS-392OU/ROU/WOU) via Arcnet using a BNC cable as shown below.

MU ID: 250   OU ID: 1

75 Ω termination

Arcnet
(75 Ω BNC cable)

75 Ω termination
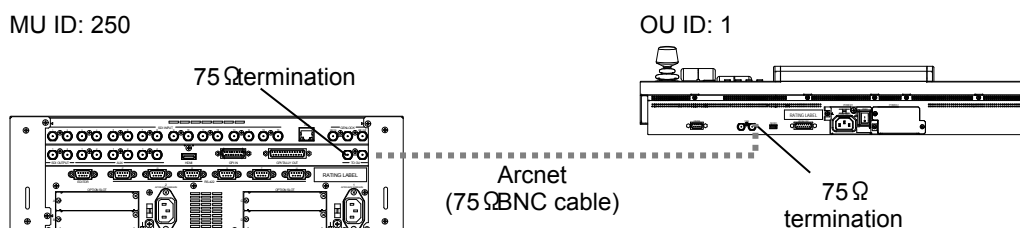
(2) The MENU button in the CONTROL block at the right of the menu display should light up at power ON.
(3) Press MENU and then press SETUP.
(4) The SETUP menu top page appears in the menu display. Turn F1 to select SYSTEM and then press F1.

```
SETUP     : >SYSTEM   >INPUT    >OUTPUT   >PANEL
MENU      : >GPI/TLY >FUNCTION>EXT I/F  >STATUS
```
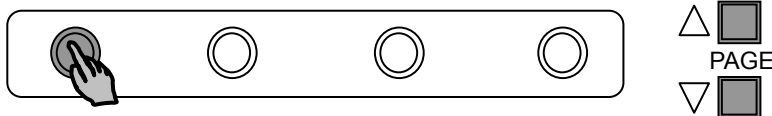

(5) In the [SETUP - SYSTEM] menu, turn F1 to select ARCNET and then press F1 to display the [SETUP - SYSTEM - ARCNET] menu.

```
SETUP     : >FORMAT   >REF I/O >ARCNET   >ETHERNET
SYSTEM    : >RS-422   >TIME     >INIT     >REBOOT
```

```
SYSTEM   : OU ID : OU NO : CTRL MU:        : 1/2
ARCNET   : = 1    : =OU1  : =250   :        :
```

(6) To change the ID of OU, turn F1 to change ID to 2, for example. Then press F1 to confirm the change.

```
SYSTEM   : OU ID : OU NO : CTRL MU:        : 1/2
ARCNET   : = 2    : =OU1  : =250   :        :
```

Change the ID numbers until all of your devices in the Arcnet have different ID numbers.

(7) Turn off the power of the MU and OU units.
(8) Connect all devices in the system and power them on.

NOTE
If connecting multiple control and remote panels to the system, refer to section 35. "Connecting Control and Remote Panels."

3-4. Power ON

Before powering on the system, verify that all system connections are properly made according to section 3. "Connection."

◆ **Control Pannel Power supply**
   Supply AC power to the control panel using the provided power cord and turn on the power switch located at the rear panel of your control panel.

◆ **MU (Main Unit) Power supply**
   Supply power to the MU using the provided power cable and turn on the power switch located at the front panel.

IMPORTANT
If a redundant power supply option is installed, turn on both power switches.

3-5. System Signal Format Selection at Initial Use

When first switching on your unit, please select a signal format as shown below.

(1) The MENU button in the CONTROL block at the right of the menu display should light up at power ON.
(2) Press MENU, then press SETUP.
(3) The SETUP menu top page appears in the menu display. Turn F1 to select SYSTEM and then press F1.

```
SETUP    : >SYSTEM   >INPUT    >OUTPUT   >PANEL
MENU     : >GPI/TLY  >FUNCTION >EXT I/F  >STATUS
```


PAGE
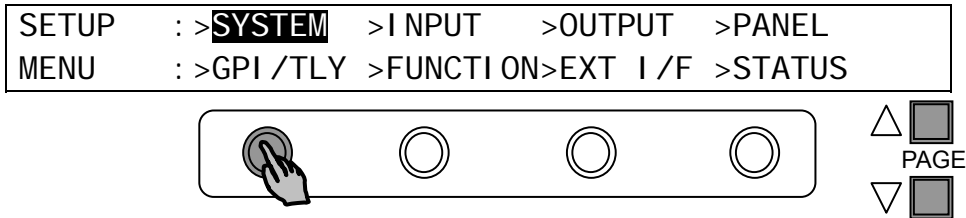
(4) The [SETUP - SYSTEM] menu as shown below appears. Turn F1 to select FORMAT and then press F1.

```
SETUP    : >FORMAT   >REF I/O  >ARCNET   >ETHERNET
SYSTEM   : >TIME     >INIT     >REBOOT
```
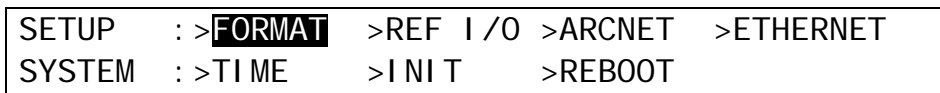
(5) The [SETUP - SYSTEM - FORMAT] menu as shown below appears. Turn F1 to select the signal format used in the switcher. Then turn F3 to select the aspect ratio.

```
SYSTEM   :    FORMAT      : ASPECT : SW TMNG:  1/1
FORMAT   : =1080/59.94i   : =16:9 :  =ANY   :
```
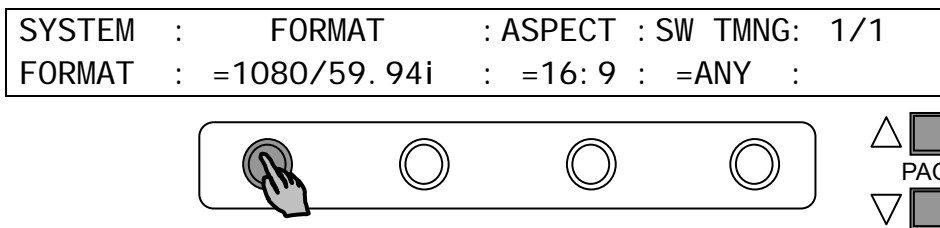

PAGE

(6) Press the page up button to return to the [SETUP - SYSTEM] menu.
(7) Turn F1 to select REBOOT and press F1. Press ENTER in the SELECT/KEYPAD block to reboot the switcher

```
SETUP    : >FORMAT   >REF I/O  >ARCNET   >ETHERNET
SYSTEM   : >RS-422   >TIME     >INIT     >REBOOT
```


MENU

SETUP

F1-F4

ENTER

PAGE UP
PAGE DOWN
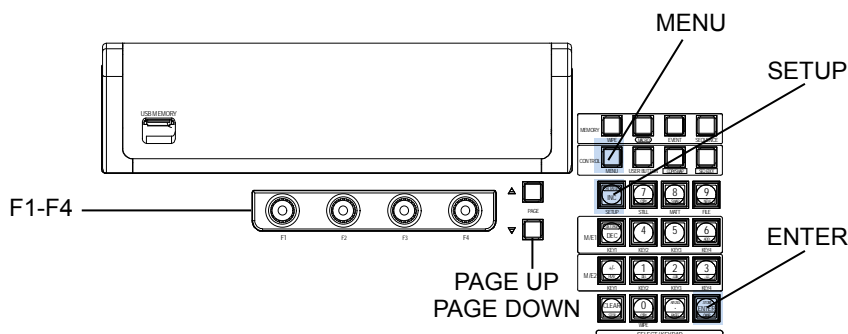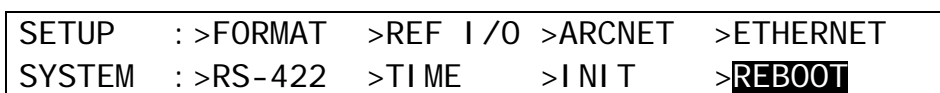
(8) The selected format and aspect are applied after restarting the switcher.

IMPORTANT
When the switcher is powered ON at the first time, set the date and time if it is not properly set. (See section 21-7. "Setting Date and Time.")

4. Menu Operations

4-1. How to Access Menus

4-1-1. Menu Access Buttons

Press MENU in the CONTROL block (see below), which changes the buttons in the SELECT/KEYPAD block to the menu buttons, and then press the buttons on the Keypad to access menus.
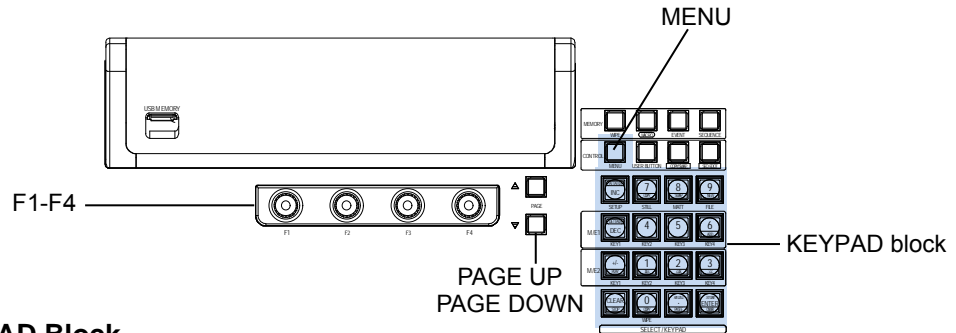
◆ **KEYPAD Block**

Button	Accessed menu	Menu Description
SET UP	SETUP MENU	Accesses menu for setups of system, panel, video input, video output and external interface.
STILL	STILL STORE	Accesses menu for operations with still images and video clips.
MATT	MATT COLOR	Accesses menu for matte color
FILE	FILE TOP	Accesses menu for file operations using a USB
M/E1 KEY1-4	M/E1 KEY1-4 SETUP	Accesses menu for setting up M/E1 KEY1 to 4.
M/E2 KEY1-4	M/E2 KEY1-4 SETUP	Accesses menu for setting up M/E2 KEY1 to 4. (2M/E control panel only)
WIPE	WIPE	Accesses menu for WIPE pattern modification.

SELECT / KEYPAD Block

The SELECT/KEYPAD block has four control modes and four memory modes as shown in the table below. Eight control buttons above the Keypad change the Keypad mode.
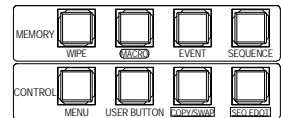
Mode Selection Buttons

Button	Function
MENU	Changes the Keypad to menu access buttons. Pressing on a button in the Keypad displays the related menu. The MENU control button blinks if a parameter has changed and requires rebooting. In such case, reboot the switcher. (See section 23-1. "Rebooting System.")
USER BUTTON	Changes the Keypad to user buttons.
COPY/SWAP	Changes the Keypad to copy/swap operation buttons.
SEQ EDIT	Changes the Keypad to sequence edit buttons.
WIPE	Changes the Keypad to WIPE pattern memory buttons
MACRO	Changes the Keypad to macro control and memory buttons
EVENT	Changes the Keypad to event memory buttons.
SEQUENCE	Changes the Keypad to sequence memory buttons.

4-1-2. Other Menu Access Buttons

By **pressing once or twice** specific buttons in the bus select section or transition control section, the related menus can be displayed. (See the figure and tables below.)
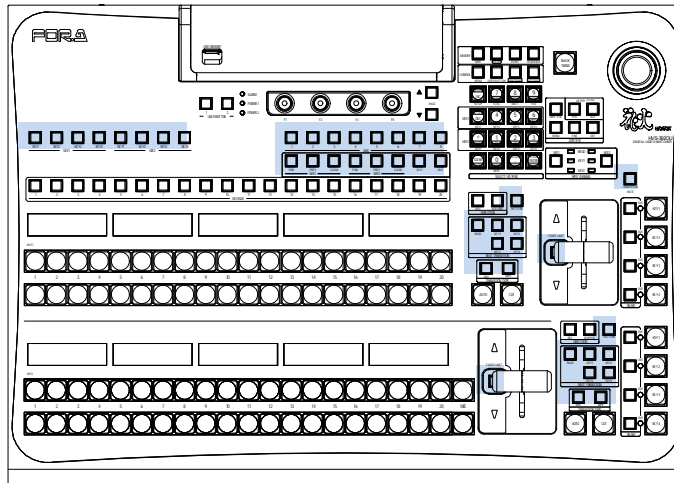
M/E1 and M/E2 bus blocks

Button	Action	Accessed Menu
MATT1 to 2 (*1)	Pressing twice quickly	[MATT] menu
STL1 to 4 (*1)	Pressing twice quickly	[STILL] menu
STK1 to 4 (*1)	Pressing twice quickly	[STILL] menu
SHIFT	Pressing twice quickly	[SETUP - INPUT - ASSIGN](6/6) menu

(*1) Note that MATT1-2 and STL1-4 and STK1-4 buttons represent the bus buttons assigned to MATT1, MATT2 and STILL1 to STILL4, STILLKEY1 to STILLKEY4 signals respectively at M/E1, M/E2 and KEY/AUX. (Refer to section 5. "Video Sources.")

BUS SELECT and KEY/AUX block

Button	Action	Accessed Menu
M/E1 KEY1 to 4	Pressing twice quickly	[M/E1 KEY(1, 2, 3, 4) SETUP] menu
M/E2 KEY1 to 4	Pressing twice quickly	[M/E2 KEY(1, 2, 3, 4) SETUP] menu
MV1-2	Pressing twice quickly	[SETUP - OUTPUT - MV(1, 2)] menu
PREV (M/E1, M/E2)	Pressing twice quickly	[SETUP - OUTPUT - CLN/PREV] PREV menu
CLEAN (M/E1, M/E2)	Pressing twice quickly	[SETUP - OUTPUT - CLN/PREV] CLEAN menu
AUX1-8	Pressing twice quickly	[SETUP - OUTPUT - OUT XPT] (1/4) menu

Transition Block

Button	Action	Accessed Menu
BKGD	Pressing twice quickly	[TRANS](1/6) menu
KEY1 to 4	Pressing twice quickly	[TRANS](2/6) menu
MIX	Pressing twice quickly	[TRANS](1/6) menu
WIPE	Pressing twice quickly	[WIPE PATTERN] menu
FADER LIMIT	Pressing once	[TRANS LIMIT] menu
TRANSITION RATE	Pressing once	[TRANS](1/6) menu
PATTERN	Pressing once	[WIPE PATTERN] menu

4-1-3. USER Button (Menu Shortcut)

User buttons can be assigned to specific menu pages and used as menu shortcuts.
Refer to section 22. "USER Button" for details.

4-2. How to Set Values

4-2-1. Displaying Parameters

See section 4-1. "How to Access Menus" to display a desired menu. If a menu has multiple submenus such as the SETUP menu, navigate to submenus following the procedure below.

Menu navigation (Example for the SETUP menu)
(1) Press MENU in the CONTROL block to the right of the menu display. Then press SETUP in the Keypad to display the SETUP menu. The SETUP menu top page will then appear on the display, as shown below.
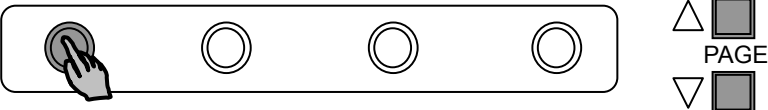
Menu title   Submenu title

```
SETUP    : >SYSTEM  >INPUT    >OUTPUT   >PANEL
MENU     : >GPI/TLY >FUNCTION>EXT I/F  >STATUS
```

(2) Select a submenu to open by turning F1 (The INPUT submenu is selected in the example below.) Then press F1 or the page down button to the right to open the selected submenu.

The current selection is shown in reverse video.

```
SETUP    : >SYSTEM  >INPUT    >OUTPUT   >PANEL
MENU     : >GPI/TLY >FUNCTION>EXT I/F  >STATUS
```


(3) The [SETUP - INPUT] menu then opens. The [SETUP - INPUT] menu also has got four submenus. Select a submenu to open by turning and then press F1 or turning F1 and pressing the page down button to open it. The ">" in front of menu items indicates that a detail submenu can be accessed by pressing F1.

```
SETUP    : >SIGNAL   >PROC AMP>RENAME    >ASSIGN
INPUT    : >CC        >COLORBAR
```

(4) The [SETUP - INPUT - PROC AMP] menu is displayed as shown below. Now users can change the parameter values.

Menu title   Parameters   Page / Total page

```
INPUT    :SELECT :LumGain: Setup :ENABLE :  1/3
PROC AMP:  =INO4 :  =10.00:  =0     :  =ON    :
```

Values

Page Navigation
As shown in the example below, the [SETUP - INPUT - PROC AMP] submenu spreads across three pages. When first accessed, page 1 of 3 will be displayed. To go to page 2, simply press the page down button. Pressing the page up button returns you to page 1.
Pressing the page up button when located at the first page brings you up one level in the menus. The same happens when pressing the page down button when located at the last page of a menu.

```
INPUT    : SELECT : LumGain:  Setup  : ENABLE :  1/3
PROC AMP:  = INO4 :  =10.00:  =0     :  =ON    :
```

△ PAGE
▽

```
INPUT    : SELECT : ChmGain:  Hue    : ENABLE :  2/3
PROC AMP:  = INO4 :  =10.00:  =0     :  =ON    :
```

△ PAGE
▽
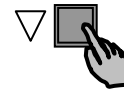
```
INPUT    : WHT-Lv : Setup  : Chroma : Pr-Lv :  3/3
 CLIP    :  =1090 :  =-70  :  =1110 :  =500  :
```

△ PAGE
▽

```
SETUP    : >SIGNAL   >PROC AMP>RENAME   >ASSIGN
INPUT    : >CC       >COLORBAR
```

△ PAGE
▽
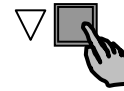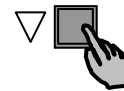
4-2-2. Changing Settings or Values Using F1 to F4

Once parameters appear in the display window, data is displayed over 2 lines. A maximum of four parameters can be displayed at a time. The "=" or ">" in front of value indicates that it is possible to change a parameter setting by turning a menu control push-button (F1 - F4), or trigger an action by pressing it.

Title   Parameters (First line)   Page/Total page
         Settings (Second line)

```
INPUT    : SELECT : FORMAT   : RESIZE :  FS  :  1/4
SIGNAL   :  = INO1 :  =AUTO   :  =---  :  =ON :
```

○   ○   ○   ○

△ PAGE
▽

Menu Control Push-buttons (F1 to F4)	Description
Turn clockwise	Increases value.
Turn counter-clockwise	Decreases value.
Press and hold down at least 1 sec.	Reset the parameter to default value.
Turn while pressing	Quickly increases/decreases value.

◆ **System Parameters Requiring Confirmation**

Some system parameters require users to confirm any parameter setting change after the change by pressing a menu control push-button. This prevents users from making mistakes when changing important system settings.

◆ **Parameters with the sign ">"**

Parameters with the sign ">" in front of them are executable by pushing the relevant menu control push-button. For example, pressing a menu control push-button initializes menus (See section 4-4. "How to Return Settings to Default."), stores still images (See section 12. "Still Store."), saves or loads data (See section 19. "File Operations").

Parameters for selecting colors can be select a color among eight standard

For color parameters, a menu control should be pressed after selecting a color from 8 standard colors. (See section 5-9. "Bus Matte")

4-2-3. Changing Settings or Values Using the Numeric Keypad

Users can also use the keypad to input numerical settings to a menu. The procedure example for changing the matte color by using the keypad is as follows.

(1) Press MENU in the CONTROL block.
(2) Press MATT to display the BUS MATT COLOR menu.
(3) To change the S (Saturation) item, press F1.
(4) Input a new setting from the keypad.
(5) Press ENTER to confirm the setting.
(6) To change the L (Luminance) item, press F2, input the new setting from the keypad and press ENTER.
(7) To change the H (Hue) item, press F3, input the new setting from the keypad and press ENTER.

```
MATT1    :    BUS MATT1 COLOR    :RECALL : 1/4
COLOR    : S=50.0  L=80.2  H=125.5:  >GREEN:
```


| MENU |
| MATT |
| F1-F4 |
| ENTER |
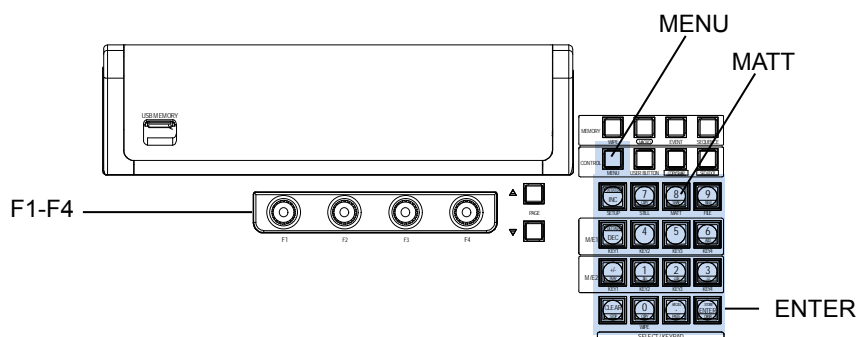
IMPORTANT
When pressing a push-button, press it down lightly and release it within 1 sec. Note that if you press and hold a control button for more than 1 sec., related settings will be returned to their default value and a beep will sound.

● Pressing CLEAR before ENTER cancels the changes just made.
● To enter a negative number, enter the number, press ± then press ENTER.

KEYPAD Operation in Numeric Input mode

The KEYPAD can operate in multiple modes by using the control buttons above the KEYPAD. To use the KEYPAD for menu input, display a desired parameter, press the menu control push-button just below the parameter (F1-F4), and enter the value using the numeric keypad and then press ENTER in the KEYPAD.

4-2-4. Changing Settings or Values Using the Joystick

Users can also use the joystick to set position, size and color settings to specific parameters. The menu pages controllable from the JOYSTICK block are shown in the table below.

MATT, KEY and MV menu

Menu	Menu Page	Menu	Menu Page
MATT1	BUS MATT1 COLOR	MATT2	BUS MATT2 COLOR1 BUS MATT2 COLOR2
M/E1 KEY1 M/E1 KEY2 M/E2 KEY1 M/E2 KEY2	BORDER COLOR POSITION SIZE (*1) LOCAL ROTATION (*2) CENTER POSITION INSERT MATT COLOR KEY EDGE COLOR KEY AUTO CK	M/E1 KEY3 M/E1 KEY4 M/E2 KEY3 M/E2 KEY4	BORDER COLOR POSITION SIZE (*1) LOCAL ROTATION (*2) CENTER POSITION INSERT MATT COLOR
INPUT SIDE	MATT COLOR		

(*1) To open the related menu, quickly press KEY1-4 twice in the BUS SELECT section, then quickly press POS twice in the Joystick section.
(*2) To open the related menu, quickly press KEY1-4 twice in the BUS SELECT section, then quickly press ROT twice in the Joystick section.

WIPE MODIFY menu

Pattern No.	Menu page
All	BORDER COLOR
0 to 99	POSITION ANGLE (*1)
100 to 137	POSITION SIZE (*1)
140 to 162	WARP LIGHT COLOR

(*1) Pressing WIPE POS in the Joystick section opens the related menu.

How to Use the Joystick
Users can simultaneously perform up to three item settings using the joystick as below.
(1) Open a menu page you want to set. The position, rotation and color setting pages can be directly open using the buttons on the Joystick section.

```
ME1  WPBG:        BORDER  COLOR        : RECALL :  2/2
BDR  COL : S=66. 3   L=5. 4     H=3. 5    :  >BLUE :
```

(2) Press MENU in the joystick block.
(3) Move the joystick to the desired direction to change three items simultaneously.
   X-axis   Moves the joystick left and right (for S item above).
   Y-axis   Moves the joystick up and down (for L item above).
   Z-axis   Twist the joystick clockwise or counterclockwise
            (for H item above).

MENU Button
Pressing the MENU button in the Joystick block allows the user to control menu items with the joystick if controllable items are included in the displayed menu.

DEF Button
See section 4-4-2. "Returning Menus to Default."

FINE Button
The FINE button allows the user to finely control the
 joystick when the button lights up.

WIPE POS button
The WIPE POS button is used to quickly access
the related menu pages in the WIPE MODIFY menu
without moving among submenus. (See the previous
page.)

KEYER (2D DVE) POS and ROT buttons
The POS button for KEY (2D DVE) is used to
quickly access the menu pages related to position
and size parameters for KEY menus.
The ROT button for KEY (2D DVE) is used to
quickly access the menu pages related to rotation
parameters. See below for how to use these buttons.
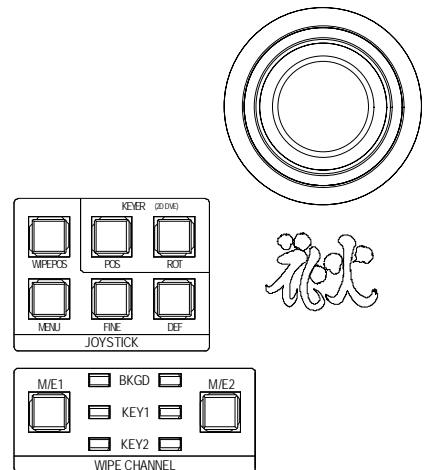
(1) Select a bus (KEY1-4) by pressing a button in the BUS SELECT block or displaying a
    menu for bus.
(2) Pressing POS or ROT as shown in the table below to access menu pages.

Operation	Description
Press POS.	Allows users to adjust key position with the joystick. Keyer 2D DVE must be enabled.
Press ROT.	Allows users to adjust key rotation with the joystick. Keyer 2D DVE must be enabled.
Press POS and ROT at the same time.	Allows users to set the center of key rotation with the joystick.
Press a menu button (KEY1 to 4) while pressing POS or ROT.	Allows users to adjust key position or rotation.
Quickly press POS twice.	Displays the menu page related to position. [KEY - POS/SIZE](1/5) is displayed
Quickly press ROT twice.	Displays the menu page related to rotation. [KEY - POS/SIZE](1/5) is displayed

WIPE CHANNEL

Operation	Description
Press M/E1.	A bus is switched among BKGD, KEY1 and KEY2 each time the button is pressed.
Press M/E2.	A bus is switched among BKGD, KEY1 and KEY2 each time the button is pressed.

To Change WIPE POSITION parameters using the Joystick:
(1) Press WIPE POS.
(2) Press M/E1 or M/E2 to select a bus for changing wipe pattern position.
(3) Change the wipe position using the joystick X and Y axes.

To Select a Bus on which Patterns are modified:
See pattern modify examples in sections 9-3 and 9-4.

To Select a Bus in Direct Pattern Mode
See section 8-8-2. "Direct Pattern Function."

4-3. Copying / Swapping Settings

Keyers can be set up easier with this feature by copying settings from one to another, swapping settings between KEY1 and KEY2, or copying settings from KEY1 to KEY4.

4-3-1. Operation Example: Copying Settings from M1K2 to M1K4

(1) Press COPY/SWAP in the CONTROL block above the Keypad. The button's light turns on and the COPY SWAP menu is displayed (see "DIRECT ON/OFF" and "XPT ON/OFF.") and available buttons on the keypad turns on green.
(2) Press COPY. (Press SWAP if you want to swap settings.)
(3) Press M/E1 KEY2 to copy the settings. The button will light up orange.
(4) Press M/E1 KEY4 to set the destination bus. The button will light up orange.
(5) Press ENTER to paste the settings to KEY4. To cancel the process, press COPY/SWAP. (If DIRECT mode is ON, copy and paste are performed without pressing ENTER. See "DIRECT ON/OFF" below.)
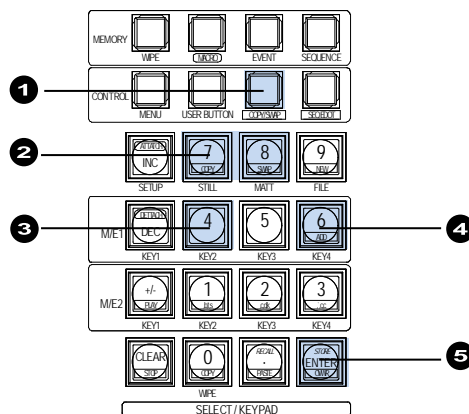
Copying and swapping settings are available among KEY1 to 4 on M/E1 and M/E2. For KEY3 and KEY4, however, keyer's additional features such as Wipe and Chromakey are not copied or swapped.

◆ DIRECT ON/OFF
If **DIRECT** is set to ON, copy and paste are performed without pressing ENTER.

```
COPY/    : DIRECT :        : XPT     :        : 1/1
SWAP     :  =OFF  :        : =---    :        :
```

◆ XPT ON/OFF
If **XPT** is set to ON, the signal selections such as key source and insert signal settings are also copied to or swapped between.

4-4. How to Return Settings to Default

4-4-1. Returning Parameters to Default

Pressing and holding down Control Push-buttons
Press and hold the control push-button (F1 - F4) below each parameter to return their settings to factory default.

Briefly pressing the DEF button
If you need to reset parameters controllable from the JOYSTICK block to factory default, display parameters and press the DEF button. These parameters are returned to factory default all together.

4-4-2. Returning Menus to Default

Pressing and holding down the DEF button
If you need to reset all parameters in the currently displayed menu to factory default, press and hold down the DEF button for a while. All parameters in the menu are returned to factory default all together.

Using INIT parameters
Some menus have an INIT parameter in the menu top page. Selecting INIT and pressing the control push-button returns all parameters in the menu to their default setting. Turn the related push-button to select ALL or a category you want to return to default if INIT can be set, and then press the push-button to reset the parameters.

Menu where INIT included	Menus to be returned to default settings
[SETUP - SYSTEM] menu	See section 23-2. "System Initialization."
WIPE menu top page	Each submenu in a [WIPE MODIFY] menu
[KEY -SETUP] menu	Each submenu in a [KEY SETUP] menu

4-5. How to Back up Settings

One of the following three operations backs up panel settings and loads them automatically at startup. It is recommended to do any one of these operations after changing menu settings.

- Rebooting (Be sure to reboot the switcher instead of turning the power off then on. See section 23-1. "Rebooting System.")
- Moving to the top page in the SETUP menu.
- Saving / loading an event.

Background and key settings can be automatically loaded to the panel at startup.
See section 16-6. "Loading an Event at Start-up" for details.

5. Video Sources

5-1. How to Assign User Names to Sources

Video inputs, Still1-4 and StillKey1-4 can be assigned user-specific names, to make them easier to identify for operators. User names can be given to input signals, internally generated black mattes and matte signals, and still pictures. Follow the procedure below to name a signal source.

(1) Press MENU in the CONTROL block above the numeric keypad and then press SETUP to display the SETUP menu top page.

(2) Turn F1 to select INPUT. Then press F1 or the page down button to display the [SETUP - INPUT] menu.

(3) Turn F1 to select RENAME. Press F1 or the page down button to display the [SETUP - INPUT - RENAME] menu.

```
SETUP    : >SIGNAL   >PROC AMP>RENAME   >ASSIGN
INPUT    : >CC        >COLORBAR
```

(4) Turn F1 to select a signal under **SELECT**. (See the table below.)

```
INPUT    : SELECT : SHORT   :  LONG NAME  (MV)  :  1/1
RENAME   :  =INO4 :  =INO4  :  =INPUTO4          :
```

SELECT	SHORT default setting	LONG NAME default setting (*1)	Signal description
BLACK	BLAK	BLACK	Black signal
IN01 to IN16	IN01 to IN16	INPUT01 to INPUT16	SDI video input to rear connectors 1-16
STILL1 to STILL4	STL1 to STL4	STILL1 to STILL4	Still images 1 to 4
STILK1 to STILK4	STKY1 to STKY4	STILLKEY1 to STILLKEY4	Still KEYOUT
MATT1 to 2	MAT1 to MAT2	MATTE1 to MATTE2	BUS matte color 1 and 2
CLBAR	CLBR	COLOR BAR	Color bar
INA1 to INA4 INB1 to INB4	IN17 to IN24 (*2)	INPUT17 to INPUT24 (*2)	Optional video inputs on Slot A and B (See section 2-3.)
M/E	M/E	M/E1	M/E1PGM re-entry

(*1) Long names are used for titles displayed on the multiviewer screen.
(*2) IN09 and following inputs are determined by the type and number of the installed input expansion card.

(5) To change the short name of a signal, use F2 to assign a name up to 4 characters in length, entering the characters one by one. First, press F2 to highlight a character. When the latter is highlighted, turn F2 to change it. Alphanumeric characters and symbols (ASCII characters) can be used for names.

(6) To change the long name of a signal, use F3 to assign it a name up to 8 characters in length, entering the characters one by one. First, press F3 to highlight a character. When the latter is highlighted, turn F3 to change it. Alphanumeric characters and symbols (ASCII characters) can be used for names.

5-2. How to Assign Sources to Bus Buttons

Primary and optional video inputs, internally generated signals (black, mattes, etc.), captured stills and macros can be freely assigned to any M/E1, M/E2 or KEY/AUX bus buttons using the procedure below. Signal-to-Button mappings are shared among M/E1, M/E2 and KEY/AUX buses.

(1) Press MENU, then SETUP to display the SETUP menu top page.
(2) Turn F1 to select INPUT. Press F1 or the page down button to display the [SETUP - INPUT] menu.
(3) Turn F1 to select ASSIGN. Press F1 or the page down button to display the [SETUP - INPUT - ASSIGN] (1/6) menu.

```
INPUT    : BUTTON : SIGNAL NAME    : INHIBIT: 1/6
OU ASSGN: =01     : =IN04 : =IN04 : =OFF    :
```

(4) Turn F1 to select a bus button under **BUTTON**.
(5) Turn F2 to select the signal to be assigned under **SIGNAL**. Users can also select a signal by turning F3 under **NAME**. **SIGNAL** and **NAME** are linked to each other. (See section 5-1. "How to Assign User Names to Source" for more details.)

Submenu	Parameter	Default	Setting range
OU ASSIGN	BUTTON	1	1-28, sft1-sft28 (shifted buttons) (*1)
	SIGNAL NAME	IN01	(See the table below)
	INHIBIT	OFF	OFF, M/E1, M/E2, BOTH

BUTTON	SIGNAL setting	Description
01 to 28, sft01 to sft28 (shifted buttons) (*1)	NONE	No signal assignment
	BLACK	Black signal
	IN01 to IN16	Video input to rear connectors 1-16
	STIL1 to 4	Still pictures 1 to 4
	STILK1 to 4	Stillkeys 1 to 4
	MATT1, MATT2	BUS MATT Color 1 and 2
	CLBAR	Internally generated color bar signal
	M/E	M/E1 program re-entry (M/E2 bus only)
	MCR00-39	Macro00 to 39 (See section 18-6-1.)
	SHIFT	Shift button function
	INA1-INA4	Optional video input to slot A (*1) (See section 2-3.)
	INB1-INB4	Optional video input to slot B (*1) (See section 2-3.)

(*1) The number of buttons varies depending on the OU type.
Inputs vary depending on the type and number of installed input expansion card/s.

◆ To Disable Bus Button Operation

Users can inhibit operation of specific bus buttons. First, select an M/E or BOTH under **INHIBIT** on PAGE 1, the selected bus button on the M/E is set to INHIBIT. Next, set **INHIBIT** to ENABLE on PAGE 2 to enable the bus button inhibit function. All bus buttons, which are set to INHIBIT, cannot select signals. The INHIBIT setting has no effect on the KEY/AUX bus. Even if a bus button cannot be used on M/E, it can be used for the key source, key insert or AUX output.

```
INPUT    : BUTTON : SIGNAL NAME    : INHIBIT: 1/6
OU ASSGN: =01     : =IN04 : =IN04 : =BOTH   :
```

```
INPUT    :  M/E CONTROL   :       : INHIBIT: 2/6
OU ASSGN: ME1=ON : ME2=ON :       : =ENABL :
```

◆ To Disable M/E Bank Operation

Users can inhibit M/E Bank operation by setting **M/E1** and/or **M/E2** to OFF under **M/E CONTROL** on PAGE 2. All operations including bus signal selections and transitions cannot be performed on the disabled M/E bank.

```
INPUT   :  M/E CONTROL  :        :INHIBIT: 2/6
OU ASSGN: ME1=OFF: ME2=ON :      : =ENABL:
```

Note that KEY ON AIR and KEY AUTO buttons for KEY3 and KEY4, however, are still active on the disabled M/E, if KEY3 and KEY4 are displayed on AUX outputs (AUX1-8).

5-3. How to Display Signal Names on the Bus Section

Information displayed above bus buttons on each M/E can be set on the menu.

(1) Open [SETUP - INPUT - ASSIGN] menu PAGE 3.
(2) Turn F1 to select a bus button.
(3) Turn F2 to select a display type. (See the table below.)
(4) Setting INV to ON changes tests or images to reverse video.

```
INPUT   :BUTTON :  TYPE  : INV   :       : 3/6
BUS DISP: =01    : =SHORT: =OFF   :       :
```

Submenu	Parameter	Setting range	Description
BUS DISP	BUTTON	1 to 28, sft1 to sft28 (*1)	Selects a bus button.
	TYPE	OFF	Displays nothing.
		SHORT	Displays short signal names (up to 4 characters).
		LONG	Displays long signal names (up to 8 characters).
		BMP	Displays bitmap images.
	INV	OFF	Displays text or images in normal video.
		ON	Displays text or images in reverse video.

(*1) The number of buttons varies depending on the OU type.

5-4. Resize Function

A resize function allows users to input **SD signals** at the same frame-rate **as that in HD mode**, and use them as **HD images by upsizing**.

```
The Resize function is available for the following inputs:
        IN13 to IN16                        4 inputs
        HVS-30HSDI (extension card)         All 4 inputs
```

To use this function, proceed as follows.

(1) Display the [SETUP - INPUT] menu.
(2) Turn F1 to select SIGNAL. Press F1 or the page down button to display the [SETUP - INPUT - SIGNAL] menu.

```
SETUP     : >SIGNAL    >PROC AMP>RENAME    >ASSIGN
INPUT     : >CC        >COLORBAR
```

(3) Turn F1 to select an input signal for resizing.
(4) Turn F2 to set AUTO or SD-SDI for **FORMAT**.
(5) Turn F3 to select an aspect ratio under **RESIZE**.

```
INPUT     : SELECT : FORMAT   : RESIZE : FS  : 1/4
SIGNAL    : =IN13  : =SD-SDI  : =4:3   : =ON :
```


Input	Processing	Output
IN01 (HD) (1080/59.94i)	FORMAT (AUTO) RESIZE (OFF)	
IN04 (SD) (525/59.94i)	FORMAT (SD-SDI) RESIZE (4:3)	
IN04 (SD) (525/59.94i)	FORMAT (SD-SDI) RESIZE (SQUEEZE)	
IN04 (SD) (525/59.94i)	FORMAT (SD-SDI) RESIZE (LETTER)	
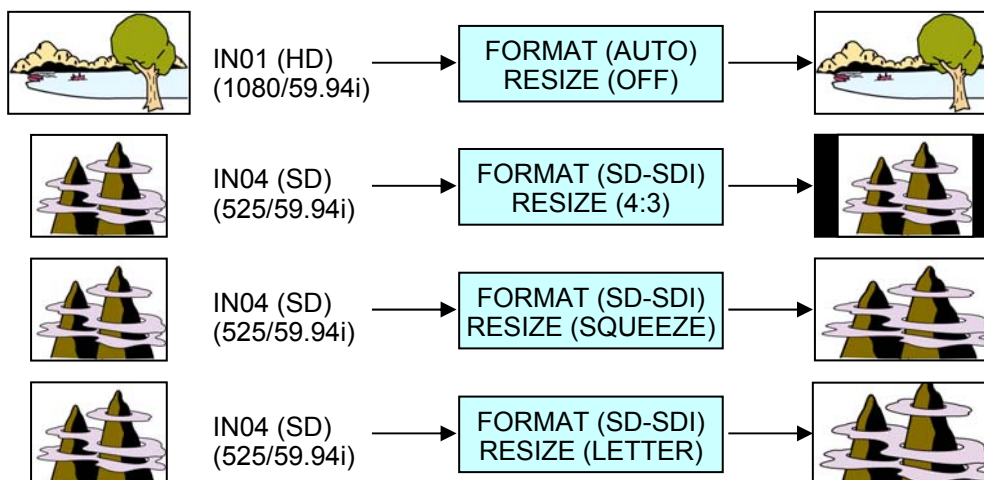
```
                        IMPORTANT
The Resize function is automatically enabled when SD signals are input to the
switcher in HD mode, and FORMAT in the [SETUP - INPUT - SIGNAL] menu is set to
SD-SDI. (Ensure the Resize function stays disabled if HD-SDI is set for FORMAT.)
```

5-5. INPUT STILL (Freezing Input Video)

Standard inputs (IN01 to IN16) can display frozen images (INPUT STILLs) by capturing video. Still images for INPUT STILLs can also be uploaded using the FILE menu. (See section 32-3. "Image Data Transfer.")

◆ **To Freeze Input Video**
(1) Display [SETUP - INPUT - SIGNAL] menu PAGE 2.
(2) Select an input under **SELECT**.
(3) Turn F2 to select GRAB, then F2. The input video will be displayed frozen.
(4) Turn F3 to select a freeze type from ODD, EVEN and FRAME.

```
INPUT   : SELECT : CONTROL: FREEZE :        : 2/4
STILL   : =IN01  : =GRAB   : =FRAME:         :
```

◆ **To Return to Input Video Display**
To display the input video again from the frozen image, turn F2 to select CLEAR, then press F2.

◆ **To Freeze Input Video Using a User Button (Operation Example)**
<Assigning **INPUT STILL STORE** to USER 1>
(1) Press USER BUTTON in the CONTROL block to open the [USER BUTTON] menu.
(2) Turn F1 to select OU-1 (OU USER 1). USER 1 will blink.
(3) Turn F2 to select STILL. Turn F3 to select INPUT STILL STORE.

```
USER    : SELECT : TYPE  : FUNC(F3)      : 1/2
BUTTON  : =OU-1   : =STILL: =INPUT STILL STORE
```

<**Freezing** IN01>
(1) Holding down USER 1, press the KEY/AUX bus button to which IN01 is assigned. (For example, press 1, if IN01 is assinged to Bus Button 1.)
(2) A still image for IN01 is automatically captured and saved to memory. Then the KEY/AUX bus button will turn off and the IN01 output video will freeze (replaced with the captured still image.)

<**Restoring** the IN01 Input Video>
Holding down USER 1, press the KEY/AUX bus button to which IN01 is assigned. The frozen image for IN01 is cleared and the IN01 input video is restored and displayed on an output screen.

IMPORTANT
INPUT STILLs use the frame synchronizer buffer memory. Therefore, the frame synchronizer cannot work while an INPUT STILL is displayed or enabled. (See section 5-8. "Frame Synchronizer.")

5-6. Changing the Side Panel Image

The side panel image of 4:3 video can be changed as shown in the procedure below.

(1) Display the [SETUP - INPUT] menu.
(2) Turn F1 to select SIGNAL. Press F1 or the page down button to display the [SETUP - INPUT - SIGNAL] menu.
(3) To change the side bar color for 4:3 images, press the page down button to go to PAGE3.
(4 Turn F1 to select an input signal to which side panels are to be added.
(5) Turn F2 to set the side panel to ON.
(6) Turn F3 to select an input signal to be used for the side panel. Options are BLACK, INPUT01-16, STILL1-4, STILL KEY1-4, MATT1-2 and SDMT. Select SDMT (single color for side panel) for the signal in this example.

```
INPUT    : SELECT :    SIDE PANEL   : XPT DLY:  3/4
SIDE PNL:  =IN01 : En=ON   S=SDMT   : =0      :
```

(7) Press the page down button to go to PAGE 4 to set the SDMT color.
(8) Turn F4 to select a color from the following 8 standard colors. Then press F4 to apply the setting.

   WHITE, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE and BLACK

If you want to adjust the selected color or set the color by entering its HSL values, turn F1, F2 and F3 to enter these values or press F1, F2 and F3, enter a value from the Keypad, then press ENTER (from the keypad). Users can also set these three parameters via the JOYSTICK block. (See section 4-2-4. "Changing Settings or Values Using the Joystick.")

IN02 (SD)
(525/59.94i)   →   COLOR=WHITE   →
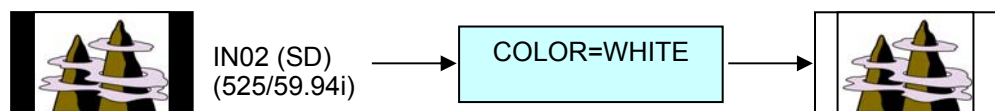
5-7. XPT DELAY

The XPT DELAY (crosspoint delay) feature allows you to add a time delay until a signal is changed after pressing a bus button. To enable the feature, proceed as follows:

(1) Display the [SETUP - INPUT] menu.
(2) Turn F1 to select SIGNAL. Press F1 or the page down button to display the [SETUP - INPUT - SIGNAL] menu.
(3) Press the page down button to go to PAGE 2.

```
INPUT    : SELECT :    SIDE PANEL   : XPT DLY:  2/3
SIGNAL   : =IN01 : En=ON   S=SDMT   : =30     :
```

(4) Turn F1 to select an input signal. Select IN01 in this example.
(5) Turn F4 to set a delay value in frames.
(6) Press IN01 (the bus button to which IN01 is assigned) on the M/E2 PGM bus. The PGM image is switched to the IN01 image 30 frames after the bus button is pressed.

5-8. Frame Synchronizer

A video frame synchronizer is provided for each input (including optional inputs) and is used to synchronize asynchronous signals. Users can select whether to apply frame synchronization to input signals or not (for each signal) as shown in the procedure below.

(1) Display the [SETUP - INPUT - SIGNAL] menu.
(2) Turn F1 to select an input signal for use.
(3) Turn F4 to set **FS** to ON and activate the frame synchronizer.

```
INPUT    : SELECT :  FORMAT   : RESIZE :  FS  :  1/4
SIGNAL   : =IN02 :  =HD-SDI  : =--- :  =ON :
```

◆ **To Enable/Disable FS Using a User Button (Operation Example)**
<Assigning **FS ENABLE** to USER 3>
(1) Press USER BUTTON in the CONTROL block to open the [USER BUTTON] menu.
(2) Turn F1 to select OU-3 (OU USER 3). INC (USER 3) on the keypad will blink.
(3) Turn F2 to select STILL. Turn F3 to select FS ENABLE.

```
USER     : SELECT :  TYPE   :  FUNC(F3)        :  1/2
BUTTON   : =OU-3 :  =STILL:  =FS ENABLE
```

<**Enabling** FS for IN01>
Holding down INC (USER 3) (with USER BUTTON lit), press the KEY/AUX bus button to which IN01 is assigned. (Press 1 , for example, if IN01 is assigned to Bus Button 1.) The frame synchronizer function for IN01 will be enabled.

<**Disabling** FS for IN01>
Holding down INC (USER 3) (with USER BUTTON lit), press the KEY/AUX bus button to which IN01 is assigned. The frame synchronizer function for IN01 will be disabled.

> Ancillary data in input video cannot be passed through if **FS** (input frame synchronizer) is set to ON or **RESIZE** is enabled. To pass ancillary data, input the video synchronized with the genlock signal and set **FS** to OFF. Note that ancillary data in SD inputs cannot be used when the switcher operates in HD mode.

5-9. Bus Matte

Matte signals can be assigned to any bus buttons for M/E1, M/E2 and KEY/AUX. (Default assignment: Buttons 19 and 20). Refer to section 5-2. "How to Assign Sources to Bus buttons" for for details matte assignment. Bus matte colors can be specified in the [MATT COLOR] menu.

5-9-1. Setting the Matte Color

(1) Press MENU in the CONTROL block, then press MATT to display the MATT menu.

```
MATT1    :       BUS MATT1 COLOR     : RECALL :  1/4
COLOR    : S=50.0  L=80.2  H=125.5:  >GREEN:
```

(2) Turn F4 to select a color from the following 8 standard colors. Then press F4 to apply the setting.

WHITE, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE and BLACK

If you want to adjust the selected color or set the color by entering its HSL values, turn F1, F2 and F3 to enter these values or press F1, F2 and F3, enter a value from the Keypad, then press ENTER (from the keypad). Users can also set these three parameters via the JOYSTICK block. (See section 4-2-4. "Changing Settings or Values Using the Joystick.")

Parameter	Setting Range	Description	Joystick operation
S (Saturation)	0.0 to 100.0	Adjusts color saturation.	Moves Joystick horizontally (X -axis)
L (Luminance)	0.0 to 100.0	Adjusts color luminance.	Moves Joystick vertically (Y -axis)
H (Hue)	0.0 to 359.5	Adjusts color hue.	Twists Joystick cw or ccw. (Z -axis)

5-9-2. Setting the Gradient Matte

(1) Press MENU in the CONTROL block, then press MATT to display the [BUS MATT 2 COLOR] (2/4) menu.
(2) To select a start color for the gradadient matte, turn F4 to select a color or enter the HSL values to specify the color.

```
MATT2    :      BUS  MATT2  COLOR1    : RECALL :  2/4
COLOR1  : S=50. 0   L=80. 2   H=125. 5:  >GREEN:
```

(3) Press the page down button to go to the [MATT 2 COLOR2] (3/4) menu.
(4) To select an end color for the gradient matte, turn F4 to select a color or enter the HSL values to specify the color.

```
MATT2    :      BUS  MATT2  COLOR2    : RECALL :  3/4
COLOR2  : S=50. 0   L=80. 2   H=125. 5:  >GREEN:
```

(5) Press the page down button to go to the [BUS MATT 2 GMAT] (4/4) menu.
(6) Turn F1 to select a pattern for the gradation matte. Set the position at **POS** and adjust the softness gradient at **SOFT**.

```
MATT2    : PATTERN ▮▮▮▮▮ : POS     : SOFT  :  4/4
GMAT     : =H      ▨▨▨▨ : =0       : =0    :
```

PATTERN setting	Description
COLOR1	Displays the matte color set at BUS MATT2 COLOR1.
H	Displays a horizontal gradient from COLOR1 to COLOR2.
V	Displays a vertical gradient from COLOR1 to COLOR2.
H/V	Displays a diagonal gradient from COLOR1 to COLOR2.

5-10. Setting up Additional Inputs

Up to 4 cards of additional inputs can be installed into slots A and Slot B.

A(IN)   B(IN)
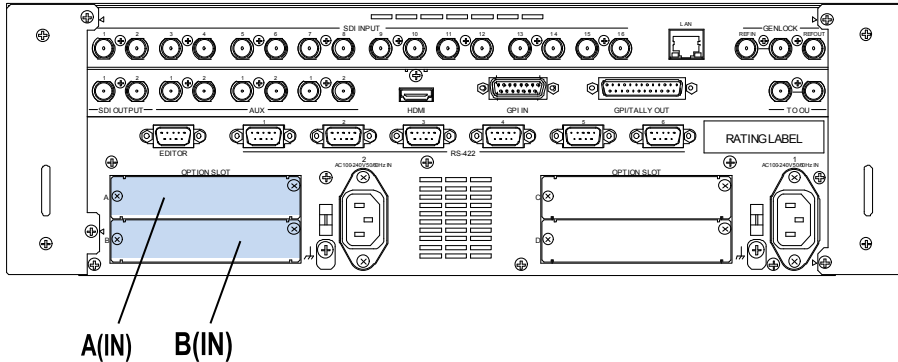
Option Slot	Available card	Signal (connector)	Number of inputs per card
A, B	HVS-30HSDI-A HVS-30HSDI	HD/SD SDI (BNC) (w/ FS) HD/SD SDI (BNC) (w/ FS and up-size function)	4 inputs
	HVS-30HSAI	HD/SD analog component or Analog composite (BNC, mini-DIN 7-pin)	2 inputs
	HVS-30PCIN	Digital RGB (DVI-D) / Analog RGB signal (VGA)	2 inputs

Each card provides four or two channels of input and each channel can be set up respectively as described below.

(1) Open the [SETUP - INPUT - SIGNAL] menu.
(2) Turn F1 to select an input channel. Select from IN17 to IN20 if the card installed to Slot A has four inputs. Select between IN17 and IN18 if the card installed to Slot A has two inputs. In the same way select from successive numbers after the inputs on Slot A if the card is installed to Slot B.
(3) Turn F2 to specify the signal format for the channel.

```
INPUT    : SELECT : FORMAT  : RESIZE : FS  :  1/4
SIGNAL   : =IN17  : =HD-SDI : =---   : =OFF:
```

Normally set to AUTO. The following settings are available as needed.

Expansion card	Slot	Number of inputs	FORMAT setting
HVS-30HSDI-A HVS-30HSDI	A, B	4 inputs	AUTO, HD-SDI, SD-SDI
HVS-30PCIN	A, B	2 inputs	AUTO (If set to AUTO, input signal format is automatically detected and set.) (See the table below.)
HVS-30HSAI	A, B	2 inputs	HD Component, SD Component, Composite

HVS-30PCIN available format

Format	Resolution
1080	1024 x 768 (XGA), 1280 x 1024 (SXGA), 1600 x 1200 (UXGA), 1280 x 768 (WXGA), 1920 x 1200 (WUXGA)
720	1024 x 768 (XGA), 1280 x 1024 (SXGA), 1280 x 768 (WXGA)
SD	640 x 480 (VGA), 800 x 600 (SVGA), 1024 x 768 (XGA)

HVS-30HSAI available format

System standard	HD Component	Composite	Component SMPTE	Component BetaCam	Component
1080/59.94i 720/59.94i	Available	Available*	Available	Available*	-
1080/50i, 720/50p	Available	Available	-	-	Available
525/60	-	Available*	Available	Available*	-
625/50	-	Available	-	-	Available
Other standards	Available	-	-	-	-

* Video signals with and without 7.5% Setup can be accepted. If a signal with 7.5% Setup is input, the symbol "+" follows immediately after the name of the signal.

(4) When operating in HD mode, SD signals can be input, upsized by using the Resize function and used as HD signals. This function is available only when the SD signals have the same frame rate as that of the current video format.

◆ **HVS-30HSDI/30HSAI**
See 5-4. "Resize Function."

◆ **HVS-30PCIN**
If 4:3 signals are input, the aspect ratio is selectable between two below.

RESIZE setting	Description
NORMAL	Adds black bars to the left and right of the screen.
FULL	Expands the video image to 16:9 aspect ratio.
ZOOM	Displays image in full-screen by cropping off the top and bottom of the image.

Resizing

(4:3 image) (NORMAL) (FULL) (ZOOM)
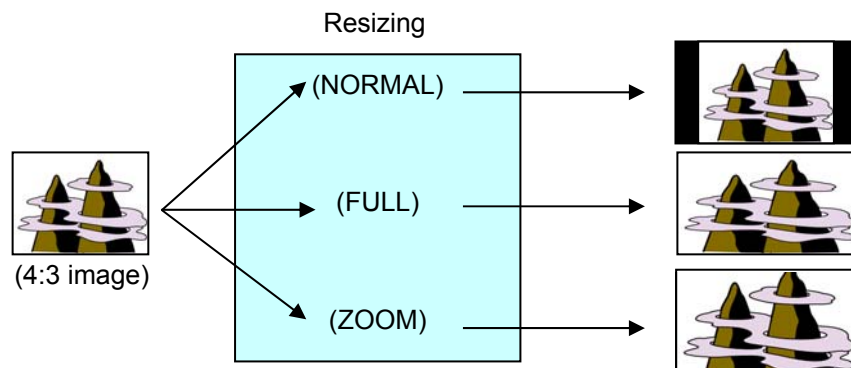
```
INPUT   : SELECT : FORMAT   : RESIZE : FS  : 1/4
SIGNAL  : =IN17 : =AUTO     : =NORML: =OFF:
```

6. Video Outputs

SDI OUTPUT 1, 2   AUX1-6   HDMI

Standard outputs   Optional outputs
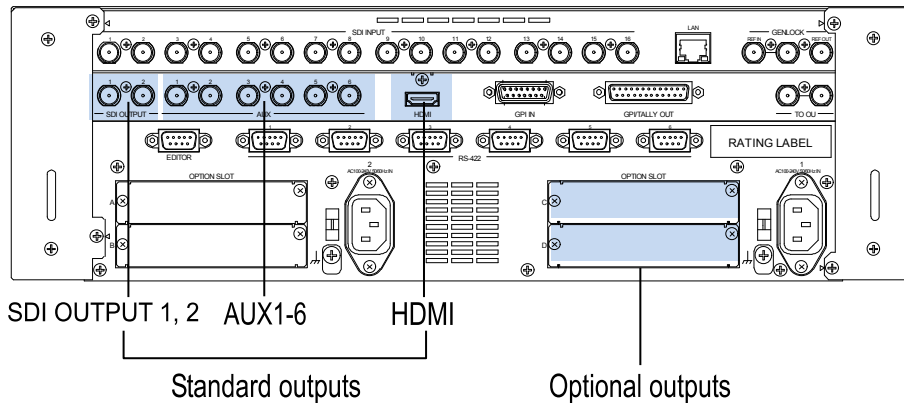
6-1. Selecting Video for SDI OUTPUT1 and 2

SDI OUTPUT1 and 2 on the MU rear panel can output only M/E combined videos. Select videos for SDI OUTPUT 1 and 2 as shown below.

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP menu top page.
(2) Turn F1 to select OUTPUT. Press F1 or the page down button to display the [SETUP - OUTPUT] menu.
(3) Turn F1 to select OUT XPT. Press F1 or the page down button to display the [SETUP - OUTPUT - OUT XPT] menu.

```
SETUP    : >MARKER   >CLN/PREV>ANCI      >OUT XPT
OUTPUT   : >MV1      >MV2      >OPTION   >RENAME
```

(4) Turn F1 to select OUT1 or OUT2.
(5) Turn F2 to select a video signal.

```
OUTPUT   : SELECT :  XPT    : INHIBIT: AUX  TRS:  1/4
OUT XPT  : =OUT1  :  =M1PGM:  =---   : =---   :
```

6-2. How to Select Aux Signals

The AUX output signals can be selected from all bus sources (primary inputs, stills, mattes, etc.), program, preview, clean and key out signals. There are two procedures to select signals for auxiliary outputs: via bus buttons or from menu selection. If you want to select a signal easily and quickly, select the signal in the KEY/AUX bus. If you want to select a signal not assigned to bus buttons, select it in the menu.

6-2-1. Selecting Video via Bus Buttons

(1) Press an AUX button, from AUX1 to AUX8 indicated below.
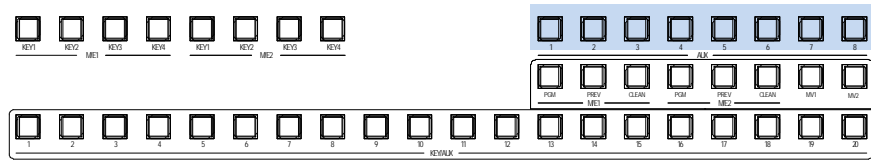
(2) Press a button in the KEY/AUX bus section to select a signal for the selected AUX output.
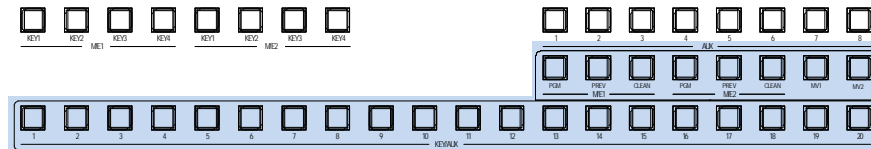
AUX signal selection via bus buttons can be disabled if **INHIBIT** is set to ON in the [SETUP - OUTPUT - OUT XPT] (1/4) menu to prevent any operational mistakes.

```
OUTPUT  : SELECT : XPT    : INHIBIT: AUX TRS:  1/4
OUT XPT : =AUX1 :  =IN01 :  =OFF  : =OFF   :
```

6-2-2. Selecting Video from Menu Selection

(1) Refer to the previous page to display the [SETUP - OUTPUT - OUT XPT] menu.
(2) Turn F1 to select an AUX bus.
(3) Turn F2 to select a video signal.

```
OUTPUT  : SELECT : XPT    : INHIBIT: AUX TRS:  1/4
OUT XPT : =AUX1 :  =IN01 :  =OFF  : =OFF   :
```

Available signal selections are as described below:

Button	Signal	Refer to
BLACK, IN01-08, STILL1-4, MATT1-2, CLBAR, IN09-24 (option)	Signals assignable to the bus buttons in M/E1, M/E2 and KEY/AUX.	5-2
M/E1 PGM	M/E1 program video	
M/E1 PREV	M/E1 preview video (next video with or without KEY1-4)	6-3
M/E1 CLEAN	M/E1 clean video (program video with or without KEY1-4)	6-4
M/E1 KEY	Key cut signal for M/E1 program video	6-6
M/E2 PGM	M/E2 program video	
M/E2 PREV	M/E2 preview video	6-3
M/E2 CLEAN	M/E2 clean video	6-4
M/E2 KEY	Key cut signal for M/E2 program video	6-6
MV1-2	Multiviewer video	15-1

6-2-3. AUX Video Switching with Effects

The background video displayed on an AUX bus can be easily switched using effects. The auxiliary video can be changed using crossfade, horizontal or vertical wipe transitions. This chapter explains how to switch AUX video using two operational examples.

Ex. 1: Changes the AUX1 video at 30 frames using a crossfade.
Ex. 2: Changes the AUX2 video at 60 frames using a horizontal wipe (diagonal)

◆ **Ex. 1**
(1) Quickly press AUX1 twice in the BUS SELECT block to display the [SETUP - OUTPUT-OUT XPT] (1/4) menu.
(2) Turn F1 to select AUX1.
(3) Turn F4 to select AUX TRS to ON.

```
OUTPUT   : SELECT :  XPT    : INHIBIT: AUX TRS:  1/4
OUT XPT :  =AUX1 :  =INO1 :  =OFF   :  =ON     :
```

(4) Go to PAGE 2.
(5) Set TRS TYPE to MIX and RATE to 30.

```
OUTPUT   : SELECT : TRS TYP:  RATE   : WP SOFT:  2/4
AUX TRS :  =AUX1 :  =MIX   :  =30    :  =0      :
```

(6) Return to PAGE 1.
(7) Turn F2 to select the next video. The current video will fade out and a new image will fade into the screen at 30 frames/sec.

```
OUTPUT   : SELECT :  XPT    : INHIBIT: AUX TRS:  1/4
OUT XPT :  =AUX1 :  =INO5 :  =OFF   :  =ON     :
```

◆ **Ex. 2**
(1) Quickly press AUX1 twice in the BUS SELECT block to display the [SETUP - OUTPUT-OUT XPT] (1/4) menu.
(2) Turn F1 to select AUX2.
(3) Turn F4 to select AUX TRS to ON.
(4) Go to PAGE 2.
(5) Set TRS TYPE to HOR, RATE to 60 and WP SOFT to 30.

```
OUTPUT   : SELECT : TRS TYP:  RATE   : WP SOFT:  2/4
AUX TRS :  =AUX1 :  =HOR   :  =60    :  =30     :
```

(6) Let's change the AUX 2 video on the control panel. Press AUX2 then select a video in the KEY/AUX bus.

AUX buses transitions effects are enabled only when video input, matte or still signals are assigned to the AUX outputs. If M/E composite signals such as program, preview, clean, or multi-view images are assigned to AUX buses, video streams are switched using CUT, even if a wipe or other transition effect is set.

6-3. Preview Set Up

The switcher does not have a dedicated PREVIEW output. The preview bus output can be assigned to, however, an SDI OUTPUT or AUX output. Users can also add the key images to PREVIEW. This can be done as explained below:

6-3-1. Preview Bus Monitoring

Follow the procedure below to assign the preview video to an AUX output. AUX1 is used in the example below.

(1) Quickly press AUX1 twice in the BUS SELECT block to display the [SETUP - OUTPUT - OUT XPT] (1/4) menu.
(2) Turn F1 to select AUX1.
(3) Turn F2 to select M1PV.

```
OUTPUT  : SELECT : XPT    : INHIBIT: AUX TRS:  1/4
OUT XPT :  =AUX1 :  =M1PV :  =OFF  :  =OFF  :
```

6-3-2. Setting Up Preview Images

(1) Open PAGE 3 or PAGE 4 in the [SETUP - OUTPUT - CLN/PREV] menu.
(2) Turn F1 to F4 to set whether the key images are to be displayed on the preview image, then press the push-button to confirm the setting for each.

```
OUTPUT  : KEY1  : KEY2  : KEY3  : KEY4  : 3/4
M/E1 PRV: =ON   : =ON   : =OFF  : =OFF  :
```

```
OUTPUT  : KEY1  : KEY2  : KEY3  : KEY4  : 4/4
M/E2 PRV: =ON   : =ON   : =OFF  : =OFF  :
```

Item	Setting	NEXT TRANSITION	KEY On-Air/Off-Air	KEY image on PREVIEW
PREVIEW OUT - KEY1-4	ON	KEY button ON	On-Air	Not displayed
	ON	KEY button OFF	On-Air	Displayed
	ON	KEY button ON	Off-Air	Displayed
	ON	KEY button OFF	Off-Air	Not displayed
	OFF	---	---	Not displayed

Whether the KEY images are displayed on the preview depends on both the PREVIEW OUT settings and KEY button status in the NEXT TRANSITION section.

6-4. Clean Set Up

The switcher can output the CLEAN video via an auxiliary output. Users can also add the KEY image to CLEAN. Follow the procedure below to assign the clean video to an AUX output. AUX3 is used in this example

Routing an M/E1 Clean Video to AUX Output
(1) Quickly press AUX1 twice in the BUS SELECT block to display the [SETUP - OUTPUT- OUT XPT](1/4) menu.
(2) Turn F1 to select AUX3.
(3) Turn F2 to select M1CL.

```
OUTPUT   :SELECT :  XPT   : INHIBIT: AUX TRS:  1/4
OUT XPT :  =AUX3 :  =M1CL :  =OFF  :  =OFF   :
```

Displaying KEY Images on M/E1 Clean
(1) Open the [SETUP - OUTPUT - CLN/PREV] menu.
(2) Turn F1 to set KEY1 to ON. Then press F1 to confirm the setting.
(3) Set KEY2 to KEY4 in the same way.

```
OUTPUT   : KEY1  : KEY2   : KEY3   : KEY4  : 1/4
M/E1 CLN:  =ON   :  =ON   :  =ON   :  =ON  :
```

6-5. HDMI Output

6-5-1. Selecting the HDMI Output Video

Video output through the HDMI port can be selected from M/E programs, previews, cleans and key outs, AUX1-8 and MV1-2 as shown below.

(1) Quickly press AUX1 twice in the BUS SELECT block to display the [SETUP - OUTPUT - OUT XPT] (1/4) menu.
(2) Press the page down button to go to PAGE 3.
(3) Turn F1 to select a video to be output from the HDMI port.
   Available options are:
   M/E1 PGM, M/E1 PREV, M/E1 CLEAN, M/E1 KEY
   M/E2 PGM, M/E2 PREV, M/E2 CLEAN, M/E2 KEY
   AUX1 to AUX8, MV1, MV2

(4) Turn F2 to select an output video format.

System Format	FORMAT Setting	If in MV_HQ mode (See the next page)
1080i	HDTV (1920 x 1080) *1	None
720p	HDTV (1280 x 720) *1	None
SD	SVGA (800 x 600) *2	HDTV (1920 x 1080) *1

*1 The HDMI output frequency for HDTV signals is the same as that used in the switcher.

*2 The HDMI output frequency can be changed to 50 Hz only when the switcher is running on 625/50 and the HDMI outputs an SVGA video signal.

◆   **Ex. 1**
Switcher System Format: 1080/59.94i
To Output the M/E1PGM video (at 1920 x 1080 resolution):

```
OUTPUT  :  XPT   : FORMAT :  FRQ   : MV HQ  :  3/4
HDMI OUT:  =M1PGM:  =HDTV :  =---  :  =OFF  :
```

◆ **Ex. 2**

Switcher System Format: 720/50p
To Output the AUX1 video (at 1280 x 720 resolution):

```
OUTPUT  : XPT    : FORMAT : FRQ    : MV HQ  : 3/4
HDMI  OUT: =AUX1 : =HDTV : =--- : =OFF   :
```

◆ **Ex. 3**

Switcher's System Format: SD PAL (625/50)
To Output the MV1 SVGA video at 50Hz:

```
OUTPUT  : XPT    : FORMAT : FRQ    : MV HQ  : 3/4
HDMI  OUT: =MV1  : =SVGA : =50Hz : =OFF   :
```

6-5-2. HD Multiviewer Video Output in SD Mode

The HDMI port can output a multiviewer video (MV1 or MV2) in HD resolution when the switcher is running in SD mode.

(1) Displays the [SETUP - OUTPUT - OUT XPT] menu PAGE 3.
(3) Turn F2 to select HDTV.
(4) Turn F4 to select MV1 or MV2 under **MV HQ** and press F4 to confirm the setting.

```
OUTPUT  : XPT    : FORMAT : FRQ    : MV HQ  : 3/4
HDMI  OUT: =--- : =HDTV : =--- : =MV1   :
```

Once MV1 or MV2 is selected for **MV HQ**, the HDMI connection does not output a video selected under **XPT** but a multiviewer video selected under **MV HQ**. In addition, the multiviewer signals cannot be assigned to outputs other than the HDMI.

6-6. Setting Up and Outputting KEY OUT

The KEY OUT signal (switcher processed key cut signal) can be assigned to AUX outputs. Various kinds of key cut signals can be used for KEY OUT sources. KEY OUT signals are useful for purposes such as checking key signals while processing chroma keys.

(1) Open the [SETUP - OUTPUT - OUT XPT] (4/4) menu referring to section 6-3. "Preview Set Up."
(2) Press the page down button to go to PAGE 2.

```
OUTPUT  : ME1 KEY: ME2 KEY:              : 4/4
KEY OUT : =M1PGM  : =M2KEY :             :
```

(3) Turn F1 to select a KEY OUT signal. Various types of KEY OUT signals are available as shown in the table below. Press F1 or ENTER to confirm the setting.

Item	Setting	Description
M/E1 KEY	M1PGM	Key signal of M/E1 PGM when using DVE
	M1PST	Key signal of M/E1 PST when using DVE
	M1MEA	Key signal of M/E1 -A when using DVE
	M1MEB	Key signal of M/E1 -B when using DVE
	M1KY1 to 4	Key signal of each key when using DVE
	M1KEY	Key signal of M/E1 PGM including KEY1-4 when using DVE
M/E2 KEY	M2PGM	Key signal of M/E2 PGM when using DVE
	M2PST	Key signal of M/E2 PST when using DVE
	M2MEA	Key signal of M/E2 -A when using DVE
	M2MEB	Key signal of M/E2 -B when using DVE
	M2KY1 to 4	Key signal of each key when using DVE
	M2KEY	Key signal of M/E2 PGM including KEY1-4 when using DVE

6-7. Setting Up Additional Outputs

Up to two cards of additional outputs can be installed into slots C and D.

C(OUT) D(OUT)
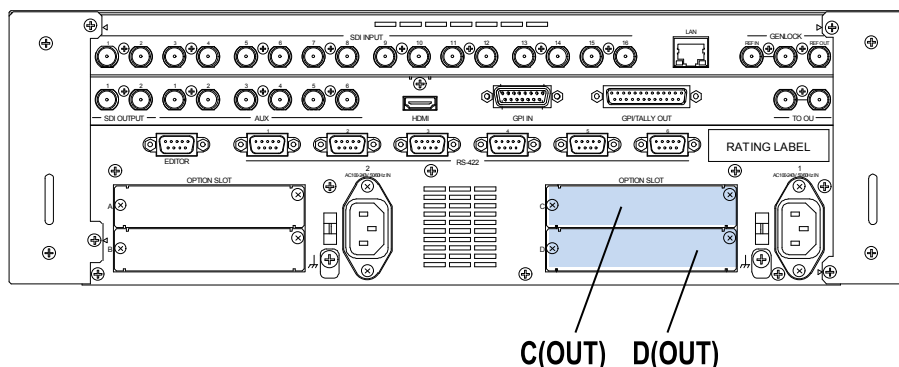
Option Slot	Available card	Available Video Signal (Connector)	Number of outputs per card.
C, D	HVS-30HSDO	HD/SD-SDI (BNC)	3 outputs (*1)
	HVS-30HSAO	HD/SD analog component or Analog composite (BNC)	2 outputs
	HVS-30PCO	Digital RGB (DVI-D) and Analog RGB (VGA)	2 outputs

(*1) HVS-30HSDO can send two output channels to three connecters: Ch 1 to Connector 1 and Ch 2 to Connectors 2 and 3.

Each card has two output channels whose signals can be selected respectively in the menu as shown in the procedure below.

(1) Open the [SETUP - OUTPUT - OPTION] menu.
(2) Turn F1 to select an output channel. C-Ch1 and C-Ch2 is for Slot C and D-Ch1 and D-Ch2 is for Slot D.
(3) Turn F2 to select an image to be output from M1PGM, M1PRV, M1CLN, M2PGM, M2PRV, M2CLN, AUX1 to AUX8, MV1 to MV2.

```
OUTPUT   : SELECT  : OUTPUT  : FORMAT  : ASPECT :   1/2
OPTION   :  =C-Ch1:  =M1PGM   :  =SXGA :  =4:3   :
```

(4) Select the signal format and aspect ratio. Available selections are shown in the tables below.

If HVS-30HSDO is installed:

System format	Channel	FORMAT setting	ASPECT setting
HD	Ch1	HD-SDI (Fixed)	-----
1080i/59.94, 50, 1080PsF/29.97, 25 720p/59.94, 50	Ch2	HD-SDI (Fixed)	-----
		SD-SDI (Fixed)	4:3, SQUEEZE, LETTER
SD	Ch1, Ch2	SD-SDI (Fixed)	---

If HVS-30HSAO is installed:

System format	Channel	FORMAT setting	ASPECT setting
HD	Ch1	HD Component	-----
	Ch2	HD Component	-----
		SD Component, Composite *	4:3, SQUEEZE, LETTER
SD	Ch1, Ch2	Component * (SMPTE or BetaCam level), Composite *	-----

* You can choose whether to add 7.5% Setup to the output signals if the switcher is running in 59.94 Hz mode. If 7.5% Setup is added to a signal, the symbol "+" follows immediately after the name of the signal.

If HVS-30PCO is installed:

System format	Channel	FORMAT setting	ASPECT setting
1080i	Ch1, Ch2	1280x1024 (SXGA), 1600x1200 (UXGA)	4:3, LETTER
		1680x1050 (WSXGA), 1920x1200 (WUXGA), 1920x1080 (HDTV) *	-----
720p	Ch1, Ch2	1280x1024 (SXGA)	4:3, LETTER
		1280x768 (WXGA)	-----
SD	Ch1, Ch2	800x600 (SVGA)	-----

* You can choose between 60 Hz and 50 Hz for the output frequency for DVI-D (Ch 1) if the switcher is running in 50 Hz mode (1080/50i, 720/50p or 625/50). See step (5) below.

* You cannot output video signals from the PCO outputs if the switcher is running in 1080/23.98PsF or 1080/24PsF format.

(5) Select the output frequency for HVS-30PCO between 60Hz and 50Hz in the [SETUP - OUTPUT - OPTION] (2/2) menu. The setting can be made for each channel by turning menu controls. The setting is available only when the switcher is running in 50Hz mode.

```
OUTPUT  : HVS-30PCO V SCAN FREQUENCY    : 2/2
OPTION  : E1=60Hz E2(60Hz)F1=60Hz F2(60Hz):
```

6-8. AUX LINK

In the AUX-LINK function, the auxiliary outputs are grouped, and the master and slave outputs are set to allow all slave output signals to be switched simultaneously by simply selecting the master output signal. A group consists of one master output and up to three slave outputs. Seven auxiliary output groups can be set. Examples of AUX LINK settings and operation are shown below.

6-8-1. Creating AUX Output Link Groups

(1) Open the [SETUP - FUNCTION] menu. Turn F1 to select AUX LINK. Press F1 or the page down button to display the AUX LINK menu.

```
SETUP    : >M/E_KEY >VIRTUAL >AUX LINK
FUNCTION:
```

```
FUNCTION: ENABLE :                        :  1/3
AUX LINK: =OFF   :                        :
```

(2) Press the page down button again to go to the [AUX LINK - AUX GRP] menu page.

```
FUNCTION: SELECT: MASTER:   SLAVE SEL/AUX :  2/3
AUX GRP  : =1     : =AUX1: 1=AUX2  2=AUX3 3=AUX4
```

(3) Turn F1 to select a group to be set from 1-7
(4) Turn F2 to set the auxiliary output serving as the MASTER. Available outputs are shown below.

Master Output	AUX1-8, M1PG, M1PS, M2PG, M2PS M1-A, M1-B, M2-A, M2-B M1K1, M1K2, M1K3, M1K4, M2K1, M2K2, M2K3, M2K4

(5) Select the auxiliary outputs (up to three) serving as the SLAVE linking to the MASTER output. Available outputs are shown below. Press F3 and then turn F3 to select an output for Slave 1. Press F3 and then turn F3 to select an output for Slave 2. Select an output for Slave 3 in the same way.

Slave Output (Normal link)	Same options as Master Output. (Note that video set as Master cannot be selected for the Slave.

The A or B bus cannot be set for Slave when an M/E program or M/E preset bus is selected for Master. In the same way, an M/E program or M/E preset bus cannot be set for Slave output when the A or B bus is selected for Master.

6-8-2. Creating Signal Link Groups

(1) Press the page down button to go to the [AUX LINK - LINK GRP] menu.

```
FUNCTION: SELECT: MASTER:   SLAVE SEL/AUX :  3/3
LINK GRP: =1    : =INO1: 1=INO2   2=INO3  3=INO4
```

Available Signals	BLK, IN01 to IN24, STL1 to STL4, CB, MAT1, MAT2, M/E
(If AUX1-8 is selected for the MASTER or SLAVE bus)	M1PG, M1PV, M1CL, M1KY, M2PG, M2PV, M2CL, M2KY, MV1, MV2

(2) Turn F1 to select an AUX LINK group to be set in the LINK GROUP menu.
(3) Turn F2 to select a signal to be set for MASTER
(4) To set the SLAVE output signals (up to three) that link to the MASTER output signal, press F3 and then turn F3 to select a signal for Slave 1. Press F3 and then turn F3 to select a signal for Slave 2. Select a signal for Slave 3 in the same way.

NOTE
The same MASTER output signal cannot be selected twice. SLAVE output signals can be selected multiple times.

6-8-3. Enabling AUX LINK

(1) Display the [SETUP - FUNCTION - AUX LINK] menu.
(2) Turn F1 to set ENABLE to ON. This activates all AUX LINK groups.

```
FUNCTION: ENABLE :                         :  1/3
AUX LINK: =ON    :                         :
```

◆ **Operation examples:**

Assume that the AUX output link groups and their signal link groups were set as shown below.

```
          : SELECT: MASTER:   SLAVE SEL/AUX :  2/3
AUX GRP : =1  : =AUX1 : 1=AUX2   2=AUX3   3=AUX4
        : =2  : =AUX7 : 1=AUX8   2=OFF    3=OFF
        : =3  : =M2PG : 1=M2K1   2=M2K2   3=OFF
        : =4  : =M1-A : 1=M1-B   2=OFF    3=OFF
        : =5  : =M1PG : 1=M1K3   2=M1K4   3=OFF
        : =6  : =OFF  : 1=OFF    2=OFF    3=OFF
        : =7  : =OFF  : 1=OFF    2=OFF    3=OFF
```

```
          : SELECT: MASTER:   SLAVE SEL/AUX :  3/3
LINK GRP: =1  : =INO1 : 1=INO2   2=INO3   3=INO4
        : =2  : =M1PG : 1=M1PV   2=OFF    3=OFF
        : =3  : =INO5 : 1=STL1   2=STL2   3=OFF
        : =4  : =INO6 : 1=INO7   2=OFF    3=OFF
        : =5  : =IN10 : 1=IN11   2=IN12   3=OFF
        : =6  : =---  : 1=---    2=---    3=---
        : =7  : =---  : 1=---    2=---    3=---
```

Press **AUX1** in the BUS SELECT-AUX block and select **IN01** on the AUX/KEY bus:
>> IN02 is assigned to AUX2, IN03 to AUX3 and IN04 to AUX4.

Press **AUX7** in the BUS SELECT-AUX block and select M/E1 **PGM**:
>> M/E1 PREV is assigned to AUX8.

Select **IN05** in M/E2**-PGM** bus:
>> STL1 is assigned to M/E2 KEY1-INSERT and STL2 to M/E2 KEY2-INSERT.

Select **IN06** in M/E1**- A** bus:
>> IN07 is assigned to M/E1-B bus

Select **IN10** in M/E1 **-PGM** bus:
>> IN11 is assigned to M/E1 KEY3 and IN12 to M/E1 KEY4.

7. Bus Operation

The video signals input to the switcher are assigned to the bus buttons on the control panel for usage. The assigned signals are shared by the M/E1, M/E2, and AUX/KEY bus sections.
As a factory default settings, video inputs, Stills and Mattes are assigned to the bus buttons. The signal assignments are freely changeable. The Button Inhibit function for preventing accidental button operations is also available. (See section 5-2. "How to Assign Sources to Bus buttons.")

7-1. Selecting Video Sources

◆ **HVS-392OU**

Button 1 ——————————————— Button 20 M/E Re-entry

◆ **HVS-392ROU**

Button 1 ————— Button 12 M/E Re-entry
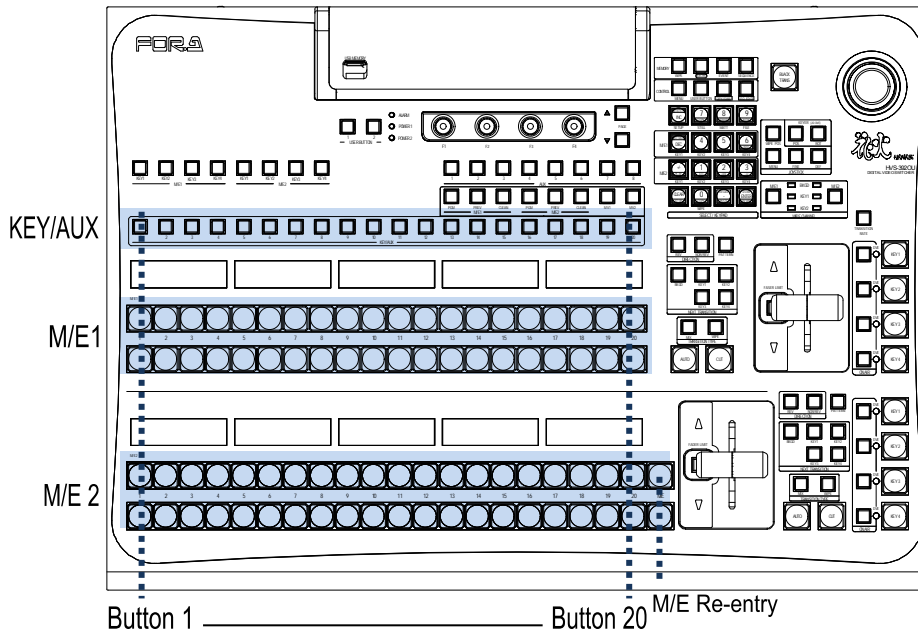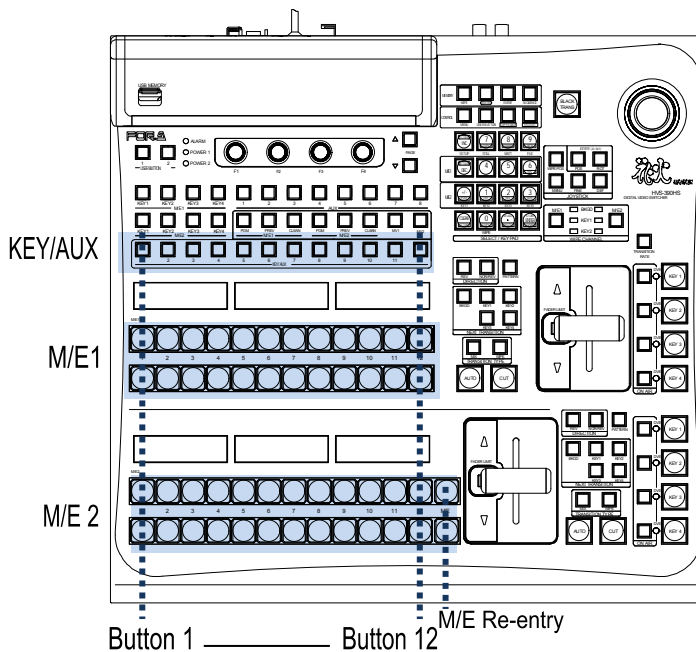
◆ **HVS-392WOU**
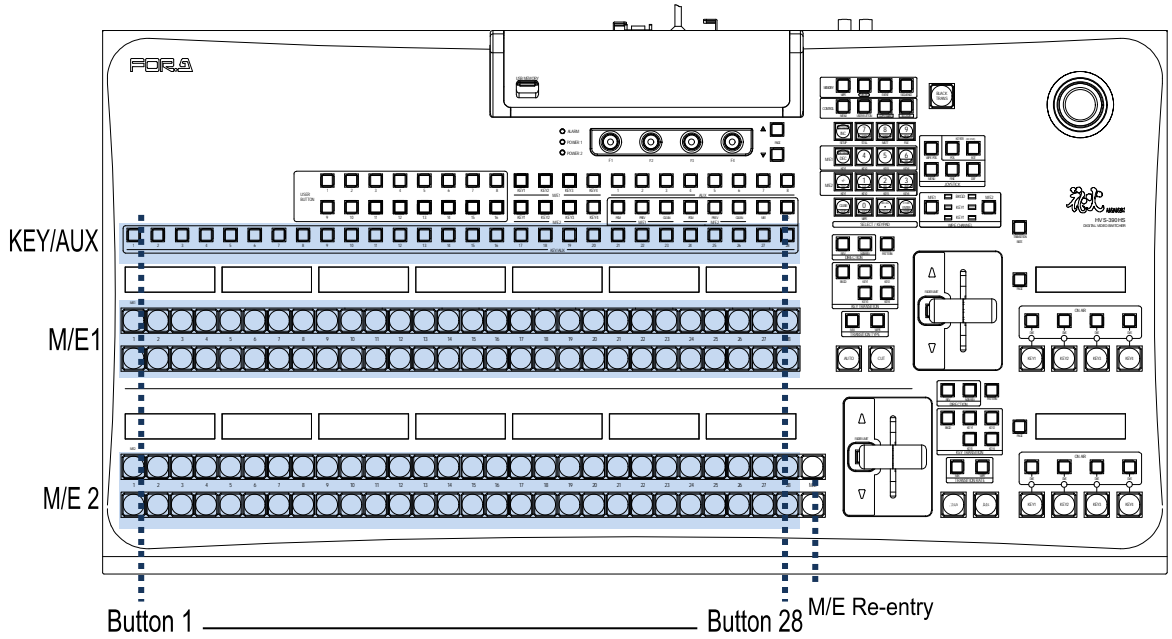
7-1-1. Selecting Video Sources on M/E1 and M/E2

Press the desired bus button on the **PGM** bus row. The video signal assigned to the selected bus button is displayed on the **program output** screen. At the factory default setting, the PGM bus is the **upper** row and the PST bus is the **bottom** row both in the M/E1 and M/E2 bus sections.
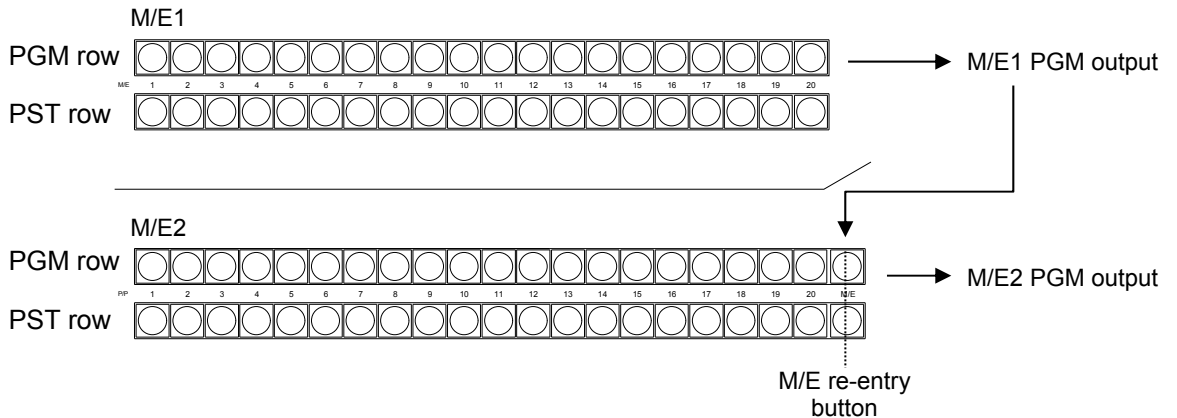
Press the desired bus button on the **PST** bus. The video signal assigned to the selected bus button is displayed on the **preview output** screen. Then move the fader lever from end to end to check how the button indication changes as the signals are switched. Once the transition is complete, the selected signals on PGM and PST are switched (flip-flop).
The switcher's basic operation is to select the next video on the PST bus and send it to air via transition. And Repeat them again and again.

Users can change the button switching mode for M/E buses from PGM/PST to A/B. (See section 7-2. "Button Switching Mode in M/E buses.")

Button Indication on the M/E1 and the M/E2 buses

M/E1 bus	Red	Indicates that the video is displayed on the M/E2 program screen. (Re-entry)
	Green	Indicates that the video is displayed on the M/E1 program screen.
	Orange	Indicates that the video is set to next output on the M/E1 bus.
M/E2 bus	Red	Indicates that the video is displayed on the M/E2 program screen.
	Orange	Indicates that the video is set to next output on the M/E2 bus.

7-1-2. Selecting Video Sources for AUX Outputs

(1) Press the desired AUX button in the Bus Select section. The button will light up.
(2) Press a desired button on the KEY/AUX bus.

Bus selection buttons

KEY/AUX bus

Example 1) To Select IN1 for AUX1
Press AUX1. Then press 1 (IN01) on the KEY/AUX.

Example 2) To Select M/E1 PREV for AUX2
Press AUX2. Then press M/E1 PREV on the KEY/AUX.

See section 10. "KEY" for how to select key signals.

7-2. Button Switching Mode in M/E buses

Users can change the button switching mode for the M/E1, M/E2 bus from P/P (PGM/PST) to A/B. In P/P mode (default), the source selections in the PGM and PST buses are switched when transitions occur and users can always select the next background signal from the PST bus (the bottom row). In A/B mode, the source selections in the PGM and PST buses do not switch when transitions occur and the next signal selection must be done in the different bus after each transition.

To Change the Switching Mode to A/B:
(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP menu top page.Turn F1 to select PANEL. Press F1 or the page down button to display the [SETUP - PANEL] menu.
(2) Turn F1 to select TRS CTRL.Press F1 or the page down button to display the [SETUP - PANEL - M/E1 CTRL] or [SETUP - PANEL - M/E2 CTRL] menu.
(3) Turn F1 to select A/B. Press F1 or ENTER in Keypad to confirm the setting.

```
PANEL    : BUSTYPE: ON AIR :  FADER OFFSET  :  1/3
ME1 CTRL: =A/B   :  =GRN   : U=1. 00  L=1. 00 :
```

```
PANEL    : BUSTYPE: ON AIR :  FADER OFFSET  :  2/3
ME2 CTRL: =A/B   :  =RED   : U=1. 00  L=1. 00 :
```

To Change the M/E1 Bus Indication Color:
The M/E1 bus indication color can be changed from green to red. Select GRN under ON AIR and press ENTER in Keypad.

```
PANEL    : BUSTYPE: ON AIR :  FADER OFFSET  :  1/3
M/E1CTRL:  =A/B   :  =RED   : U=1. 00  L=1. 00 :
```

7-3. Setting-up and using the SHIFT Function

In M/E1, M/E2 and KEY/AUX, users can select a video signal from 20 sources in HVS-392OU, 12 in HVS-392ROU and 28 in HVS-392WOU, because each bus row has 20 or 12 bus buttons. On the control panel the SHIFT function can also be assigned to a bus button in the same way video sources can. The SHIFT button allows users to select a video signal among 38 sources in HVS-392OU, 22 in HVS-392ROU and 54 in HVS-392WOU. (The SHIFT button is also available in the KEY/AUX bus.) The SHIFT function is not assigned to a button by default. To use the SHIFT function, assign it to a bus button as shown in the procedure below.

7-3-1. To Assign the SHIFT Function to a Bus Button:

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP menu top page. Turn F1 to select INPUT. Press F1 or the page down button to display the [SETUP - INPUT] menu.
(2) Turn F1 to select ASSIGN. Press F1 or the page down button to display the [SETUP - INPUT - ASSIGN] menu.

```
SETUP    : >SIGNAL   >PROC AMP>RENAME    >ASSIGN
INPUT    : >CC          >COLORBAR
```

(3) Turn F1 to select a bus button for use.
(4) Turn F2 or F3 to select SHIFT under **SIGNAL**.

```
INPUT    : BUTTON :  SIGNAL NAME   : INHIBIT: 1/6
OU ASSGN: =20    :  =SHIFT =SHIFT :  =OFF   :
```

7-3-2. Using the SHIFT Function

Once the SHIFT function has been assigned to a bus button, an additional 19 buttons are available for signal selection.
This chapter explains how to select signals with the SHIFT button. Assume that video sources and the shift function are assigned to bus buttons as shown in the table below:

Bus button 1	IN01
Bus button 1 (shifted)	STILL1
Bus button 20	SHIFT function

Now, let's select **IN01 on PGM** and **STILL1 on PST**.

When SHIFT works in NORMAL:
Shifted buttons are enabled while holding down SHIFT.
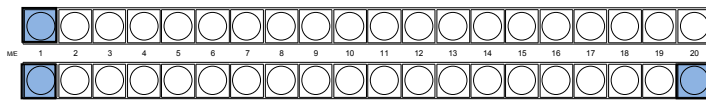
Press 1 to select IN01.

Press 1 while holding down 20 (SHIFT) to select STILL1.

When SHIFT works in TOGGLE:
To select shifted buttons, press SHIFT then press a bus button.

Press 1 to select IN01.

Press 20 (SHIFT).
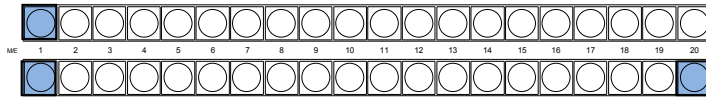
Press 1 to select STILL 1.

The SHIFT setting (NORMAL or TOGGLE) can be selected in the [SETUP - INPUT - ASSIGN] (6/6) menu.

8. Transitions

Available Transitions on M/Es
- BLACK transition (M/E2 only)
- Backgrounds: CUT, MIX and Pattern transitions
- KEY1 and 2: CUT, MIX and Pattern transitions
  SLIDE (4-direction), SCALER and WIPE (4-direction) transitions
- KEY3 and 4: CUT and MIX transitions
  SLIDE (4-direction), SCALER and WIPE (4-direction) transitions

-Transitions setup by next transition bus selection
-Transitions using the AUTO button or fader lever
-On-Air indicators for keys
-More than 150 types of various preset patterns
-Simultaneous background and key pattern transitions
-2Ch-DVE pattern transitions for backgrounds
-Transitions using M/E re-entry (M/E2 only)

◆ **Transition Example on M/E1 PGM**

Chromakey   KEY2

Background pattern transition — KEY2 cutting in
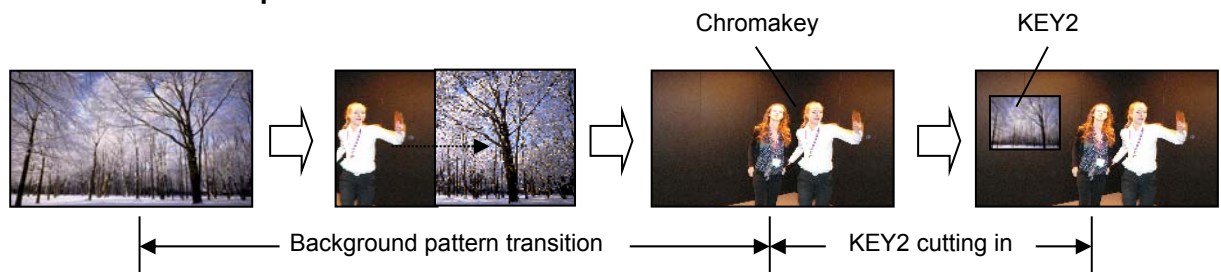
◆ **Transition Example on M/E2 PGM using M/E re-entry**

M/E re-entry

Caption (KEY3)   Logo (KEY4)

Logo (KEY4) sliding in and Caption (KEY3) cutting in
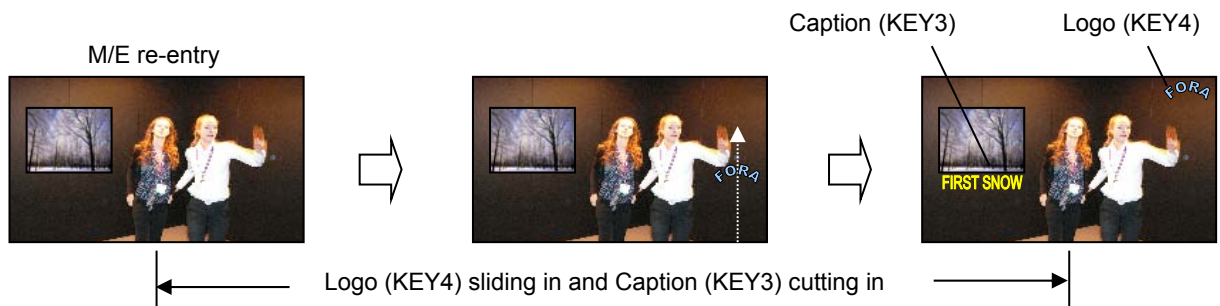
Other Transitions
- AUX crosspoint switching with effects (See section 6-2-3)
- Transitions using Event Recall (See section 16-2-3)

8-1. Transition Block Description

M/E1 and M/E2 transition sections have the same functions and buttons.

\<HVS-392OU/ROU\>   **\<HVS-392WOU\>**
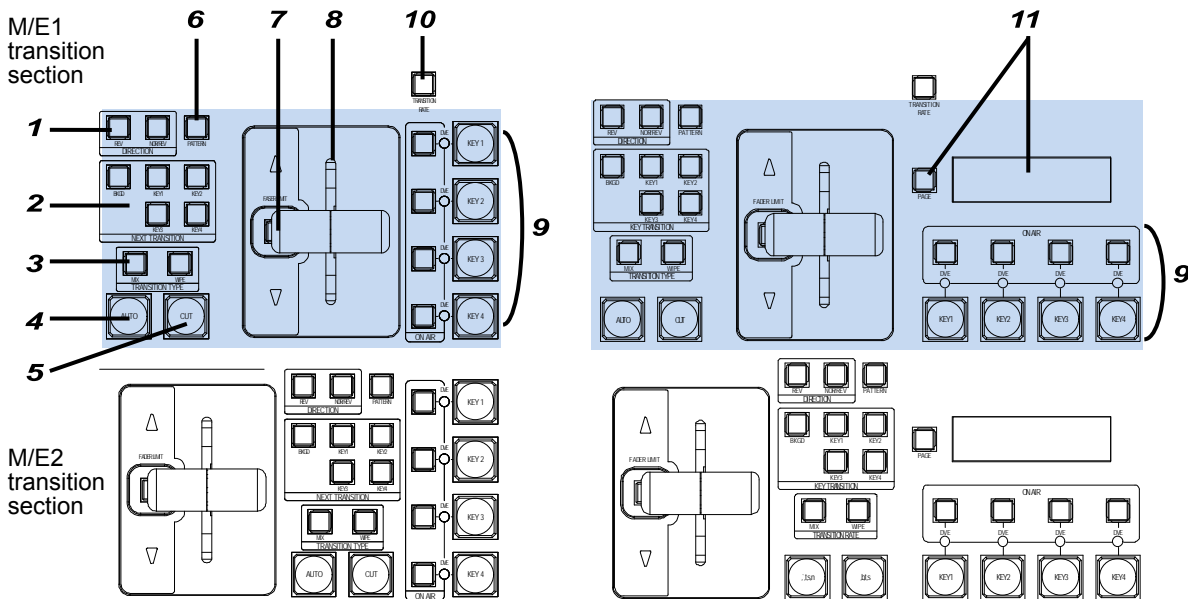
◆ M/E1 and M/E2 Transition Sections

No.	Description
1	For pattern transition direction setting
2	For next transition bus selection For next transition bus setting display on the KEY information display (in EACH mode on HVS-392WOU)
3	For transition type selection
4	AUTO transition button for BKGD and KEY
5	CUT transition button for BKGD and KEY
6	For pattern selection
7	Fader limit ON/OFF button
8	BKGD and KEY fader lever
9	ON AIR and AUTO transition buttons and DVE indicators for KEY1-4
11	Key information display and PAGE button (HVS-392WOU only)

◆ Other Transition Related Buttons

10	For transition rate setting. Pressing the button opens the related menu.	
-	BLACK TRANS button (Located on the left next to the joystick)	For M/E2 BLACK transition use.

8-2. Quick Reference for Available Transitions

Bus	Type	Rate	Fader Limit	Pattern Direction	Transition Execute Button or Tool	Refer to
BLACK	BLACK	Available	-	-	BLACK TRANS button	8-3
BKGD	CUT	-	Available	-	BKGD >> CUT button	8-4
	MIX	Available	Available	-	BKGD >> MIX >> AUTO button	
		--	Available	NOR/REV	Fader lever	
	WIPE	Available	Available	NOR/REV	BKGD >>WIPE >> AUTO button	8-4
		-	Available	NOR/REV	Fader lever	8-7
KEY1 KEY2	CUT	-	Available	-	KEY >> CUT button KEY ON AIR button KEY AUTO button	8-5
	MIX	Available	Available	-	KEY >> MIX >> AUTO or KEY AUTO button KEY AUTO button	
		--	Available	NOR/REV	Fader lever	
	WIPE	Available	Available	NOR/REV	KEY >> WIPE> > AUTO or KEY AUTO) button	8-5
		-	Available	NOR/REV	Fader lever	8-7
	USER TRANS	Available	-	-	KEY ON AIR button	8-9
	PRIORITY	—	—	—	KEY display (HVS-392WOU only)	10-11
KEY3 KEY4	CUT	-	Available	-	KEY >> CUT button KEY ON AIR button KEY AUTO button	8-5
	MIX	Available	Available	-	KEY >> MIX >> AUTO or KEY AUTO button KEY AUTO button	
	USER TRANS	Available	Available	-	KEY ON AIR button	8-9
	PRIORITY	—	—	—	KEY display (HVS-392WOU only)	10-11

8-3. Black Transitions

Just pressing the BLACK TRANS button can perform the BLACK transitions. Pressing the button initiates a fade to black of whichever source is currently on air (program output). Pressing the button again starts another fade from black to the previous video.
The BLACK transitions can be performed only on the **M/E2** bus.

◆ **To Set Black Transition Rate**
(1) Press the TRANSITION RATE button to display the [TRANS - BKGD/BLK] menu.
(2) Turn F4 to set the transition rate. See section 8-10-2. "Transition Rate" for details.

```
TRANS    : M/E1  : M/E2  :        : BLK  TRS:  1/7
BKGD/BLK: =30    : =30   :        : =30     :
```

8-4. Background Transitions

This chapter explains how to perform background transitions using the M/E2 background as an example.

◆ CUT Transition

(1) Select a video source in the PST bus block.
(2) Press the BKGD button in the NEXT TRANSITION block.
(3) Press CUT to perform the background CUT transition.
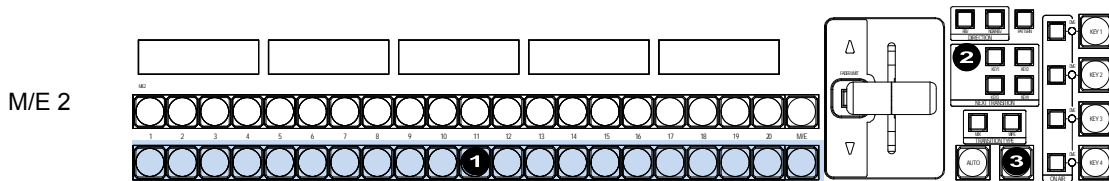
◆ MIX Transition

(1) Select a video source in the PST bus block.
(2) Press the BKGD button in the NEXT TRANSITION block.
(3) Press MIX in the TRANSITION TYPE block.
(4) Press AUTO or move the fader lever to perform the background MIX transition.
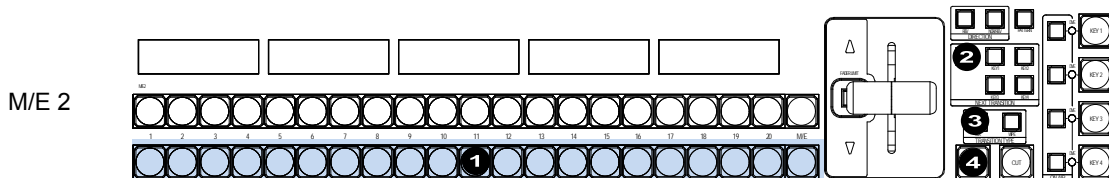
◆ WIPE Transition

(1) Select a video source in the PST bus block.
(2) Press the BKGD button in the NEXT TRANSITION block.
(3) Press WIPE in the TRANSITION TYPE block.
(4) The [TRANS - BKGD] menu appears in the menu display.
(5) Turn F1 to select a desired pattern. (See section 8-8 "How to Select Patterns.")
(6) Press AUTO or move the fader lever to perform the background WIPE transition.
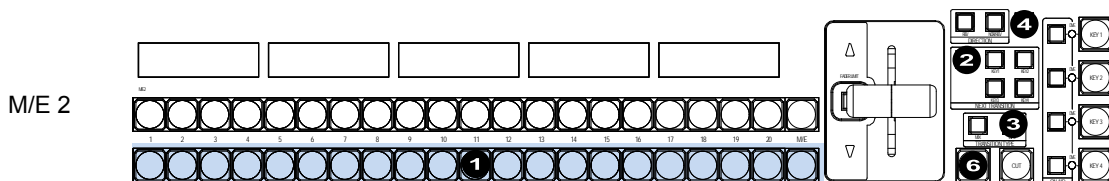
> See section 8-7. "Pattern (WIPE) Transitions" for the WIPE transition details.
> See section 8-10-2. "Transition Rate" for the transition rate.
> See section 8-10-1. "Fader Limit" for the fader limit.

◆ To Check Next Video:

To check the Preview video, assign the Preview video to an AUX bus to display the image. (See section 6-3. "Preview Set Up.") To check the clean video, assign the Clean video to an AUX bus to display the clear signal of program video. (See section 6-4. "Clean Set Up.")

74

8-5. KEY Transitions

Key images are displayed on each M/E output screen. This chapter explains how to perform key transitions using M/E1KEY1 as an example.

(1) Perform key setup for the KEY. (See section 10. "KEY.")
(2) Perform a desired transition referring to the below procedures.

◆ CUT Transition
<Method 1>
(1) Press KEY1 in the NEXT TRANSITION block.
(2) Press CUT to perform a key CUT transition.

<Method 2>
(1) Press KEY1 ON AIR to insert KEY1 onto the M/E1 program video. Press the button again to remove KEY1 from the screen. (See section 8-9. " Key IN/OUT Effects" for details.)
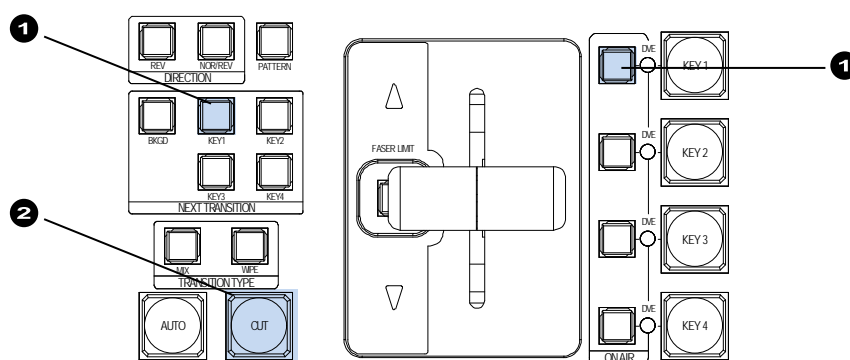
◆ MIX Transition
(1) Press KEY1 in the NEXT TRANSITION block.
(2) Press MIX in the TRANSITION TYPE block.
(3) Press AUTO or KEY1 AUTO, or move the fader lever to perform the KEY1 MIX transition.
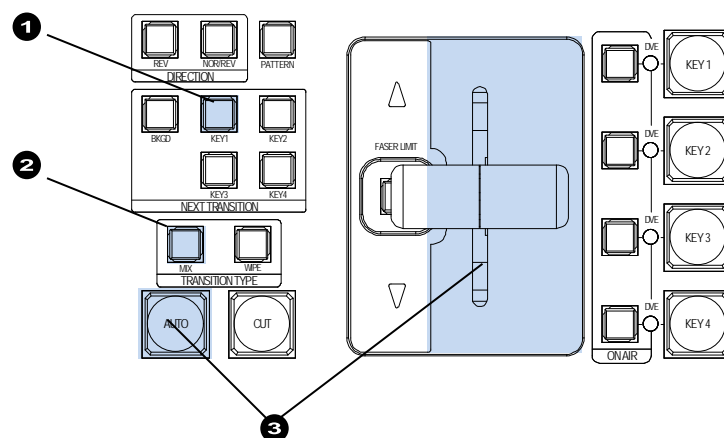
The KEY1 AUTO button behaves the same as the AUTO button when selecting KEY1 for the next transition. For example, if MIX is set as the KEY1 transition type under the NEXT TRANSITION, the KEY1 mix transition is performed when KEY1 AUTO is pressed and a KEY1 wipe transition is performed if WIPE is set as the transition type.

◆ **Pattern transition**

(1) Press KEY1 in the NEXT TRANSITION block.
(2) Press WIPE in the TRANSITION TYPE block.
(3) Press PATTERN to display the [WIPE PATTERN] menu.
(4) Turn F2 or F3 to select a desired pattern. (See section 8-8 "How to Select Patterns.")

```
WI PE      : BKGD   ■→  : KEY1    ↑   : KEY2   ■→  :  1/1
PAT  M1  : 00       →   : 20      ↓   : 00      →   :
```

(5) Press AUTO or KEY AUTO, or move the fader lever to perform the pattern transition.
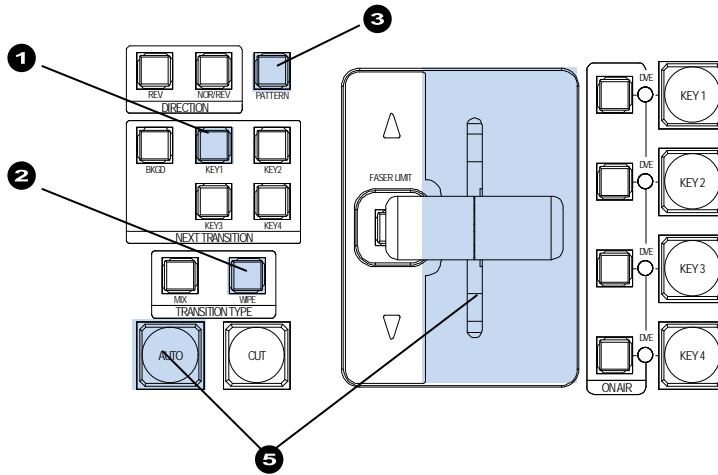
Note that pattern transitions are available only for KEY1 and KEY2.

KEY3 or KEY4 images can be displayed directly on an AUX bus instead of the M/E bus.
(See section 10-9. "Where KEY3 and KEY4 Appear")

See section 8-7. "Pattern (WIPE/DVE) Transitions" for the WIPE transition details.
See section 8-10-2. "Transition Rate" for the transition rate.
See section 8-10-1. "Fader Limit" for the fader limit.

◆ **USER Transitions**

Press the KEY ON AIR button to insert the KEY on the M/E program video by using a USER transition (scaler, slide in/out, etc.). (See section 8-9. " Key IN/OUT Effects" for details.)

8-6. Simultaneous BKGD and Key Transitions

Background and key transitions can be performed simultaneously. This chapter explains how to perform simultaneous BKGD, KEY1 and KEY2 transitions as an example.

(1) Set transition types for the background, KEY1 and KEY2 to MIX or WIPE respectively. Select a pattern using the menu if set to WIPE. (See the note below.)
(2) Set the transition rate or direction, if necessary.
(3) Press BKGD, KEY1 and KEY2 simultaneously to light up the buttons.
(4) Press AUTO, or move the fader lever to perform a simultaneous transition.
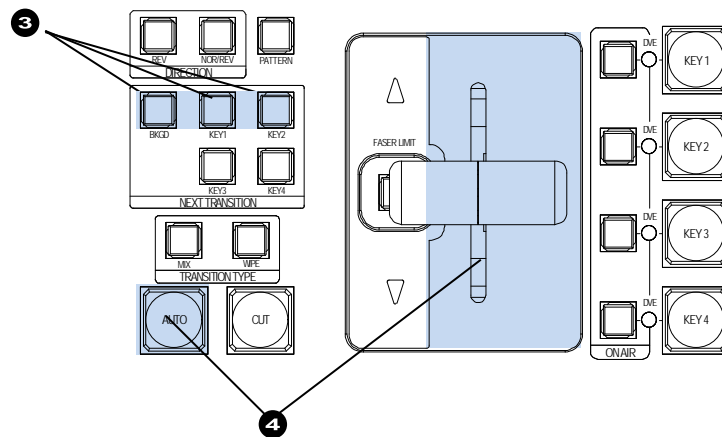
WIPE or DVE Pattern Use Limitations

- Up to two channels of WIPE patterns (No. 0-99) are available at the same time. KEY1 and KEY2, however, cannot use WIPE patterns simultaneously. WIPE transitions cannot be performed for KEY3 and KEY4.
- Up to two channels of 1Ch-DVE patterns (No. 100-162) are available at the same time. One channel of 2Ch-DVE patterns (No. 170-181) can be used only on backgrounds.
- If there is no free DVE channel, the WIPE button is disabled even if the button is pressed. In such case, cancel another WIPE or DVE setting, then press the WIPE button again.
- When performing pattern transitions with a DVE pattern (No. 100-162) for KEY1 or KEY2, all 2D DVE menu settings are disabled.

See section 8-7. "Pattern (WIPE/DVE) Transitions." for details on transition settings.

8-7. Pattern (WIPE/DVE) Transitions

Pattern transitions are available for Background, KEY1 and KEY2 on each M/E. This section explains how to perform pattern transitions.

(1) Select a next background video on the PST bus. Before performing a KEY1 or KEY2 transition, perform keyer setup.
(2) Press BKGD, KEY1 or KEY2 in the NEXT TRANSITION section to select a bus to be transitioned. A simultaneous transition of these three buses is also possible. (See section 8-6. "Simultaneous BKGD and Key Transitions.")
(3) Press WIPE in the TRANSITION TYPE block.

If the WIPE button does not light up...

There are no free channels for WIPE or DVE transitions. In such case, cancel another WIPE or DVE setting by selecting MIX for the bus, and then press the WIPE button again for the desired bus. See the previous page for pattern selection limitations.

(4) Press the PATTERN button to display the [WIPE PATTERN] menu. Select a disired pattern for the bus using F1 to F3. The patterns can be selected using the Direct Pattern function. See section 8-8. "How to Select Patterns" for details.

(5) Users can modify the pattern here to add a border, change the aspect ratio, change the start position and so on. (See section 9. "Modifying Patterns. ")

(6) Set the direction of transition using the direction buttons (NOR/REV and REVERSE).

Transition direction	RON/REV button	REV button
Always Normal	Unlit	Unlit
Always Reverse	Unlit	Lit
Normal at Normal/Reverse operation	Lit	Unlit
Reverse at Normal/Reverse operation	Lit	Lit

Transition Rate

The AUTO transition duration (Transition Rate) can be set in the menu.
See section 8-10-2. "Transition Rate."

Fader Limit

When performing transitions there may be times when you want the transition to the next signal to only complete to a certain degree instead of fully switching from one picture to another. In such case, change the Fader Limit in the menu. See section 8-10-1. "Fader Limit."

(7) Press AUTO or move the fader lever to perform the background pattern transition.
The KEY AUTO buttons are available for KEY1 and KEY2 pattern transitions.

8-8. How to Select Patterns

Wipe patterns are available for background and KEY transitions. More than 150 preset patterns are provided. This chapter explains how to select patterns for transitions, verify the currently selected pattern and select patterns quickly, using the Direct Pattern function.

8-8-1. Selecting Patterns in the Menu

(1) Press the PATTERN button in the Transition block to display the [WIPE PATTERN] menu.

> Users can also display the [WIPE-PATTERN] menu by quickly pressing the WIPE button twice.

The number and icon of the currently selected pattern are displayed in the menu display. The letter M is added in front of the number if the pattern has been modified. (See section 9 "Modifying Patterns.")

```
WIPE    : BKGD ▮→ : KEY1 ┌──┐: KEY2 ▮→ :  1/1
PAT M1 : 00        : 20  └──┘: 00        :
```

(2) To change the pattern, turn F1 to F3 to select another desired pattern.

8-8-2. Direct Pattern Function

The Direct Pattern Selection feature uses the number buttons on the keypad (0-9), to which WIPE patterns previously registered can be recalled at the touch of a button. So it is useful to assign frequently used patterns to number buttons. Up to 20 patterns can be registered.

To Register a Pattern:
(1) Press the PATTERN button in the Transition block to display the [WIPE PATTERN] menu.
(2) Turn F1 to F3 to select a pattern for registration.
(3) Modify the pattern, if needed. See section 9 "Modifying Patterns" for details on pattern modification.
(4) Press WIPE in the MEMORY block. The [DIRECT PATTERN] menu is displayed and the keypad changes to DIRECT PATTERN mode.

```
DIRECT   :  PAGE  : DIRECT : CLEAR   :         :  1/1
PATTERN :  =0     :  =ON   :  >OFF  :         :
```

(5) Turn F1 to select a page from the Direct Pattern memory. Patterns 0-9 are stored on PAGE 1 and the patterns 10-19 are stored on PAGE 2.
(6) Press the STORE button.
(7) Press M/E1 (or M/E2) once or twice in the WIPE CHANNEL block to select the bus where the pattern is to be used. BKGD, KEY1 or KEY2 is set each time the button is pressed.
(8) Press a number button (0-9). The selected pattern will be saved to the number button of the selected page.
(9) Repeat steps (1) to (8) to register patterns.
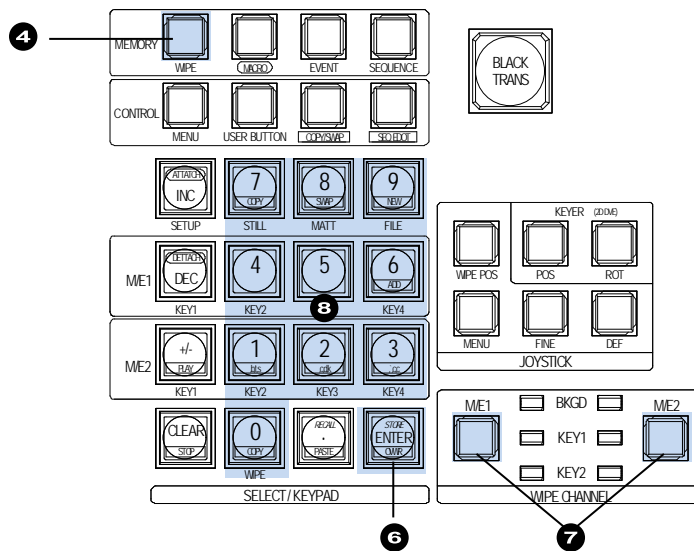
When pressing WIPE in the MEMORY block, the number buttons onto which patterns are already saved light up. If a user presses a lit button to save a selected pattern, the number button will blink. To overwrite the pattern, press the number button again. (To cancel the overwrite, press STORE.)

If users cannot overwrite a number button (lit red), cancel the operation and change the OVER WR (overwrite) item from DISBL (disable) to ENABL (enable) in the [DIRECT RECALL] menu. The [DIRECT RECALL] menu is automatically displayed when the number button to which a pattern is stored on the KEYPAD is pressed.

To Select a Pattern:
(1) Press M/E1 (or M/E2) to select the bus from which the pattern is to be recalled.
(2) Press the WIPE button above the SELECT/KEYPAD block. The [DIRECT PATTERN] menu is displayed and the keypad changes to DIRECT PATTERN mode.
(3) Turn F1 to select a page from the Direct Pattern memory in the menu.

```
DIRECT  : PAGE  : DIRECT : CLEAR  :       : 1/1
PATTERN : =0    : =ON    : >OFF   :       :
```

(4) Press the number button to which the desired pattern has been saved. The transition type is automatically switched to WIPE and the current pattern changes over to the new one.

If **DIRECT** in the [DIRECT PATTERN] menu is set to OFF, a direct pattern cannot be recalled just by pressing a number button. In such case, press a number button and then press RECALL on the KEYPAD.

To Set Overwrite Protection
(1) Press WIPE in the MEMORY block. The [DIRECT PATTERN] menu is displayed and the keypad changes to DIRECT PATTERN mode.
(2) Turn F2 to change **DIRECT** to OFF, if it is ON.

```
DIRECT  : PAGE  : DIRECT : CLEAR  :       : 1/1
PATTERN : =0    : =OFF   : >OFF   :       :
```

(3) Turn F1 to select a page of the Direct Pattern memory in the menu.
(4) Press the number button to be cleared. The [DIRECT RECALL] menu will then be displayed.

(5) Turn F3 to change **OVER WR** (Overwrite) to ON to set overwrite protection.

```
DIRECT   : PATTERN        ┌──┐↑  : OVER WR: DELETE :  1/1
RECALL   : =020          └──┘↓ : =ON    : =OFF   :
```

NOTE
Before setting overwrite protection, set **DIRECT** to OFF. Otherwise, the selected pattern is set immediately when pressing the number button.

To Clear a Direct Pattern Registration Individually
(1) Press WIPE in the MEMORY block. The [DIRECT PATTERN] menu is displayed and the keypad changes to DIRECT PATTERN mode.
(2) Turn F1 to change **DIRECT** to OFF, if it is ON.
(3) Turn F1 to select select a Direct Pattern memory page from the menu.

```
DIRECT  : PAGE  : DIRECT : CLEAR  :          :  1/1
PATTERN : =0      : =OFF   : >OFF   :          :
```

(4) Press the number button to be cleared. The [DIRECT RECALL] menu will then be displayed.
(5) Turn F4 to change **DELETE** to ON. Press F4 to delete the registration.

```
DIRECT   : PATTERN        ┌──┐↑  : OVER WR: DELETE :  1/1
RECALL   : =020          └──┘↓ : =OFF   : =ON    :
```

NOTE
Before clearing a direct pattern registration, set **DIRECT** to OFF. Otherwise, the selected pattern is set immediately when pressing the number button.

To Clear All Direct Pattern Registrations
(1) Press WIPE in the MEMORY block. The [DIRECT PATTERN] menu is displayed and the keypad changes to DIRECT PATTERN mode.
(2) Turn F3 to change **CLEAR** to ALL. Then press F3 to clear all direct patterns.

```
DIRECT  : PAGE  : DIRECT : CLEAR  :          :  1/1
PATTERN : =0     : =OFF   : >ALL   :          :
```

8-9. Key IN/OUT Effects

Key transitions can be performed not only through the BKGD AUTO button and fader lever, but also through key ON AIR and key AUTO buttons.(See figure below.)
KEY ON AIR and KEY AUTO are multiple function buttons. CUT, MIX, SLIDE (4 types) and WIPE (4 types) transitions can be performed using these two buttons for each key.
This chapter explains how to perform key transitions using KEY1 as an example.

◆ **To Perform M/E1 KEY1 Transitions**
(1) Set up KEY1 on M/E1. (See section 10. "KEY.")
(2) Press KEY1 ON AIR. This will insert KEY1 onto the M/E1 program video using CUT (button default setting).
(3) Then press KEY1 AUTO. This will fade out KEY1 from the screen (button default setting).

Lit red when DVE is applied.
Lit green when 2D DVE is enabled

KEY ON AIR
CUT (default)

KEY AUTO
MIX (default)

Buttons turn on while On-Air.
Buttons turn off while Off-Air.

Buttons turn on while On-Air. (Light color varies according to output bus)
Buttons turn off while Off-Air.
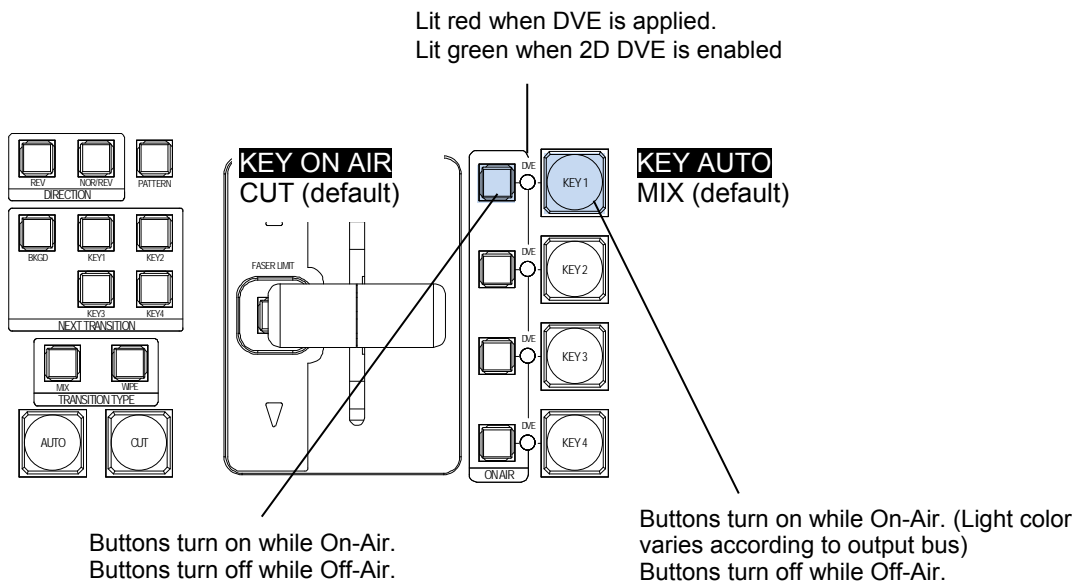
◆ **KEY AUTO, KEY ON AIR and DVE Light Indications**
The KEY AUTO and KEY ON AIR buttons turn on while On-Air and turn off when Off-Air.
The light color for KEY AUTO varies depending on the output bus.

State	Output bus	KEY AUTO	KEY ON AIR
On-Air	M/E1 PGM	Lit green (*1)	Lit
On-Air	M/E2 PGM	Lit red	Lit
On-Air (KEY3, KEY4)	AUX1 to 8	Lit green	Lit
Transition	M/E1 PGM, M/E2 PGM	Flashing	Lit
Off-Air	-	Unlit	Unlit

(*1) Lit red when an M/E1 key is inserted on the M/E2 PGM image using the re-entry function.

8-9-1. Setting the KEY ON AIR Button Function (USER Transition)

The KEY ON AIR function is set to CUT as factory default.
To set KEY1 ON AIR on M/E1 to SLIDE TOP, proceed as follows:

(1) Press the TRANSITION RATE button above the KEY1 ON AIR button to display the [TRANS] menu. Go to PAGE 4.

Users can also display the [TRANS] menu by quickly pressing the following buttons twice: BKGD, KEY1 to KEY4 and MIX in the NEXT TRANSITION block.

(2) Turn F1 to select M/E1 KEY1 under **SELECT**.
(3) Turn F2 to select SLIDE TOP.

```
TRANS   : SELECT :  USER TRANS     : ADV CTL:  4/7
USER/ADV:  =M1KY1:  =SLIDE TOP     :  =AUTO :
```
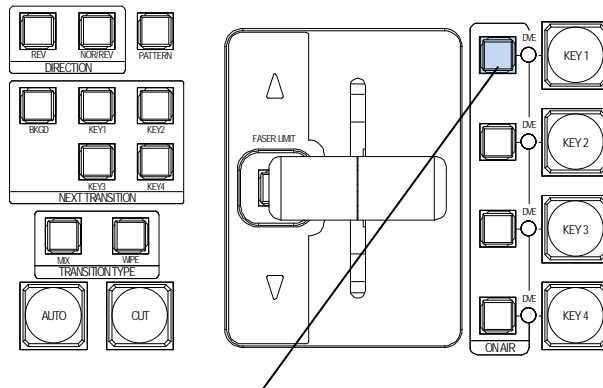
Buttons turn on while On-Air.
Buttons turn off while Off-Air.

◆ **KEY ON-AIR Button Function Settings**

Item	Setting	Description
USER TRANS	CUT	Cuts images in or out.
	SCALER	Scales up to insert images or scales down to remove images.
	SLIDE RIGHT/LEFT	Slides in to insert images or slides out to remove images.
	SLIDE TOP/BOTTOM	
	WIPE RIGHT/LEFT	Wipes images in or out.
	WIPE TOP/BOTTOM	
	OFF	Disables the button function.

8-9-2. Setting the KEY AUTO Button Function

The KEY AUTO buttons are set to AUTO (MIX) as factory default.
To change the KEY2 ON AIR button function on M/E2 so that CUT transitions can be performed by briefly pressing the button and KEY2 AUTO (MIX) transitions can be performed by pressing and holding down the button, proceed as follows:

(1) Press the TRANSITION RATE button above the KEY ON AIR buttons to display the [TRANS] menu.
(2) Turn F1 to select M/E2 KEY2 under **SELECT**.
(3) Turn F4 to select C/AT.

```
TRANS    : SELECT : USER TRANS    : ADV CTL: 4/7
USER/ADV: =M2KY2: =CUT            : =C/AT :
```


Buttons turn on while On-Air.
(Light color varies depending on output bus)
Buttons turn off while Off-Air.
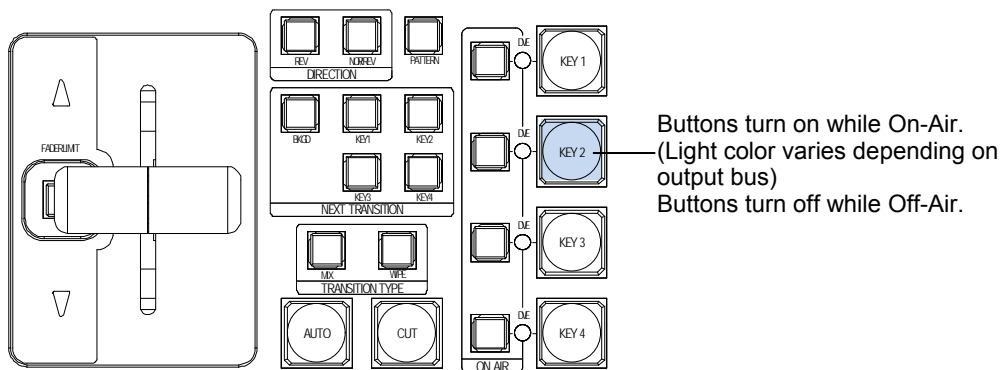
◆ **KEY AUTO Button Function Settings**

Item	Setting	Description
ADV CTL	AUTO	Always performs MIX transitions regardless of how long the button is pressed.
	C/AT	Performs Cut transitions when button is briefly pressed. Performs MIX transitions when button is pressed and held down.
	OFF	Disables the button function.

The transition time for MIX transitions can be set under **RATE** in the [TRANS] (1/7)-(3/7) menus. See section 8-10-2. "Transition Rate" for details.

Users can perform key transitions in the NEXT TRANSITION block in the same way as those for backgrounds. Therefore, if KEY1 is set up to MIX or WIPE in the NEXT TRANSITION block, pressing KEY1 AUTO performs the MIX or WIPE transition in the same way as that for the AUTO button in the NEXT TRANSITION.

The DVE lamps for KEY1 and KEY2 light red to indicate that the key uses a DVE pattern. This is useful for verifying the currently used DVE channels, since only two DVE channels can be used simultaneously.

8-10. Advanced Settings for Transitions

8-10-1. Fader Limit

The fader limit setting determines how far your transition can proceed. When performing transitions (mix or other) there may be times when you want the transition to the next signal to only complete to a certain degree instead of fully switching from one picture to another. In such case, you will need to limit the fader range. The procedure to do this is as follows.

(1) Press the FADER LIMIT button in the TRANSITION block to display the [TRANS - LIMIT] menu. Set the fader limit value at **L (Limit)**. The default setting is 100.0. With this setting, the transition is complete with pictures switching fully. **Set E (Enable)** to ON to enable the fader limit function.

```
M/E1 TRS:      M/E BKGD    :                 : 1/3
LIMIT    : L=100. 0: E=ON    :                 :
```

```
M/E2 TRS:      M/E BKGD    :                 : 1/3
LIMIT    : L=100. 0: E=ON    :                 :
```

(2) Press the page down button to go to the following pages and set the fader limit for keys in the same way.

> The FADER LIMIT buttons turn on when the fader limit function is enabled. Pressing the FADER LIMIT buttons on the fader levers toggle the fader limit feature of the background to ON or OFF.

(3) Press AUTO or move the fader lever to perform transitions.

Adjusting the Fader Offset:
The fader OFFSET for the lever can also be adjusted in the [SETUP - PANEL - TRS CTRL] menu. Turn F3 and F4 to adjust the fader offset.

```
PANEL    : BUSTYPE: ON AIR :  FADER OFFSET  : 1/3
M/E1CTRL:  =P/P   :  =GRN   : U=1. 00    L=1. 00 :
```

```
PANEL    : BUSTYPE: ON AIR :  FADER OFFSET  : 2/3
M/E2CTRL:  =P/P   :  =RED   : U=1. 00    L=1. 00 :
```

Item	Setting	Description
FADER OFFSET	U	Sets the upper edge offset.
	L	Sets the bottom edge offset.

8-10-2. Transition Rate

The transition rate setting determines how long the transition takes in frames to complete.

(1) Press the TRANSITION RATE button in the transition section to display the [TRANS] menu.

Users can also display the [TRANS] menu by quickly pressing the following buttons twice: BKGD, KEY1, KEY2 and MIX in the NEXT TRANSITION block.

(2) Turn F1 to F4 to set the transition rate for each bus. To enter the rate in the KEYPAD, press F1 or other related control-push button, enter the rate in the KEYPAD and then press ENTER in the KEYPAD to store the new transition rate.

The transition rate can be set for each bus respectively as shown in the following menu pages. Use the page up and down buttons to move between the menu pages. The setting range is 0 to 999 on a frame basis.

```
TRANS    : M/E1  : M/E2  :         :BLK TRS: 1/7
BKGD/BLK: =30    : =30   :         : =30   :
```

```
TRANS    : KEY1  : KEY2  : KEY3   : KEY4   : 2/7
RATE-ME1: =30    : =30   : =30    : =30    :
```

```
TRANS    : KEY1  : KEY2  : KEY3   : KEY4   : 3/7
RATE-ME2: =30    : =30   : =30    : =30    :
```

8-10-3. Endpoint Processing for DVE Transitions

In DVE operations, differences in video delay times when entering and exiting DVE effects can cause the video to appear choppy. This choppiness can be reduced by menu setting so that the DVE effect always exits at the transition start and end points (**TRS EDGE** to OFF in the [SETUP - FUNCTION - M/E_KEY] menu).

```
FUNCTION: TRSEDGE: KEY LNK:        :EXT ME : 1/2
M/E_KEY : =OFF   : =ON    :        : =2ME  :
```

8-10-4. Background Layer of DVE images (Effect Background)

The effect background is the bottom layer placed below the DVE effects. It is used to transition images with a 2Ch-DVE pattern.

Effect background ————

DVE image ————
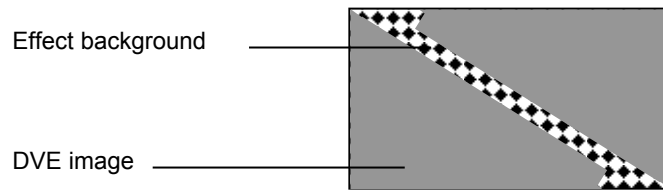
(1) Press the TRANSITION RATE button to display the [TRANS] menu.
(2) Press the page down button to go to PAGE 5.

```
TRANS    : ME1 XPT: ME2 XPT:                    :  5/7
EFF BKGD: =MATT :  =MATT :                       :
```

(3) Select the DVE background image from MATT, AUX7 or AUX8.
    If AUX7 or AUX8 is set, the currently selected image for AUX7 or AUX8 is used.
    If MATT is set, go to the next page (PAGE 6) to specify the color for MATT. See section 5-9-1. "Setting the Matte Color" for color setting.

8-10-5. Swapping the CUT and AUTO Buttons

The CUT and AUTO buttons on the transition block can switch their locations with each other. To locate CUT to the left and AUTO to the right, proceed as follows.

(1) Press MENU then SETUP in the CONTROL block to display the SETUP menu top page. Turn F1 to select PANEL. Press F1 or the page down button to display the [SETUP - PANEL] menu.
(2) Turn F1 to select TRS CTRL. Press F1 or the page down button to display the [SETUP - PANEL - M/E CTRL] menu.
(3) Turn F1 to select A/B. Press F1 or ENTER on the keypad to confirm the setting.
(4) Go to PAGE 3.
(5) Turn F1 to select L/R=CUT/AUTO. Press F1 or ENTER on the keypad to confirm the setting.

```
PANEL    : CUT/AUTO ASSIGN:        :          :  3/3
M/E CTRL: L/R= CUT/AUTO :           :          :
```

◆ **Replacing Button Lables**
If you have switched the CUT and AUTO button locations, you need to change the button lables.

(1) To remove the CUT and AUTO buttons from the front panel, pinch a button with your fingers and pull it upwards to remove the button cap.
(2) Replace the label and insert the button cap into the body with checking the correct label orientation.

9. Modifying Patterns

9-1. Preset Pattern Groups

The WIPE preset patterns (No. 0-202) can be changed or modified from their original patterns. Basically the preset patterns are categorized into five different groups. The available items in the WIPE modify menu are also different according to the type of groups

Pattern No.	Type of Group	Available modification settings
0 to 99	WIPE	2D border, multi, 2D position, 2D size, etc.
100 to 137	2D/2.5D DVE	2D border, 2D position, 2D size, crop, etc.
140 to 147, 150 to 157, 161 and 162	3D DVE	2D border, lighting effects, warp effects, crop, etc.
170 to 181	2D/2.5D DVE (2ch)	2D border, 2D position, 2D size, crop, etc.
200 to	MIX, FAM, NAM	---

To modify a pattern, select a WIPE pattern, open the WIPE menu and change desired parameters to modify the pattern. This section explains how to modify patterns using examples for the KEY transition and background transition.
See section 9-6. "WIPE Menu" for details about modification settings.

9-2. Modified Patterns

Press the PATTERN button in the Transition block to display the [WIPE PATTERN] menu. The currently selected patterns are displayed in the menu. When a pattern is modified, the letter "M' is added in front of the pattern number as shown in the menu below. When the CG WIPE feature is enabled (ENABLE in the [WIPE MODIFY-CG WIPE] menu is set to ON.), the letter "C' is added in front of the pattern number.

```
WIPE    : BKGD  ▛→ : KEY1  ⬆ : KEY2  ▛→ : 1/1
PAT M1 : M00  ▛→ : M20  ⬇ : 00  ▛→ :
```
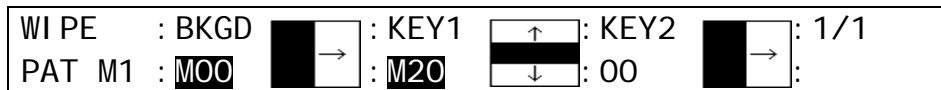
The same pattern can be individually modified for the background, KEY1 and KEY2. However, when you change the pattern to another one of the same type (WIPE or DVE) after modifying the pattern, the modified pattern data will be lost. To preserve and recall a modified pattern easily, register it to the Direct Pattern memory. (See section 8-8-2. "Direct Pattern Function.")

Returning Pattern to Normal Settings
When you change a pattern to another one of the same type after the pattern modification in some cases, some modification data set for the specified pattern may be preserved and applied to the newly selected pattern. In these cases, if you wish the modified pattern to return to the default settings, reset the pattern. (See section 9-5. "How to Reset WIPE Menu.")

Baking Up Modified Data
The modified pattern data is lost when powering off the switcher. It is recommended that important modified data be backed up to the event memory or a USB flash memory stick. For details about backup procedures, refer to section 16 "Event Memory" and section 19. "File Operations." The Direct Pattern data is included in the switcher's backup data (ALL data).

9-3. Pattern Modify Example 1 (Pattern 20)

This modification example adds a border effect to the M/E1 background transitions using Pattern 20.

(1) Select a desired signal on the M/E1 PST bus.
(2) Press BKGD in the NEXT TRANSITION block.
(3) Press WIPE.
(4) Press PATTERN to display the [WIPE PATTERN] menu.
(5) Turn F1 to select 20.

```
WIPE: BKGD      ↑   : KEY1  ■→  : KEY2  ■→  :  1/1
PATT: 20        ↓   : 00          : 00        :
```

(6) Press M/E1 in the WIPE CHANNEL block to turn BKGD to ON.
(7) Press MENU in the CONTROL block, then press WIPE in the Keypad to display the [WIPE] menu.
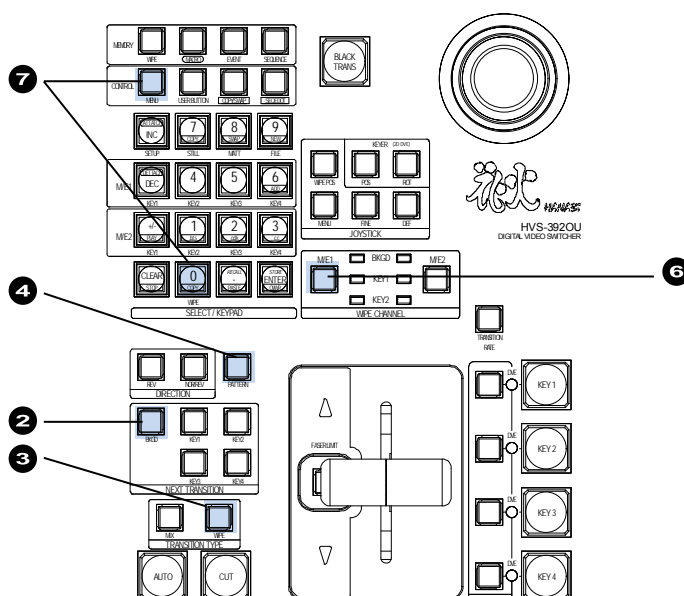
(8) Turn F1 to select BORDER. Press F1 or the page down button.

```
ME1 WPBG: >BORDER   >POS/ANGL>MULTI    >SUB EFF
No. 020   : >CG WIPE >INIT
```

(9) The [WIPE - BORDER] menu appears. Turn F1 to select the signal used for the border under **SIGNAL**. Select MATT in this example. Set the border width under **WIDTH** and border softness under **SOFT**.

```
ME1 WPBG: SIGNAL : WIDTH : SOFT  :      : 1/2
BORDER   : =MATT : =5.0  : =2.0  :      :
```

(10) Press the page down button to go to PAGE 2.
(11) Turn F4 to select a border color among eight standard colors. Press F4 to apply the selected color. If you want to adjust the selected color or set the color by entering HSL values, turn F1, F2 and F3 to adjust values or press F1, F2 and F3, enter a value in the Keypad, and then press ENTER in the Keypad. Users can also set these three parameters in the JOYSTICK block. (See section 4-2-4. "Changing Settings or Values Using the Joystick.")

```
ME1 WPBG:        BORDER COLOR     : RECALL :  2/2
BORDER   : S=66.3   L=5.4    H=3.5   :  >BLUE :
```

9-4. Pattern Modify Example 2 (Pattern 117)

This modification example also adds a border effect to KEY1 transitions on M/E1 using Pattern 117. However Pattern 117 has different border settings than Pattern 20. It can use both inside and outside border effects.

(1) Set up KEY1 on M/E1. (See section 10. "KEY.")
(2) Press KEY1 in the NEXT TRANSITION block.
(3) Press WIPE.
(4) Press PATTERN to display the [WIPE PATTERN] menu.
(5) Press F2, enter "117" in the Keypad and press ENTER in the Keypad to select Pattern 117.

```
WIPE    : BKGD  [  ↑  ] : KEY1  [  ↓  ] : KEY2  [   →  ] :  1/1
PAT M1 : M20   [  ↓  ] : 117   [  ↑  ] : 00    [   →  ] :
```

(6) Press M/E1 in the WIPE CHANNEL block to turn KEY1 to ON.
(7) Press MENU in the CONTROL block, then press WIPE in the Keypad to display the [WIPE] menu.
(8) Turn F1 to select BORDER. Press F1 or the page down button.

```
ME1 WPK1: >BORDER   >POS/ANGL>MULTI    >SUB EFF
No. 117   : >INIT
```

(9) The [WIPE - BORDER] menu appears. To use the inside border, set the border width under INSIDE X and Y. To use the outside border, set the border width under OUTSIDE X and Y.

```
ME1 WPK1:      INSIDE   :    OUTSIDE    :  1/3
BORDER   : X=20     Y=50  : X=5      Y=5     :
```

(10) Press the page down button to go to PAGE 2. Set the softness for the inside border under INSIDE X and Y. Set the softness for the outside border under OUTSIDE.

```
ME1 WPK1:      INSIDE     : OUTSIDE:      :  2/3
BDR SOFT: X=3       Y=3    : =0      :      :
```

(11) Press the page down button to go to PAGE 3.
(12) Turn F4 to select a border color among eight standard colors. Press F4 to apply the selected color. If you want to adjust the selected color or set the color by entering HSL values, turn F1, F2 and F3 to adjust values or press F1, F2 and F3, enter a value in the Keypad and then press ENTER in the Keypad. Users can also set these three parameters in the JOYSTICK block. (See section 4-2-4. "Changing Settings or Values Using the Joystick.")

```
ME1 WPK1:        BORDER COLOR     : RECALL :  3/3
BDR COL : S=66.3   L=5.4    H=3.5   :  >BLUE :
```

9-5. How to Reset the WIPE Menu

To Reset a Modified Pattern using the WIPE PATTERN Menu:
(1) Press ⟦PATTERN⟧ in the TRANSITION block to display the [WIPE PATTERN] menu. The letter "M" appears in front of the modified pattern.

```
WIPE    : BKGD  ▉→ : KEY1  ▬↑  : KEY2  ▉→ :  1/1
PAT M1  : 00       : M20    ▬↓  : 00       :
```

(2) Press and hold down ⟦F2⟧ to reset Pattern 20 in the above example.

To Reset a Modified Pattern using User Buttons:
(1) Assign the reset function of the WIPE menu (OTHER - WIPE MOD BKGD RESET, WIPE MOD KEY1 RESET or WIPE MOD KEY2 RESET) to a USER button.
(2) Press a set USER button. All parameters for the selected bus in the WIPE menu are returned to factory default settings. (See section 22. "USER Button.")

To Reset a Part of the Modified Pattern using the WIPE Menu:
The INIT items in the menu allows the user to reset a submenu respectively in the WIPE menu.

(1) Press ⟦M/E1⟧ in the WIPE CHANNEL block to turn on the lamp of the bus where the pattern is used.
(2) Press ⟦MENU⟧ in the CONTROL block.
(3) Press ⟦WIPE⟧ in the Keypad to display the [WIPE] menu.
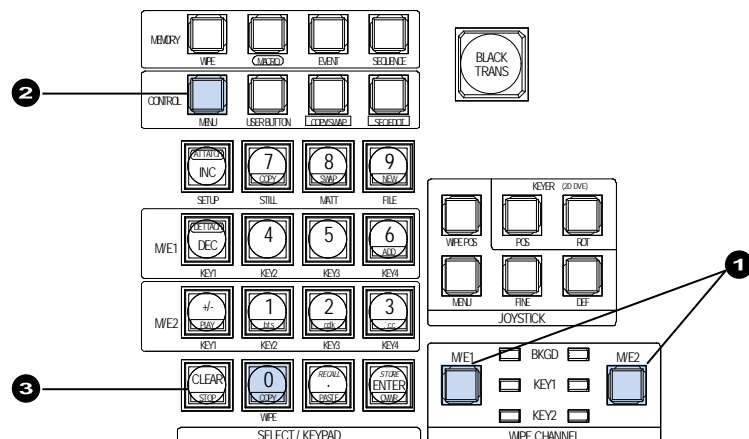
(4) Turn ⟦F1⟧ to select INIT. And then press and hold down ⟦F1⟧ for a while.

```
ME1 WPBG: >BORDER   >POS/ASP  >CROP     >SUB EFF
No. 117  : >CG WIPE >█INIT█
```

(5) Turn ⟦F1⟧ to select the parameter group you want to reset under **INIT**. Press ⟦F1⟧ to reset the selected parameter values.

```
ME1 WPBG: INIT    :                          : 1/1
INIT     : =█BORDER█:                         :
```

9-6. WIPE Menu

9-6-1. No. 0-99

The pattern number is displayed instead of "0XX" in the top page of the submenu.
The M/E number is displayed instead of "X" and "BG" (BKGD), "K1"(KEY1) or "K2"(KEY2) is
displayed instead of "XX" on each page.

```
MEX WPXX: >BORDER   >POS/ANGL>MULTI     >SUB EFF
No.OXX   : >CG WIPE >INIT
```

```
MEX WPXX: SIGNAL : WIDTH : SOFT  :         : 1/2
BORDER   : =MATT : =0.0  : =0.0  :         :
```

```
MEX WPXX:        BORDER COLOR     : RECALL : 2/2
BORDER   : S=66.3  L=5.4   H=3.5  : >BLUE  :
```

```
MEX WPXX:       POSITION   : ANGLE : ASPECT : 1/1
POS/ANGL: X=0       Y=0    : =0.0  : =0.0   :
```

```
MEX WPXX:        MULTI      :              : 1/1
MULTI    : X=1       Y=1    :              :
```

```
MEX WPXX: EFFECT :     MONO COLOR        : 1/3
SUB EFF  : =NOR  : S=0.0   H=0.0  En=OFF  :
```

```
MEX WPXX:       DEFOCUS   :     PAINT   : 2/3
SUB EFF : H=0.0    V=0.0  : Y=0      C=0 :
```

```
MEX WPXX: FREEZE : STROBE : NEGA   : MOSAIC : 3/3
SUB EFF  : =OFF  : =OFF   : =OFF   : =OFF   :
```

```
See section 0 for details about the CG WIPE pages.
The WIPE menu for KEY 1 and KEY 2 does not have CG WIPE pages.
```

```
MEX WPXX: INIT  :                       : 1/1
INIT     : >OFF :                       :
```

```
The SUB EFF pages are not available in No. 0-99 for KEY1 and KEY2.
```

9-6-2. No. 100-137

The pattern number is displayed instead of "1XX" in the top page of the submenu.
The M/E number is displayed instead of "X" and "BG" (BKGD), "K1"(KEY1) or "K2"(KEY2) is
displayed instead of "XX" on each page.

```
MEX WPXX: >BORDER   >POS/ASP >CROP      >SUB EFF
No. 1XX  : >CG WIPE >INIT
```

```
MEX WPXX:      INSIDE      :     OUTSIDE   : 1/3
BORDER   : X=0       Y=0    : X=0       Y=0    :
```

```
MEX WPXX:      INSIDE      : OUTSIDE:        : 2/3
BDR SOFT: X=0       Y=0    :  =0      :       :
```

```
MEX WPXX:        BORDER COLOR      : RECALL : 3/3
BDR COL : S=66.3   L=5.4    H=3.5   : >BLUE :
```

```
MEX WPXX:     POSITION    : SIZE  :       : 1/2
POS/SIZE: X=0       Y=0    :  =1000 :       :
```

```
MEX WPXX:      ASPECT      : FADE LV:       : 2/2
ASPT/FAD: X=1000   Y=1000 :  =0.0   :       :
```

```
MEX WPXX:            CROP POSITION      : 1/1
CROP     : T=0.0    B=0.0   L=0.0   R=0.0  :
```

```
MEX WPXX:          :      MONO COLOR     : 1/3
SUB EFF  :          : S=0.0    H=0.0   En=OFF :
```

```
MEX WPXX:     DEFOCUS    :    PAINT    : 2/3
SUB EFF  : H=0.0    V=0.0  : Y=0       C=0    :
```

```
MEX WPXX: FREEZE : STROBE :  NEGA   : MOSAIC : 3/3
SUB EFF  :  =OFF   :  =OFF   :  =OFF   :  =OFF   :
```

See section 0 for details about the CG WIPE pages.
The WIPE menu for KEY 1 and KEY 2 does not have CG WIPE pages.

```
MEX WPXX: INIT  :                       : 1/1
INIT     : >OFF  :                       :
```

9-6-3. No. 140-147, 150-157, 161 and 162

The pattern number is displayed instead of "1XX" in the top page of the submenu.
The M/E number is displayed instead of "X" and "BG" (BKGD), "K1"(KEY1) or "K2"(KEY2) is
displayed instead of "XX" on each page.

```
MEX WPXX: >BORDER  >TURN     >CROP      >SUB EFF
No. 1XX  : >CG WIPE >INIT
```

```
MEX WPXX:       INSIDE    :     OUTSIDE    : 1/3
BORDER  : X=0       Y=0    : X=0       Y=0    :
```

```
MEX WPXX:       INSIDE    : OUTSIDE:        : 2/3
BDR SOFT: X=0       Y=0    : =0      :        :
```

```
MEX WPXX:         BORDER COLOR     : RECALL : 3/3
BDR COL : S=66.3   L=5.4    H=3.5   : >BLUE  :
```

```
MEX WPXX:    LIGHTING    : DIR   : RAD    : 1/2
WARP     : W=0.0  En=OFF  : =0    : =0     :
```

```
MEX WPXX:        LIGHT COLOR      : RECALL : 2/2
LIGHTCOL: S=0.0    L=100.0  H=0.0  : >WHITE :
```

```
MEX WPXX:          CROP POSITION          : 1/1
CROP     : T=0.0    B=0.0   L=0.0   R=0.0  :
```

```
MEX WPXX:        :     MONO COLOR    : 1/3
SUB EFF :        : S=0.0   H=0.0  En=OFF  :
```

```
MEX WPXX:    DEFOCUS    :     PAINT    : 2/3
SUB EFF : H=0.0    V=0.0  : Y=0       C=0    :
```

```
MEX WPXX: FREEZE : STROBE :  NEGA  : MOSAIC : 3/3
SUB EFF :  =OFF  :  =OFF  :  =OFF  :  =OFF  :
```

```
See section 0 for details about the CG WIPE pages.
The WIPE menu for KEY 1 and KEY 2 does not have CG WIPE pages.
```

```
MEX WPXX: INIT  :                      : 1/1
INIT     : >OFF  :                      :
```

94

9-6-4. No. 170-181

The pattern number is displayed instead of "1XX" in the top page of the submenu.
The M/E number is displayed instead of "X" and "BG1" (BKGD CH1) or "BG2"(BKGD CH2) is
displayed instead of "BGx" on each page.

```
MEX WPBX: >BORDER1 >CROP1 >SUB EFF1>CG WIPE
No. 1XX   : >BORDER2 >CROP2 >SUB EFF2>INIT
```

```
MEX WPBX:       INSIDE     :     OUTSIDE    : 1/3
BORDER  : X=0       Y=0   : X=0       Y=0    :
```

```
MEX WPBX:       INSIDE     : OUTSIDE:        : 2/3
BDR SOFT: X=0       Y=0    :  =0     :        :
```

```
MEX WPBX:          BORDER COLOR     : RECALL : 3/3
BDR COL : S=66.3   L=5.4    H=3.5   : >BLUE  :
```

```
MEX WPBX:          CROP POSITION            : 1/1
CROP    : T=0.0    B=0.0    L=0.0    R=0.0   :
```

```
MEX WPBX:       :          MONO COLOR       : 1/3
SUB EFF :       : S=0.0     H=0.0   En=OFF   :
```

```
MEX WPBX:      DEFOCUS     :     PAINT       : 2/3
SUB EFF : H=0.0    V=0.0   : Y=0       C=0    :
```

```
MEX WPBX: FREEZE : STROBE :  NEGA   : MOSAIC : 3/3
SUB EFF :  =OFF  :  =OFF   :  =OFF   :  =OFF   :
```

> See section 0 for details about the CG WIPE pages.
> The WIPE menu for KEY 1 and KEY 2 does not have CG WIPE pages.

```
MEX WPBX: INIT  :                        : 1/1
INIT    : >OFF  :                        :
```

9-6-5. No. 200-202

The pattern number is displayed instead of "2XX" in the top page of the submenu.

```
MEX WPBG:  >CG WIPE >INIT
No. 20X  :
```

> See section 0 for details about the CG WIPE pages.
> The INIT menu is the same as that of other patterns

10. KEY

The key feature enables you to superimpose titles and images onto background signals. With the HVS-390 series, four key channels are provided for each M/E. Three key types are available in all keyers: Luminance Key, Full Key and Bus Key. Key Invert, Mask and 2D DVE effects can also be added to keys. Furthermore, the Chroma Key feature and Edge effect can be used in KEY1 and KEY2.

Key Features

Feature	KEY1 and KEY2	KEY3 and KEY4	Refer to
Luminance key	Available	Available	10-1
Full key	Available	Available	10-2
Bus key	Available	Available	10-3
Chroma key	Available	-	10-6
Key invert	Available	Available	10-7-1
Box mask, signal mask	Available	Available	10-7-2
Preset mask	Available	-	10-7-2
Edge effect	Available	-	10-8
Pattern transition	Available	-	8-7
3D DVE	Available	-	11
IN/OUT effects	Available	Available	8-9
M/E1 PGM image (M/E re-entry) selection	Available (*1)	Available (*1)	
AUX output	-	Available	10-9

(*1) Except when M/E1 is selected for the output bus.

The following section describes the key setup and adjustment using M/E1 KEY1 as an example.

◆ **Luminance KEY**

Luminance Key, also called Self Key, uses the same image for Key Source and Key Insert. This image is selected from Key Insert.
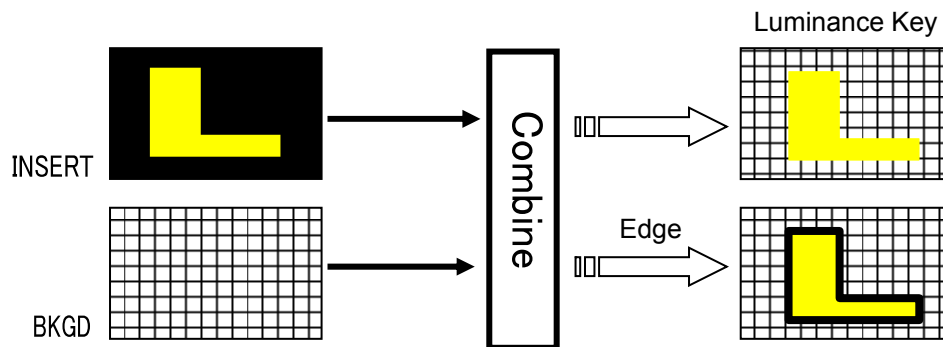
◆ **Full key**

Full Key displays the key insert signal full-screen.

96
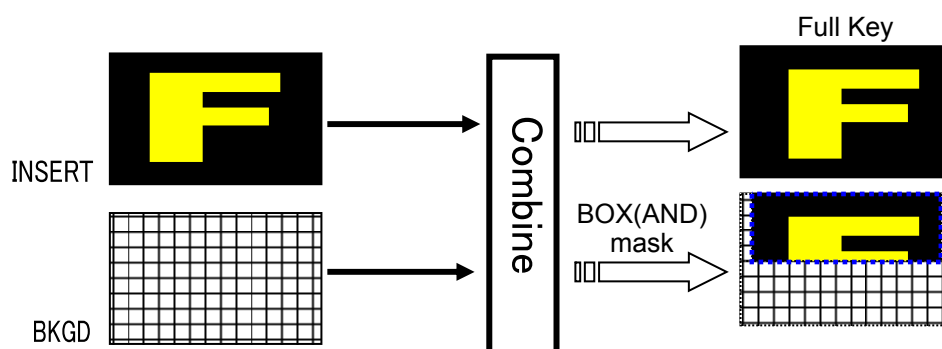
◆ **Bus key**
  Bus Key, also called External Key, uses different images for Key Source and Key Insert. The background signal is cut out using Key Source and Key Insert fills in the cut out part of the signal.
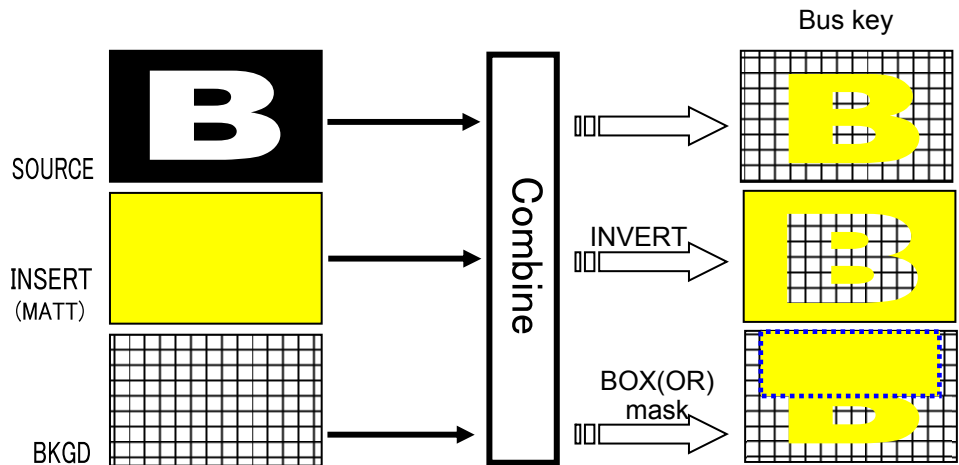
10-1. Luminance Key

(1) Press the M/E1 KEY1 button in BUS SELECT.
(2) Select a signal for Key Insert in the KEY/AUX bus.
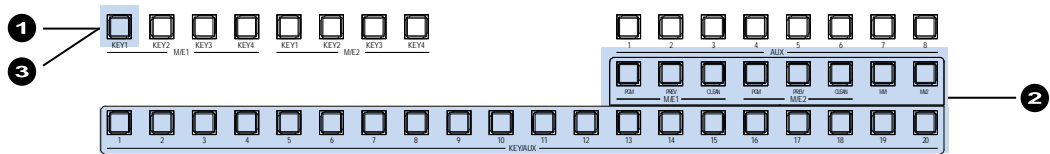
(3) Quickly press KEY1 twice in BUS SELECT to display the [M/E1 KEY1 SETUP] menu.
(4) Turn F1 to select INS/SRC, and press F1 or the page down button.

```
ME1 KEY1: >INS/SRC >EDGE     >MASK     >CK
SETUP    : >POS/SIZ >BORDER   >SUB EFF >INIT
```

(5) The [M/E1 KEY1 - INS/SRC] menu is displayed. Turn F1 to set **TYPE** to LUM. The insert signal can also be selected at INSERT.

```
ME1 KEY1:  TYPE  : INSERT : SOURCE : INVERT :  1/4
INS/SRC :  =LUM  :  >INO1 :  =INO1 :  =OFF   :
```

> See section 8-5. "KEY Transitions" and 8-9. "Key IN/OUT Effects" for details on transitions.
> See section 10-4. "Adjusting Key Signal" for details on making fine adjustments.
>
> Edge (KEY1 and 2 only), Invert, Mask and 2D DVE effects can be applied to Luminance keys.

10-2. Full Key

(1) Follow Step (1) to Step (4) in "Luminance Key" above.
(2) The [M/E1 KEY1 - INS/SRC] menu is displayed. Turn F1 to set **TYPE** to FULL. The insert signal can also be selected at **INSERT**.

```
ME1 KEY1: TYPE  : INSERT : SOURCE : INVERT :  1/4
INS/SRC :  =FULL   :  >INO1 : =INO1 : =OFF  :
```

> See section 8-5. "KEY Transitions" and 8-9. "Key IN/OUT Effects" for details on transitions.
> See section 10-4. "Adjusting Key Signal" for details on making fine adjustment.
>
> Edge (KEY1 and 2 only), Invert, Mask and 2D DVE effects can be applied to Full keys.

10-3. Bus Key

Bus Key uses different signals for Key Insert and Key Source. To create a Bus Key, select a Key Insert signal and a Key Source signal in the menus. Since selecting a signal in the menu takes time, the switcher has a KEY LINK function, which enables you to select a key source and insert using only a source button. See section 10-3-1. "Key Link" for details.

(1) Press the KEY1 button in BUS SELECT.
(2) Select a signal for Key Insert in the KEY/AUX bus.
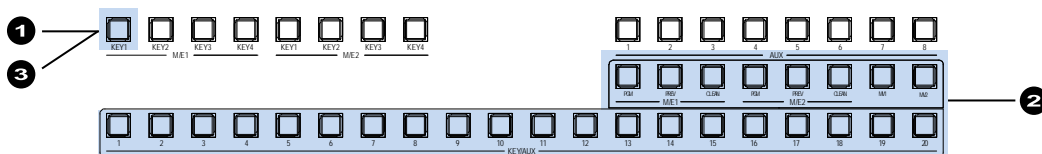
(3) Quickly press KEY1 twice in BUS SELECT to display the [M/E1 KEY1 SETUP] menu.
(4) Turn F1 to select INS/SRC, and press F1 or the page down button.

```
ME1 KEY1: >INS/SRC >EDGE     >MASK     >CK
SETUP    : >POS/SIZ >BORDER   >SUB EFF >INIT
```

(5) The [M/E1 KEY1 - INS/SRC] menu is displayed. Turn F1 to set **TYPE** to BUS.
(6) Turn F3 to select a signal for Key Source in **SOURCE**.

```
ME1 KEY1: TYPE  : INSERT : SOURCE : INVERT :  1/4
INS/SRC :  =BUS    :  >INO1 : =INO2 : =OFF  :
```

> See section 8-5. "KEY Transitions" and 8-9. "Key IN/OUT Effects" for details on transitions.
> See section 10-4. "Adjusting Key Signal" for details on making fine adjustments.
>
> Edge (KEY1 and 2 only), Invert, Mask and 2D DVE effects can be applied to Bus keys.

10-3-1. Key Link

A Key Source signal is automatically selected when a Key Insert signal is selected if KEY LINK is on. The INSERT/SOURCE signal pairs for Bus keys are automatically set once they are selected for a key. To change signal assignment, select the INSERT/SOURCE signal pair again for the key or another key. The same assignments are shared among all keys of KEY1-4.

When Using the Key Link:
(1) Select a key among KEY1-4.
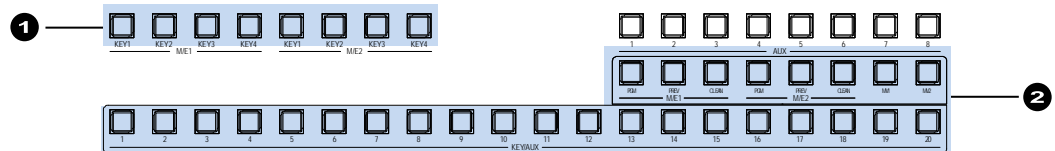
(2) Just selecting a signal for KEY INSERT in the KEY/AUX allows users to select a KEY INSERT and KEY SOURCE signal pair.

NOTE
If the key links do not work correctly, set **LINK** to ON in PAGE 2 of the [SETUP-FUNCTION - M/E_KEY] menu.

10-3-2. KEY INSERT MATT

In addition to the bus matt signal, the internally generate MATT can be used as key fill.

KEY INSERT MATT is a dedicated matte signal for keys and it is not the same as BUS MATT. The different colors can be set in KEY INSERT MATT for each key (KEY1-4).

(1) Set up a Bus Key, then press F2 in the [M/E1 KEY1 - INS/SRC] menu to set **INSERT** to InMAT (Insert Matt).

```
ME1 KEY1:  TYPE   :INSERT :SOURCE :INVERT :  1/4
INS/SRC :  =BUS   : >InMAT:  =INO2 :  =OFF   :
```

(2) Press the page down button to go to PAGE 3.
(3) Press F4 and select a color among eight standard colors, then press F4.
To use a different color, turn F1, F2, and F3 to adjust the color.

```
ME1 KEY1:       MATT COLOR      :RECALL :  4/4
INS MATT: S=67.3  L=15.8  H=257.5:  >RED   :
```

Key Links cannot be applied to KEY MATT.

10-4. KEY INSERT AUX

The KEY INSERT AUX allow users to replace key fill images using an AUX bus (AUX5 to AUX8), changing only inside images while maintaining key shapes.

KEY ON → Change KEY INSERT to AUX5. → Change the AUX5 image.
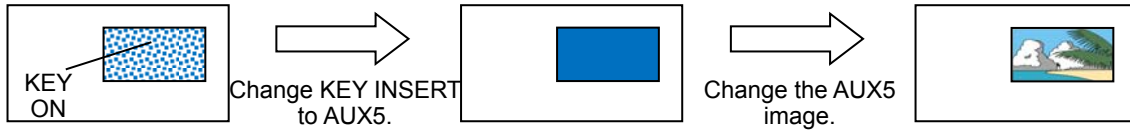
(1) Set up a bus referring to Section "10-3. Bus Key."
(2) Press F2 in the [M/E1 KEY1 - INS/SRC] menu to select InMAT (insert matt) under **INSERT**.

```
ME1 KEY1:  TYPE   : INSERT : SOURCE : INVERT :  1/4
INS/SRC :  =BUS   : >InMAT : =INO2  : =OFF    :
```

(3) Turn F2 to select AUX5 (or AUX6 to 8).

```
ME1 KEY1:  TYPE   : INSERT : SOURCE : INVERT :  1/4
INS/SRC :  =BUS   : >AUX5  : =INO2  : =OFF    :
```

(4) Press AUX5 (or AUX6 to AUX8) in the BUS SELECT section.
(5) Select a video signal for the key fill on the KEY/AUX bus.
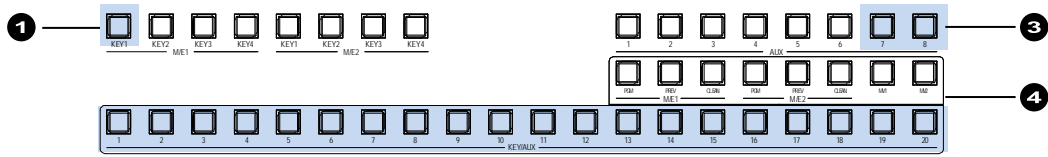
Note that if an internally generated signal such as program, preview clean or multi-view (stills and matts are available) is selected for AUX5 to 8, key images will appear black. KEY LINK is not available when using an AUX bus.

The KEY INSERT AUX function can be applied to bus-, full- and chroma-keys.

10-5. Adjusting the Key Signal

Clip and Gain allows users to adjust the key signal and its composition over the background. The transparency of the KEY can also be adjusted.

(1) Quickly press KEY1 twice in BUS SELECT, and display the [M/E1 KEY1 SETUP] menu.
(2) Turn F1 to select INS/SRC, and press F1 or the page down button.

```
ME1 KEY1: >INS/SRC >EDGE     >MASK     >CK
SETUP    : >POS/SIZ >BORDER   >SUB EFF >INIT
```

(3) The [M/E1 KEY1 - INS/SRC] menu is displayed. Press the page down button to go to PAGE2.

```
ME1 KEY1: GAIN  : CLIP  : TRANSP : FAM    : 2/4
PROC AMP: =1.0  : =6.2  : =0.0   : =OFF   :
```

(4) Turn F1 to adjust **GAIN**
(5) Turn F2 to adjust **CLIP** for adjusting the key.
(6) Turn F3 to set the transparency of the key. Increasing the value makes the key more transparent.

Clip thresholds of key signals can be set for Bus keys.

(7) Go to PAGE 3.
(8) Set thresholds of key luminance level under CLIP-H and CLIP-L. Turn F3 to ON to enable these limits.

```
ME1 KEY1: CLIP-H : CLIP-L : ENABLE :        : 3/4
KEY CLIP: =100.0: =0.0   : =ON     :        :
```

◆ Clip Example

Original Key signal

Clipped Key signal
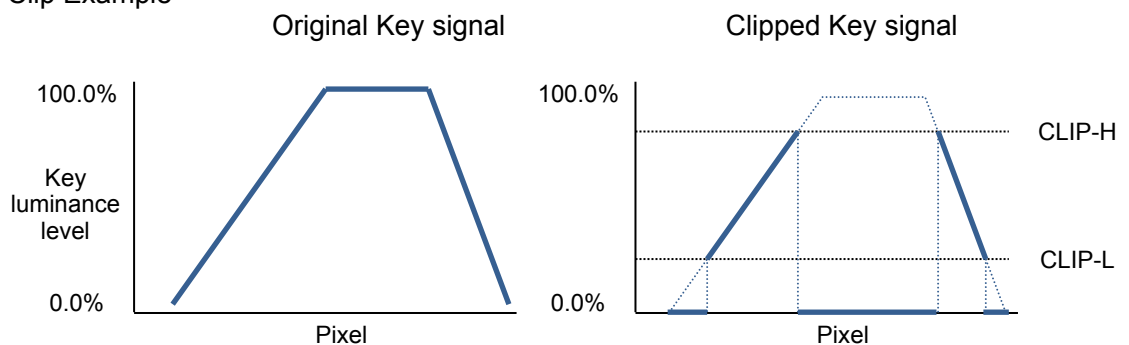
10-6. Chroma Key

Chroma key is a method for creating a key signal using a chroma component instead of a luminance component. It is mostly used for compositing moving subjects such a person in the virtual background. For example, to place a person onto a background graphic, first film the person standing in front of a background such as a blue screen. The blue part of the filmed image is detected and will be used to create the key signal.
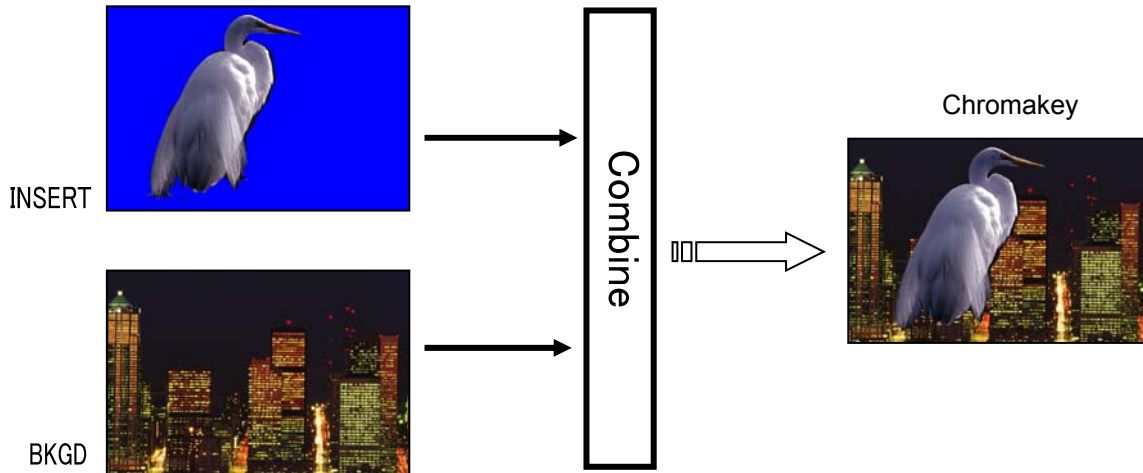
10-6-1. Creating a Chroma Key

(1) Select a signal to be used as a background on the M/E1 PGM bus.
(2) Press the KEY1 button in BUS SELECT and select a Chroma key signal in the KEY/AUX bus. (The signal can be selected in the INSERT item in the [M/E1 KEY1 - INS/SRC] menu.)
(3) Quickly press KEY1 twice in BUS SELECT to display the [M/E1 KEY1 SETUP] menu.
(4) Turn F1 to select INS/SRC, and press F1 or the page down button.

```
ME1 KEY1: >INS/SRC >EDGE      >MASK      >CK
SETUP    : >POS/SIZ >BORDER   >SUB EFF >INIT
```

(5) The [M/E1 KEY1 - INS/SRC] menu is displayed. Turn F1 to set **TYPE** to CHR.

```
ME1 KEY1:  TYPE   :INSERT : SOURCE :INVERT :  1/4
INS/SRC  : =CHR    :  >IN01 :  =IN01 :  =OFF   :
```

(6) Press KEY1 ON AIR to display KEY1 on the M/E1 program screen.
(7) Press the page up button to return to the [M/E1 KEY1 SETUP] menu.
(8) Turn F1 to select CK and press F1 to display the [M/E1 KEY1 - AUTO CK] menu.
(9) Turn F3 to change **SELECT** to ON to activate the Auto Chroma key.

```
ME1 KEY1:    POSITION     :SELECT :PGM OUT:  1/5
AUTO CK :X=0       Y=0     : =ON     :  =OFF   :
```

(10) KEY1 is displayed on the topmost layer of the M/E1 preview image and a cross hair cursor appears. The current position of the cursor is displayed at **POS X** and **POS Y** in the [M/E1 KEY1 - AUTO CK] menu.

If you need to have a crosshair cursor also appear on the M/E1 PGM screen, set the **PGM OUT** item to ON in the [M/E1 KEY1 - AUTO CK] menu.

---

(11) Press MENU in the Joystick block. Move the joystick up, down left and right to move the crosshair cursor onto the desired color. Pressing the FINE button will help you fine tune the adjustment. To precisely adjust the position, press F1 or F2, enter the values directly into **POSITION X** and **Y** using the numeric keypad and then press ENTER. Selecting a darker color makes adjustment easier.

(12) Twist the joystick counter-clockwise to generate the Chroma key. This can also be done by turning F3 to set the **SELECT** item to OFF in the [M/E1 KEY1 - AUTO CK] menu.

```
ME1 KEY1:    POSITION   : SELECT : PGM OUT:  1/5
AUTO CK : X=100    Y=600   : =ON    : =OFF   :
```
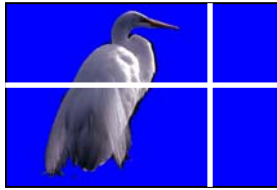

Preview image

Move the crosshair with the joystick along the X-Y axes and twist the joystick CCW to create a Chroma key.
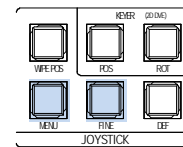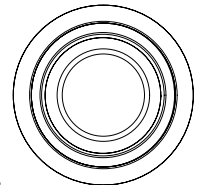
10-6-2. Chroma Key adjustments

If the desired result is not achieved using the automatic chroma key generation procedure, fine adjustments can be made as follows:

Adjust HUE, ANGLE and ANGLE OFFSET to make the background clear.

Use CK EDGE to smooth chroma key edges.

Use COLOR CANCEL and SUPPRESSION to eliminate or reduce color noise on the bird.

◆ **Adjusting Edges**
Used to adjust the edge of the Keyed area when it appears unnatural.
Press the page down button to go to PAGE 2 of the chroma key menu. Adjust the left edge in the **L** (LEFT) item and the right edge in the **R** (RIGHT) item.

```
ME1 KEY1:    CK EDGE   : CK MODE: CK MASK:  2/5
CK ADJT : L=0     R=0    : =NORML: =NORML:
```

◆ **Gain and Clip**
These are used to adjust the key signal and its composition over the background image. Press the page down button to go to PAGE 3 of the chroma key menu. Turn F1 and F2 to adjust the gain and clip.

```
ME1 KEY1: GAIN  : CLIP  : HUE    : COL CAN:  3/5
CK ADJT :  =1.0 : =0.0  : =0.0   : =ON    :
```

For chroma key, **INVERT**, **GAIN**, **CLIP**, and **TRANSP** in the [KEY - INS/SRC] menu cannot be set.

◆ Chroma Key Mix Mode 1 (CK MODE)

Set a mix mode 1 for chroma keys suitable to the background image under CK MODE in PAGE 2.

```
ME1 KEY1:     CK EDGE     :CK MODE:CK MASK: 2/5
CK ADJT : L=0     R=0     : =NORML:  =NORML:
```

CK MODE setting	Description
NORMAL	Used for ordinary background images.
BLACK	Used for lower luminance background images. This reduces the luminance level of chroma key edges to appear smoother.

◆ Chromakey Mix Mode 2 (CK MASK)

Set a mix mode 2 for chroma keys suitable to composite method under CK MASK in PAGE 2. To the background image under CK MODE in PAGE 2.

```
ME1 KEY1:     CK EDGE     :CK MODE:CK MASK: 2/5
CK ADJT : L=0     R=0     : =NORML:  =NORML:
```

CK MASK setting	Description
NORML (NORMAL)	Used for the standard chroma key composite. (Used to mask areas characterized by both luminance and chrominance components with the key cut signal.)
CHROM (CHROMA)	Used to mask areas characterized by the chrominance component with the key cut signal. (See section 10-6-4.)

◆ Adjusting Chroma key Colors

Use to fine-tune specific chroma key colors, press the page down button to go to PAGE 3 of the KEY menu. Turn F3 to make HUE adjustments.

```
ME1 KEY1: GAIN  : CLIP  : HUE   :COL CAN: 3/5
CK ADJT : =1.0  : =0.0  : =0.0  : =ON   :
```

◆ Chroma Angle

The ANGLE parameter determines the width of the color hue. Press the page down button to go to PAGE 5 of the KEY menu. If the reference color (blue back panel or other background) is not uniform and has some variation, widen the **ANGLE** to make the HUE range wider. You can finely adjust the range by using the **Y**, **C** and **K** parameters of **ANGLE OFFSET.**

```
ME1 KEY1: ANGLE :     ANGLE OFFSET     : 5/5
ANGLE    : =45.00: Y=0.00   C=0.00   K=0.00 :
```

◆ Color Cancellation and Suppression

Turning on **Color Cancel** (default) reduces the reflection in the foreground and background images. If you still notice some tint or spill of color (blue) on the foreground subject, use the **Y**, **C1**, and **C2** parameters in **SUPPRESSION** respectively to eliminate or reduce the color noises.

```
ME1 KEY1:        SUPPRESSION     :     : 4/5
SUPPRES : Y=1.00 C1=1.00 C2=0.0  :     :
```

10-6-3. Advanced Example 1 (Using KEY INSERT AUX)

This example replaces Chromakey images while maintaining the key shape by selecting InMAT (insert matt) or AUX5 to 8 for KEY INSERT. (See section 10-4. "KEY INSERT AUX.")

Replace the chroma key image to a matt or other image.

(1) Set up a Chroma key referring to Section "10-6-1. Creating a Chroma Key." Then press F2 in the [M/E1 KEY1 - INS/SRC] menu to select InMAT (insert matt) under **INSERT**.
To change the matt color, see section 10-3-2. "KEY INSERT MATT."
To change the key to another image, go to Step (2).

```
ME1 KEY1:  TYPE  : INSERT : SOURCE : INVERT :  1/4
INS/SRC :  =CHR  : >InMAT: = INO2 :  =OFF   :
```

(2) Turn F2 to select AUX5 (or AUX6 to 8).

```
ME1 KEY1:  TYPE  : INSERT : SOURCE : INVERT :  1/4
INS/SRC :  =CHR  : >AUX5 :  = INO2 :  =OFF   :
```

(3) Press AUX5 (or AUX6 to AUX8) in the BUS SELECT section.
(4) Select a video signal for the key fill on the KEY/AUX bus

10-6-4. Advanced Example 2 (Images with a Specified Color Left)

Setting **INVERT** to ON and **CK MASK** to CHROM allows you to create chroma key images as shown below in which the specified color areas remain with the original color and other areas are changed to black-and-white.

Only green color remains.

IN01 — Green is specified. — Changed to B/W except Green — Chroma key composite image

Only red color remains.

IN01 — Red Flag is specified. — Changed to B/W except Flag — Chroma key composite image
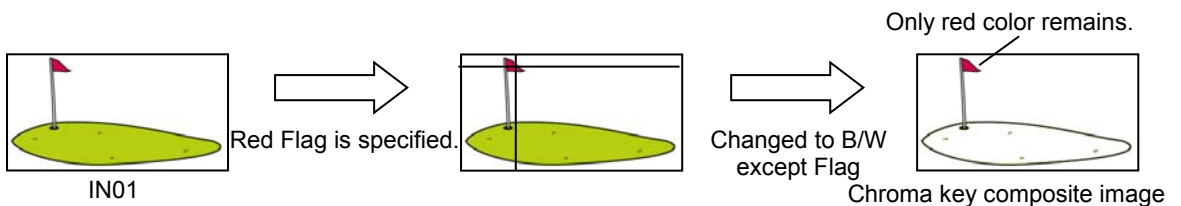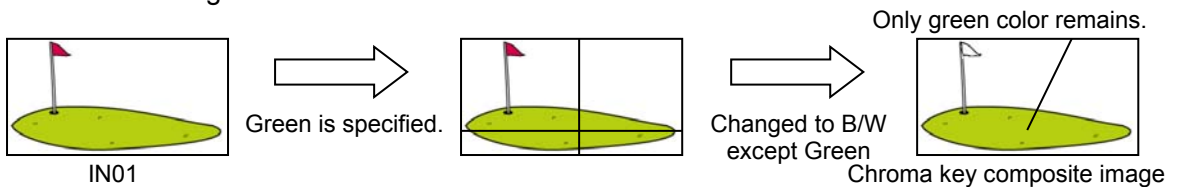
```
ME1 KEY1:  TYPE  : INSERT : SOURCE : INVERT :  1/3
INS/SRC :  =CHR  : >INO1 :  ---    :  =ON    :
```

```
ME1 KEY1:     CK EDGE   : CK MODE: CK MASK:  2/5
CK ADJT : L=0      R=0   :  =NORML:  =CHROM:
```

10-7. Mask and Invert

Mask and Invert can be used for all keys. Preset masks are available only for KEY1 and KEY2.
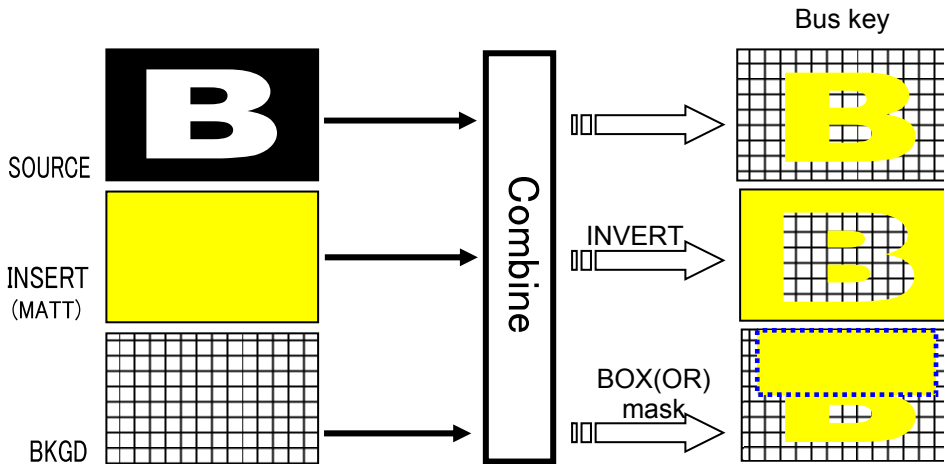
10-7-1. Inverting Key and Background

Setting Invert to ON inverts the key image and the background image. Set **INVERT** in the [M/E1 KEY1 - INS/SRC] menu to ON. The key signal is then inverted.

10-7-2. Key Masks

◆ BOX Mask
Box-shaped masks can be applied to keys. They can also be inverted so that the keyed area inside the box becomes invisible.

(1) Create a KEY1.
(2) Quickly press KEY1 twice to display the [M/E1 KEY1 SETUP] menu.
(3) Turn F1 to select MASK, and press F1 or the page down button to open the [M/E1 KEY1 - MASK] menu.
(4) Turn F2 to set **BOX MASK** to ON in PAGE 1 of the [M/E1 KEY1 - MASK] menu.
(5) Set **TYPE** to AND or OR. If set to AND, the area where Key Source and Box Mask overlap is used as the key signal. If set to OR, both Key Source and Box Mask are used as the key signal.

```
ME1 KEY1:  TYPE   :MASK    :INVERT :        :  1/5
MASK       :  =AND  :  =BOX   :  =OFF  :        :
```

(6) Set the horizontal and vertical mask width on PAGE 2 in the MASK menu.

```
ME1 KEY1:          BOX MASK POSITION      :  2/5
MASK POS: T=0      B=0       L=0      R=0     :
```

106

◆ Signal Mask

Video inputs can be used for mask signals instead of Box. Inputs used for masks must be assigned to AUX5 to AUX8. Combined video signals such as program or multi-view cannot be used.

(1) Open the [M/E1 KEY1 - MASK] menu PAGE 1. (See the previous page.)
(2) Turn F3 to select a mask signal.
(3) If you want to invert key signal, turn F4 to ON.
(4) Set **TYPE** to AND or OR.

```
ME1 KEY1:  TYPE   : BOX MSK: MASK(EXT/PST)  :  1/5
MASK      :  =AND  :  =OFF   :  S=AUX5: INV=ON :
```

◆ Preset Mask

WIPE patterns can be used for mask signals for KEY1 and KEY2.

(1) Open the [M/E1 KEY1 - MASK] menu PAGE 1. (See the previous page.)
(2) Turn F3 to select PRST (PRESET).
(3) If you want to invert key signal, turn F4 to ON.
(4) Set **TYPE** to AND or OR.

```
ME1 KEY1:  TYPE   : BOX MSK: MASK(EXT/PST)  :  1/5
MASK      :  =AND  :  =OFF   :  S=PRST: INV=ON :
```

(5) Press PAGE DOWN to go to PAGE 3.
(6) Turn F1 to select a wipe pattern.
(7) Turn F4 to change the pattern shape.

```
ME1 KEY1: PATTERN        :          : LEVEL  :  3/5
WIP PTRN:  =51           :          :  =50.0 :
```

(8) Mask pattern can be modified using PAGE 4 and 5

```
ME1 KEY1:       POSITION   : ANGLE : ASPECT : 4/5
WIP POS : X=0       Y=0    :  =0.0  :  =0.0  :
```

```
ME1 KEY1:       MULTI      :                 :  5/5
WIP MULT: X=1      Y=1     :                 :
```

10-8. Key Edge

The EDGE function allows users to add border type edges on KEY1 and KEY2. Two types of edges are available: Normal and Outline. The width, transparency, and color can be set for the edges. Shadow effects can also be added by changing the position of the edges. This chapter shows how to add a key edge using M/E1 KEY1 as an example.

No edge, no shadow   Normal edge   Outline edge

(1) Go to the [M/E1 KEY1 - EDGE] menu. Turn F1 to select NORMAL or O_LINE for **TYPE**. Selecting NORMAL allows users to add edges. O_LINE allows users to display outlines without key fill images.

(2) The **SOFT** parameter is for setting softness, **TRANSP** is for transparency, and **WIDTH** is for edge width.

```
ME1 KEY1: TYPE  : SOFT  : TRANSP :  WIDTH :  1/3
EDGE     : =O_LIN: =0    : =0     : =1     :
```

(3) Press the page down button to go to PAGE2. Change the **X** and **Y** values to set the edge position.

```
ME1 KEY1:   POSITION    :              : 2/3
EDGE POS: X=0       Y=0  :              :
```

(4) Press the page down button to go to PAGE3. The edge color can be set on this page. Turn F4 to select a color among eight standard colors. If you wish to use a color other than those eight, adjust the color by turning F1, F2 and/or F3.

```
ME1 KEY1:      EDGE COLOR    : RECALL :  3/3
EDGE COL: S=0.0  L=0.0   H=0.0  :  >BLACK:
```

10-9. Where KEY3 and KEY4 Appear

The KEY3 and KEY4 images appear on each M/E program screen as a factory default setting. Users can change the destination of KEY3 and KEY4 to AUX1 to 8. To do this, follow the procedure below.

(1) Press MENU in the CONTROL block, then SETUP in the Keypad to display the [SETUP] menu.
(2) Turn F1 to select FUNCTION, and press F1 or the page down button to open the [SETUP - FUNCTION] menu.
(3) Turn F1 to select M/E_KEY, and press F1 or the page down button to open the [SETUP - FUNCTION - M/E_KEY] menu.

```
SETUP    : >M/E_KEY  >VIRTUAL  >AUX LINK
FUNCTION:
```

4) Press the page down button to go to PAGE 2.
5) To display the M/E1 KEY3 image on the AUX1 program video, turn F1 to select AUX 1 and then press F1. Select the destination for other keys in the same way.

```
FUNCTION: ME1kEY3: ME1kEY4: ME2kEY3: ME2kEY4:  2/2
KEY ASGN:  =AUX1  :  =M/E1 :  =M/E2 :  =M/E2 :
```

10-10. Changing KEY Layer Order

Layer order between KEY1 and KEY2, and KEY3 and KEY4 can be changed using a USER button. Assign KEY1/2PRIORITY or KEY3/4PRIORITY (TYPE: KEYER) to a USER button.
▶ See section 22. "USER Button."

Press the USER button, to which KEY1/2PRIORITY is assigned.
KEY1 appears in front of KEY2.

The KEY3/KEY4 layer order can be changed in the same way as that of KEY1/KEY2 order. Also note that KEY3 and KEY4 layers are always placed in front of KEY1 and KEY2 layers.

10-11. Key Information Display (HVS-392WOU)

A Key Informatin Display is equipped in HVS-392WOU control panels. It allows users to display key signal and transition settings as well as to change the key layer order.

10-11-1. Key Information

There are two modes for key information display.

VIEW: Displays all key information. (default)
EACH: Displays each key information.
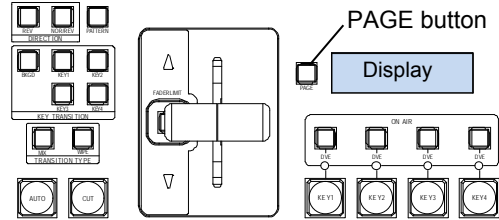
◆ **Setting Display Mode**
(1) Double-click the PAGE button at the left side of the key information display to display the [SETUP - PANEL - KEY DISP] menu in the menu display.
(2) Turn F1 or F2 to select the display mode for M/E1 or M/E2.

```
KEY DISP: M/E1  :  M/E2  :              :  1/1
PATTERN : =VIEW  :  =EACH  :              :
```

◆ **Display in VIEW mode**
The information is composed of the following three pages. To move between pages, press the PAGE button.

KEY1	KEY2	KEY3	KEY4

CHR	FULL	BUS	LUM	— KEY type
IN01	CLBR	STL3	IN12	— KEY INSERT signal

■→|	MIX	MIX	MIX	— Transition type or pattern
30	100	200	100	— Transition rate

CUT	SCLR	≫ S	▲▼ W	— User transition type
30	100	200	100	— Transition rate

SLIDE WIPE

◆ **Display in EACH mode**
The information is composed of the following five pages. To move between pages, press the PAGE button. In addition, pressing each next transition bus button directly opens its page.

1	CHR IN01	■→ 30	USERTRS =CUT	— PAGE 1: KEY1

2	FULL CLBR	MIX 100	USERTRS =SCRL	— PAGE 2: KEY2

3	BUS STL3	MIX 200	USERTRS =SLIDE:L	— PAGE 3: KEY3

4	LUM IN12	MIX 100	USERTRS =WIPE:T	— PAGE 4: KEY4

BKGD	■→ 100		— PAGE 5: Background

10-11-2. Displaying KEY Layer Priority

The following operational example is for M/E1. Key layer operation in the M/E2 is almost the same as that of the M/E1. The KEY PRIORITY menu allows users to display the key priority order and change the layer order between KEY1 and KEY2 and between KEY3 and KEY4 respectively.

◆ KEY PRIORITY display

Press and hold the PAGE button for a while to display the KEY PRIORITY page. This page can be accessed eitther from VIEW or EACH mode.
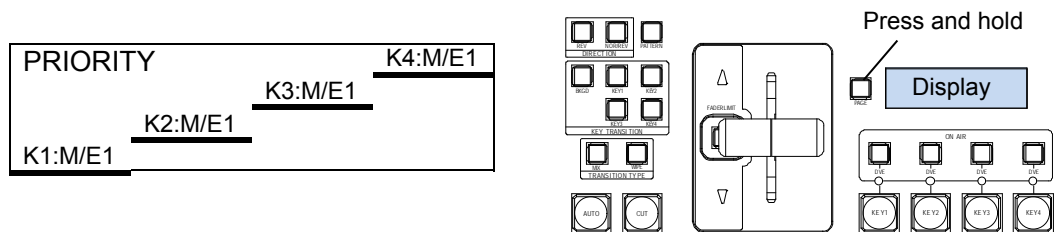
◆ Changing Priority between KEY1 and KEY2

Pressing KEY1 in the NEXT TRANSITION with the PRIORITY menu displayed places the KEY1 image above the KEY2 image. Pressing KEY2 places KEY2 above KEY1.
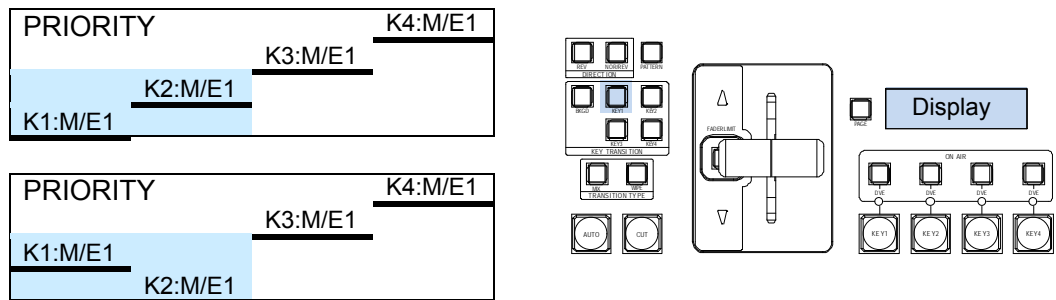
◆ Changing Priority between KEY3 and KEY4

Pressing KEY3 with the PRIORITY menu displayed places KEY3 above KEY4 and pressing KEY4 places KEY4 above KEY3.

If KEY3 and/or KEY4 are assigned to an AUX or P/P bus, the assigned bus is displayed and KEY3 and KEY4 layers cannot be changed. (See section 10-9. "Where KEY3 and KEY4 Appear" and section 35-3. "2.5M/E Mode."

11. DVE Effects on Keys

Dedicated 2D-DVE(2.5D) effects are available for each key in the standard configuration. The 2D-DVE is available just by setting the 2D DVE item to ON in each key menu. As an example, this section explains how to add a 2D-DVE effect on M/E2 KEY1.

11-1. How to Enable 2D DVEs

(1) Press MENU in the CONTROL block.
(2) Press the M/E2 KEY1 button to display the [M/E2 KEY1 SETUP] menu.
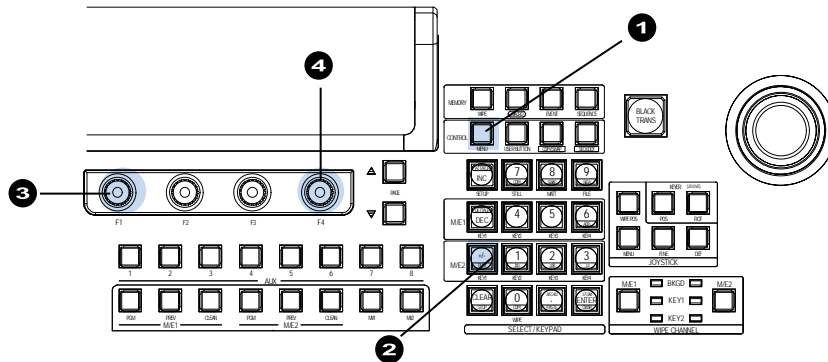
(3) Turn F1 to select POS/SIZE, then press F1 or the page down button to display the [M/E2 KEY1 - POS/SIZE] menu

```
ME2 KEY1: >INS/SRC >EDGE      >MASK     >CK
SETUP    : >POS/SIZ >BORDER   >SUB EFF >INIT
```

(4) Turn F4 to set **2D DVE** in the menu to ON.

```
ME2 KEY1:   POSITION    : SIZE  : 2D DVE :  1/5
POS/SIZE: X=0    Y=0     : =500  : =ON    :
```

The 2D DVE function is enabled for M/E2 KEY1, and therefore the POS/SIZE, BORDER, and SUB EFFECT menus in the M/E2 KEY1 menu become available.

11-2. Changing Position

The position of key images can be changed using the menu or joystick as follows:

◆ **Changing Positions Using the Joystick:**
(1) Press POS of KEYER (2D DVE) to the left and below the joystick.
(2) Change the M/E2 KEY1 position by moving the joystick up, down, left and right.

POSITION(0,0)   POSITION(200,200)   POSITION(-200,-200)
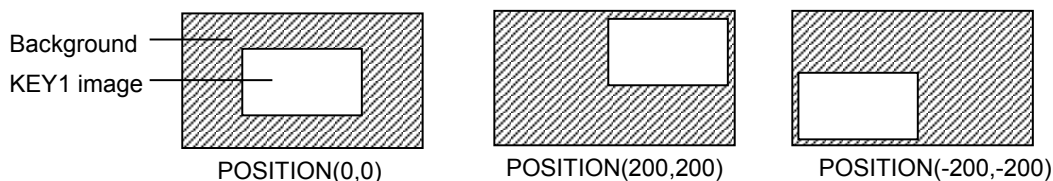
◆ **Changing Positions Using the Menu**
(1) Display the [M/E2 KEY1 - POS/SIZE], menu PAGE1.
(2) Turn F1 or F2 to set the position of the KEY1 image.

```
ME2 KEY1:    POSITION    : SIZE  :2D DVE :  1/5
POS/SIZE: X=0      Y=0      : =500   : =ON      :
```

The base original POSITION of a key is at the center of the output screen. You can set the position of the key images by specifying X and Y coordinates, with the origin of the axes located at the center of the screen.

11-3. Changing Sizes or Aspect Ratios

◆ **Changing Sizes Using the Joystick**
(1) Press POS of KEYER (2D DVE) to the left and below the joystick.
(2) Change the M/E2 KEY1 size by moving the joystick clockwise and counter-clockwise.
    The figures below are examples of **SIZE=500** and 750 when **POSITION** is set to (0, 0).)
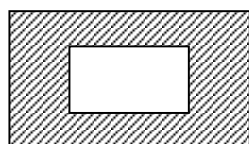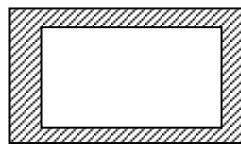
SIZE(500)   SIZE(750)

◆ **Changing Sizes Using the Menu**
(1) Display the [M/E2 KEY1 - POS/SIZE], menu PAGE1.
(2) Turn F3 to set the size of the KEY1 image.

```
ME2 KEY1:    POSITION    : SIZE  :2D DVE  :  1/5
POS/SIZE: X=0      Y=0      : =500   : =ON      :
```

Setting the size allows users to change the size of key images while retaining aspect ratios. If the value is 1000, the key images will be of a full screen size.

◆ **Changing the Aspect Ratio**
(1) Press the page down button to display PAGE2 of the [M/E2 KEY1 - POS/SIZE] menu.
(2) Turn F1 and F2 to change the **ASPECT** values for the KEY1 image.

```
ME2 KEY1:     ASPECT    : FADE LV:      :  2/5
ASPECT   : X=1000   Y=1000 : =0.0   :        :
```

(The figures below are examples when **POSITION** is set to (0, 0).)
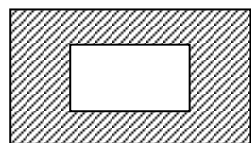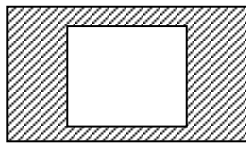
(500, 500)   (500, 750)   (750, 750)

11-4. FADE

FADE allows users to add an effect to make backgrounds transparent.

(1) Go to the [M/E2 KEY1 - POS/SIZE] menu PAGE 2.
(2) Turn F3 to set the **FADE** level for the KEY1 image. Increasing the value makes the backgound transparent.

```
ME2 KEY1:      ASPECT    : FADE LV:       : 2/5
ASPECT  : X=1000  Y=1000 : =0. 0  :           :
```

11-5. Rotation

In addition to the position and size changes, users can add a rotation effect to the key images.

◆ **Specifying the Rotation Angle (Number of Rotation)**
(1) Go to PAGE 3 of the [M/E2 KEY1 - POS/SIZE] menu.
(2) Turn F1 to F3 to rotate the key image around the X, Y and Z axes.

```
ME2 KEY1:      LOCAL ROTATION    :        : 3/5
ROTATION: X=0       Y=0      Z=0   :        :
```

The **LOCAL ROTATION** values can rotate the key image around the base point up to approximately eight times in the positive or negative direction.

X-Rotation: Rotates around the Y-axis.
Y-Rotation: Rotates around the X-axis.
Z-Rotation: Rotates around the origin.
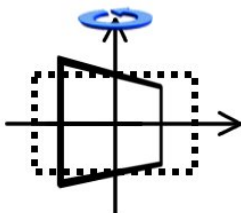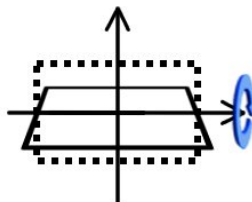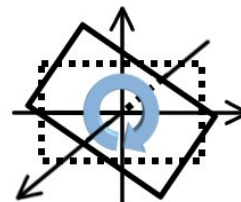
X-Rotation	Y-Rotation	Z-Rotation
LOCAL ROTATION	LOCAL ROTATION	LOCAL ROTATION
(100,0,0)	(0,100,0)	(0,0,100)

In the factory default setting, the base point is set to the coordinates (0,0,0), which coincide with the center point of the key image. The figure examples above show the rotations around the base point (0, 0, 0). Changing the CENTER POSITION values in the menu can move the base point

◆ **Moving the Center (Axes) of Rotation**
(1) Go to PAGE 4 of the [M/E2 KEY1 - POS/SIZE] menu.
(2) Turn F1 to F3 to move the center of rotation.

```
ME2 KEY1:      CENTER POSITION    :        : 4/5
ROTATION: X=0       Y=0      Z=0   :        :
```

11-5-1. Setting Example

(1) Set the M/E2 KEY1 position and size on PAGE 1 of the [M/E2 KEY1 - POS/SIZE] menu. Note that the position is two-dimensional and its origin is placed on (0, 0), which coincides with the center of the screen. The position values are the distance between the origin and the center of the KEY1 images, which will be a positive value if the center of the key image is above the origin and negative value if it is below the origin.

```
ME2 KEY1:     POSITION    : SIZE  : 2D DVE :  1/5
POS/SIZE: X=-200   Y=-200 :  =500  :  =ON    :
```

To enter a negative number, enter the number, press ± then press ENTER.

POSITION(-200,-200)
SIZE 500

Point of view

Screen surface
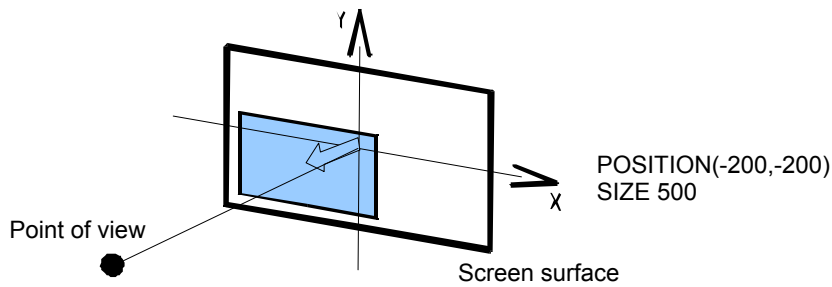
(2) Change the center of rotation on PAGE4 of the [M/E2 KEY1 - POS/SIZE] menu. To rotate the key image at the current POSITION, leave CENTER POSITION (0, 0, 0) un changed.

```
ME2 KEY1:     CENTER POSITION    :        :  4/5
ROTATION: X=150    Y=-200   Z=-400 :        :
```


Center of rotation

POSITION(-200,-200)
SIZE 500
CENTER POSITION (150,-200,-400)

Point of view

Screen surface
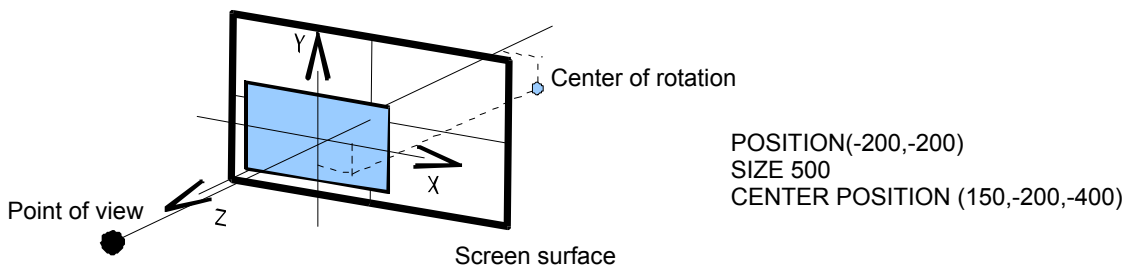
(3) Set the rotation value on PAGE3 of the [M/E2 KEY1 - POS/SIZE] menu.

```
ME2 KEY1:     LOCAL ROTATION    :        :  3/5
ROTATION: X=100    Y=100    Z=100 :        :
```

[Example 1] Rotation around the X-axis

POSITION (-200,-200)
SIZE 500
CENTER POSITION (150,-200,-400)
ROTATION (100,0,0)

Center of rotation

Point of view

Screen surface
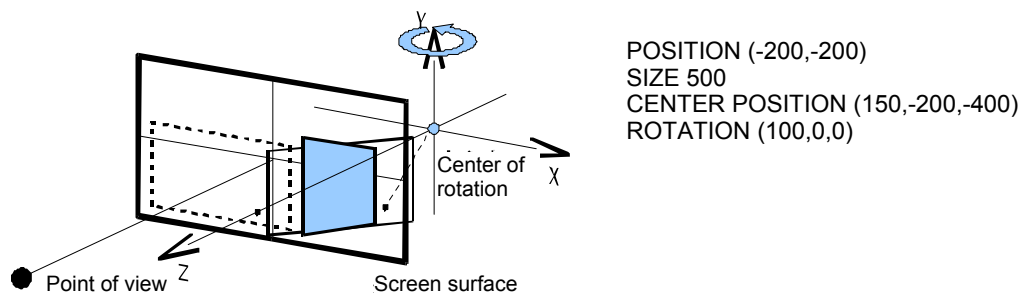
[Example 2] Rotation around the Y-axis

POSITION (-200,-200)
SIZE 500
CENTER POSITION (150,-200,-400)
LOCAL ROTATION (0,0,100)
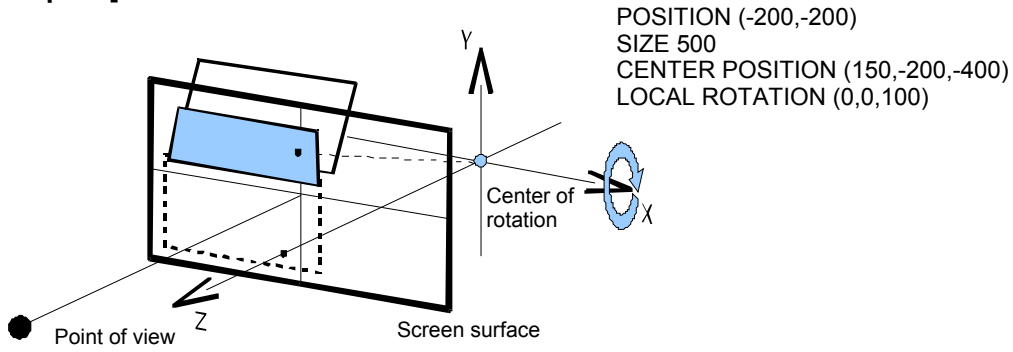
[Example 3] Rotation around the Z-axis

POSITION (-200,-200)
SIZE 500
CENTER POSITION (150,-200,-400)
ROTATION (0,0,100)
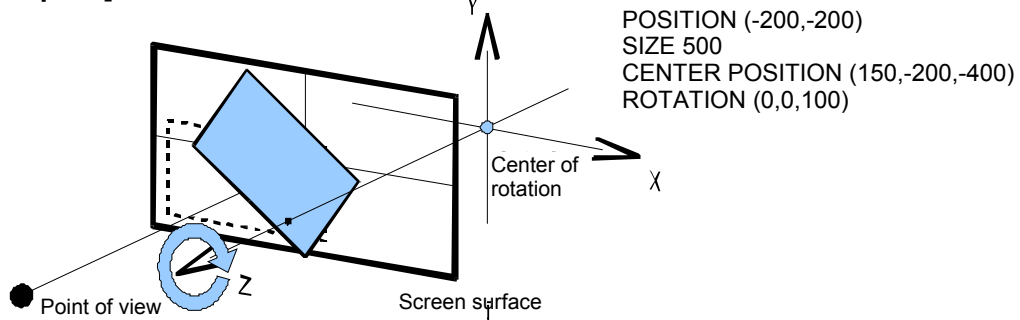
11-6. CROP

CROP allows users to trim the key image from all four directions. The background image then only remains visible in the cropped area.

(1) Go to PAGE5 of the [M/E2 KEY1 - POS/SIZE] menu.

```
ME2 KEY1:          CROP POSITION        : 5/5
CROP      : T=0     B=0      L=0      R=0     :
```

(2) Use F1, F2, F3 and/or F4 to crop the M/E2 KEY1 image.

Key image
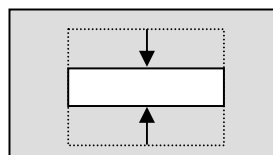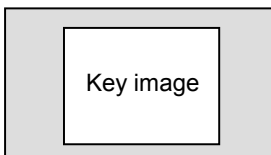
Crops from top and bottom.
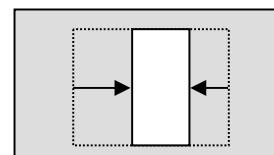
Crops from right and left.

11-7. SUB EFFECT

The SUB EFFECT menu allows users to add MONO COLOR, DEFOCUS, and PAINT COLOR effects. Access the SUB EFFECT menu as shown below.

(1) Press MENU in the CONTROL block, then the M/E2 KEY1 button to display the [M/E2 KEY1 SETUP] menu.
(2) Turn F1 to select SUB EFF, then press F1 or the page down button to display the [M/E2 KEY1 - SUB EFF] menu.

```
ME2 KEY1: >INS/SRC >EDGE     >MASK     >CK
SETUP    : >POS/SIZ >BORDER  >SUB EFF >INIT
```

11-7-1. MONO COLOR

Monochrome effects can be configured via this menu.

(1) Go to PAGE 1 of the [ME2 KEY1 - SUB EFF] menu.
(2) Turn F4 to set **EN** (ENABLE) to ON.
(3) Set the color by adjusting its **S** (SATURATION) and **H** (HUE) values.

```
ME2 KEY1:        :       MONO COLOR    : 1/3
SUB EFF :        : S=0     H=0    En=ON    :
```

11-7-2. DEFOCUS

The DEFOCUS function allows users to add an effect that will blur the output image.

(1) Go to PAGE 2 of the [M/E2 KEY1 - SUB EFF] menu.
(2) Turn F1 to set the horizontal defocus level at item **H** (HORIZONTAL).
(3) Turn F2 to set the vertical defocus level at item **V** (VERTICAL).

```
ME2 KEY1:     DEFOCUS    :     PAINT    : 2/3
DEFOCUS :  H=40.0  V=50.0: Y=0      C=0      :
```

11-7-3. PAINT COLOR

The Paint color effect allows users to add an effect, which makes the image look like a painting. Increasing the value decreases the degree of gradation, so the image becomes like a painting.

(1) Go to PAGE 2 of the [M/E2 KEY1 - SUB EFF] menu.
(2) Turn F3 to set the luminance level at item **Y** (LUMINANCE).
(3) Turn F4 to set the chroma level at item **C** (CHROMA).

```
ME2 KEY1:     DEFOCUS    :     PAINT    : 2/3
DEFOCUS : H=0.0   V=0.0  : Y=10     C=10     :
```

11-7-4. FREEZE, STROBE, NEGA, MOSAIC

Freeze, strobe, negative, and mosaic effects are also available.

(1) Go to the [M/E2 KEY1 - SUB EFF] menu PAGE 3.

```
ME2 KEY1: FREEZE : STROBE :  NEGA   : MOSAIC :  3/3
FREEZE  : =OFF    :  =OFF   :  =OFF  :  =OFF  :
```

(2) When applying these effects, please refer to the table below.

Parameter	Description
FREEZE	Allows users to enable the freeze effect function. Users can select either frame freeze or field freeze.
STROBE	Allows users to enable strobe effects. Increasing the value increases the intervals of flashing light.
NEGA	Setting this function to ON makes an image negative by reversing all luminance levels.
MOSAIC	Allows users to use a mosaic effect. Increasing the value enlarges the size of mosaic cells.

◆ **Setting Example**

```
ME2 KEY1: FREEZE : STROBE :  NEGA   : MOSAIC :  3/3
FREEZE  : =FIELD: =1      :  =ON    :  =OFF  :
```

11-8. BORDERS

Borders can be added to key images. Inside border and outside borders can be adjusted independently.

(1) Go to the [M/E2 KEY1 - BORDER] menu.
(2) To use the inside border, set the width at the **INSIDE X** and **Y**. To use the outside border, set the width at the **OUTSIDE X** and **Y**.

```
ME2 KEY1:      INSIDE    :    OUTSIDE    :  1/3
BORDER  : X=0      Y=0    : X=0      Y=0    :
```

(3) Press the page down button to go to PAGE2. In this menu, border softness can be adjusted. **INSIDE X** and **Y** allow users to set the softness for the inner half of the set border. The softness of the outer half of the border is set at **OUTSIDE**.

```
WIPE      :    INSIDE     : OUTSIDE:        :  2/3
BDR SOFT: X=0      Y=0    :  =0      :        :
```

(4) Press the page down button to go to PAGE3. Turn F4 to select a color for the border among eight standard colors. If you wish to use a color other than those eight, adjust the color using F1, F2 and/or F3. You can also use the joy stick to set the color.

```
ME2 KEY1:        BORDER COLOR      : RECALL :  3/3
BDR COL : S=66.3  L=5.4    H=3.5  :  >BLUE :
```

◆ **Inside Border**

| W/o border | W/ border | W/ border Inner half softness | W/ border Outer half softness |

◆ **Outside Border**

| W/o border | W/ border | W/ border Inner half softness | W/ border Outer half softness |

119
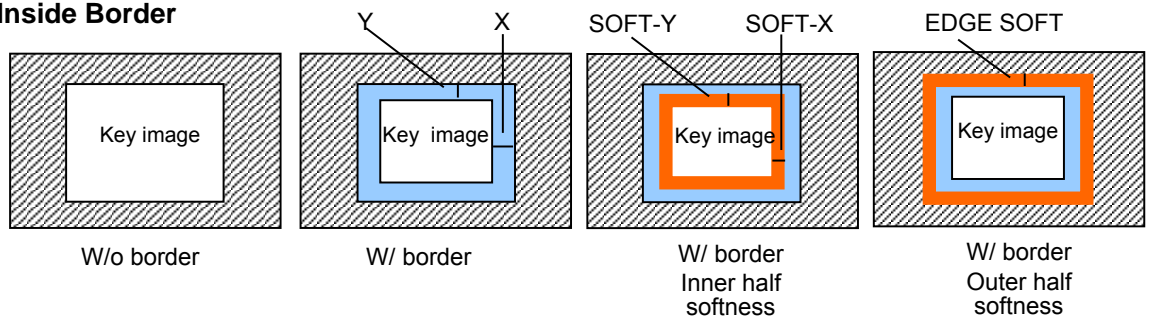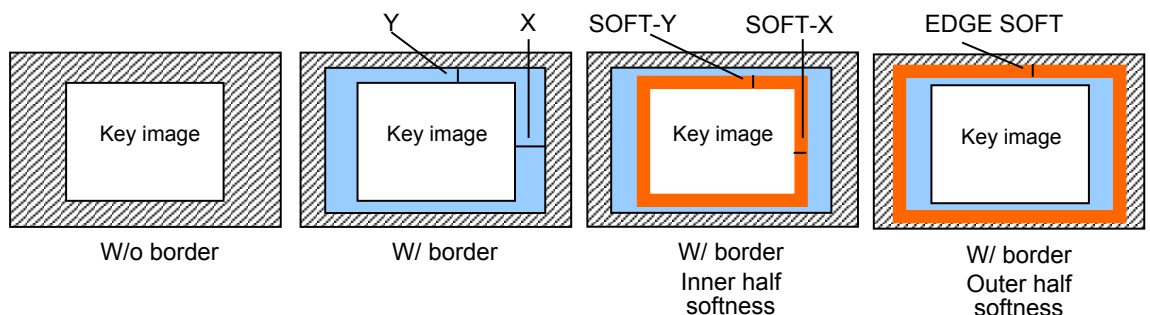
12. Still Store

The switcher can capture and memorize up to four Video and Key still pictures from the switcher output video. Once captured stills are assigned to bus buttons (See section 5-2. "How to Assign Sources to Bus buttons"), they can then be used as key fill and source signals, M/E background and AUX output signals.
Although the stored stills are cleared when the switcher is powered down, they can be backed up to the Still memory in the switcher. Up to six still images can be stored to and loaded from the backup memory (MEM1 to MEM6). In addition, stored stills can also be saved to USB flash memory.

12-1. Saving Stills

Let's capture M/E1 program images using STILL1 as follows:

(1) Press MENU in the CONTROL block, then STILL in the Keypad to display the [STILL STORE] menu
(2) Press the page down button to go to PAGE2.
(3) Select M/E1 PGM under **FILL SOURCE** and **KEY SOURCE**.

```
STILL   : FIL SRC: KEY SRC:            :  2/6
SIGNAL  : =M1PGM:  =M1PGM:             :
```

(4) Press the page up button to go back to PAGE1.
(5) Then press F1 to save the image to STILL1. A beep will sound and the image will be saved to the selected still memory.

```
STILL   : STILL1 : STILL2 : STILL3 : STILL4 :  1/6
 STORE  :  >FRAME:  >FRAME:  >FRAME:  >FRAME:
```

NOTE
The program, clean and preview images of M/E1 and M/E2 and AUX1 to AUX8 images can be caputured using Still Stores. See section 6. "Video Outputs" for details on these signals.
Note that when a new still is stored, the current still data is cleared and the new still data is overwritten into the memory.

12-2. Displaying Still Images

Selecting STILL1 on the PGM bus will display the captured STILL1 image on the PGM screen. Still images can also be assigned to AUX outputs and key images.
The still image loading type can be selected on PAGE 1. For example, to use an odd field image of STILL1 set the menu as shown in the figure below. Selectable options are FRAME, ODD (odd field) and EVEN (even field).

```
STILL   : STILL1 : STILL2 : STILL3 : STILL4 :  1/6
 STORE  :  >ODD  :  >FRAME:  >FRAME:  >FRAME:
```

12-3. Backing-up Stills

◆ **To Save Still Images:**
(1) Press MENU in the CONTROL block, then STILL in the Keypad to display the [STILL] menu
(2) Press page down to go to PAGE 3 ([STILL RESUME] menu).
(3) Turn F1 to select a still to be backed up to the backup memory.
(4) Turn F2 to select SAVE>.
(5) Turn F3 to select a memory number from MEM1 to MEM6.
(6) Press F2 to save the still to the selected memory number. The backed up stills are preserved after powering off the switcher.

```
STILL    : STILL  : FUNC   : MEMORY : RESUME :  3/6
BACKUP   : =STIL1:  SAVE>  : =MEM1  :  =MEM1 :
```

◆ **To Load Saved Still Images to Still Memory Manually:**
(1) Open PAGE3 of the [STILL] menu.
(2) Turn F1 to select a still to be loaded from the backup memory.
(3) Turn F2 to select <LOAD.
(4) Turn F3 to select a memory number where the desired still image is to be stored.
(5) Press F2 to load the still from the memory.

```
STILL    : STILL  :  FUNC  : MEMORY : RESUME :  3/6
BACKUP   : =STIL1:  <LOAD  :  =MEM1 :  =MEM1 :
```

◆ **To Load Saved Still Images to Still Memory Automatically:**
(1) Open PAGE3 of the [STILL] menu.
(2) Turn F1 to select the desired still.
(3) Turn F4 to select the memory number where the desired still image is to be stored. Then the still images are automatically loaded at startup.

```
STILL    : STILL  :  FUNC  : MEMORY : RESUME :  3/6
BACKUP   : =STL1  :  <LOAD :  =MEM1  :  =MEM1 :
```

Turn **RESUME** to OFF if you do not wish to recall any data to stills at startup.

```
STILL    : STILL  :  FUNC  : MEMORY : RESUME :  3/6
BACKUP   : =STL1  :  <LOAD :  =MEM1  :  =OFF   :
```

12-4. Backing-up Still and Clip Data (HVS-39MB)

> To use the still and clip automatic backup, an HVS-39MB should be installed to your switcher.

An HVS-39MB option allows you to automatically save all still and clip backup data. Automatic backup is performed every time the user stores an image or clip to a buffer, STILL1-4, INPUT_STILL1-16 or CLIP1-4.

Automatic backup is performed:
-When still images are sent to STILL1-4 or INPUT_STILL1 to 16 from the OU via a USB flash drive.
-When still images or clips are sent to STILL1-4, INPUT_STILL1-16 or CLIP1-4 via FTP.
-When still images are captured from input video and saved to STILL1-4.

Each backup data can be automatically loaded at startup as well as manually loaded as needed.

◆ **Standard Backup Memory (MEM1-6) and Optional Backup Memory (HVS-39MB)**
Six backup registers are standardly provided for saving still images. If an HVS-39MB option is installed, all data including STILL1-4 (still images), STILL1-4 (clip data) and INPUT_STILL1-16 can be backed up.
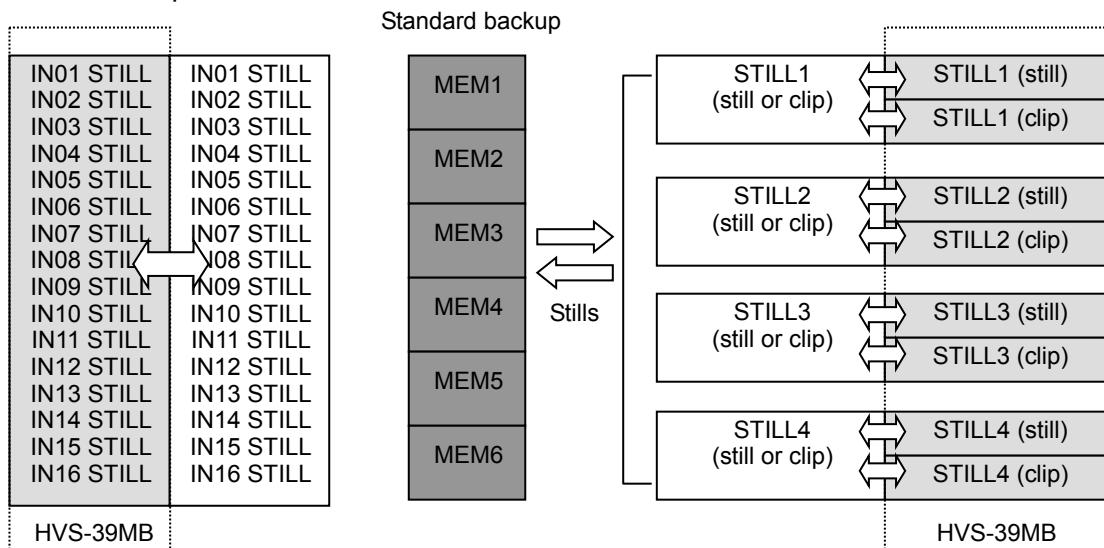
12-4-1. Setting the Automatic Backup to ON

(1) Press MENU in the CONTROL block, then press STILL to open the [STILL] menu.
(2) Go to PAGE 4.
(3) Turn F3 to set **BACKUP** to ON to enable the automatic backup. If set to OFF, the backup is disabled.

```
STILL   : STILL  : FUNC  : BACKUP :        :  4/7
BACKUP  : =STIL1 : <LOAD  : = ON   :        :
```

> The automatic backup is enabled or disabled for **all** STILL1-4, INPUT_STILL1-16 and CLIP1-4, and can**not** be individually set for each.

12-4-2. Loading Backup Data

(1) In [STILL] menu PAGE 4, Turn F1 to select one from STILL1 to 4, INPUT_STILL1 to16 and CLIP1 to 4.
(2) Turn F2 to select LOAD. Then press F2 to load the backup data.

```
STILL    : STILL  : FUNC   : BACKUP :        :  4/7
BACKUP   : =STILL1 : <LOAD  : =ON    :        :
```

12-4-3. Deleting Backup Data

(1) In [STILL] menu PAGE 4, Turn F1 to select one from STILL1 to 4, INPUT_STILL1 to16, CLIP1 to 4 and ALL.
(2) Turn F2 to select DELETE. Then press F2 to delete the backup data.
   If ALL is selected, all backup data is cleared.

```
STILL    : STILL  :  FUNC   : BACKUP :        :  4/7
BACKUP   : =STILL1 : <DELETE :  =ON    :        :
```

12-4-4. Automatic Loading at Startup

(1) Open [STILL] menu PAGE 3.
(2) Turn F1 to select one from STIL1 to 4 and INPUT_STILL1 to16.
(3) Turn F4 to change RESUME to BACKUP. In the setting example below, backup data is automatically loaded from HVS-39MB to STILL1 at startup.

```
STILL    : STILL  :  FUNC   : MEMORY : RESUME :  3/7
BACKUP   : =STILL1 :  <LOAD  :  =MEM1  : =BACKUP :
```

Which is loaded to Stills, a still image or clip?
For example, if CLIP is selected for STILL1 in [STILL] menu PAGE 1 as shown below, clip data will be loaded to STILL1. If FRAME, ODD or EVEN is selected, still data will be loaded.

```
STILL    : STILL1 : STILL2 : STILL3 : STILL4 :  1/6
 STORE   : >CLIP  : >FRAME : >FRAME :  >FRAME :
```

---

13. Managing Clips

Clip stores allow you to record and play output video. Up to four video and key pair signals can also be recorded simultaneously. Clip data can be stored in four still memory buffers with still data. In addition, sequential image files can be transferred from a computer and saved in the memory as a video clip.

Clips can be played back through STILL1 to 4 and can be also used for CG Wipes. Each clip of up to 2 seconds as standard or 4 seconds with an HVS-39MEM can be recorded in four clip buffers.

13-1. Clip Recording

13-1-1. Recording Video

Let's record an M/E1 program video to clips through STILL1.

(1) Press MENU in the CONTROL block, then press STILL to display the [STILL] menu.
(2) Turn F1 to select CLIP under STILL1.

```
STILL   : STILL1 : STILL2 : STILL3 : STILL4 :  1/6
 STORE  :  >CLIP  :  >FRAME:  >FRAME:  >FRAME:
```

(3) Press Page Down to go to PAGE 2. Select M/E1PGM for **FILL SOURCE** and **KEY SOURCE**.

```
STILL   : FIL SRC: KEY SRC:                   2/6
SIGNAL  :  =M1PGM:   =M1PGM:
```

(4) Press Page Down to go to PAGE 5. Turn F3 to select STL1 (STILL1).
(5) Press F4 while holding down F3 to begin recording.

```
STILL   : SELECT :            (STOP  1/0 ):  5/6
CLIP    :  =STL1 :  >STOP :  >REC  :  >PLAY :
```

(6) Press F2 (STOP) or F4 (PAUSE) to stop recording. (Recording is automatically stopped when the memory is full.)

```
STILL   : SELECT :            (STOP 40/40):  5/6
CLIP    :  =STL1 :  >STOP :  >REC  :  >PAUSE:
```

NOTE
The M/E program, clean, preview and AUX1 to AUX8 images can be recorded to clips. See section 6. "Video Outputs" for details on these signals.

13-1-2. Recording Video and Key Signals Simultaneously

Assume a video signal is assigned to AUX1 and its key signal to AUX2.

If you need to record an input signal such as IN01, assign the signal to an AUX bus before recording.

Let's record AUX1 video and AUX 2 key signals simultaneously to clips through STILL 2.

(1) Open the [STILL] menu PAGE 1.
(2) Turn F2 to select CLIP under **STILL2**.

```
STILL    : STILL1 : STILL2 : STILL3 : STILL4 :  1/6
STORE    :  >FRAME:  >CLIP  :  >FRAME:  >FRAME:
```

(3) Go to PAGE 2. Select AUX1 and AUX2 for **FILL SOURCE** and **KEY SOURCE** respectively.

```
STILL    : FIL SRC: KEY SRC:                     2/6
SIGNAL   :  =AUX1  :  =AUX2  :
```

(4) Press F4 while holding down F3 to begin recording.
(5) Press F2 (STOP) or F4 (PAUSE) to stop recording.

◆ **Loop Recording**

Loop recording automatically loops back to the memory start point when it reaches the end of the memory and continues recording overwriting clip frames, until STOP is pressed. If LOOP is set to ON, both playback and recording are changed to Loop mode.
LOOP can be set to ON on PAGE 6 of the [STILL] menu as shown below.

```
STILL    : SELECT :  LOOP   : REC MOD: CLEAR :   6/6
CLIP     :  =STL1  :  =ON    :  =STD   :  >OFF :
```

◆ **Recording Mode**

Two modes are available for recording. The recording mode can be set under **REC MODE** on PAGE 6 of the [STILL] menu.

```
STILL    : SELECT :  LOOP   : REC MOD: CLEAR :   6/6
CLIP     :  =STL2  :  =OFF   :  =STD   :  >OFF :
```

Mode	Description
STD (STANDARD)	Standard mode. In this mode, to start recording, press F4 (PLAY) while holding down F3 (REC) on PAGE 5.
DRCT (DIRECT)	Direct mode. In this mode, to begin recording, press F3 (REC) on PAGE 5.

13-2. Playing Clips

13-2-1. Ex. 1: Playback on PGM Bus

This example shows how to play the M/E1PGM clip recorded in section 13-1-1 on the M/E2 background through STILL1. Assume that STILL 1 is assigned to the bus button 1 .

(1) Open PAGE 1 in the [STILL] menu.
(2) Select CLIP for **STILL1**.

```
STILL    : STILL1 : STILL2 : STILL3 : STILL4 :  1/6
 STORE   :  >CLIP :  >ODD   :  >EVEN :  >FRAME:
```

(3) Press bus button 1 on the M/E2 PGM bus. (The current frame of the clip will be displayed on the monitor.)
(4) Go to PAGE 5 in the [STILL] menu.
(5) Press F4 (PLAY) to begin playing. The video clip is played on the M/E2 PGM output. (Playback will be stopped at the last frame and the screen will be frozen on the last frame image.)

Current frame No.

Clip status   Recorded frames

```
STILL    : SELECT :          (STOP   1/40):  5/6
CLIP     :  =STL1 :  >STOP :  >REC   :  >PLAY :
```

13-2-2. Ex. 2: Playback on KEY1

This example shows how to play the video and key clip recorded in section 13-1-2. Assume an animation logo (V+K) as shown at right is stored in STILL2.
Let's insert the logo through M/E1 KEY1. Then specify the IN and OUT points to perform loop playback.

(1) Open PAGE 1 in the [STILL] menu.
(2) Select CLIP for **STILL1**.

```
STILL    : STILL1 : STILL2 : STILL3 : STILL4 :  1/6
 STORE   :  >FRAME: >CLIP  :  >EVEN :  >FRAME:
```

(3) Quickly press M/E1 KEY1 twice in the BUS SELECT section to display the [M/E1 KEY1 SETUP] menu. Go to the [M/E1 KEY1 - INS/SRC] menu.
(4) Turn F1 to **set TYPE** to BUS.
(5) Turn F2 to select STL2 (FILL) under **INSERT**.
(6) Turn F3 to select STK2 (KEY) under **SOURCE**.

```
ME1 KEY1:  TYPE   : INSERT : SOURCE : INVERT :  1/3
INS/SRC  :  =BUS   :  =STL2 :  =STK2 :  =OFF   :
```

> To play clips with video and key signals such as V+K-recorded ones or image files with an alpha channel, another STILL KEY channel is required.

(7) Display KEY1 on the PGM image by pressing KEY1 at the right end of the transition (All On/Off effects for KEY 1 are available.)

(8) Go to PAGE 4 in the [STILL] menu. Turn F1 to select STIL1 (STILL1) and set the IN and OUT points, then press F4.

```
STILL    : SELECT : CUR(100):  IN  : OUT  :  4/6
CLIP     : =STL1 : =78      : =1    : >100 :
```

(9) Go to PAGE 6 in the [STILL] menu. Turn F1 to select STIL1 (STILL1) and set **LOOP** to ON.

```
STILL    : SELECT : LOOP  : REC MOD: CLEAR :  6/6
CLIP     : =STL1 : =ON    : =STD   : >OFF   :
```

(10) Go to PAGE 5 in the [STILL] menu.
(11) Press F4 (PLAY). The logo animation will be played on a loop.

```
STILL    : SELECT :              (STOP 1/100):  5/6
CLIP     : =STL1 : >STOP : >REC   : >PLAY :
```

13-3. Clearing Clip Data

(1) Go to PAGE 6 in the [STILL] menu.
(2) Turn F1 to select a still.
(3) Turn F4 to set to ON. Then press F4.

```
STILL    : SELECT : LOOP  : REC MOD: CLEAR :  6/6
CLIP     : =STL1 : =OFF   : =STD   : >ON     :
```

(4) A confirmation message will appear. Press ENTER to clear memory data.

14. CG WIPE

CG WIPE allows you to create a sequence in which a CG video, which is displayed using a KEY, moves in accordance with the motion of a WIPE pattern. Normally patterns used for CG Wipes are modified according to sequences.

◆ **Fig. 1: CG WIPE Sequence Diagram with CG, Key and Background**
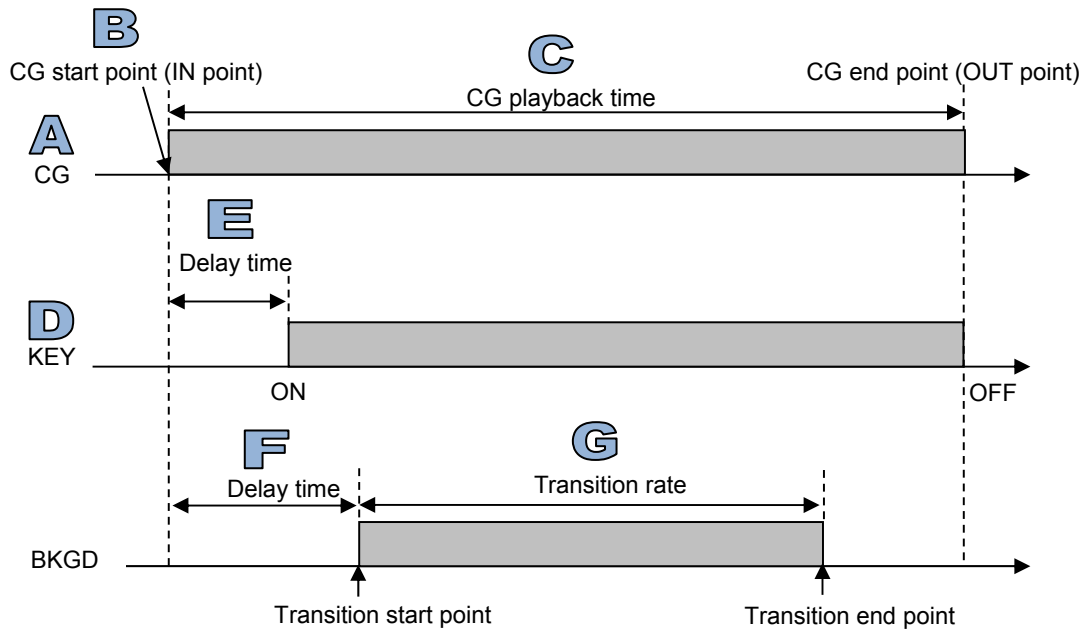
◆ **Fig. 2: Example of CG WIPE Video**
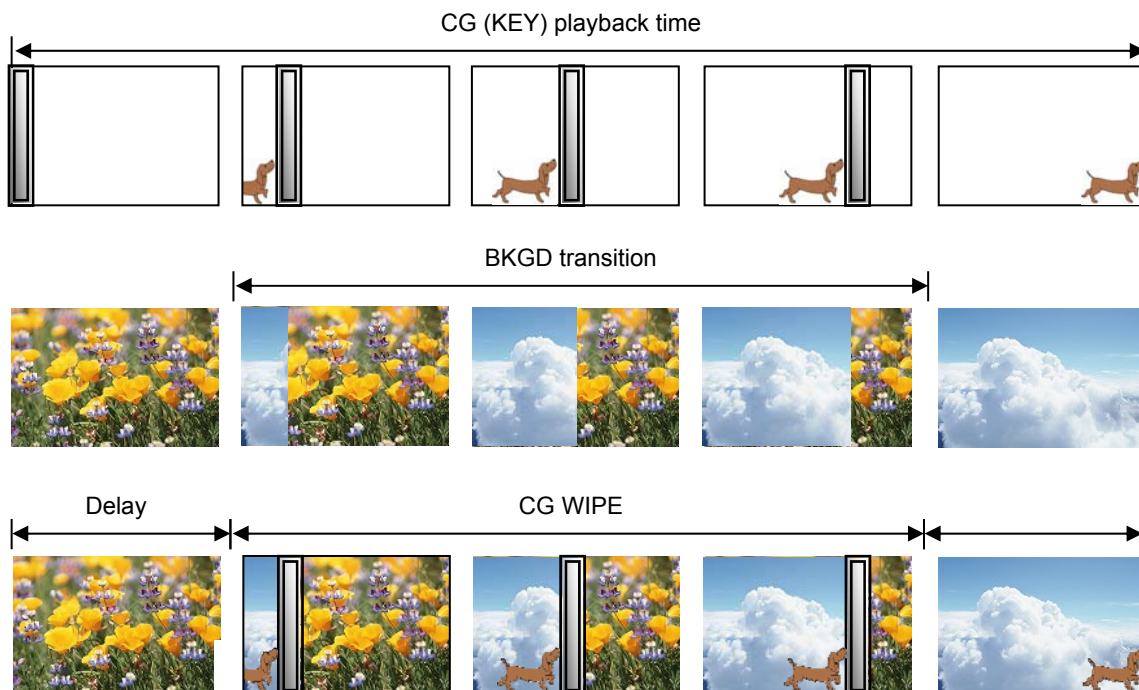
14-1. CG WIPE Operation Example 1

◆ Ex. 1: CG WIPE using STILL1 and M/E1 KEY1

In this example, it is assumed that a CG (V + K) is stored in STILL1. Assign STILL1 and STILL KEY to KEY1 signals, display KEY1 on the screen and play the CG through KEY1. Then set CG WIPE to ON, and perform a background transition. Change IN/OUT points, transition rate and delay values to adjust the CG WIPE sequence, if needed.

\<Setting up KEY\>
(1) Press MENU above the keypad, then press STILL to display the [STILL] (1/6) menu. Set STILL1 to CLIP.
(2) Press the page down button to go to PAGE 6 in the [STILL] menu. Turn F3 to set KEYOUT to STL1 (STILL1).
(3) Quickly press KEY1 twice in the BUS SELECT section to display the [M/E1 KEY1 SETUP] menu.
(4) Turn F1 to select INS/SRC, then press F1 or the page down button to display the [M/E1 KEY1 - INS/SRC] menu.
(5) Set TYPE to BUS, INSERT to STL1 (FILL) and SOURCE to STK1 (KEY).

```
ME1 KEY1:  TYPE   :INSERT  :SOURCE  :INVERT  :  1/4
INS/SRC :  =BUS   :  =STL1  :  =STK1  :  =OFF    :
```

\<Setting up BKGD\>
(1) Press BKGD in the M/E1 transition section.
(2) Press WIPE to set the BKGD transition type to WIPE.
(3) Press PATTERN in the M/E1 transition section to display the [WIPE PATTERN] menu, then press F1 to enter a desired pattern number on the keypad. Then press ENTER to confirm the selection. (Note that MIX, FAM and NAM can also be used for CG WIPE.)
(4) Modify the selected pattern suitable for your CG WIPE sequence.

\<Setting up CG WIPE\>
(1) Display the [WIPE MODIFY] menu by pressing MENU then WIPE.
(2) Turn F1 to select CG WIPE. Press F1 or the page down button to display the [M/E1 WPBG - CG WIPE] menu.
(3) Set ENABLE to ON in PAGE 1.
   Select STL1 under CG. (See **A** in Fig. 1, p. 128)
   Set the CG playback time in frames under DUR. (See **C** in Fig. 1)

```
ME1 WPBG: ENABLE :   CG    :         : DUR   :  1/3
CG WIPE :  =ON    :  =STL1  :         :  =30     :
```

(4) Press the page down button to go to PAGE 2 and select KEY1 under SELECT. (See **D** in Fig. 1)
(5) Set delay time in frames under DELAY, which indicates the duration from the start of CG playback (IN point) to the time when KEY1 is displayed on the screen. (See **E** in Fig. 1)

```
ME1 WPBG: SELECT :  DELAY :                 :  2/3
CG WIPE :  =KEY1  :  =0      :                 :
```

(6) Go to PAGE 3. Set the delay time in frames under DELAY, which indicates the duration from the start of CG playback to the transition start time. (See **F** in Fig. 1)
   Set the background transition time under RATE. (See **G** in Fig. 1)

```
ME1 WPBG:  DELAY :  RATE   :FDRLINK:         :  3/3
CG WIPE :  =0      :  =30    :  =ON   :         :
```

<Performing CG WIPE>

(1) Verify that the background transition type is set to WIPE and the modified WIPE pattern is properly selected. Use the fader lever or the AUTO button to perform a CG WIPE sequence.

(2) Adjust time or position using the related menu items, as needed.

14-2. CG WIPE Operation Example 2

◆ **Ex. 2: CG WIPE using VDCP1 and M/E1 KEY1**

In this example, CGs (video and key) are stored in a VDCP device. Connect the VDCP device to the switcher and control the device from the switcher via VDCP. CG clip signals (video and key) are input to the switcher and used for KEY1 INSERT and SOURCE. Display KEY1 on the screen and play the CG. Then set CG WIPE to ON, and perform a background transition. Change IN/OUT points, transition rate and delay values to adjust the CG WIPE sequence, if needed.

<Connection>

Connect the switcher to a VTR in which CG is stored as shown below.
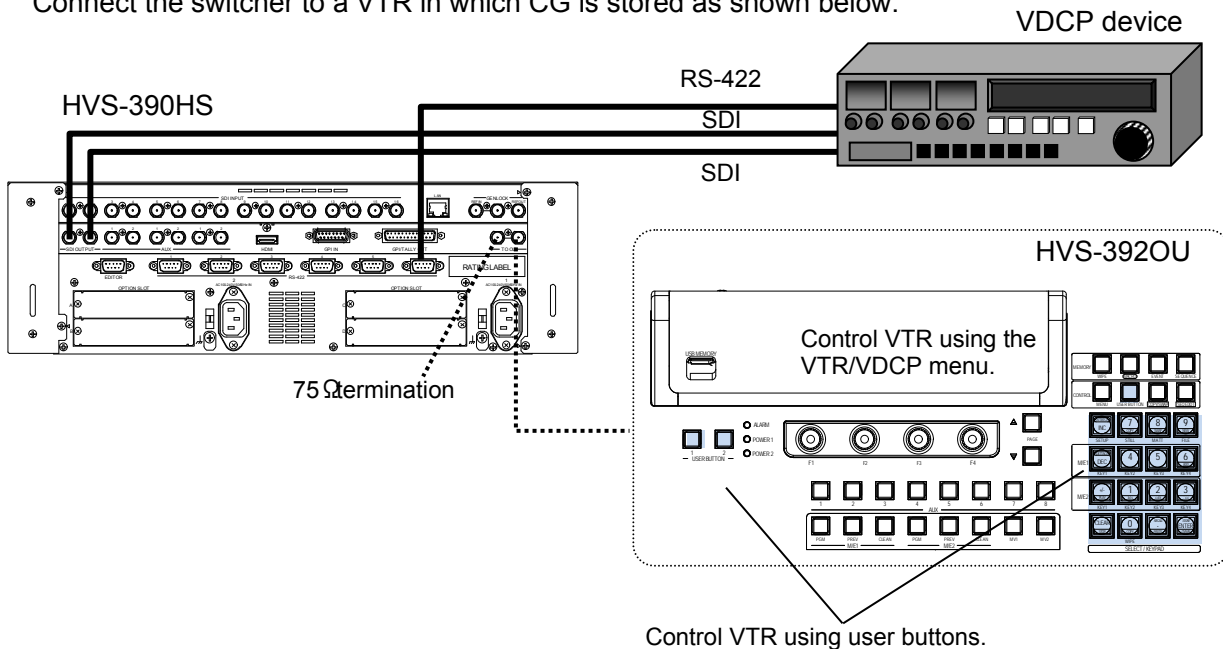
See section エラー! 参照元が見つかりません。. "Assigning a VTR or VDCP Channel to an RS-422 Port" to assign VDCP1 to the RS-422 port to which the VTR is connected. Select the VDCP type, referring to section 24-3. "Selecting the VDCP Type."

<Setting Up KEY>

(1) Quickly press M/E1 KEY1 twice in the BUS SELECT section to display the [M/E1 KEY1 SETUP] menu.

(2) Turn F1 to select INS/SRC, then press F1 or the page down button to display the [M/E1 KEY1 - INS/SRC] menu.

(3) Set TYPE to BUS. Select the CG input (FILL) for INSERT and the CG input (KEY) for SOURCE.

```
ME1 KEY1: TYPE  :INSERT :SOURCE :INVERT :  1/3
INS/SRC :  =BUS  : =INO1 : =INO2 :  =OFF  :
```

<Setting Up BKGD>
(1) Press BKGD in the M/E1 transition section.
(2) Press WIPE to set the BKGD transition type to WIPE.
(3) Press PATTERN in the M/E1 transition section to display the [WIPE PATTERN] menu, then press F1 to enter a desired pattern number on the keypad. Then press ENTER to confirm the selection. (Note that MIX, FAM and NAM can also be used for CG WIPE.)
(4) Modify the selected pattern suitable for your CG WIPE sequence.

<Setting UP CG WIPE>
(1) Display the [WIPE MODIFY] menu by pressing MENU then WIPE.
(2) Turn F1 to select CG WIPE. Press F1 or the page down button to display the [M/E1 WPBG - CG WIPE] menu.
(3) Set ENABLE to ON in PAGE 1. Select VDCP1 under CG.

```
ME1 WPBG: ENABLE :   CG    :        : DUR  : 1/4
CG WIPE :  =ON    :  =VDCP1: >CLIP ID: =30    :
```

(4) Turn F1 to select a CLIP ID and press F1.

```
CG WIPE : CLIP0001                    : 1/1
CLIP ID : CLIP0002            : >CANCEL:
```

(5) Once the CLIP ID is selected, the menu is automatically returned to the previous page. Verify that the selected CLIP ID is displayed in the upper line on the menu page.
Set the CG playback time in frames under DUR. (See **C** in Fig. 1, p. 128)

```
WIPE BG : ENABLE :   CG    : CLIP0001: DUR  : 1/4
CG WIPE :  =ON    :  =VDCP1: >CLIP ID: =30    :
```

(6) Go to PAGE 2. Set the start point (IN point) of the CG playback time.

```
ME1 WPBG:  IN TIME     (STOP/00: 00: 00: 00): 2/4
CG WIPE :  =00: 00: 00: 00   : >CUE UP  : >SETIN:
```

(7) Go to PAGE 3. In this example, select KEY1, which is used to display the CG image. (See **D** in Fig. 1)
Set the delay time in frames under DELAY, which indicates the duration from the start of CG playback (IN point) to the time when KEY1 is displayed on the screen. (See **E** in Fig. 1)

```
ME1 WPBG: SELECT :  DELAY :           : 3/4
CG WIPE :  =KEY1 :  =0     :           :
```

(8) Go to PAGE 4. Set the delay time in frames under DELAY, which indicates the duration from the start of CG playback to the transition start time. (See **F** in Fig. 1)
Set the background transition time under RATE. (See **G** in Fig. 1)

```
ME1 WPBG:  DELAY :  RATE  : FDRLINK:        : 4/4
CG WIPE :  =0     :  =30   :  =OFF  :        :
```

NOTE
See section 25-6 "VDCP Operation" for VTR control from the switcher using VDCP.

<Performing CG WIPE>
    (1) Verify that the background transition type is set to WIPE and the modified WIPE pattern is properly selected. Press the AUTO button to perform a CG WIPE sequence.
    (2) Adjust time or positioning using the related menu items, as needed.

14-3. Saving CG WIPE Settings

CG WIPE settings can be saved as WIPE pattern modification settings in Direct Pattern and in the event memory.
See section 8-8-2. "Direct Pattern Function" and section 16. "Event Memory" for details on how to save and load settings.

14-4. CG WIPE Menu Quick Reference

(1) Display the [WIPE MODIFY] menu by pressing MENU then WIPE.
(2) Turn F1 to select CG WIPE. Press F1 or the page down button to display the [M/E1 WPBG - CG WIPE] menu.

```
ME1 WPBG: ENABLE :   CG   :          : DUR  :   1/4
CG WIPE :  =ON    : =STILL:          : =30    :
```

```
ME1 WPBG:  IN TIME      (STOP/00:00:00:00):   2/4
CG WIPE :  =00:00:00:00  : >CUE UP : >SETIN:
```

```
ME1 WPBG: SELECT :  DELAY :                  :   3/4
CG WIPE :  =KEY1 :  =0      :                  :
```

```
ME1 WPBG:  DELAY :  RATE  : FDRLINK:        :   4/4
CG WIPE :  =0     : =30    : =OFF   :        :
```

CG WIPE menu settings vary depending on where CG video is played; on a still bus, VTR or VDCP channel.

◆ **Table 1. If STILL is used for CG playback**

Menu item		Default	Setting	Description	Fig. 1
1/3	ENABLE	OFF	OFF, ON	Sets CG WIPE ON/OFF.	-
	CG	STL1	STL1 to 4	Selects a channel through which a CG is played back.	A
	DUR	30	0 to 60	Sets the CG playback time.	C
2/3	SELECT	KEY1	KEY1 to 4	Selects a KEY through which a CG is displayed.	D
	DELAY	0	0 to 60	Sets delay time from the start of CG playback (IN point) until the CG is displayed on screen (KEYER to ON).	E
3/3	DELAY (*1)	0	0 to 60	Sets delay time from the start of CG playback (IN point) to the start of transition.	F
	RATE(*1)	30	0 to 999	Sets the background transition rate.	G
	FDRLINK	OFF	ON, OFF	Sets if CG WIPE can be performed with the fader lever.	-

(*1) If the sum of the transition delay time and transition rate are longer than the CG playback time, the transition is forced to end immediately after the CG is finished playing and the image displayed on the monitor is switched to the PST image.

◆ **Table 2. If VTR1-4 is used for CG playback**

Menu item		Default	Setting	Description	Fig. 1
1/4	ENABLE	OFF	OFF, ON	Sets CG WIPE ON/OFF.	
	CG	-	VTR1 to 4	Selects a channel through which a CG is played back.	
	DUR	30	0 to 999	Sets the CG playback time.	C
2/4	IN TIME	00:00:00:00	00:00:00:00 to 23:59:59:29	Sets the start time of CG playback (IN point).	B
	CUE UP	-	-	Sets back to the IN point.	-
	SET IN	-	-	Sets the current time code to IN TIME.	-
3/4	SELECT	KEY1	KEY1 to 4	Selects a KEY through which a CG is displayed.	D
	DELAY	0	0 to 255	Sets delay time from the start of CG playback (IN point) until a KEY is displayed on screen (KEYER to ON).	E
4/4	DELAY (*1)	0	0 to 255	Sets delay time from the start of CG playback (IN point) to the start of transition.	F
	RATE(*1)	30	0 to 999	Sets the background transition rate.	G
	FDRLINK	OFF	OFF	Fader link cannot be used.	-

◆ **Table 3. If VDCP1-4 is used for CG playback**

Menu item		Default	Setting	Description	Fig. 1
1/4	ENABLE	OFF	OFF, ON	Sets CG WIPE ON/OFF.	-
	CG	-	VDCP1 to 4	Selects a channel through which a CG is played back.	A
	CLIP ID	-	-	Selects a CLIP ID.	
	DUR	30	0 to 999	Sets the CG playback time.	C
2/4	IN TIME	00:00:00:00	00:00:00:00 to 99:59:59:29	Sets the start time of CG playback (IN point).	B
	CUE UP	-	-	Sets back to the IN point.	-
	SET IN	-	-	Sets the current time code to IN TIME.	-
3/4	SELECT	KEY1	KEY1 to 4	Selects a KEY through which a CG is displayed.	D
	DELAY	0	0 to 255	Sets delay time from the start of CG playback (IN point) until a KEY is displayed on screen (KEYER to ON).	E
4/4	DELAY (*1)	0	0 to 255	Sets delay time from the start of CG playback (IN point) to the start of transition.	F
	RATE(*1)	30	0 to 999	Sets the background transition rate.	G
	FDRLINK	OFF	OFF	Fader link cannot be used.	-

(*1) If the sum of the transition delay time and transition rate are longer than the CG playback time, the transition is forced to end immediately after the CG is finished playing and the image displayed on the monitor is switched to the PST image.

15. Multiviewer

The multiviewer allows users to monitor multiple images such as video sources input to the switcher and internally generated or combined images on the same screen. The HVS-390HS provides two multiviewer outputs, with each output having three types of split displays: quad, 10 and 16 way. Different videos can be displayed in different patterns. The video titles and on-air tally information can also be displayed. Note that the multiviewer outputs are delayed by one frame relative to the program output.

The setup procedure for the multiviewer is as follows:

1. **Assign a multiviewer video to an AUX output bus.**
2. **Select a split-screen type.**
3. **Select video for each split area. (Clock display instead of video)**
4. **Add titles, audio level meters, safety area markers, on-air tallies and frame borders.**

15-1. Assigning the Multiviewer to an AUX Bus

The multiviewer function can be assigned to any AUX bus. There are two ways to select an AUX bus: using the buttons in the BUS SELECT block or using the menus. In the following example AUX2 is selected to be the MV1 output.

◆ **Using the BUS SELECT Buttons**
(1) Press AUX2 in the BUS SELECT block.
(2) Press MV1 in the KEY/AUX block.
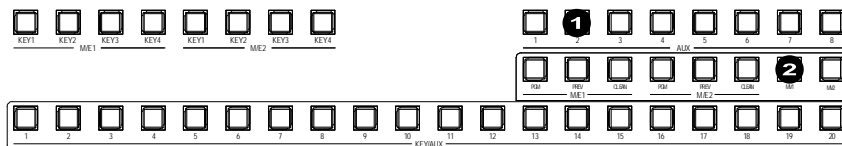
◆ **Using the Menu**
(1) Quickly press AUX2 twice in the BUS SELECT block.
(2) The [SETUP - OUTPUT- OUT XPT] menu opens. Turn F2 to select MV1.

```
OUTPUT   : SELECT :  XPT    : INHIBIT: AUX TRS:  1/4
OUT XPT  :  =AUX1  :  =MV1  :  =OFF   :  =OFF   :
```

15-2. Selecting the Split-screen Type

The type of split-screen to be used can be selected in the [SETUP - OUTPUT-MV1] menu. There are three different types.

(1) Quickly press MV1 twice in the KEY/AUX block to display the [SETUP - OUTPUT- MV1] menu.

```
OUTPUT   :  DIV    : SCREEN : SIGNAL :  CHARA :  1/6
MV1      :  =4     :  =1    :  =INO1  :  = OFF :
```

(2) Turn F1 to select the split screen type from 4, 10 or 16-way. (See the split screen images with channel numbers below.)

01	02
03	04

01		02	
03	04	05	06
07	08	09	10

01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16

15-3. Selecting Video for Each Split Area

This section shows how to select a video source for each split area in the multiviewer screen. This is done in the [SETUP - OUTPUT - MV1] menu.

(1) Quickly press MV1 twice in the KEY/AUX block to display the [SETUP - OUTPUT - MV1] menu.

```
OUTPUT   :  DIV    : SCREEN : SIGNAL :  CHARA :  1/6
MV1      :  =4     :  =1    :  =INO1  :  = OFF :
```

(2) Turn F2 to select a channel number (split area) of the split screen under the **SCREEN** item.
(3) Turn F3 to select video to display on the split area. The following video sources are selectable.

Input images	IN01 - IN24
Internal bus images	BLK(BLACK), STL1 to STL4, STK1 to STK4, MATT1, MATT2, CLBR(Color bar), M/E1 PGM, M/E1 PREV, M/E1 CLN, M/E2 PGM, M/E2 PREV, M/E2 CLN, AUX1 to AUX8, CLOCK

(4) Repeat steps (2) and (3) to assign images to the multiviewer channels.

15-4. Setting Up Each Split Area

15-4-1. Titles

(1) Quickly press MV1 twice in the KEY/AUX block to display the [SETUP - OUTPUT - MV1] menu.

(2) Turn F2 to select a channel number (split area) of the split screen under the **SCREEN** item.

```
OUTPUT   : DIV   : SCREEN : SIGNAL :  CHARA :  1/6
MV1      : =4 ⊞ : =1     : =INO1  : =OFF   :
```

(3) Turn F4 to select the type of title display under **CHARA**. Short and long names can be used for titles.

CHARA setting	Description
OFF	Displays no title.
SHORT	Displays a title within 4 characters.
LONG	Displays a title within 8 characters.

Titles for input signals can be set and changed in the [SETUP - INPUT - RENAME] menu. (See section 5-1. "How to Assign User Names to Sources.")
Titles for output signals can be set and changed in the [SETUP - OUTPUT - RENAME] menu. (See "Changing Output Signal Names" in the next page.)

(4) Press the page down button to go to PAGE 3. The settings in this page are shared among all split windows.

```
OUTPUT   :   TITLE AREA/POSITION  :       : 3/6
MV1 TITL: =WIDE   : X=0     Y=-100 :       :
```

(5) Turn F2 to select the width of the title background.

Item	Description
WIDE	Spreads the title background to the width of the screen.
NORMAL(default)	Adjusts the width of the title background to fit the title.
OFF	Title Backgrounds are not displayed.

(6) Turning F2 selects the horizontal title position and turning F3 selects the vertical title position respectively from the three options.

Item		Description
TITLE AREA POSITION	X	Selects the horizontal title position from -100 (left), 0 (middle) or 100 (right).
	Y	Selects the vertical title position from 100 (high), 0 (middle) or -100 (low).

◆ **Setting Example**

In this setting example, the multiviewer is set as shown on the right hand side with the multiviewer settings in the table below.
(Names are default settings.)

Channel number	SIGNAL setting	CHARA setting	WIDE/NORMAL selection
1	IN01	OFF	
2	IN02	SHORT	NORMAL
3	ME2PRV	LONG	
4	ME2PGM	LONG	

◆ **Changing Output Signal Names**
Open the [SETUP - OUTPUT - RENAME] menu and change names, as necessary.

```
OUTPUT    : SELECT : SHORT  :  LONG NAME(MV) :  1/1
RENAME    :  =M1PG :  =M1PG :  =M/E1 PGM     :
```

SELECT	SHORT (Defalt)	LONG NAME (Default)	Description
M1PG to M2PG	M1PG to M2PG	M/E1 PGM to M/E2 PGM	M/E program outputs
M1PV to M2PV	M1PV to M2PV	M/E1 PRV to M/E2 PRV	M/E preview outputs
M1CL to M2CL	M1CL to M2CL	M/E1 CLN to M/E2 CLN	M/E clean outputs
M1KY to M2KY	M1KY to M2KY	M/E1 KEY to M/E2 KEY	M/E program key outputs
AUX1 to AUX8	AUX1 to AUX8	—	AUX outputs

15-4-2. Audio Level Meter

A Level Meter for embedded audio can be displayed on each screen in multiviewer video.
Select 2- or 4-channel for audio type to be displayed, which can be set for each screen.

(1) Open [SETUP - OUTPUT - MV1] menu PAGE 2.
(2) Turn F1 to select a screen number.
(3) Turn F2 to select audio channels to be displayed.

```
OUTPUT   : SCREEN : AUDIO  : SF AREA/SIZE  :  2/6
MV1      : =1     : =Ch1-4 : =OFF   :          :
```

AUDIO setting	Description
OFF	Displays no level meters.
Ch1/2, Ch3/4, Ch5/6, Ch7/8	Displays level meters for two channels.
Ch1-4, Ch5-8	Displays level meters for four channels.

15-4-3. Safety Area

(1) Open the [SETUP - OUTPUT - MV1] menu PAGE 2.
(2) Turn F1 to select a screen number.
(3) Turn F3 to set ON or OFF the safety area display. (Selectable for each screen)
(4) Turn F4 to select the safety area size. (Common to all screens in each MV)

```
OUTPUT   : SCREEN : AUDIO  : SF AREA/SIZE  :  2/6
MV1      : =1     : =Ch1-4 : =ON    : =70%   :
```

15-4-4. Frame Border

A frame border can also be applied to the split-screen to emphasize channel areas.
(1) Quickly press MV1 twice in the KEY/AUX block to display the [SETUP - OUTPUT - MV1] menu.
(2) Press the page down button to go to PAGE 4.
(3) Turn F4 to select a border color among eight standard colors. Press F4 to apply the selected color. If you want to adjust the selected color or set the color by entering HSL values, turn F1, F2 and F3 to adjust values, or press F1, F2 and F3, enter a value in the Keypad, then press ENTER in the Keypad.

```
OUTPUT   :          BORDER COLOR    :RECALL :  4/6
MV1 BDR  : S=0.0    L=100.0 H=0.0   :  >WHITE:
```

15-4-5. On-air Tally

The tally indicates which video is currently On-air (output from the program) and which is set to be the next output. The multiviewer can display two types of tally indicators: Frame and Marker. You can use either or both at the same time.

(1) Display [SETUP - OUTPUT - MV1] menu PAGE 5.
(2) Select a tally indication. Frame (FRAME) and square (MARKER) markers can be displayed at the same time.

```
OUTPUT   :  FRAME  : MARKER :        : KEY TLY:  5/6
MV1 TLY  :  =ON    :  =ON   :        : =OFF   :
```

◆ **Setting Example**
Here, we assume that IN02 is displayed
in the M/E2 PGM and .IN01 is selected on
the M/E2 PST bus.
The tally frame and marker are displayed
on the screen. (See the menu above.)

Green:
Next indication

Red:
On-air indication
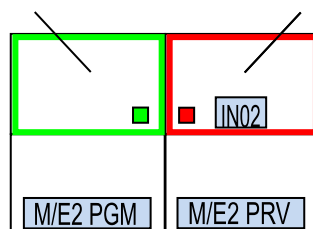
◆ **KEY TALLY**
Note that the "Key-On tally" information is included in the tally data as factory default.
If you need only "Background -On" tallies, set **KEY TLY** to OFF.

IMPORTANT
The on-air tally indication (RED and GREEN) is linked to the tally color (**TLY COL**) setting. For example, the PGM tally color is set to RED and the PST tally color to NONE, green tally (next indication) is not displayed. (See section 24-2-1. "Tally Color Settings."

◆ **TALLY LINK**
Another tally indication can be displayed on a multiviewer image screen.
For example, to display the IN05 tally indication on the IN06 video screen of the multiviewer, set parameters as shown below in PAGE 6. Setting **LINK EN** to ON to enable all tally links set in this menu.

```
OUTPUT   :      TALLY LINK        : LINK EN:  6/6
MV1 TLY  : SRC=IN06   LINK=IN05    : =ON    :
```

16. Event Memory

The switcher can save control panel setup statuses as data for recall when needed. This function is called Event Memory. This Event Memory function enables quick recall of the same setting statuses that were previously saved. The event memory data can accurately reproduce statuses of button assignments and selections including a re-entry of M/E1 PGM on the control panel, because the event memory data holds all panel information.

The keypad is used to save and recall events. The event memory data can be backed up and then restored from USB flash memory drives. (See section 19 "File Operations.") In addition to this, the RATE item in the EVENT menu allows users to perform transitions by loading events. (See section 16-2-3. "Transitions Using Event Recall.")

16-1. Storing Events

The event memory can store the setting status of the control panel. Up to 100 events (10 memory pages, with 10 events per page) can be stored in memory.

◆ **To Store an Event (basic):**
(1) Press EVENT in the MEMORY block.
(2) Press STORE (ENTER) on the Keypad.
(3) Press a number button (0-9) on the Keypad to store the event.

◆ **Storing Events (detailed):**
(1) Press EVENT in the MEMORY block.
The [EVENT MEMORY] menu is displayed and the Keypad switches to EVENT mode.

(2) Turn F1 to select an event page in the [EVENT MEMORY] menu. PAGE 0 has Event 0-9 (event memories), PAGE 1 has Event 10-19, and so on. The last page, PAGE 9 has Event 90-99.

```
EVENT   : PAGE   : DIRECT : PAGECLR: RATE   : 1/3
MEMORY  : =0     : =OFF   : =CRNT  : =OFF   : L=0
```

(3) Press STORE (ENTER) on the Keypad. The STORE button flashes green and the [EVENT STORE] menu will then be displayed.

(4) The [EVENT STORE] and [EVENT MEMORY] menus allow users to select the data to be saved in the event. (See the next page for details.)

(5) Press a number button (0-9) on the Keypad to store the event.

If an Event is Already Saved to a Button:
When STORE is pressed, the light of the buttons (0 to 9) are off if no events are saved. The number buttons light up if events are saved. If you press a button where an event is already saved, it flashes. Pressing the button again overwrites the event. If you press another button that has no event already saved before overwriting, the event will be saved to that button.
If you cannot overwrite data, change **OVER WR** to ENABL (ENABLE) in the [EVENT RECALL] menu. (See section 16-3. "Overwrite Protection.")

◆ **Data not saved in the event memory**

All SETUP menu settings
All FILE menu settings
STILL images
USER TRANS and ADV CTRL settings in the TRANS menu (See section 8-9-2.)
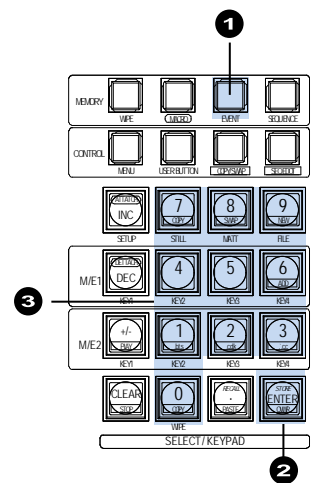
◆ Detailed Data Selection for Saving Events

Data saved to the event can be selected under the [EVENT MEMORY] menu or [EVENT STORE] menu as shown below.

[EVENT MEMORY] menu

Item	Setting	Description
*RATE	OFF, 1 to 999	See section 16-2-3. "Transitions Using Event Recall."
AUX BUS	ON, OFF	Setting to ON stores all AUX bus data. To set the AUX bus data individually, set in the [EVENT STORE] menu.
*KEY ASG	ON, OFF	Setting to ON stores the output bus where KEY3 and KEY4 images appear. (See section 10-9. Where KEY3 and KEY4 Appear.")
*SEQ RCL	ON, OFF	Setting to ON stores the current sequence data.
M/E BUS	ALL, M/E1, M/E2	Selects an M/E (or ALL) whose data is to be stored.
*CG WIPE	ON, OFF	Setting to ON stores the current CG WIPE data.

* Indicates the same item in both [EVENT MEMORY] and [EVENT STORE] menus.

```
EVENT   : PAGE   : DIRECT : PAGECLR:  RATE   : 1/3
MEMORY  :  =0     :  =OFF   :  =CRNT  :  =OFF   : L=0
```

```
EVENT   : AUX  BUS: KEY  ASG: SEQ  RCL: M/E  BUS:  2/3
MEMORY  :  =OFF   :  =OFF   :  =OFF   :  =ALL   :  L=0
```

```
EVENT   : CG  WIPE:                        :  3/3
MEMORY  :  =OFF   :                        :  L=0
```

[EVENT STORE] menu

Item	Setting	Description
SELECT	ALL ME1BG, ME1K1 to ME1K4 ME2BG ME2K1 to ME2K4	Select ALL or a bus under **SELECT**. Setting **DATA** to ON stores all data for the bus (including signal selection, transition rate, transition type settings, etc.). Setting **XPT** to ON stores only the signal selection data.
XPT	ON, OFF	Normally set to ON for **XPT** and **DATA**, so that information for all buses is saved to events.
DATA	ON, OFF	Set **DATA** to OFF if any data for the bus is not needed. The data can be further selected when recalling events.
*RATE	OFF, 1 to 999	See section 16-2-3. "Transitions Using Event Recall."
AUX SEL	AUX1 to AUX8	Select an AUX bus at **AUX SEL**.
AUX RCL	ON, OFF	Setting **AUX RCL** to ON stores the information for the bus.
*KEY ASG	ON, OFF	Setting to ON stores the output bus where KEY3 and KEY4 images appear. (See section 10-9. Where KEY3 and KEY4 Appear.")
*SEQ RCL	ON, OFF	Setting to ON stores the current sequence data.
*CG WIPE	ON, OFF	Setting to ON stores the current CG WIPE data.

* Indicates the same item in both [EVENT MEMORY] and [EVENT STORE] menus.

```
EVENT   : SELECT  : XPT      : DATA     :  RATE   :  1/3
STORE   :  =ALL   :  =ON     :  =ON     :  =OFF   : P.00
```

```
EVENT   : AUX SEL: AUX RCL: KEY ASG: SEQ RCL:  2/3
STORE   :  =AUX1 :  =OFF  :  =OFF  :  =OFF  : P.00
```

```
EVENT   : CG WIPE:                          :  3/3
STORE   :  =OFF  :                          : P.00
```

IMPORTANT
User Default Settings for the [EVENT STORE] menu
The same items (RATE, KEY ASG and DEQ RCL) in the [EVENT MEMORY] menu and [EVENT STORE] menu link together. When one is changed in the [EVENT MEMORY] menu, it is also changed in the [EVENT STORE] menu and becomes the default setting in the [EVENT STORE] menu, but not vice versa.

16-2. Recalling Events

16-2-1. DIRECT Mode

Events can most quickly be recalled in Direct Operation mode. However, users cannot select the loaded data at recalling events. To use Direct Operation mode, set **DIRECT** to ON in the menu before recalling events.

(1) Press EVENT in the MEMORY block.
(2) Turn F1 to select an event page in the [EVENT MEMORY] menu.

```
EVENT   : PAGE   : DIRECT : PAGECLR: RATE   :  1/3
MEMORY  :  =0    :  =OFF  :  >CRNT :  =OFF  : L=0
```

Last Recall No.

(3) Press the number button where the needed data is to be stored. The selected event will be applied to the panel.

*   Users can select the data to be recalled from PAGE 2 in the [EVENT MEMORY] menu. See the previous page.

The number of the currently opened event page is displayed at bottom right in the [EVENT RECALL] menu.

◆ **To Set DIRECT to ON:**
When pressing EVENT in the MEMORY block, the [EVENT MEMORY] menu is automatically displayed.
Turn F2 to set **DIRECT** to ON.

```
EVENT   : PAGE   : DIRECT : PAGECLR: RATE   :  1/3
MEMORY  :  =0    :  =ON   :  >CRNT :  =OFF  : L=0
```

16-2-2. Using the RECALL Button

◆ **To Recall Events (fastest method):**
(1) Press EVENT in the MEMORY block.
(2) Press the number button where the needed data
    is to be stored.
(3) Press RECALL.
    The selected event will then be applied to the panel.
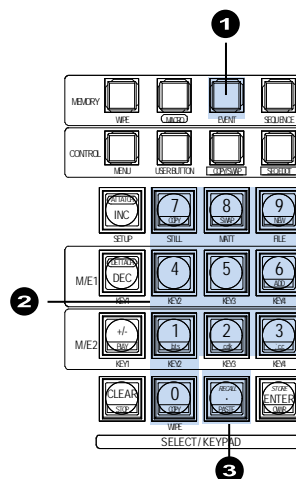
◆ **To Recall Events (detailed):**
(1) Press EVENT in the MEMORY block.
    The [EVENT MEMORY] menu is displayed and
    the Keypad changed to Event mode.
(2) Turn F1 to select an event page in the [EVENT
    MEMORY] menu.
(3) Press the number button where the needed data
    is to be stored. The [EVENT RECALL] menu is
    displayed and the saved data in the event is set
    on the [EVENT RECALL] menu.

```
EVENT   : SELECT : XPT      : DATA    : RATE   : 1/3
RECALL  :  =ALL   :  =ON     :  =ON     :  =OFF   : P. 00
```

                                               Page No.

(4) This time users can select to recall all saved data or specific data within the event by setting **SELECT**, **XPT** and **DATA** items on PAGE 1. (PAGE 2 has the same items for data selection as those on PAGE 2 of the [EVENT STORE] menu. See section 16-1. "Storing Events" for details.)

For example, to recall stored event data except the M/E2 background information, one must do the following:

```
EVENT   : SELECT : XPT      : DATA    : RATE   : 1/3
RECALL  :  =ALL   :  =OFF    :  =OFF    :  =OFF   : P. 00
```

(5) Press RECALL. The [EVENT RECALL] menu is displayed.

The number of the last recalled event is displayed at bottom right in the [EVENT MEMORY] menu. This is useful when checking which event was recalled last.

16-2-3. Transitions Using Event Recall

The RATE item in the EVENT menu allows users to set the duration time (transition rate) for loading events. With this duration time, transition sequences of two steps (statuses before and after recalling events) can be performed. The two images (keyframes) before and after recalling events that appear on program screens are automatically interpolated to create a smooth transition in the same way as the Sequence feature. The RATE setting is made when events are stored. It can also be set and changed when events are recalled.

P/P PGM image   P/P PGM image

Duration time set at RATE

Loading starts   Loading is complete
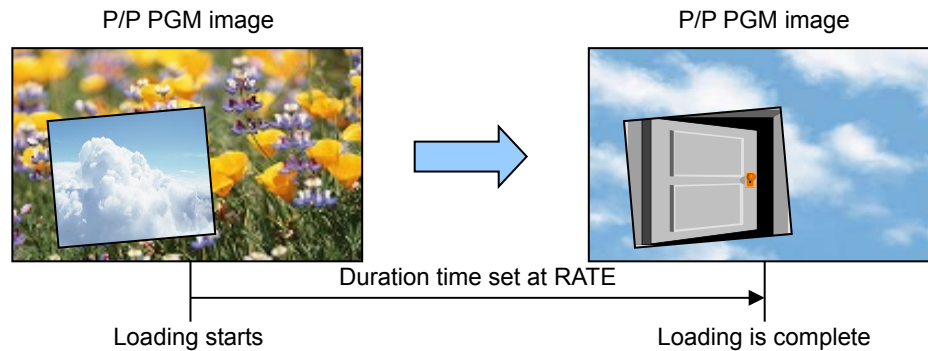
◆ **Operation Example**
The following operation example shows an event that is saved to EVENT No. 10 with 150 frames for RATE and it is recalled while changing RATE to 30 frames.

Saving the Event
(1) Press EVENT in the MEMORY block to display the [EVENT MEMORY] menu.
(2) Turn F1 to select PAGE 1 (Events No. 10-19).

```
EVENT   :  PAGE   : DIRECT : PAGECLR: RATE    :   1/3
MEMORY  :  =1     :  =ON   :  >CRNT :  =OFF   :  L=0
```

(3) Press STORE to display the [EVENT STORE] menu.
(4) Press F4, enter 150 in the Keypad then press ENTER.

```
EVENT   : SELECT :  XPT    :  DATA  :  RATE   :  1/3
STORE   :  =ALL  :  =ON    :  =ON   :  =150   : P. 01
```

> If setting RATE to 150 in the [EVENT MEMORY] menu, the initial value for RATE in the [EVENT STORE] menu will always be 150 (the default value).

(5) Press 0 in the Keypad to save the current panel status to Event No. 10.

Loading the Event
(1) Press EVENT in the MEMORY block to display the [EVENT MEMORY] menu.
(2) Turn F1 to select PAGE 1 (Event Nos. 10-19).
(3) Press 0 in the Keypad to recall Event No. 10. The [EVENT RECALL] menu will be displayed.
(4) Turn F4 to change the RATE value from 150 to 30.

```
EVENT   : SELECT :  XPT    :  DATA  :  RATE   :  1/3
RECALL  :  =ALL  :  =ON    :  =ON   :  =30    : P. 01
```

(5) Press RECALL. The data saved in Event No. 10 is recalled to the control panel, taking 30 frames.

16-3. Overwrite Protection

(1) Press EVENT in the MEMORY block.
(2) Press the number button where the needed data is stored. The button will start flashing when pressed. The [EVENT RECALL] menu will be automatically displayed.
(3) Press the page down button to go to PAGE 3.
(4) Turn F2 to change **OVER WR** to DISBL(disable) to set the write protection on the memory button.

```
EVENT  : CG WIPE: OVER WR: DELETE :        :  3/3
RECALL :  =OFF   :  =DISBL:  >OFF   :        : P. 01
```

16-4. Deleting Events

◆ **To Delete Data for an Event:**
(1) Press EVENT in the MEMORY block.
(2) Press the number button from which data is to be deleted. The button will begin flashing when pressed.
(3) Press the page down button to go to PAGE 3.
(4) Turn F3 to set **DELETE** to ON, then press F3. The data saved in the event memory button will then be cleared.

```
EVENT  : CG WIPE: OVER WR: DELETE :        :  3/3
RECALL :  =OFF   :  =ENABL:  >ON    :        : P. 01
```

◆ **To Delete Data for an Event Page:**
(1) Press EVENT in the MEMORY block. The [EVENT MEMORY] menu is displayed.
(2) Turn F1 to select an event page to be deleted.
(3) Turn F3 to set **PAGECLR** to CRNT (current), then press F3. The data saved in the event page will then be cleared.

```
EVENT  :  PAGE   : DIRECT : PAGECLR: RATE     :  1/3
MEMORY :  =1      :  =OFF   :  =CRNT  :  =OFF    : L=10
```

◆ **To Delete All Event Data :**
(1) Press EVENT in the MEMORY block. The [EVENT MEMORY] menu is displayed.
(2) Set **PAGECLR** to ALL, and press F3. All event data is cleared.

```
EVENT  :  PAGE   : DIRECT : PAGECLR: RATE     :  1/3
MEMORY :  =O      :  =OFF   :  =ALL   :  =OFF    : L=10
```

16-5. Setting the User Default Menu when Storing an Event

The [EVENT STORE] menu appears as shown below in the factory default setting when storing events.

```
EVENT   : SELECT : XPT    : DATA  : RATE  : 1/3
STORE   : =ALL   : =ON    : =ON   : =OFF  : P. 00
```

```
EVENT   : AUX SEL: AUX RCL: KEY ASG: SEQ RCL: 2/3
STORE   : =ALL   : =OFF   : =OFF   : =OFF   : P. 00
```

```
EVENT   : CG WIPE: OVER WR: DELETE :        : 3/3
RECALL  : =OFF    : =DISBL : >OFF   :        : P. 01
```

Changing the default setting of the [EVENT STORE] menu is possible. To do this, proceed as follows.

(1) Press EVENT in the MEMORY block. The [EVENT MEMORY] menu is displayed.
(2) Change the following menu items to the desired settings, which become the default settings in the [EVENT MEMORY] menu. (Only highlighted items are changeable.)

```
EVENT   : PAGE   : DIRECT : PAGECLR: RATE  : 1/3
MEMORY  : =0     : =OFF   : =OFF   : =OFF  : L=0
```

```
EVENT   : AUX BUS: KEY ASG: SEQ RCL: M/E BUS: 2/3
MEMORY  : =OFF    : =OFF   : =OFF   : =ALL   : L=0
```

```
EVENT   : CG WIPE:                :        : 3/3
MEMORY  : =OFF    :                :        : L=0
```

16-6. Loading an Event at Start-up

The settings made for the background and key buses on the control panel are cleared when powering off the switcher. You can, however, recall the desired panel setup whenever the switcher starts by setting in the [SETUP - SYSTEM - INIT] menu as shown in the procedure below.

(1) Press MENU in the CONTROL block.
(2) Press SETUP to display the SETUP menu top page.
(3) Turn F1 to select SYSTEM and then press F1.

```
SETUP   : >SYSTEM   >INPUT    >OUTPUT   >PANEL
MENU    : >GPI/TLY  >FUNCTION >EXT I/F  >STATUS
```

(4) The [SETUP - SYSTEM] menu as shown below appears. Turn F1 to select INIT and then press F1 to display the [SETUP - SYSTEM - INIT] menu.

```
SETUP   : >FORMAT   >REF I/O >ARCNET   >ETHERNET
SYSTEM  : >RS-422   >TIME    >INIT     >REBOOT
```

```
SYSTEM  : INIT           : LOAD :          : 1/1
INIT    : >CURRENT       : =LAST :          :
```

(5) Turn $\boxed{\text{F3}}$ to select the desired panel setup in the table below

LOAD setting	Description
OFF	The switcher starts with Last Saved Settings. "Last Saved Settings" are automatically saved when the unit is rebooted or SETUP is pressed.
LAST	The switcher starts with the last loaded event. Note that to enable the Last Load function, an event must be loaded after setting to LAST.
0-99	The switcher starts with a selected event (0-99) loaded.

17. Sequence Operation

A sequence is a function for joining individual images into a sequential video and recalling it for playback in a single operation. Each sequence is composed of video frames called steps. To make sequences, create an initial step and save it to the sequence working memory, then create the next step and to save to the working memory and so on. Although the sequence data saved in the working memory is cleared and lost when the switcher is powered off, it can be kept and recalled by storing it to sequence memory. Up to 10 sequences of 60 steps at most for each can be saved to sequence memory.

Note that the sequence data is not a sequential video itself but a series of states on the control panel as of when the images were saved as steps. Therefore, the images that are displayed on the monitor during sequence playback may be different from those that appeared when the sequence was stored, if the input videos were different. However, the switch timings, key, picture-in-picture display, 3D and other effects will remain the same.

The flow diagram below shows the basic series of sequence operations.
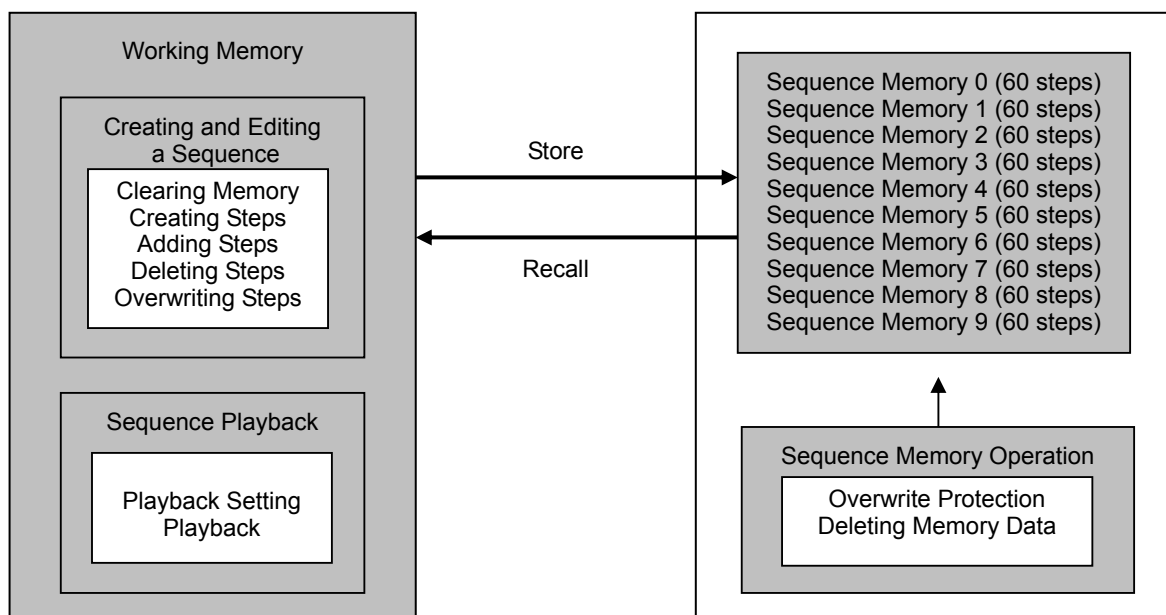
Functions and Information Available for Sequence Control	
XPT information for each bus (except AUX)	Bus Matte color information
Transition type settings for each bus	Key setting information
Transition direction settings	Pattern modify settings
PGM output bus information	Pattern number settings of bus assignments
NEXT TRANSITION settings	

Functions and Information Not Available for Sequence Control	
Event memory	Direct patterns
Still Store	SETUP menu settings
File operation	USER TRANS and ADV CTRL settings in the TRANS menu
Output destination of KEY3 and KEY4	

17-1. Sequence Operation Examples

17-1-1. Creating New Sequences

The operation example in this section shows how to create a new sequence in three steps and store it to "Sequence Memory 0."
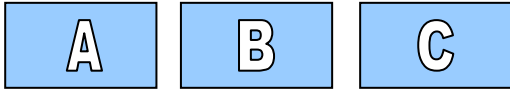
Creating a Sequence with the Keypad
(1) Press SEQ EDIT to change the Keypad to SEQ EDIT mode.
(2) Press 9 (NEW), and then press ENTER to clear the working memory.
(3) Create "Video A." Press 3 (ADD) to save "VIDEO A" (the current control panel status) to Step 1.
(4) Create "Video B." Press 3 (ADD).
(5) Create "Video C." Press 3 (ADD).
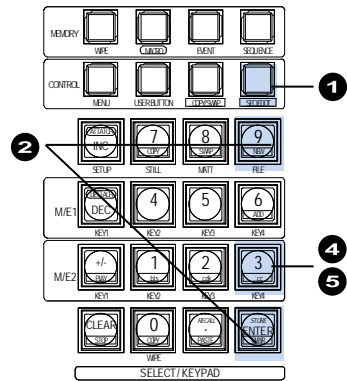
Pressing the SEQ EDIT button changes the Keypad to SEQ EDIT mode and enables the following function buttons: NEW, INS, ADD, OVWR(OVERWRITE), DEL, PASTE, CUT, COPY, INC, DEC, PLAY and STOP (See section 17-2-2. "SEQ EDIT Mode.")

Storing the Sequence
(1) Press SEQUENCE in the MEMORY block above the numeric keypad.
(2) Press STORE. The [SEQUENCE STORE] menu appears and displays the sequence information in the working memory.

```
SEQUENCE: TOTAL  STEP->3    : LOOP->OFF     :  1/1
STORE    : TOTAL  TIME->60  : DIR ->NOR     :
```

TOTAL STEP:	Number of steps in the sequence
TOTAL TIME:	Total playback time of the sequence (in frames)
LOOP:	Loop play On or Off
DIR:	Playback direction of the sequence (NOR: Normal, REV: Reverse)

(3) Press 0 . The sequence data in the working memory is stored to "Sequence Memory 0."
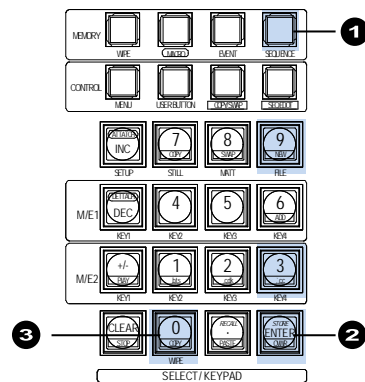
If a Sequence Memory has stored data:

When storing a sequence, the number buttons on the Keypad (0 to 9) are changed to the memory buttons that turn off if they have no data and turn on if they have stored data. To store the current setup sequence to the button that has sequence data, press the memory button (flashing) and then press the button. If another memory button is pressed before pressing the button a second time, the sequence is saved to the former button.

If sequence data cannot be saved to the stored memory button, the sequence memory is overwrite-protected. In such case, clear the overwrite protection of the sequence memory. (See section 17-3-1.)

17-1-2. Playing Back Sequences

The operation example in this section shows how to recall and play the sequence that was created in the previous section and saved to "Sequence Memory 0."

Recalling the Sequence
(1) Press SEQUENCE to change the Keypad to SEQUENCE mode.
(2) Press 0 to select "Sequence Memory 0."
(3) Press RECALL to recall the data that was stored in "Sequence Memory 0" to the working memory.

Pressing SEQUENCE in the MEMORY block changes the Keypad to SEQUENCE memory mode and enables the following memory and function buttons: memory buttons 0-9 and STORE, RECALL, INC, DEC, PLAY and STOP.

```
SEQUENCE: TOTAL STEP->3    : LOOP->OFF    : 1/2
RECALL   : TOTAL TIME->60  : DIR ->NOR    :
```
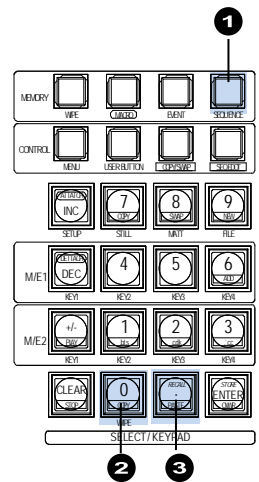
Play, Stop and Pause of Sequence
Press +/- (PLAY) to play back the sequence.
The sequence will stop playing when it comes to the end.
Pressing STOP(CLEAR) during playback stops playback
and the sequence returns to Step 1.
Pressing +/- (PLAY) during playback pauses the playback and
pressing the button again restarts playback from the point
at which it paused.

DIRECT mode allows quick playback of sequences (See the next section.)
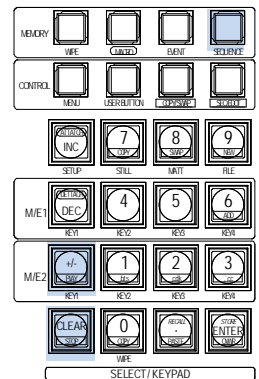
Looping Playback
The looping playback is possible in the following way.

(1) Press SEQ EDIT to display the [SEQ EDIT] menu.
(2) Turn F1 to set **LOOP** to ON.
(3) Pressing STOP(CLEAR) during playback stops playback and the sequence returns to Step 1.
    Pressing +/- (PLAY) during playback pauses the playback and pressing the button again restarts playback from the point at which it paused.

```
SEQ EDIT: LOOP  : DIR   : LINK  :TOTAL-D: 1/3
PLAY     : =ON  : =NORML: =OFF  : =60    :
```

17-1-3. Quick Recall (Direct Mode)

The operation example in this section shows how to recall the sequence that was saved to "Sequence Memory 0" using Direct mode.

(1) Press SEQUENCE to change the Keypad to SEQUENCE mode.
(2) Press 0 to select "Sequence Memory 0." A "beep" sound will be heard and the data that was saved in "Sequence Memory 0" is recalled.

> Before recalling sequences, Direct mode should be enabled in the following way.

Setting Direct Operation Mode to ON

(1) Press SEQUENCE to display the [SEQUENCE MEMORY] menu.
(2) Turn F1 to set **DIRECT** to ON.

```
SEQUENCE: DIRECT :  STEP->--/-- LOOP->--- :  1/2
MEMORY   : =ON    :  TIME->----/----       :
```
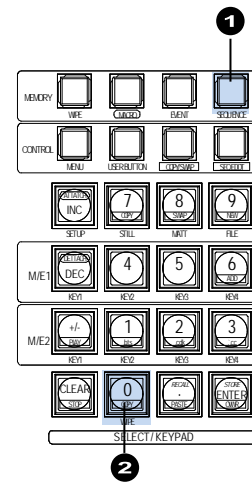
17-1-4. Playing Back Sequences Using Advanced Settings

Playing Sequences by Changing Bus Signal Selections
Sequence data includes that on bus signal selection states and are basically recalled on the control panel exactly the same that they were stored. For example, if Bus Button 1 was selected in the M/E1 PGM bus and Bus Button 2 in the M/E1 PST bus in the sequence, these buttons should be selected in the same way when recalling the sequence.
However, users can select 5 in the PGM and 6 in the PST when recalling the sequence.
To do this, follow the procedure below.

(1) Press SEQUENCE to display the [SEQUENCE MEMORY] menu.
(2) Press 0 to select "Sequence Memory 0."
(3) Press RECALL to recall the data that was stored in "Sequence Memory 0" to the working memory.
(4) Press SEQ EDIT to display the [SEQ EDIT] menu.
(5) Press the page down button twice to go to PAGE 3.
(6) Turn F1 to select ALL (all buses) or M/E1 BG.
(7) Turn F2 to set **XPT** to OFF.

```
SEQ EDIT:SELECT : XPT    : TRANS :INTERP : 3/3
CTRL ENA: =ALL   : =OFF   : =AUTO : =LINE :
```

(8) Press 5 in the M/E1 PGM row and press 6 in the M/E1 PST row.
(9) Press +/- (PLAY) to play back the sequence.

Playing Sequences without Specific Bus(es) or Using Manual Transitions
The sequences can be played back without M/E1 KEY1 and by using manual transitions for KEY2.
To do this, follow the procedure below.

(1) Open PAGE 3 in the [SEQ EDIT] menu.
(2) Set **SELECT** to ME1 K1 and **TRANS** to OFF.

```
SEQ EDIT:SELECT : XPT    : TRANS :INTERP : 3/3
CTRL ENA: =ME1K1: =OFF   : =OFF  : =LINE :
```

(3) Set **SELECT** to ME1 K2 and **TRANS** to MANU.

```
SEQ EDIT:SELECT : XPT    : TRANS :INTERP : 3/3
CTRL ENA: =ME1K2: =OFF   : =MANU : =LINE :
```

OFF	The selected bus is not played back.
AUTO (default setting)	The selected bus is automatically played back.
MANU (manual)	The transition for the selected bus should be performed manually by using the fader lever or the AUTO button.

Note that even if AUTO or MANU is set for a bus at **TRANS**, it cannot be performed if the **Fader Link** of the bus is set to ON.

◆ **Playing Sequences Using the Fader Lever**
The playback of sequences can be played back using the fader lever. To do this, follow the procedure below.

(1) Open PAGE 1 in the [SEQ EDIT] menu.
(2) Set **LINK** to ON.

```
SEQ EDIT: LOOP  : DIR   : LINK  :TOTAL-D: 1/3
PLAY    : =ON   : =NOR  : =ON   : =100   :
```

(3) Move the fader lever from end to end to play the sequence one time with the desired play time.

> Note that when the **Fader Link** for a bus is set to M/E1 or M/E2, fader operations cannot be performed if AUTO or MANU is set for the bus at **TRANS**. In such case, the looping playback cannot be performed, even if **LOOP** is set to ON,

◆ **Playing Sequences with the Fader Lever or the PLAY Button Using the Break Function**
The Break function can automatically pause sequence playback at a desired step. The setting example below shows how to set the Break function at Step 2 and how to play back the sequence with the AUTO button using the Break function.

(1) Open PAGE 2 in the [SEQ EDIT] menu.
(2) Select 2 at **STEP**.
(3) Set **BREAK** to ON.
(4) Set **BRK CTL** to EACH.

```
SEQ EDIT: STEP  : DUR   : BREAK :BRK CTL: 2/3
STEP    : = 2/ 3: =30   : =ON   : =EACH :
```

BRK CTL setting	BREAK setting	Description
OFF	---	The Break function is disabled at all steps.
EACH	OFF	The Break function is disabled at this step
	ON	The Break function is enabled at this step.
ALL	---	The Break function is enabled at all steps.

(5) Open PAGE 1 in the [SEQ EDIT] menu and set **LINK** to M/E1 or M/E2.

```
SEQ EDIT: LOOP  : DIR   : LINK  :TOTAL-D: 1/3
PLAY    : =ON   : =NORML: =M/E1 : =60    :
```

(6) Press +/- (PLAY) to start the sequence playback. The sequence will stop at Step 2. Press +/- (PLAY) again to restart the sequence. The sequence will be played back from Step 2 to the end. The sequence playback with break points is also performed with the fader lever in the same way.

First playback   Second playback
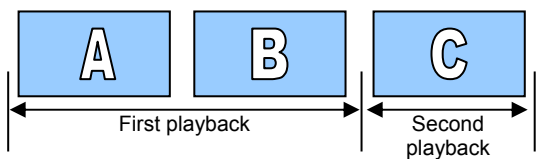
17-1-5. Editing Sequences: Adding or Inserting Steps

The operation example in this section shows how to recall "Sequence Memory 0" that was stored in section 17-1-1, edit the sequence by adding and overwriting steps to create a new sequence with four steps, and store it to "Sequence Memory 1."
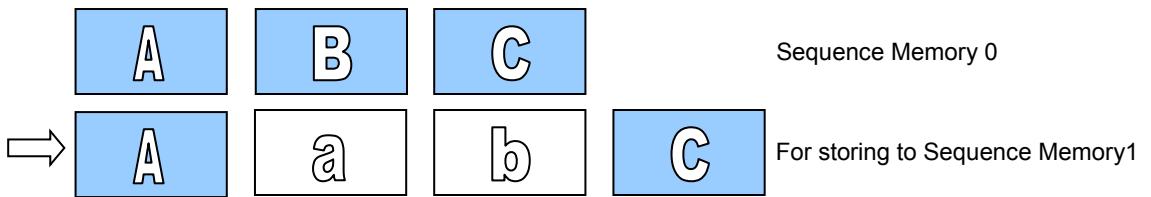
Sequence Memory 0

For storing to Sequence Memory1

◆ **Recalling the Sequence**
(1) Press SEQUENCE to display the [SEQUENCE MEMORY] menu.
(2) Press 0 to select "Sequence Memory 0."

```
SEQUENCE: TOTAL STEP->3    : LOOP->OFF    :  1/2
RECALL   : TOTAL TIME->60  : DIR ->NOR    :
```

(3) Press RECALL to recall the sequence data to the working memory.

> Pressing the SEQUENCE button changes the Keypad to SEQUENCE mode and enables the following memory and function buttons: memory button 0-9 and STORE, RECALL, INC, DEC, PLAY and STOP (See section 17-2-2. "SEQ EDIT Mode.")

◆ **Adding a New Step**
(1) Press SEQ EDIT to go to the edit point (Step 1).
(2) Create "Video a."
(3) Press SEQ EDIT to display the [SEQ EDIT] menu.
(4) Press 3 (ADD). "Video a" is inserted after Step 1.

Press ADD here.
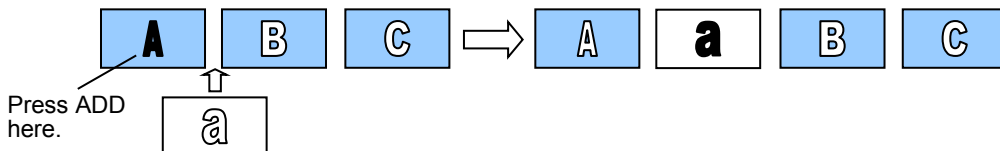
> The state of the control panel (output images) has not changed when recalling a sequence because the current step (edit point) is placed at Step 0 (standby). To begin editing the sequence, press INC or DEC to move the edit point.
>
> Pressing ADD inserts a new step **after** the edit point and one second is added to the total duration. Pressing INS inserts a new step at the midpoint **between** the edit point and the next step and the total duration remains the same.

Add

TOTAL DURATION

Insert

TOTAL DURATION
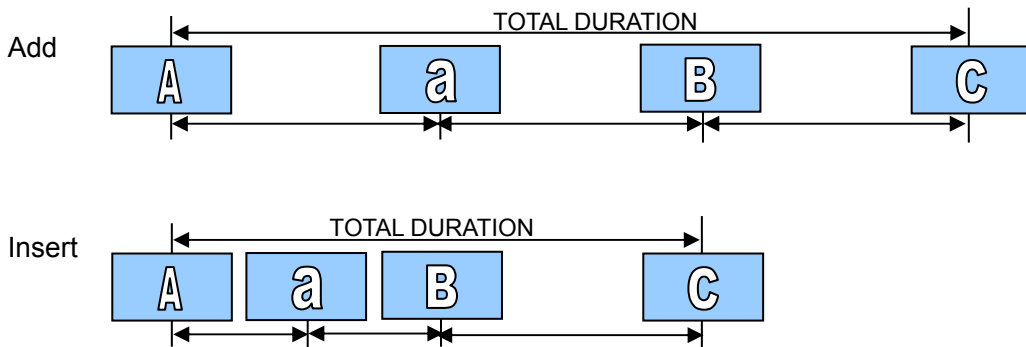
◆ Overwriting Step 3

(1) Press SEQ EDIT to change the Keypad to SEQ EDIT mode and display the [SEQ EDIT] menu.
(2) Press the page down button to go to PAGE 2. Verify the current step.
(3) Turn F1 to select 3 at **STEP** in the menu or press INC in the Keypad to go to Step 3.
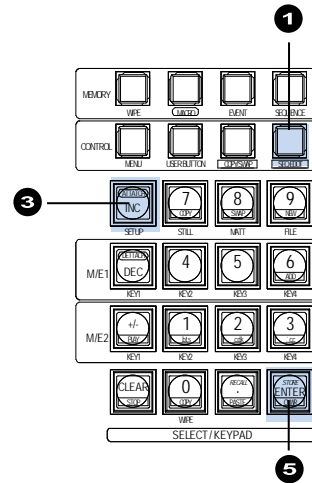

```
SEQ EDIT: STEP   :  DUR   :  BREAK :BRK CTL:  2/3
STEP     : = 3/ 4: =30   : =ON    : =OFF   :
```
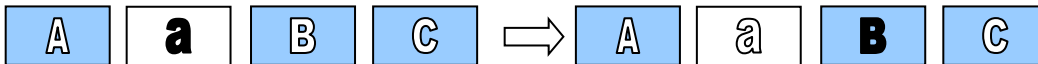

Pressing INC and DEC in the Keypad moves between steps.

(4) Create "Video b" for saving Step 3.
(5) Press OVERWRITE(ENTER) in the Keypad to replace Step 3.

Press ENTER here.
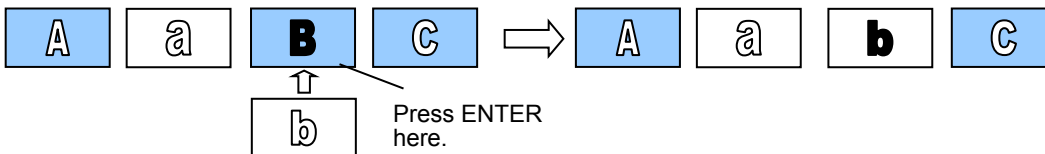
Playing Back the Sequence
Press +/- (PLAY) to play back and check the sequence contents.

Storing the Sequence
(1) Press SEQUENCE to display the [SEQUENCE MEMORY] menu.
(2) Press STORE. The [SEQUENCE STORE] menu appears, the current sequence information is displayed and the Keypad is set to Sequence Store mode.

```
SEQUENCE: TOTAL  STEP->4    : LOOP->ON      :  1/1
STORE    : TOTAL  TIME->120 : DIR ->NOR     :
```

(3) Press 1 .to store the current data in the working memory to "Sequence Memory 1."

154

17-1-6. Editing Sequences: Copying and Deleting Steps

This section explains how to copy, paste and delete steps. The operational example below shows how to create a sequence having 5 steps with the first and last steps the same.

| A | B | C | D | A |
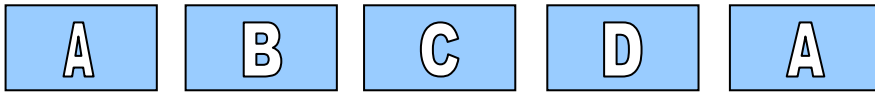
◆ **Creating a New Sequence**
(1) Press SEQ EDIT to change the Keypad to Sequence Edit mode.
(2) Press 9 (NEW), then ENTER to clear the working memory.
(3) Create "Video A." Press 3 (ADD) to save the current status to Step 1.
(4) Create "Video B" then press 3 (ADD).
(5) Create "Video C" then press 3 (ADD).
(6) Create "Video D" then press 3 (ADD).
(7) Press 3 (ADD) again to make the sequence that has 5 steps.

| A | B | C | D | **D** |
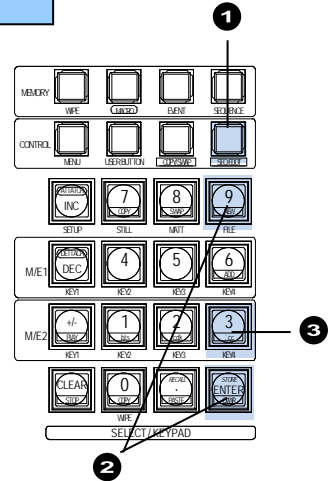
◆ **Copying and Pasting Step 1**
(1) Press DEC in the Keypad four times to go to Step 1.
(2) Press COPY to copy the data in Step 1.

| **A** | B | C | D | D |

Press COPY here.

(3) Press INC four times to go back to Step 5.
(4) Press PASTE. The copied step is inserted before Step 5.

| A | B | C | D | **D** |

Press PASTE here.

⇨ | A | B | C | D | A | **D** |
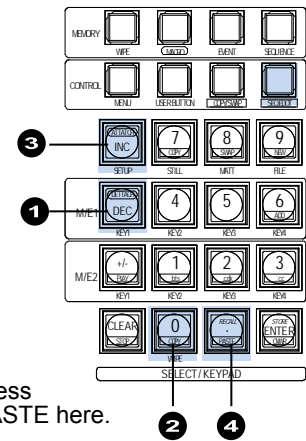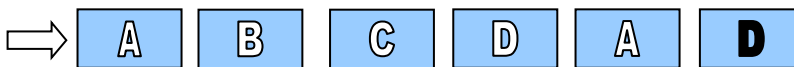
◆ **Deleting Step 6**
(1) Display PAGE 2 in the [SEQ EDIT] menu. Change **STEP** (edit point) to 6 (i.e., move to Step 6).
(2) Press 2(DEL), then ENTER to delete Step 6.

| A | B | C | D | **A** |

Deleting a step using DELETE automatically closes the intervals in front and back of the step.
Deleting a step using CUT keeps the intervals in front and back of the step.

155

17-1-7. Editing Sequences: Setting Interpolation and Duration
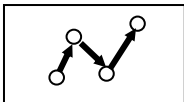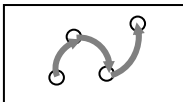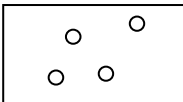
This section explains how to set the interpolation mode and the playback time using KEY1 as an example.

Smoothing Movements for KEY1 (Interpolation Mode)
At factory default settings, the movements between steps for the backgrounds and keys are linearly interpolated. For example, to smoothly interpolate steps for M/E1 KEY1, proceed as follows:

(1) Open PAGE 3 in the [SEQ EDIT] menu.
(2) Select ME1K1 at **SELECT**.
(3) Select SMOOTH at **INTERP** (interpolation).

```
SEQ EDIT:SELECT : XPT   : TRANS :INTERP : 3/3
CTRL ENA: =ME1K1: =OFF  : =AUTO : =SMOOT:
```


LINE(linear)	SMOOTH(curve)	CUT

Note that the transitions between the last step and the first step are performed by CUT during loop play. Therefore, the transitions between them look smoother when using the same data for the first and last steps.

Changing Playback Time
At factory default setting, the time intervals between steps are automatically set to 30 frames (for 60 Hz signals) or 25 frames (for 50 Hz signals).

(1) Display the [SEQ EDIT] menu. In the menu examples below the **TOTAL-D** (total duration) value is 120 on PAGE 1 and the **DUR** (duration) for Step 1 is 30 on PAGE 2.

```
SEQ EDIT: LOOP  : DIR   : LINK  :TOTAL-D: 1/3
PLAY     : =ON   : =NORML: =OFF  : =120   :
```

```
SEQ EDIT: STEP  : DUR   : BREAK :BRK CTL: 2/3
STEP     : =1    : =30   : =ON   : =OFF  :
```

(2) For example, change the duration for Step 4 to 60 (frames). The total duration of the sequence must be 150 (the sum of each step's duration).

TOTAL DURATION: 150

A	B	C	D	A
DUR: 30	DUR: 30	DUR: 30	DUR: 60	
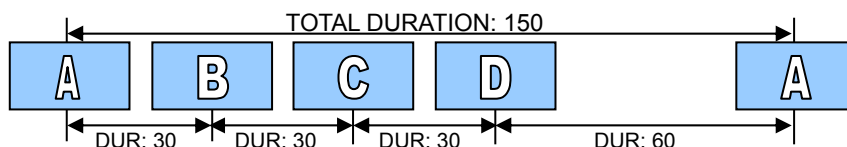
When changing **TOTAL-D** to 200, the duration time of each step automatically increases while keeping the ratios the same. The values for DUR in the menu, however, are not changed. In such case, they represent not the real values but the relative values (ratios).

17-2. Sequence Menu and Keypad Mode

In Sequence Operations the Keypad automatically changed its mode according to the displayed menu. The Keypad is in Sequence mode when the [SEQUENCE MEMORY], [SEQUENCE STORE] or [SEQUENCE RECALL] menu is displayed. The Keypad is in SEQ EDIT mode when the [SEQUENCE EDIT] menu is displayed.

17-2-1. SEQUENCE Mode

SEQUENCE mode is used for saving, recalling and deleting sequences and setting overwrite protection for each sequence memory.
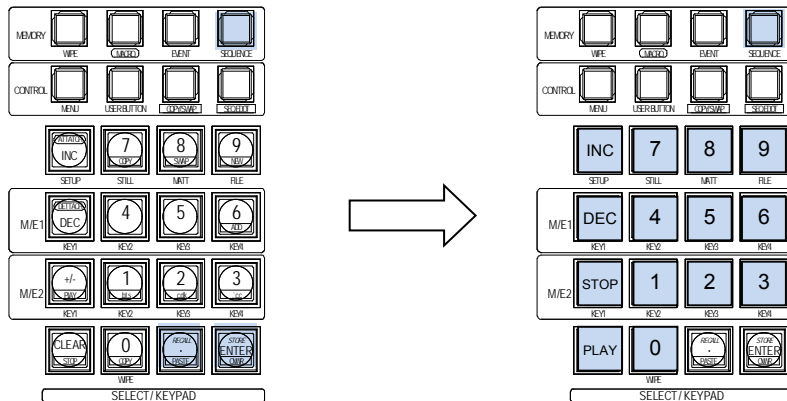
Button	Function	Refer to
INC (INCREMENT) DEC (DECREMENT)	Moves between steps.	17-1-5 17-1-6
PLAY	Plays back a sequence. Pressing the button during playback pauses the playback.	17-1-2
STOP	Stops sequence play.	17-1-2
0 to 9	Accesses Sequence Memory 0 to 9.	17-3

The SEQUENCE MEMORY menu
Pressing SEQUENCE in the MEMORY block opens the [SEQUENCE MEMORY] menu. This menu displays information of on the sequence working memory. Direct Operation mode can be set On/Off in this menu.

```
SEQUENCE: DIRECT :  STEP->5/5    LOOP->OFF   :  1/1
MEMORY   :  =OFF  :  TIME->0/200              :
```

Item	Description	Refer to
DIRECT	Sets Direct Operation mode to On or Off. If the mode is On, sequences can be quickly recalled.	17-1-3
STEP LOOP TIME	Displays information on the current data in the sequence working memory (the number of steps, the Loop play mode and the total duration)	

The SEQUENCE RECALL menu

In SEQUENCE mode, pressing a memory button that has data on the Keypad opens the [SEQUENCE RECALL] menu. This menu is used to recall a sequence to the sequence working memory. The overwrite protection for the sequence memories can also be set in this menu.

```
SEQUENCE: TOTAL STEP->10  : LOOP->OFF     :  1/2
RECALL   : TOTAL TIME->120 : DIR ->NOR      :
```

```
SEQUENCE: OVER WR: DELETE :         :       :  2/2
RECALL   : =DISBL: >OFF    :         :       :
```

Item	Description	Refer to
TOTAL STEP	Displays the number of steps in the sequence.	17-1-2
LOOP	Displays the Loop mode setting (On or Off) for the sequence.	
TOTAL TIME	Displays the play time of the sequence in frames.	
DIR	Displays the direction of the sequence play (normal or reverse).	
OVER WR	Sets the overwrite protection for the sequence On or Off.	17-3-1
DELETE	Deletes the sequence data in the sequence memory.	17-3-2

The SEQUENCE STORE menu

Pressing STORE in SEQUENCE mode opens the [SEQUENCE STORE] menu. This menu is used to check the sequence data when storing current data in the working memory to sequence memory.

```
SEQUENCE: TOTAL STEP->10  : LOOP->OFF     :  1/1
STORE    : TOTAL TIME->120 : DIR ->NOR      :
```

Item	Description
TOTAL STEP	Displays the number of steps in the sequence.
LOOP	Displays the Loop mode setting (On or Off) for the sequence.
TOTAL TIME	Displays the play time of the sequence in frames.
DIR	Displays the direction of sequence play (normal or reverse).

17-2-2. SEQ EDIT Mode

The [SEQ EDIT] menu is used to edit the sequence in the working memory with the Keypad in SEQ EDIT mode

Item	Description	Refer to
INC (INCREMENT) DEC (DECREMENT)	Moves between steps.	17-1-5 17-1-6
PLAY	Plays back a sequence. Pressing the button during playback pauses the playback.	17-1-2
STOP	Stops sequence play.	17-1-2
NEW	Creates a new sequence by clearing the working memory data.	17-1-1 17-1-5
INS	Adds a step to the sequence. The step is inserted at the midpoint between the edit point (current position) and the next step.	17-1-5
ADD	Adds a step to the sequence. The step is added after the edit point (current position) and the total duration is increased.	17-1-1 17-1-5
OVWR (OVERWRITE)	Overwrites the current step (where the edit point is placed) with the data in the working memory.	17-1-5
CUT	Deletes a step while keeping the intervals in front and back of the step.	17-1-6
DEL	Deletes a step by closing the intervals in front and back of the step.	17-1-6
COPY PASTE	Used to copy and paste step data. To copy and paste steps, press COPY at the step to be copied, move to the step in front of which the copied step is to be inserted, then press PASTE.	17-1-6

The SEQUENCE EDIT menu

```
SEQ EDIT: LOOP  : DIR   : LINK  :TOTAL-D: 1/3
PLAY    : =OFF  : =NORML: =OFF  : =100  :
```

```
SEQ EDIT: STEP  : DUR   : BREAK :BRK CTL: 2/3
STEP    : = 1/ 5: =30   : =OFF  : =OFF  :
```

```
SEQ EDIT:SELECT : XPT   : TRANS :INTERP : 3/3
CTRL ENA: =ALL  : =ON   : =AUTO : =LINE :
```

Item	Description	Refer to
LOOP	Sets Loop play ON or OFF.	17-1-2
DIR	Selects the direction of playback between Normal and Reverse.	
LINK	Sets whether sequences are played back with the fader lever or not. If set to M/E1 or M/E2, sequence playback can be performed with the fader lever.	17-1-4
TOTAL-D	Sets total duration of the sequence.	17-1-7
STEP	Specifies the current position (step) in the sequence. Users can also move between steps by pressing INC and DEC in the Keypad.	
DUR	Sets the duration of the current step.	
BREAK	Enables or disables the Break point on each step.	17-1-4
BRK CTL	Enables or disables the Break function. It can set the break point on all steps.	
SELECT XPT TRANS INTERP	Sets the signal selection and the interpolation mode for each bus or all buses (backgrounds and keys).	17-1-4 17-1-7

17-3. Sequence Memory Operation Examples

17-3-1. Setting Overwrite Protection on Sequence Memory 2

(1) Press SEQUENCE to display the [SEQUENCE MEMORY] menu.
(2) Press 2 to select "Sequence Memory 2." The button light turns on and the [SEQUENCE RECALL] menu appears.
(3) Press the page down button to go to PAGE 2 of the menu.
(4) Press F1 to change **OVER WR** (overwrite) to DISBL (disable) to set "Sequence Memory 2" to be protected from data change.

```
SEQUENCE: OVER WR: DELETE :              :  2/2
RECALL   : =DISBL:  >OFF   :              :
```

17-3-2. Deleting "Sequence Memory 2"

(1) Press SEQUENCE to display the [SEQUENCE MEMORY] menu.
(2) Press 2 to select "Sequence Memory 2." The button light turns on and the [SEQUENCE RECALL] menu appears.
(3) Press the page down button to go to PAGE 2 of the menu.
(4) Press F2 to set **DELETE** to ON and press F2. The data in "Sequence Memory 2" is cleared.

```
SEQUENCE: OVER WR: DELETE :              :  2/2
RECALL   : =ENABL:  >ON    :              :
```

17-4. Backing up Sequence Data

The following procedure shows how to save the sequence data to USB memory stick.

(1) Insert a USB flash memory into the USB port.
(2) Press MENU in the CONTROL block, then press FILE to open the [FILE] top menu.
(3) Turn F1 to select SAVE, and then press F1 or the page down button to open the [FILE - SAVE] menu.
(4) Turn F1 to select ALL (or SEQ) to the **EXT** (File Extension) item.
(5) Turn F3 to select data (or "SEQDAT02.seq" for example). Press F3 to save the data to USB memory.

```
FILE    : EXT    : CTRL  : DATA.ALL     : 1/1
SAVE    : =ALL   : =SAVE :              : 101MB
```

(6) When the data is sent to the flash memory, the message "SAVE?" will appear. Press F3 again to store the data to the flash memory. A "beep" sound will be heard when the data is saved.

18. Macros

The Macro function allows users to perform a sequence of recorded operations with the single push of a button. The keypad is used to record and execute macros. The macro memory data can be backed up and then restored from USB flash memory drives. (See section 19 "File Operations.")

18-1. Recording Macros

Up to 40 macros (4 pages with 10 macros per page) can be stored in memory.

◆ **Recording Macros (basic):**
(1) Press MACRO in the MEMORY block. The [MACRO MEMORY] menu is displayed and the Keypad switches to MACRO mode.
(2) Turn F1 to select a macro page in the [MACRO MEMORY] menu. PAGE 0 has Macro 0-9, PAGE 1 has Macro 10-19, and the last page, PAGE 3 has Macro 30-39.

```
MACRO    : PAGE   : DIRECT : PAGECLR:         : 1/3
MEMORY   : =0     : =OFF   : =OFF   :         :
```

(3) Press STORE (ENTER) on the Keypad to start recording.
(4) Perform the operations that you want to record as a macro.
(5) Press STORE (ENTER) again to stop recording.
(6) Press a number button (0-9) on the Keypad to store the macro.
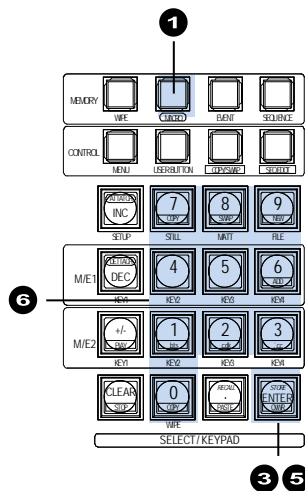
If a macro is already saved to a button:
When STORE is pressed, the button lights (0 to 9) are off if no macros have been saved. The number buttons light up if macros have been saved. If you press a button to which a macro has been saved, it flashes. Pressing the button again overwrites the macro. If you press another button that has no saved macro before overwriting, the macro will be saved to that button. If you cannot overwrite data, change **OVER WR** to ENABL (ENABLE) in the [EVENT-RECALL] menu. (See section 18-5-1. "Overwrite Protection.")

◆ **Data not saved in macro memory**

Reboot operation
FILE menu operations

18-2. Executing Macros

(1) Press MACRO in the MEMORY block.
(2) Turn F1 to select an event page in the [MACRO MEMORY] menu.

```
MACRO     : PAGE   : DIRECT : PAGECLR:        : 1/3
MEMORY    : =0     : =OFF   : =OFF   :        :
```

(3) Press the number button to which the needed data is to be stored.

> If DIRECT mode is ON, macros are executed by just pressing number buttons on the Keypad. See "To Set DIRECT to ON" below.

(4) Press RECALL to execute the macro.

◆ **To Set DIRECT to ON:**
When pressing MACRO in the MEMORY block, the [MACRO MEMORY] menu is automatically displayed.
Turn F2 to set **DIRECT** to ON.

```
MACRO     : PAGE   : DIRECT : PAGECLR:        : 1/3
MEMORY    : =0     : =ON    : >CRNT  :        : L=0
```
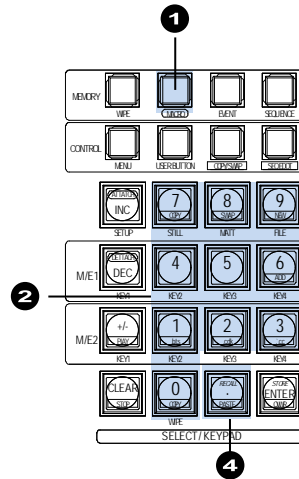
18-3. Operation Example 1

◆ **Recording Actions as Macro 09**
Let's perform the following actions and record them as Macro 09 (PAGE 0, No. 9).
   -Select M/E2 PGM for AUX1.
   -Select M/E2 PREV for AUX2.
   -Press KEY1 AUTO in the M/E2 transition section.

(1) Press MACRO.
(2) Press STORE (ENTER) on the keypad to start recording.

(3) Press AUX1 in the Bus Select section.
(4) Press M/E2 PGM.
(5) Press AUX1 in the Bus Select section.
(6) Press M/E2 PREV .
(7) Press KEY1 (AUTO) in the M/E2 transition section.

(8) Press STORE (ENTER) to stop recording.
(9) Press 9. The actions are saved as Macro 09.
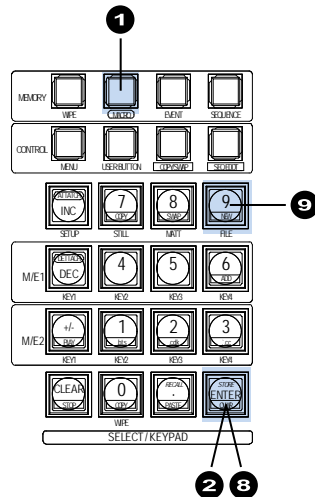
◆ **Executing Macro 09**
(1) Press MACRO.
(2) Press 9 on the keypad. (The macro is executed if DIRECT is set to ON.)
(3) Press RECALL to execute Macro 09.

Note that if the KEY1 image is already displayed on the program screen, it will be cleared from the screen.

18-4. Operation Example 2

◆ Recording Action as Macro 10

Let's perform the following actions and record them as Macro 10 (PAGE 1, No. 0).

    -Select Button 12 on the M/E2 PST bus.
    -Set the M/E2 background transition type to MIX.
    -Perform the M/E2 background transition.

(1) Press MACRO.
(2) Turn F1 to select PAGE 1 in the [MACRO MEMORY] menu.
(3) Press STORE (ENTER) on the keypad to start recording.

(4) Press 12 on M/E2PST.
(5) Press BKGD then MIX in the M/E2 transition section
(6) Press the fader lever from end to end.

(7) Press STORE (ENTER) to stop recording.
(8) Press 0. The actions are saved as Macro 10.
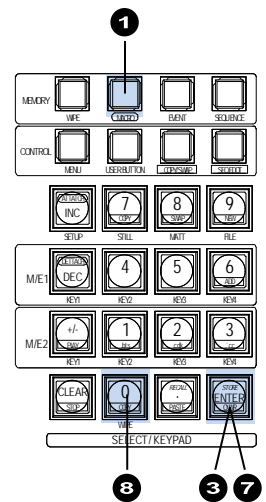
◆ Executing Macro 10

(1) Press MACRO.
(2) Turn F1 to select PAGE 1 in the [MACRO MEMORY] menu.
(3) Press 0 on the keypad. (The macro is executed if DIRECT is set to ON.)
(4) Press RECALL to execute Macro 10.

NOTE
Note that macros hold only values that are changed during recording. For fader movements, which are successively changed, macros memorize the last stopped position. Therefore, to perform the same actions as those recorded with a fader, return the fader to its previous position before a macro is executed. Also note that macros cannot record the position of two faders at the same time.

◆ Executing Macro 10 Using a Macro Attach Button

Let's attach Macro 10 to Button 11 on the M/E2 PGM bus.

(1) Press MACRO.
(2) Turn F1 to select PAGE 1 in the [MACRO MEMORY] menu.
    Set DIRECT to OFF in the menu, if it is ON.
(3) Press 0 on the keypad.
(4) Press ATTACH on the keypad.
(5) Press Button 11 on M/E2 PGM.
(6) Press ATTACH again.

Press 11.
The M/E2 PGM video is changed to that assigned to Button 11
and Macro 10 is performed.
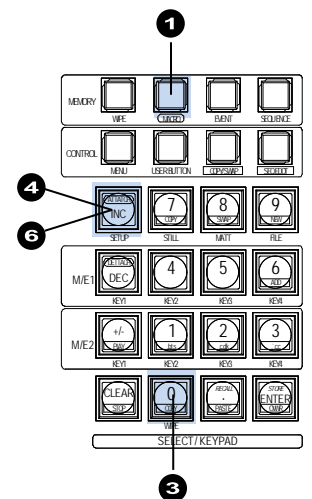
See section 18-6-3. "Macro Attach and Macro Detach" for details.

18-5. Macro Memory Operation

18-5-1. Overwrite Protection

(1) Press MACRO in the MEMORY block to display the [MACRO MEMORY] menu.
(2) Turn F1 to select a memory page. Set **DIRECT** to OFF, if it is ON.

```
MACRO   :  PAGE   : DIRECT  : PAGECLR:        :   1/3
MEMORY  :  =0     :  =OFF   :  >CRNT  :        :   L=0
```

(3) Press a macro number button on the keypad. The [MACRO RECALL] menu will appear.
(4) Turn F1 to select DISABLE to set write protection on the number button.

```
MACRO   : OVER WR: DELETE  :  NAME = MCRO1   :  1/1
RECALL  :  =DSBLE :  >OFF   :  STEP = 60      : P. 00
```

                                    Page No.

18-5-2. Naming Macros

Macros are named as MCR 00 to MCR 39 by default. Names for registered macros can be changed using the menu as shown below. Up to 6 characters are available.

(1) Press MACRO in the MEMORY block to display the [MACRO MEMORY] menu and press the page down button to go to PAGE 2.
(2) Turn F1 to select a macro number button.

```
MACRO    : SELECT : NAME    :        :        :  2/3
MEMORY   :  =12    :  =MCR12 :        :        :
```

          Page No.   Memory No.

(3) Turn F2 to move to the target character. ("R" in the example below.)
(4) Once the character is displayed in reverse video, press F2.
(5) Turn F2 to select a new character. (The "0" is selected instead of "R" in the example below.) Alphanumeric characters and symbols are available.
(6) Turn F2 to confirm the selection.

```
  : NAME    :          : NAME    :          : NAME    :
  :  =MCR12:          :  =MCR12:          :  =MC012:
        ❸                   ❹                   ❺ ❻
```

(7) Repeat Step (3) to (6) to change the macro name.

18-5-3. Deleting Macros

◆ **To Delete Data for a Macro**
(1) Press MACRO in the MEMORY block to display the [MACRO MEMORY] menu.
(2) Turn F1 to select a memory page. Set **DIRECT** to OFF, if it is ON.

```
MACRO    :  PAGE   : DIRECT : PAGECLR:        :  1/3
MEMORY   :  =0     :  =OFF   :  >CRNT :        :
```

(3) Press the number button from which data is to be deleted. The button will begin flashing when pressed.
(3) Press a lit number button in which data is stored. The [MACRO RECALL] menu will appear.
(4) Turn F2 to set to ON, then press F2. The data stored in the memory button will then be cleared.

```
MACRO    : OVER WR: DELETE :  NAME = MCRO1   :  1/1
RECALL   :  =ENBLE:  >ON    :  STEP = 60      : P. 00
```
                                                    Page No.

◆ **To Delete Data for a Macro Page**
(1) Press MACRO in the MEMORY block to display the [MACRO MEMORY] menu.
(2) Turn F1 to select a memory page.
(3) Turn F3 to select CRNT under **PAGECLR**, then press F3. The data stored in the memory page will then be cleared.

```
MACRO    :  PAGE   : DIRECT : PAGECLR:        :  1/3
MEMORY   :  =1     :  =OFF   :  =CRNT :        :
```

◆ **To Delete All Macro Data**
(1) Press MACRO in the MEMORY block to display the [MACRO MEMORY] menu.
(2) Turn F3 to select ALL under **PAGECLR**, then press F3. All macro data will then be cleared.

```
MACRO    :  PAGE   : DIRECT : PAGECLR:        :  1/3
MEMORY   :  =0     :  =OFF   :  =ALL  :        :
```

18-6. Macro Execution Buttons

18-6-1. Assigning Macros to Bus Buttons

Macros can be assigned to bus buttons in the same way as video signals.
The example below shows how to assign Macro 05 to Bus Button 3, and to execute the macro.

◆ **Assigning Macro 05 to Bus Button 3**
(1) Open the [SETUP - INPUT - ASSIGN] (1/6) menu.
(2) Turn F1 to select Bus Button 3.
(3) Turn F3 to select MCR05 (Macro 05).

```
INPUT    : BUTTON  : SIGNAL NAME    : INHIBIT: 1/6
OU ASSGN: =03      : =MCRO5: =MCROO: =OFF    :
```

◆ **Executing Macro 05**
Press Button 3 on the M/E1, M/E2 or KEY/AUX bus to execute Macro 05. Bus Button 3 on all bus rows blink while the macro is being executed..

18-6-2. Changing the KEY/AUX Bus Buttons to Macro Buttons

Stored macros can be executed using the KEY/AUX bus buttons and a USER button, to which the MACRO BUS SELECT function is applied. This chapter shows how to execute **Macro 00** using **USER 3** and **Button 1 on the KEY/AUX** bus as an example.

◆ **To Assign the MACRO BUS SELECT function to USER 3**
(1) Press USER BUTTON in the CONTROL block above the keypad.
(2) The [USER BUTTON] menu will appear.
(3) Turn F1 to select OU-3. INC (USER 3) on the upper left corner of the keypad will blink.
(4) Turn F2 to select OTHER, then turn F3 to select MACRO BUS SELECT.

```
USER     : SELECT : TYPE   : FUNC(F3)       : 1/2
BUTTON   : =OU-3  : =OTHER: =MACRO BUS SELECT
```

◆ **To Assign Macros to the KEY/AUX Bus Buttons**
(1) Press MACRO in the MEMORY block.
(2) The [MACRO MEMORY] menu will appear. Go to PAGE 3.
(3) Turn F1 to select a button on the KEY/AUX bus. Turn F3 to select a macro to be assigned to the bus button. (As factory default, Macro 00 is assigned to Button 01 in KEY/AUX, 01 to 02 and so on.)

```
MACRO    : BUTTON : MACRO/NAME     :         : 3/3
BUS ASGN: =01     : =OO  =MCROO    :
```

◆ **To Execute Macro 00 Using Button 1 in KEY/AUX**
(1) Press USER BUTTON in the CONTROL block above the keypad
(2) Press INC (USER 3) on the keypad. (The KEY/AUX bus is changed to Macro mode.)
(3) Press 1 in the KEY/AUX busto to perform Macro 00.
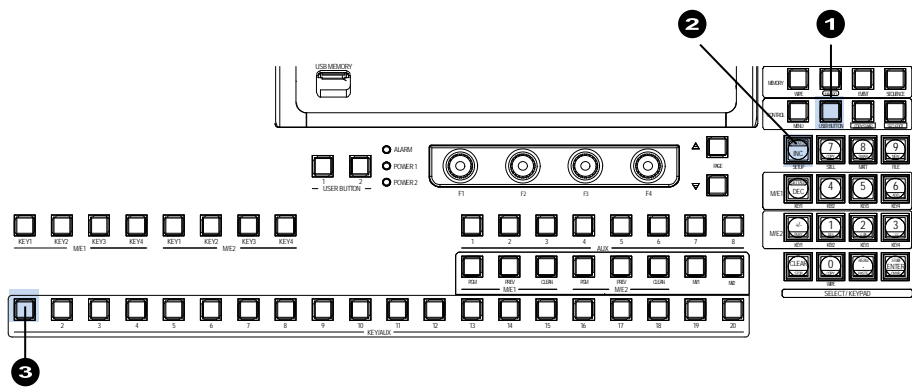
IMPORTANT

To disable Macro mode in the KEY/AUX bus, press a bus selection button (KEY1 to 4 or AUX1 to 8.)

18-6-3. Macro Attach and Macro Detach

Any button on the control panel can be used as a macro execution button. To do so, assign a macro to a button (Macro Attach). Once a macro is attached to a button, the macro is executed whenever the button is pressed. Macro Detach allows you to remove macros from buttons.

This chapter shows how to attach Macro 01 to KEY1 AUTO in the M/E1 transition as an example.

◆ **To Assign Macro 01 to M/E1 KEY1 AUTO**

(1) Press MACRO in the MEMORY block.
(2) Turn F1 to select **PAGE** 0 in the [MACRO MEMORY] menu.
    Set **DIRECT** to OFF, if it is set to ON.
(3) Press 1 on the keypad to select Macro 01.
(4) Press ATTACH on the keypad.
(5) Press KEY1 AUTO in the M/E1 transition section.
(6) Press ATTACH on the keypad again.

Press KEY1 AUTO.
KEY1 is set to ON (or OFF) and Macro 01 is executed.
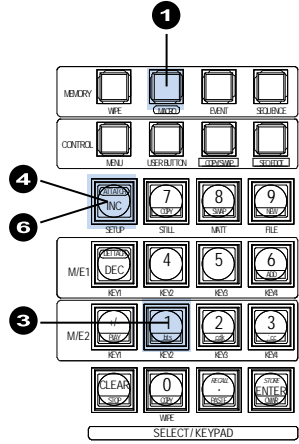
◆ **To Remove the Macro from KEY1 AUTO**

(1) Press MACRO in the MEMORY block.
(2) Press DETACH on the keypad.
(3) Press KEY1 AUTO in the M/E1 transition section.
    (You can also press other buttons to be detached here.)
(4) Press DETACH on the keypad again.
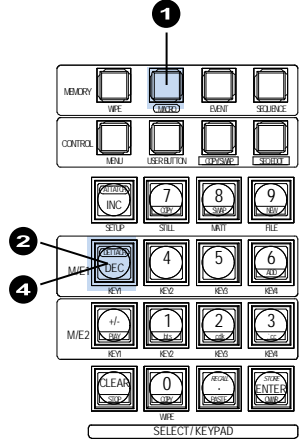
19. File Operations

The switcher is capable of storing operational data to USB flash memory and of recalling and downloading previously saved data for application to production operations. Operational data including system settings, wipe settings, stills, bus settings and events can be all saved to and downloaded from the USB flash memory.

19-1. USB Flash Memory

- See "Factory Tested USB Flash Memory Drives" in Appendix 1 for available USB flash drives. Inserting and removing of USB drives should be performed slowly and firmly.
- The access lamp on the USB flash memory blinks while saving or reading data. Check access to the USB flash memory before and while performing the operations. **Do not** remove the USB flash memory while the access lamp is flashing. This could corrupt the stored data or damage the USB flash memory device.
- The remaining storage space on the USB memory device is displayed at the bottom right-hand side in the FILE menu.

USB port
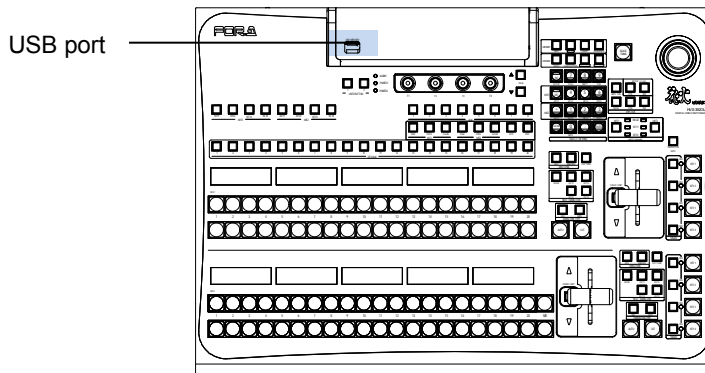
19-2. Supported Files

See "Appendix 1. Supported Files" for details on supported files.

IMPORTANT
To use USB memory sticks with the switcher, format them in FAT or FAT32 file system.

19-3. Saving Data to USB Flash Memory

This section explains how to save panel settings to USB memory by using a "data.all" file as an example.

(1) Insert a USB flash memory into the USB port.
(2) Press MENU in the CONTROL block, then press FILE to open the FILE top menu.
(3) Turn F1 to select SAVE, and then press F1 or the page down button to open the [FILE - SAVE] menu.

```
FILE      : >LOAD      >SAVE       >UPDATE
TOP       :
```

(4) Turn F1 to select ALL to the **EXT** (File Extension) item.
(5) Turn F3 to select data. (See section 19-5 "Moving between Directories in the USB Flash Memory.") Press F3 to save the data to the USB memory.

```
FILE      : EXT    : CTRL   : DATA.ALL     : 1/1
SAVE      : =ALL   : =SAVE  :              : 101MB
```

(6) When the data is sent to the flash memory, the message "SAVE?" will appear. Press F3 again to store the data to the flash memory. A "beep" sound will be heard when the data is saved.

◆ **If the same file exists in the USB flash memory:**
A pop up window appears and asks if you would like to overwrite the existing file. Turn F3 to select CANCEL, OVERWR(overwrite) or RENAME.

◆ **To Rename the File:**
If you wish to rename the file to save it, turn F3 to select RENAME and refer to section 19-7. "Renaming Files in the USB Flash Memory" to give a new name to the file.

IMPORTANT
When pressing a control push-button, press it down lightly and release it within 1 sec. Note that if you press and hold a control button down for more than 1 sec., the related operation will be cancelled. Do not remove the USB flash memory while the access lamp is flashing. This could corrupt the stored data or damage the USB flash memory.
The time is also recorded when data is saved to a USB flash memory according to the switcher internal clock. Set the date and time if it is not properly set. (See section 21-7. "Setting Date and Time.")

19-4. Loading Data from USB Flash Memory

19-4-1. To Load Setting Data

This section explains how to load setting data to the USB memory by using a "data.all" file as an example.

(1) Insert a USB flash memory into the USB port.
(2) Press MENU in the CONTROL block, then press FILE to open the FILE top menu.
(3) Turn F1 to select LOAD, and then press F1 or the page down button to open the [FILE - LOAD] menu.

```
FILE      : > LOAD      > SAVE       > UPDATE
TOP       :
```

(4) Turn F1 to select ALL to the **EXT** (File Extension) item.
(5) Turn F3 to select data. (See section 19-5 "Moving between Directories in the USB Flash Memory.")

```
FILE     : EXT    : LOAD    : <DIR>..          : 1/2
LOAD     : =ALL   :         :          DATA: 101MB
```

(6) Press F3 (or F2) to load the setting data to the control panel.

IMPORTANT
Once the saved system data (files with "all" or "sys" extension) finishes loading, you will have to restart the switcher. (The unit should be powered off then powered ON.) The system data is applied only after the switcher is restarted.
Be careful when loading system data (setting files with "all" or "sys" file extension), because the switcher and control panel cannot be connected each other if different connection settings are loaded.

19-4-2. To Download Image Files

When loading a jpeg, targa or bitmap file from the USB flash memory, you can select a centered or tiled format as well as a normal one. This section explains how to download the "sample.jpg" file to STILL1 as an example.

(1) Insert a USB flash memory into the USB port.
(2) Press MENU in the CONTROL block, then press FILE to open the FILE top menu.
(3) Turn F1 to select LOAD, and then press F1 or the page down button to open the [FILE - LOAD] menu.
(4) Turn F1 to select JPG under **EXT** (File Extension).
(5) Turn F2 to select STL1 under **LOAD** as a upload destination.
(6) Turn F3 to select sample. . (See section 19-5 "Moving between Directories in the USB Flash Memory.") Press F3 to confirm the file selection.

```
FILE     : EXT    : LOAD    : <DIR>..          : 1/2
LOAD     : =JPG   : =STILL1 :         sample: 101MB
```

(7) Press F3 (or F2) to load the image file to STILL1 memory.

◆ **Image files can be uploaded to the following memory buffers in the switcher:**

Upload destination (LOAD setting using F2)	Description
STILL1 to STILL4	Uploads an image file to a still memory buffer.
STIL1C to STIL4C	Uploads an image file to a still memory buffer as a centered format.
STIL1T to STIL4T	Uploads an image file to a still memory buffer as a tiled format.
FMEM1 to FMEM4	Uploads image files to a clip memory buffer.
IN01 to IN16 (INPUT STILL)	Uploads an image file to an input frame memory (a frame buffer ordinary used by the Frame Synchronizer) Once an image is stored to an input buffer, instead of input video, the uploaded still image will continued to be displayed from this input. To display the input video again on the input bus, perform CLEAR in the [INPUT STILL] menu. (See section 5-5. "INPUT STILL (Freezing Input Video).")

19-5. Moving between USB Flash Memory Directories

The directories in USB flash memory are displayed after "<DIR>", e.g. <DIR>JPEG, toward the upper right of the FILE menu as shown below.

Directory name

```
FILE    : EXT   : LOAD  : <DIR>JPEG     : 1/2
LOAD    : =JPG  : =STIL1:      sample:  101MB
```

File name

In all FILE menus you can move to other directories in the USB flash memory in the following way.

(1) In the [FILE - SAVE] menu, turn F2 to select PATH in the FILE menu, and then press F2. The menu display changes to the directory menu.
(2) If you want to go to a subdirectory of the current directory, turn F3 to select the directory name and press F3. If you want to go to a higher directory, select <DIR>...

NOTE
New directories cannot be prepared in the switcher. If you need a new directory, prepare it in the computer previously.

19-6. Deleting Files in USB Flash Memory

The user can delete files in USB flash memory using the FILE menu operation.

(1) Open the [FILE - LOAD] menu. If you are in the [FILE - SAVE] menu, press the page up button to go to the FILE top menu and move to the [FILE - LOAD] menu.
(2) Press the page down buttonto go to the [FILE - LOAD - DATA] menu.
(3) Turn F1 to select the extension of the file you wish to delete from the flash memory.
(4) Turn F3 to select the file to be deleted.
(5) Turn F2 to select DELETE under the **CTRL** item and press F2.
(6) Turn F3 to select ON, then press F3. A "beep" sound will be heard when the data is deleted.

```
FILE    :  EXT   :  CTRL  :  <DIR>JPEG      :  2/2
DATA    :  =JPG  :  =DELET:            STILL1:  101MB
```

19-7. Renaming Files in USB Flash Memory

The user can input an identifying name of up to 16 alphanumeric characters for any file stored to USB flash memory. Existing files can also be named / renamed using the following procedure.

(1) Open the [FILE - LOAD] menu. If you are in the [FILE - SAVE] menu, press the page up button to go to the FILE top menu and move to the [FILE - LOAD] menu.
(2) Press the page down buttonto go to the [FILE - LOAD - DATA] menu.
(3) Turn F1 to select the extension of the file you wish to rename in the displayed file list.
(4) Turn F2 to select RENAME.
(5) Turn F3 to select which file you wish to rename in the displayed file list.
(6) Press F2 to start renaming
(7) Press F3 to select the character to be changed in the selected file. Turn F4 to change the currently chosen character.

```
FILE    :  EXT   :  CTRL             STILL1:  2/2
DATA    :  =JPG  :  =RENAM:  SELECT:  CHARA:  101MB
```

(8) Repeat steps (7) to change each character in the name of the selected file.
(9) When all needed characters are input, press F2. A "beep" sound will be heard when the changed name is saved as the new file name.

20. Color Correction

The switcher has two color correction filters for each M/E. They can be assigned to inputs, M/E outputs and keys. In addition, Clip adjustment allows users to set signal level limits for all color correction outputs. The following features are available:

- Max. 4 color correction filters (2 for each M/E)
- Separate or group adjustment for RGB White/Black/Gamma levels.
- Three Color Correction modes available: BAL(balanced), DIF(differential) and SEPIA.
- Two Clip modes available: Y/C and RGB(GBR)
- Color Correction and Clip settings can be saved to events.

20-1. Color Correction

20-1-1. Assigning a Bus or Signal to a Color Corrector

(1) Press MENU in the CONTROL block, then SETUP to display the [SETUP] top menu.
(2) Turn F1 to select INPUT, then press F1 to display the [SETUP - INPUT] menu.
(3) Turn F1 to select CC, then press F1 to display the [SETUP - INPUT - CC] menu.
(4) Turn F1 to select a color corrector. Channel 1 of M/E1 (M1Ch1) is selected in the menu example below.

```
INPUT    : SELECT :  TYPE  : SIGNAL : ENABLE :  1/6
CC TOP   : =M1Ch1:  =INPUT:  =IN01 :  =OFF   :  M1-1
```
Selected channel

(5) Turn F2 and F3 respectively to select a signal to be corrected. For example, to assign STILL 1 to the channel, set **TYPE** to INPUT and **SIGNAL** to STIL1. To assign A BUS, an M/E combined signal, to the channel, set **TYPE** to BUS and **SIGNAL** to A BUS. (See the tables below.)

```
INPUT    : SELECT :  TYPE  : SIGNAL : ENABLE :  1/6
CC TOP   : =M1Ch1:  =INPUT:  =STIL1:  =OFF   :  M1-1
```

M/E	SELECT (channel) setting	TYPE setting	SIGNAL setting
M/E1	M1Ch1 M1Ch2	INPUT	IN01 - 28 STIL1 - 4
		BUS	A BUS, B BUS KEY1, KEY2, KEY3, KEY4
M/E2	M2Ch1 M2Ch2	INPUT	IN01 - 28 STIL1 - 4
		BUS	A BUS, B BUS KEY1, KEY2, KEY3, KEY4

If both INPUT and BUS type channels are applied to the same signal, the BUS type channel settings are used.

20-1-2. Adjusting Colors

Now the selected video signal can be processed using Color Correction. Check and adjust the signal using a waveform monitor and vectorscope. Also use an SDI monitor to compare between pre- and post-processed images.

(1) In the [SETUP - INPUT - CC] menu, turn F4 to set **ENABLE** to ON to enable color correction.

```
INPUT    :SELECT : TYPE   :SIGNAL :ENABLE :  1/6
CC TOP   : =M1Ch1: =INPUT: =IN01 :  =ON     : M1-1
```

(2) Go to the [SETUP - INPUT - CC] menu PAGE 2.
(3) Turn F1 to select the color correction mode from BAL (balanced), DIF (DIFFERENTIAL) and SEPIA (Sepia) under **MODE**.

```
INPUT    :        WHITE LEVEL      : MODE  :  2/6
CC WHITE: R=100% : G=100% : B=100% :  =BAL   : M1-1
```

<If Balance or Differential is selected:>
Set signal levels for WHITE, BLACK and GAMMA in PAGE 2 to 4. Set levels for R,G and B components respectively using F1 to F3 for each. In the CC GAMMA menu, turning F4 allows you to select the gamma curve type.

```
INPUT    :        WHITE LEVEL      : MODE  :  2/6
CC WHITE: R=100% : G=100% : B=100% :  =BAL   : M1-1
```

```
INPUT    :        BLACK LEVEL      :       :  3/6
CC BLACK: R=100% : G=100% : B=100% :         : M1-1
```

```
INPUT    :        GAMMA LEVEL      : CURVE :  4/6
CC GAMMA: R=100% : G=100% : B=100% :  =CENTR: M1-1
```

Page	Parameter	Description	Default	Setting range
Page 2 WHITE	R / G / B	Adjusts R, G and B. (See p. 175.)	100%	0% to 200%
Page 3 BLACK	R / G / B	Adjusts R, G and B. (See p.176.)	100%	0% to 200%
Page 4 GAMMA	CURVE	Selects gamma curve. (See p.176.)	CENTER	CENTER, BLACK, WHITE
	R / G / B	Adjusts R, G and B.	100%	0% to 200%

<If Sepia is selected:>
Use F1 and F3 to adjust **SAT** and **HUE** in PAGE 2.

```
INPUT    :        SEPIA LEVEL      : MODE  :  2/6
CC SEPIA: S=100% :          : H=100  :  =SEPIA: M1-1
```

Page	Parameter	Description	Default	Setting range
Page 2 SEPIA	SAT	Adjusts R, G and B.	25	0 to 100
	HUE	Adjusts hue.	-160	-179 to 180

◆ **Balance and Differential Modes**

When adjusting a video signal in balanced or in differential mode, the associated waveforms will appear differently as shown below. A 100% color bar signal is used in the following example.

(1) The figures below illustrate the change of the signal waveform when the WHITE level is adjusted along the R axis. This also applies to the G or B axis.

BALANCE mode

When set to a negative value: Default   When set to a positive value:

DIFFERENTIAL mode
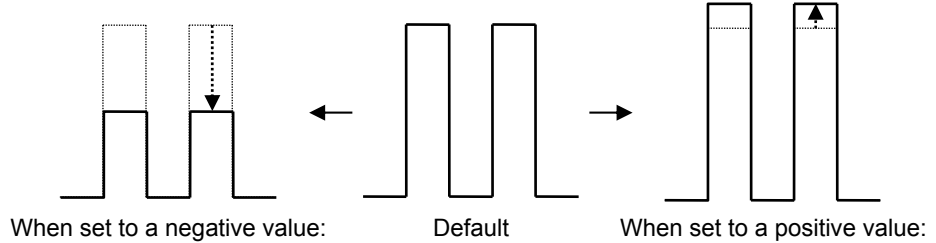
When set to a negative value: Default   When set to a positive value:
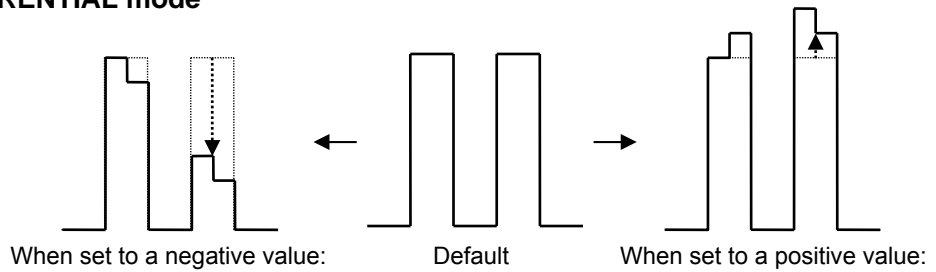
Notice that on vectorscope displays the signal level transition in the above example is different between balanced and differential modes when observing the R, G or B axis positive territories.

(2) The figures below illustrate the change in signal waveform when the BLACK level is adjusted along the R axis in balanced or differential mode. These changes will also be applied to the G or B axis.

BALANCE mode

When set to a negative value: Default   When set to a positive value:

DIFFERENTIAL mode
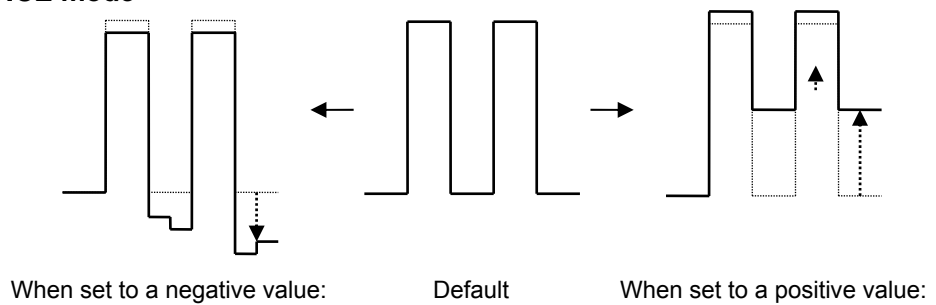
When set to a negative value: Default   When set to a positive value:
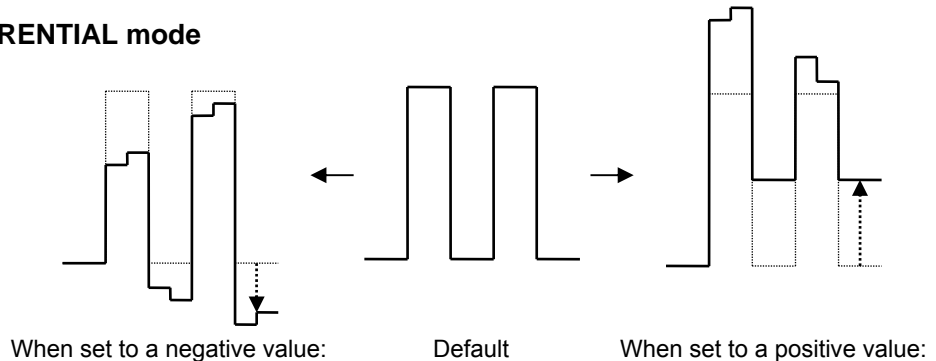
◆ Gamma Curve

When performing gamma corrections, the following three adjustment type are available:

Center: Gamma curve is weighted toward mid tones (near 50%).
White: Gamma curve is weighted toward Highlights (near 75%).
Black: Gamma curve is weighted toward Shadows (near 25%)
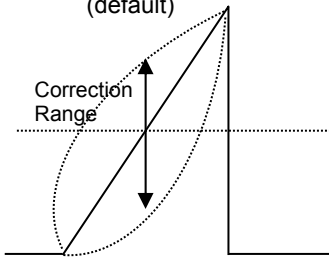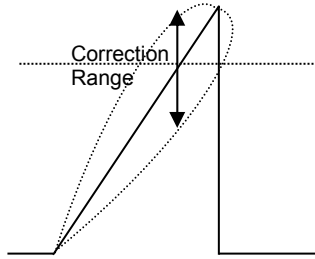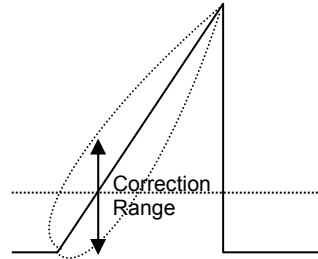
Gamma Correction Curve Adjustments

20-2. Clip Adjustment

Signal level thresholds for all color correction outputs (Clip adjustment) can be adjusted in Y/C or RGB mode. If Clip adjustment is disabled (ENABLE to OFF), default values are applied to output signals.

<To Set Clip in Y/C Mode:>
(1) Open [SETUP - INPUT - CC] menu PAGE 5.
(2) Turn F4 to set **ENABLE** to Y/C.
(3) Turn F1 to F3 to set each parameter limit respectively.

```
INPUT     :          Y/C CLIP        : ENABLE :  5/6
CC CLIP : YW=109%: YB=-7%  : C=111% :  =ON      :
```

Parameter	Description	Default	Setting
YW	Sets the WHITE limit in Y signal. (See below in this page.)	109%	50% to 109%
YB	Sets the BLACK limit in Y signal. (See the next page.)	-7%	-7% to 50%
C	Sets the WHITE limit in C signal.	111%	50% to 111%

<To Set Clip in RGB Mode:>
(1) Open [SETUP - INPUT - CC] menu PAGE 5.
(2) Turn F4 to set **ENABLE** to RGB.
(3) Turn F1 to F3 to set each R, G and B limit for WHITE in PAGE 5 and for BLACK in PAGE 6.

```
INPUT     :      RGB WHITE CLIP      : ENABLE :  5/6
CC CLIP : R=300%  : G=300%  : B=300% :   =RGB    :
```

```
INPUT     :      RGB BLACK CLIP      : ENABLE :  6/6
CC CLIP : R=-200%: G=-200%: B=-200%:   =RGB    :
```

Page	Parameter	Description	Default	Setting
Page 1 WHITE	R / G / B	Sets the WHITE limit using R, G and B. (See below.)	300%	50% to 300%
Page 2 BLACK	R / G / B	Sets the WHITE limit using R, G and B. (See the next page.)	-200%	-200% to 50 %

◆ **Y/C Mode and RGB Mode**
   Y/C mode

   Y White Clip
   Adjustable Range 50 to 109%
   Default setting: 109%
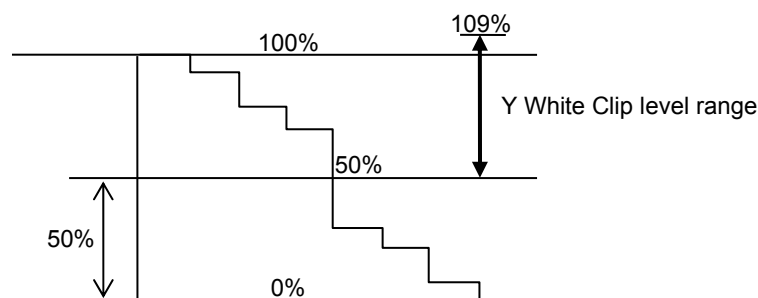
100% color bars when 100% white

Y Black Clip
Adjustable range: -7 to 50%
Default setting: -7%)

100% color bars when 0% Black
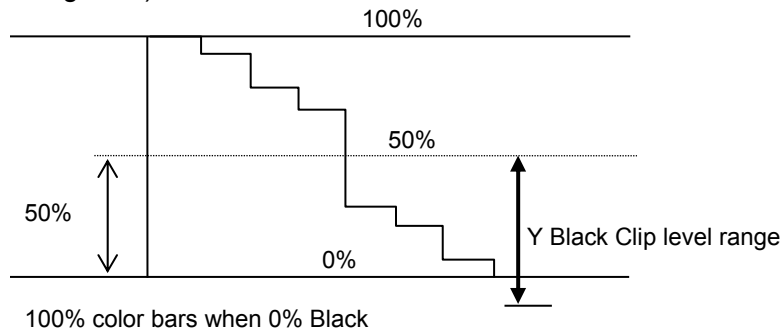
◆ **RGB mode**
Once "RGB" mode is selected for clips, YPbPr input signals are converted to RGB signals in the switcher. The converted RGB signals are processed so as not to exceed the RGB gamut range set per RGB White and Black Clip menu parameters.
The processed RGB signals are then converted again to YPbPr format. This correction is used to eliminate out-of RGB gamut problems.

White and Black cllip setting ranges for RGB Clip adustments are shown in the figure below.

RGB Clip Adjustment
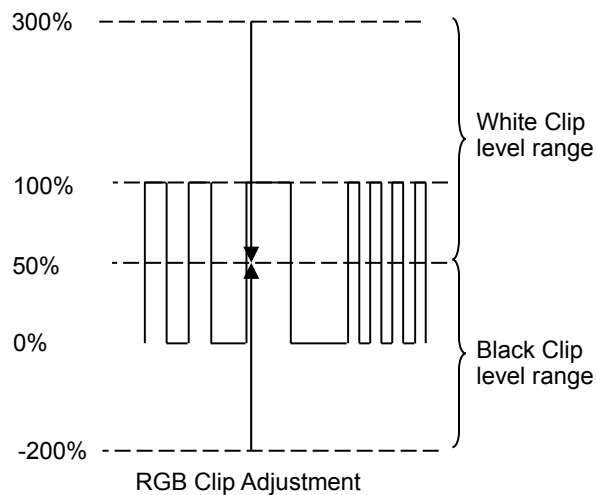
21. System Setup Settings

21-1. Selecting System Signal Format

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP top menu.
(2) Turn F1 to select SYSTEM, then press F1 or the page down button to open the [SETUP - SYSTEM] menu.
(3) Turn F1 to select FORMAT, then press F1 or the page down button to open the [SETUP - SYSTEM - FORMAT] menu.

```
SETUP    : >FORMAT  >REF I/O >ARCNET   >ETHERNET
SYSTEM   : >RS-422  >TIME    >INIT      >REBOOT
```

(4) Turn F1 to select the TV format to be used in the switcher. Turn F3 to select the aspect ratio.

```
SYSTEM   :    FORMAT    : ASPECT : SW TMNG: 1/1
FORMAT   : =1080/59.94i  : =16:9 : =ANY  :
```

(5) Press the page up button to go back to the [SETUP - SYSTEM] menu.
(6) Turn F1 to select REBOOT and then press F1. Press the ENTER button in the SELECT/KEYPAD block to reboot the system.

```
SETUP    : >FORMAT  >REF I/O >ARCNET   >ETHERNET
SYSTEM   : >RS-422  >TIME    >INIT      >REBOOT
```

(7) The selected system format is applied to the switcher after rebooting.

21-2. Crosspoint Switch Timing

The switcher can be set when and where crosspoints are switched.

(1) Open the [SETUP - SYSTEM - FORMAT] menu. (See the procedure above.)
(2) Turn F4 to set the switcher timing at the **SW TMNG** item.

```
SYSTEM   :    FORMAT    : ASPECT : SW TMNG: 1/1
FORMAT   : =1080/59.94i  : =16:9 : =ANY  :
```

Signal Format	Setting	Description
1080i/59.94, 50 525/60 625/50	ODD	Switches crosspoints in odd fields.
	EVEN	Switches crosspoints in even fields.
	ANY	Switches crosspoints at any time when the commands are issued.
720p/59.94, 50	No1	Switches crosspoints in odd frames.
	No2	Switches crosspoints in even frames.
	ANY	Switches crosspoints at any time when the commands are issued.
1080PsF/29.97, 25, 24, 23.98	---	Switches crosspoints at the same time regardless of setting.

21-3. Selecting Reference Signal

The switcher provides reference input, its loop-through and output connectors in the GENLOCK section on the rear panel.

21-3-1. To Set Reference Input

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP top menu. Turn F1 to select SYSTEM, then press F1 or the page down button to open the [SETUP - SYSTEM] menu.
(2) Turn F1 to select REF I/O, then press F1 or the page down button to open the [SETUP - SYSTEM - REF IN] menu.
(3) Turn F1 to select a reference signal to be input to the switcher between Black Burst and Tri-level Sync.
(4) Adjust the horizontal phase under **H PHS**.

```
SYSTEM  :  TYPE  :  H  PHS :              :  1/2
REF  IN  :  =B_B  :  =0        :              :
```

21-3-2. To Set Reference Output

(1) Press the page down button in the [SETUP - SYSTEM-REF IN] menu to go to the [SETUP - SYSTEM - REF OUT] menu.
(2) Turn F1 to select a reference signal to be output from the switcher between Black Burst and Tri-level Sync.
(3) You can adjust the horizontal phase of the reference signal under **H PHS** and the vertical phase under **V PHS**.

```
SYSTEM  :  TYPE  :  H  PHS :  V  PHS :        :  2/2
REF  OUT  :  =B_B  :  =0        :  =0        :        :
```

21-4. Adjusting Video Signal Levels

21-4-1. Proc Amp

The switcher provides the following Proc Amp features.

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP top menu. Turn F1 to select INPUT, then press F1 or the page down button to open the [SETUP - INPUT] menu.
(2) Turn F1 to select PROC AMP, then press F1 or the page down button to open the [SETUP - INPUT - PROC AMP] menu.
(3) Turn F1 to select the input to be adjusted.
(4) Turn F4 to set **ENABLE** to ON to enable the PROC AMP feature.
(5) You can adjust the luminance level under **LumGain** and the black level under **Setup**.

```
INPUT    : SELECT : LumGain: Setup : ENABLE :  1/3
PROC AMP: =INO4 :  =1.00 :  =0     :  =ON    :
```

(6) Press the page down button to go to PAGE 2.
(7) You can adjust the chrominance level under **ChmGain** and the color under **Hue**.

```
INPUT    : SELECT : ChmGain:  Hue    : ENABLE :  2/3
PROC AMP: =INO4 :  =10.00:  =0.0   :  =ON    :
```

21-4-2. Video Level Clip

To maintain the desired signal level after adjusting the video levels with the Proc Amp, use the Video Level Clip function to adjust the upper and lower limits of YPbPr color space. Note that Video Level Clip can be applied only when the Proc Amp is enabled.

(1) Open the [SETUP - INPUT - PROC AMP] menu. (See section 21-4-1. "Proc Amp.")
(2) Turn F1 to select an input signal to be corrected.

```
INPUT    : SELECT : LumGain: Setup : ENABLE :  1/3
PROC AMP: =INO4 :  =1.00 :  =0     :  =ON    :
```

(3) Press the page down button twice to go to PAGE 3.
(4) You can set the limit of signal levels under **WHT-Lv**, **BLK-Lv** and **Chroma** respectively.

```
INPUT    : WHT-Lv : BLK-Lv : Chroma :        :  3/3
 CLIP    :  =1019 :  =4     :  =1100 :        :
```

21-5. Safety Area Markers

Various markers indicating the safety area, the center of the screen, and the aspect ratio can be displayed on the desired output.

(1) Open the [SETUP - OUTPUT] menu.
(2) Turn F1 to select MARKER, then press F1 or the page down button to open the [SETUP - OUTPUT - MARKER] menu.
(3) Turn F1 to select a video output.

    OUT1, OUT2   (SDI OUTPUT1, SDI OUTPUT2)
    AUX1 to AUX6   (AUX1 to AUX6)
    C-Ch1, C-Ch2   (Ch1 and Ch2 on the option slot C)
    D-Ch1, D-Ch2   (Ch1 and Ch2 on the option slot D)

(4) Turn F2 to set to ON then press F2 to enable the Marker function.

```
OUTPUT   : SELECT : ENABLE : MARKER : SIDECUT:  1/2
MARKER   : =AUX1  : =ON     : =BOX   : =OFF   :
```

Safety Area Marker
To display the safety area marker in the selected output, first select the type of marker under the MARKER item in the [SETUP - OUTPUT - MARKER] menu from BOX and HOOK. (See the figures in the bottom of the page.) Then go to PAGE 2, select an aspect ratio and set the marker size.

```
OUTPUT   : SELECT : ENABLE : MARKER : SIDECUT:  1/2
MARKER   : =AUX1 : =ON     : =BOX   : =OFF   :
```

```
OUTPUT   : ASPECT :  SIZE  : CENTER :       :  2/2
MARKER   : =16:9   : =85%  : =ON    :       :
```

Center Marker
To display the center marker in the selected output, set the **CENTER** item to ON in PAGE 2 of the [SETUP - OUTPUT - MARKER] menu. (See the figures in the bottom of the page.)

```
OUTPUT   : ASPECT :  SIZE  : CENTER :       :  2/2
MARKER   : =16:9 : =85%    : =ON    :       :
```

Side Cut Display
To display the Side Cut image converting the aspect ratio from 16:9 to 4:3, select the display type under the **SIDECUT** item. Available types are LINE, BLACK and HALF. (See the figure in the bottom of the page.)

```
OUTPUT   : SELECT : ENABLE : MARKER : SIDECUT:  1/2
MARKER   : =AUX1 : =ON     : =OFF   : =BLACK:
```
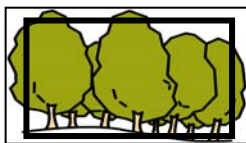
MARKER: BOX
ASPECT: 16:9
SIZE: 85%
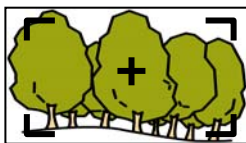
MARKER: HOOK
ASPECT: 16:9
SIZE: 85%
CENTER: ON
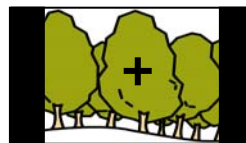
MARKER: OFF
SIDECUT:BLACK
CENTER: ON

21-6. Ancillary Data

The switcher allows users to pass, substitute or blank the ancillary data in the Program (Clean) and Preview video. Ancillary data in the current video stream is once cleared, then the same or different data inserted. The switcher can also be set to pass or blank the ancillary data in the AUX outputs. The ancillary data operation is set in the [SETUP - OUTPUT - ANCI] menu. Ancillary data does not pass through all outputs as factory default setting.

Ancillary data in input video cannot be passed through if **FS** (input frame synchronizer) is set to ON or **RESIZE** is enabled. To pass ancillary data, input the video synchronized with the genlock signal and set **FS** to OFF. Note that ancillary data in SD inputs cannot be used when the switcher operates in HD mode.

21-6-1. M/E Outputs

◆ **Program (Clean) Outputs**
(1) Open [SETUP - OUTPUT - ANCI] menu PAGE 1.
(2) Turn F1 to select an M/E.

To Blank the Ancillary Data Space
Set **PGM SWAP** to OFF (default).

```
OUTPUT  : SELECT :   PGM  SWAP    : PREV  SW:  1/2
ANCI  SWP: =M/E1 :  =OFF      Lv=50 :  =OFF   :
```

To Pass Through Ancillary Data
Set **PGM SWAP** to EACH. The Lv (level) item selects the point at which the new data is to be inserted, from 0-100. Setting **Lv** to 50 passes ancillary data through from the halfway point of the background transition.

```
OUTPUT  : SELECT :   PGM  SWAP    : PREV  SW:  1/2
ANCI  SWP: =M/E1 :  =EACH     Lv=50 :  =OFF   :
```

To Replace Data with Ancillary Data in an AUX output
Ancillary data in program outputs can be replaced with ancillary data in AUX outputs.
To change data in the M/E1 background to that in AUX1, set the menu as shown below. (The ancillary data will be replaced from the halfway point of the transition.)

```
OUTPUT  : SELECT :   PGM  SWAP    : PREV  SW:  1/2
ANCI  SWP: =M/E1 :  =AUX1     Lv=50 :  =OFF   :
```

◆ **Preview Outputs**
Ancillary data for the M/E preview output can be processed in the same way as that for program outputs. Set **PREV SW** to OFF, EACH, or AUX1 to AUX8.

The ancillary data for M/E2 outputs are set in the same way as for M/E1 outputs on PAGE 2 in the [SETUP - OUTPUT - ANCI] menu.

```
OUTPUT  : SELECT :   PGM  SWAP    : PREV  SW:  1/2
ANCI  SWP: =M/E1 :  =AUX1     Lv=50 :  =OFF   :
```

21-6-2. AUX and Optional Outputs

Ancillary data for AUX outputs are set on PAGE 2 of the [SETUP - OUTPUT - ANCI] menu. Choose an output for setting under **SELECT**. Then select ON (pass) or OFF (blank).

```
OUTPUT   : SELECT  : ENABLE :                    :  2/2
ANCI THR:  =AUX1 :   =ON      :                    :
```

21-7. Setting Date and Time

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP top menu. Turn F1 to select SYSTEM, then press F1 or the page down button to open the [SETUP - SYSTEM] menu.
(2) Turn F1 to select TIME, then press F1 or the page down button to open the [SETUP - SYSTEM - TIME] menu.

```
SETUP    : >FORMAT   >REF I/O  >ARCNET    >ETHERNET
SYSTEM   : >RS-422   >TIME      >INIT       >REBOOT
```

(3) If you need to change the date, turn F1 to select Month, Day or Year, then turn F1 to change the setting.
(4) If you need to change the time, turn F3 to select Hour, Minute or Second, then turn F3 to change the setting.

```
SYSTEM   :  DATE(mm/dd/yy): TIME[10: 20: 10]  :  1/1
TIME     :  =Jul/14/10     :  =10: 20: 20      :
```

NOTE
The date and time are used for the multiviewer clock and recording data backup time. Note that if the switcher is turned OFF within 100 hours (or less if it is not fully charged), date and time data will be cleared. In such case, reset the date and time.

21-7-1. Setting Time Using SNTP (Time) Server

The switcher time can be synchronized to a time (SNTP) server using the Simple Network Time Protocol (SNTP).
To synchronize the time to a SNTP server time, enter the IP address of your SNTP server, set the time zone, then update the time manually. After time settings are completed, it is recommended to turn on automatic updates (at start-up and/or fixed time).

The SNTP server time may not be correct due to the network delay or other reasons.To improve the time precision, locate a SNTP server in your local network zone.

◆ **Setting the IP address of SNTP Server**
(1) Open [SETUP - SYSTEM - TIME] menu PAGE 3.
(2) Press F1 to highlight the first octet (192 in the menu example above) of the IP address.

```
SYSTEM   : SNTP SERVER IP ADDRESS : UPDATE :  3/4
TIME     :  =192. 168. 000. 011        :  >EXEC :
```

(3) Turn F1 to change the value and press F1.
(4) Repeat Steps (2) and (3) to set the server IP address.

◆ Time Zone Setting
The SNTP server provides the UTC (Cooridinated Universal Time). To display the correct local time, set your time zone.

(1) Open [SETUP - SYSTEM - TIME] menu PAGE 2.
(2) Turn F3 to set the time zone offset value.

```
SYSTEM  :1st CHK:SUMMER :TIME ZONE      : 2/4
TIME    : =OFF  : =OFF  : =UTC[  0:00]  :
```

◆ Manual Time Update
(1) Open [SETUP - SYSTEM - TIME] menu PAGE 3.
(2) Press F4. A short-beep sound will be heard and the switcher time will be updated.

```
SYSTEM  :SNTP SERVER IP ADDRESS :UPDATE : 3/4
TIME    : =192.168.000.011      : >EXEC :
```

◆ Automatic Time Upade
To update time at the switcher start-up:
Set **1st CHK** to ON in [SETUP - SYSTEM - TIME] menu PAGE 2.

```
SYSTEM  :1st CHK:SUMMER :TIME ZONE      : 2/4
TIME    : =ON   : =OFF  : =UTC[  9:00]  :
```

To update time at the fixed time:
Set the update time under **UPDATE TIME** in [SETUP - SYSTEM - TIME] menu PAGE 4.
The **INTRVL** (INTERVAL) parameter allows you to set OFF, 1HOUR, 3HOUR, 6HOUR, 12HOUR and1DAY, and to update the time at the set interval starting from the time set in the **UPDATE TIME**.

```
SYSTEM  :UPDATE TIME   :INTRVL :        : 4/4
TIME    : =12:00       : =3HOUR :        :
```

◆ Summer Time Setting
The SUMMERT is set to ON in [SETUP - SYSTEM - TIME] menu PAGE 4, the time will be set one-hour advanced in relation to the standard time.

```
SYSTEM  :1st CHK:SUMMER :TIME ZONE      : 2/4
TIME    : =ON   : =ON   : =UTC[  9:00]  :
```

21-8. Buzzer, Brightness and Screen Saver

The brightness of the display and control panel buttons as well as the buzzer volume, can be adjusted in the menu. You can also set the start time of the screen saver shown on the menu display.

(1) Open the [SETUP - PANEL] menu.

```
SETUP    : >UTILITY >TRS CTRL
PANEL    :
```

(2) Turn F1 to select UTILITY, then press F1 or the page down button to open the [SETUP-PANEL-UTILITY] menu.

```
PANEL    : BUZZER : S-SAVER: SW/VFD : BUSDSP :  1/1
UTILITY  : =OFF   : =1      : =8      : =6      :
```

Buzzer:	Sets the buzzer volume.
Screen Saver:	Sets the start time of the screen saver in minutes. Set to OFF if you do not want to use the screen saver.
Switch/VFD	Sets the brightness of the VFD display and buttons on the control panel.
Bus Display	Sets the brightness of signal displays in the panel bus section.

22. USER Button

User buttons can be assigned to specific menu pages and used as shortcuts or specific functions buttons. Follow the procedure below to assign the desired menu page or function to buttons.

22-1. USER Button Operation

The following 18 user buttons on HVS-392OU/ROU and 16 on HVS-392WOU are available.

◆ **USER BUTTONS1 and 2 (below the menu display) on HVS-392OU/ROU**
   USER BUTTONS1 to 16 on HVS-392WOU
Pressing a button lets you open the desired menu page or perform the desired function. In the factory default setting, the button can be set to enable or disable GPI IN triggers.

◆ **How to Use 16 User buttons on the SELECT/KEYPAD block of the HVS-392OU/ROU (in USER BUTTON mode)**
(1) Press USER BUTTON in the CONTROL block above the numeric keypad to change the Keypad to User Button mode.
(2) Press a user button on the Keypad to open a desired menu page or perform a desired function.

HVS-392OU/ROU
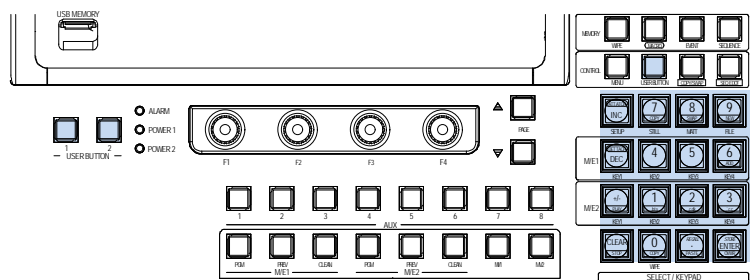
HVS-392WOU
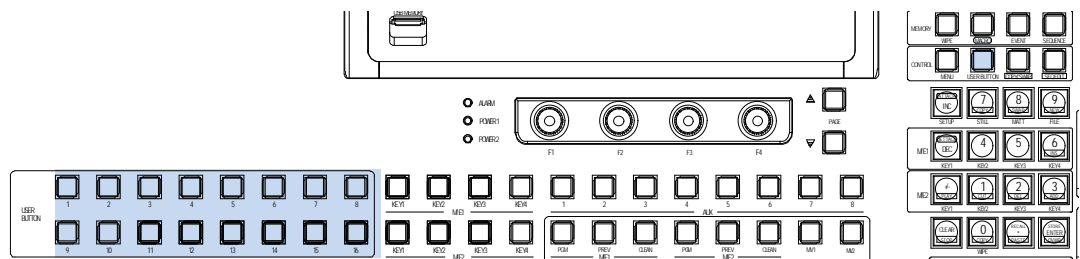
NOTE
As the factory default setting, no menu page or functions are assigned to user buttons on the Keypad. Assign a desired menu page or a function following the procedure below.

USER Button Default Assignments

Button	Default Setting
USER BUTTON 1 (OU-1)	GPI IN ENABLE
USER BUTTON 2 (OU-2)	EDITOR ENABLE
USER BUTTON 3 and later	NONE

22-2. USER Button Settings

(1) Press USER BUTTON in the CONTROL block to display the [USER BUTTON] menu.
(2) Turn F1 to select a USER button for use. The selected USER button blinks.
(3) Select MENU or the function type under **TYPE**.

```
PANEL   : SELECT : TYPE  : FUNC (F3)        : 1/2
USER BTN: = 1    : =NONE : = (NOT ASSIGN)
```

◆ If Menu Shortcut is Set:

Turn F2 to select **TYPE** to MENU and press F2. Then turn F3 to select a menu page and press F3. Once the menu shortcut is assigned to a User button, pressing the button opens the assigned menu page.

Assignable Menu Page

Menu	Setting (Accessed menu page)
FILE	FILE-TOP, FILE - LOAD, FILE - SAVE
SET UP	SYSTEM-FORMAT MENU
SET UP	EDITOR MENU
SET UP	MV1 MENU, MV2 MENU
SET UP	STATUS MENU
KEY	KEY1-2 EDGE of each M/E
KEY	KEY1-2 AUTO CK of each M/E
KEY	KEY1-4 MATT of each M/E
KEY	KEY1-4 GAIN/CLIP of each M/E
KEY	KEY1-4 POS/SIZE of each M/E
KEY	KEY1-4 CROP of each M/E
KEY	KEY1-4 BORDER of each M/E
KEY	KEY1-4 SUB EFF of each M/E
STILL	STILL
MATT	MATT
EXT I/F	VTR / VDCP
FADER LIMIT	TRANS-FADER LIMIT

◆ If Function Type is Set:

Turn F2 to select the type of function and press F2. Then turn F3 to select a function to be used and press F3. Once the function is assigned to a User button, pressing the button switches the assigned function On and Off. If a function is assigned, it can also be a menu shortcut (accessible by pressing the button twice quickly).

Assignable Functions

When MARKR (Marker) is selected for TYPE:		
Setting	Function	Button Indication
AUX1 -6 ENABLE	Pressing the button shows a safety area marker for the output.	ON: Lit orange, OFF: Unlit
SLOT-C CH1, CH2 ENABLE		
SLOT-D CH1, CH2 ENABLE		

(Continued on next page)

When GPIO (GPI In/Out) was selected for TYPE:		
Setting	Function	Button Indication
GPI IN ENABLE	Pressing the button enables GPI IN.	ON: Lit orange, OFF: Unlit
GPI OUTPUT1-16 (PUSH)	The GPI OUTPUT function (1-16) represents the ON/OFF setting for each GPI OUTPUT (1-16) assigned to a GPI IN/TALLY OUT connector pin that is set at the menu. The function is enabled whenever the relevant USER button is pressed.	Lit when pushed, unless unlit.
GPI OUTPUT1-16 (TGLE)	The GPI OUTPUT function (1-16) represents the ON/OFF setting for each GPI OUTPUT (1-16) assigned to a GPI IN/TALLY OUT connector pin that is set at the menu. The function is enabled or disabled each time the relevant USER button is pressed.	ON: Lit orange, OFF: Unlit

When USTRS (User Transition) is selected for TYPE:		
Setting	Function	Button Indication
KEY1-4 SCALER of each M/E		
KEY1-4 MIX of each M/E		
KEY1-4 SLIDE LEFT of each M/E		
KEY1-4 SLIDE RIGHT of each M/E		
KEY1-4 SLIDE TOP of each M/E	Performs the user transition for keys.	On-Air: Lit orange, Off-Air: Unlit
KEY1-4 SLIDE BOTTOM of each M/E		
KEY1-4 WIPE LEFT of each M/E		
KEY1-4 WIPE RIGHT of each M/E		
KEY1-4 WIPE TOP of each M/E		
KEY1-4 WIPE BOTTOM of each M/E		

When KEYER is selected for TYPE:		
Setting	Function	Button Indication
KEY1-4 2D DVE ENABLE of each M/E	Sets 2D DVE On/Off.	
KEY1-4 BOX MASK AND ENABLE of each M/E	Sets AND type BOX MASK On/Off.	
KEY1-4 BOX MASK OR ENABLE of each M/E	Sets OR type BOX MASK On/Off.	
KEY1-2 EDGE NORMAL ENABLE of each M/E	Sets Normal Edge On/Off.	
KEY1-2 EDGE OUTLINE ENABLE of each M/E	Sets Outline Edge On/Off.	ON: Lit orange, OFF: Unlit
KEY1-4 FIELD FREEZE ENABLE of each M/E	Sets Field Freeze On/Off.	
KEY1-4 FRAME FREEZE ENABLE of each M/E	Sets Frame Freeze On/Off.	
PREVIEW OUT-KEY1-4 of each M/E	Sets keys On or Off for preview outputs.	
KEY1,2 / 3,4 PRIORITY	Changes the key priority.	

When VTR is selected for TYPE (planned for future support):		
Setting	Function	Button Indication
VTR/VDCP REW		During execution: Lit, Other cases: Unlit
VTR/VDCP PLAY/PAUSE		
VTR/VDCP FWD		
VTR/VDCP STOP		Always lit orange
VTR/VDCP REC	Operates the connected VTR or VDCP channel.	During execution: Lit, Other cases: Unlit
VTR/VDCP STEP REV		
VTR/VDCP STEP FWD		
VTR/VDCP CUE UP		Always lit orange
VDCP MARK IN		
VDCP MARK OUT		

VDCP TC DISPLAY	Displays time code information when controlling VDCP devices.	Always lit orange
VTR1-4 SELECT	Selects a VTR or VDCP channel for control. Selecting the channel again deselects it.	Channel selected: Lit orange Other cases: Unlit
VDCP1-4 SELECT		
VTR1-4 REW	Rewinds video on VTR1-4.	During execution: Lit, Other cases: Unlit
VTR1-4 PLAY	Plays video on VTR1-4.	
VTR1-4 PAUSE	Pauses video on VTR1-4.	Always unlit
VTR1-4 FWD	Fast-forwards video VTR1-4.	During execution: Lit, Other cases: Unlit
VTR1-4 STOP	Stops recoding/playback on VTR1-4.	Always unlit
VTR1-4 REC	Records video on VTR1-4.	During execution: Lit, Other cases: Unlit
VTR1-4 GOTO TOP	Cues to 00:00:00:00 on VTR1-4	Always unlit
VDCP1-4 REW	Rewinds video on VDCP1-4.	During execution: Lit, Other cases: Unlit
VDCP1-4 PLAY	Plays video on VDCP1-4.	
VDCP1-4 PAUSE	Pauses video on VDCP1-4.	Always unlit
VDCP1-4 FWD	Fast-forwards video VDCP1-4.	During execution: Lit, Other cases: Unlit
VDCP1-4 STOP	Stops recoding/playback on VDCP1-4.	Always unlit
VDCP1-4 REC	Records video on VDCP1-4.	During execution: Lit, Other cases: Unlit
VDCP1-4 GOTO TOP	Cues to 00:00:00:00 on VDCP1-4	Always unlit

When SEQ is selected for TYPE:		
Setting	Function	Button Indication
MEMORY No.0-9 RECALL	Recalls Sequence Memory 0 -9	Always lit orange
SEQUENCE PLAY	Plays the sequence.	
SEQUENCE PAUSE	Pauses the sequence.	
SEQUENCE STOP	Stops the sequence.	
SEQ FADER LINK M/E1	Enables/disables the fader link.	
SEQ FADER LINK M/E2	Enables/disables the fader link.	

When STILL is selected for TYPE:		
Setting	Function	Button Indication
STILL1-4 STORE	Performs still captures.	Always lit orange
INPUT STILL STORE	Captures and saves or clears a still image for INPUT STILL 1 to 16.	Image stored: Lit Image not stored: Unlit
CLIP 1-4 PLAY/PAUSE	Begins to play the recorded clip or pauses the playback/recording.	Always lit orange
CLIP 1-4 STOP	Stops clip playback and cues to IN point.	
CLIP 1-4 REC	Begins to record video	

When OTHER is selected for TYPE:		
Setting	Function	Button Indication
EDITOR ENABLE	Sets editor control On/Off.	ON: Lit orange OFF: Unlit
WIPE MODIFY BKGD RESET	Resets the [WIPE BKGD] menu.	
WIPE MODIFY KEY1 RESET	Resets the [WIPE KEY1] menu.	
WIPE MODIFY KEY2 RESET	Resets the [WIPE KEY2] menu.	
WIPE MODIFY ALL RESET	Resets the [WIPE MODIFY] menu for all buses.	
ASSIGN INHI ENABLE	Enables the bus button inhibit function	ON: Lit orange OFF: Unlit
ME1 CONTROL ENABLE	Enables the M/E1 control.	
ME2 CONTROL ENABLE	Enables the M/E2 control.	
CG WIPE ENABLE	Enables CG WIPE.	ON: Lit orange OFF: Unlit

FS ENABLE	Enables/disables FS for each input.	ON: Lit orange OFF: Unlit
EVENT NO0-9 RECALL	Loads an event.	Event stored: Lit Event not stored: Unlit
AUX1-8 TRANS ENABLE	Sets AUX Crossfade transitions to On or Off.	ON: Lit orange OFF: Unlit
VIRTUAL ENABLE	Enables Virtual Link.	
ROUTER ENABLE	Enables router control.	ON: Lit orange OFF: Unlit
AUX LINK ENABLE	Enables AUX LINK.	
MACRO BUS SELECT	Sets the KEY/AUX bus to Macro mode.	

22-3. Triggering User Buttons

User buttons can be triggered (activated) by state changes (ON/OFF) of tally or GPI function items. This chapter shows how to set settings for these examples in the USER BUTTON menu. Three typical examples are shown below:

Ex. 1: **Starts KEY1 SCALER transitions** when **IN01 is displayed on the M/E2 PGM** screen.
Ex. 2: **Starts KEY2 MIX transitions** when **IN01 is cleared from the M/E2 PGM** screen.
Ex. 3: **Plays video on VTR1** when **KEY1 is ON**.

<Ex. 1>
To execute the Ex. 1 procedure using USER Button 1, set the menu as shown below.

(1) Open PAGE 1 of the [USER BUTTON] menu.
(2) Select OU-1 for SELECT, USTRS for TYPE and ME1 KEY1 SCALER in the next field.

```
USER    : SELECT :  TYPE  :  FUNC(F3)       : 1/2
BUTTON  : =OU-1  :  =USTRS:  =ME1 KEY1 SCALER
```

(3) Press the page down button to go to PAGE 2.
(4) Turn F3 to select Out:RED TALLY-IN01. Set TRG EDG to ON.

```
USER    : SELECT : TRG EDG:  FUNCTION(F3)   : 2/2
BUTTON  : =OU-1  :  =ON    :  =Out:RED TALLY-IN01
```

<Ex. 2>
To execute the Ex. 2 procedure using USER Button 2, set the menu as shown below.

(1) Set PAGE 1 of the [USER BUTTON] menu as shown below.

```
USER    : SELECT :  TYPE  :  FUNC(F3)       : 1/2
BUTTON  : =OU-2  :  =USTRS:  =ME2 KEY2 MIX
```

(2) Set PAGE 2 as shown below. (See the table on the next page for details on TRG EDG.)

```
USER    : SELECT : TRG EDG:  FUNCTION(F3)   : 2/2
BUTTON  : =OU-2  :  =OFF   :  =Out:RED TALLY-IN01
```

<Ex. 3>
To execute the Ex. 3 procedure using USER Button 3, set the menu as shown below.

(1) Set items on PAGE 1 of the [USER BUTTON] menu as shown below.

```
USER    : SELECT :  TYPE  :  FUNC(F3)        :  1/2
BUTTON  :  =OU-3  :  =VTR   :  =VTR1 PLAY
```

(2) Set items on PAGE 2 as shown below.

```
USER    : SELECT : TRG EDG:  FUNCTION(F3)   :  2/2
BUTTON  :  =OU-3  :  =ON    :  =Out:ME1 KEY1 ON TLY
```

◆ **About TRG EDG (TRIGGER EDGE)**

Setting	Description
ON (Default)	User button function is activated when the state of the specified item changes to ON.
OFF	User button function is activated when the state of the specified item changes to OFF.
DBL	User button function is activated when the state of the specified item changes to ON or OFF.

◆ **About FUNCTION**
The FUNCTION item specifies an item as a trigger. Items available for tallies or GPI IN can be set. See tables in section 24-1-2. "GPI OUT" and section 24-2. "Tally Output" for details.

NOTE
The following User Button functions cannot be activated by triggers.
-Record on VTR or VDCP (if DIRECT REC mode is off.)
-Record to Clip Memory (if REC MODE is STANDARD.)
The Trigger User Button function can be used only on an Operation Unit whose OU NO is set to OU1 in the ARCNET menu. See section 3-3. "How to Connect between MU and OU Units" and section 32-1 "Arcnet" for details on OU NO settings.

23. Reboot and Initialize

23-1. Rebooting System

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP top menu.
(2) Turn F1 to select SYSTEM, then press F1 or the page down button to open the [SETUP - SYSTEM] menu.
(3) Turn F1 to select REBOOT, and then press F1. Press the ENTER button in the SELECT/KEYPAD block to reboot the system.

```
SETUP   : >FORMAT   >REF I/O >ARCNET   >ETHERNET
SYSTEM  : >RS-422   >TIME    >INIT     >REBOOT
```

23-2. System Initialization

To initialize the system settings, follow the procedure below.

(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP top menu.
(2) Turn F1 to select SYSTEM, then press F1 or the page down button to open the [SETUP - SYSTEM] menu.
(3) Turn F1 to select INIT, then press F1 or the page down button to display the [SETUP - SYSTEM - INIT] menu.

```
SETUP   : >FORMAT   >REF I/O >ARCNET   >ETHERNET
SYSTEM  : >RS-422   >TIME    >INIT     >REBOOT
```

(4) Turn F1 to select SETUP(expSYS), then press F1 to initialize the switcher setup data aside from the system data.

```
SYSTEM  : INIT              : LOAD   :          : 1/1
INIT    : >CURRENT          : =LAST  :          :
```

CURRENT: Resets settings for backgrounds, keys and mattes.
SETUP(expSYS):   Resets the SETUP menu parameters and still memory, aside from the
                  following parameters:
                  -FORMAT in the [SETUP - SYSTEM - FORMAT] menu
                  -All parameters in the [SETUP - SYSTEM - ARCNET] menu
                  -All parameters in the [SETUP - SYSTEM - ETHERNET] menu
CUR&SETUP: Resets settings including CURRENT and SETUP(expSYS) above.
FACTORY: Resets settings including CURRENT and SETUP (all SETUP menu
                  parameters) above.

See section 4-4. "How to Return Settings to Default" for initializing menus.

See section 16-6. "Loading Event at Start-up" for how to load the desired settings at system startup.

---

24. GPI IN/OUT and Tally Outputs

24-1. GPI Control

The switcher can control external devices or can be controlled by external devices via the GPI interface. The GPI input and output functions are freely assignable to each pin of the GPI IN and GPI/TALLY OUT connectors on the HVS-390HS and the GPI/TALLY OUT connector on the HVS-392OU/ROU/WOU. The pin assignments are made in the [SETUP - GPI/TLY] menu as shown below.

Displaying the [SETUP-GPI/TLY] Menu
(1) Press MENU in the CONTROL block, then press SETUP to display the SETUP top menu.
(2) Turn F1 to select GPI/TLY, then press F1 or the page down button to open the [SETUP - GPI/TLY] menu.

```
SETUP     : >SYSTEM  >INPUT    >OUTPUT   >PANEL
MENU      : >GPI/TLY >FUNCTION >EXT I/F  >STATUS
```

```
SETUP    : >TLY COL >GPI IN   >GPI OUT  >OU GPI/O
GPI/TLY  : >TALLY1   >TALLY2   >TALLY3   >3OTALR
```

24-1-1. GPI IN

The GPI IN connector on the HVS-390HS provides GPI inputs. See section 2-4-3. "GPI IN Connector" and 2-4-4. "TALLY OUT Connector" and 2-4-5 "GPI/TALLY OUT connector" for the default pin assignment.

(1) Turn F1 to select GPI IN and press the F1 or the page down button to display the [SETUP - GPI/TLY - GPI IN] menu.
(2) Turn F2 to select the pin number at **P NO**.
(3) Turn F3 to select the function to be assigned. (See the table "GPI IN function" in the following page for available functions.)
(4) Set other pin assignments in the same way.
(5) Turn F1 to set ON to activate all GPI inputs in the connector.

```
GPI/TLY : ENABLE : P NO : FUNCTION       : 1/1
GPI IN  : =ON     : =1    : =In:ME1 BKGD AUTO TRS
```

NOTE
The GPI IN ENABLE function can be assigned to a USER button. Once this function is assigned, pressing the USER button repeatedly toggles between GPI IN ON (button lit) and GPI IN OFF (button unlit). Pressing the USER button twice quickly opens the GPI I/O menu. See section 22. "USER Button" for how to assign the function to the USER button.

24-1-2. GPI OUT

The following [GPI OUT] menu is for the GPI/TALLY OUT connector on the HVS-390HS rear. See section 2-4-4. "GPI/TALLY OUT Connector" for the default pin assignment.

(1) Turn F1 to select GPI OUT and press the F1 or the page down button to display the [SETUP - GPI/TLY - GPI OUT] menu.
(2) Turn F2 to select the pin number at **P NO**.
(3) Turn F3 to select the function to be assigned. (See the table "GPI OUT function" below for available functions.)
(4) Set other pin assignments in the same way.

```
GPI/TLY :        :P NO :  FUNCTION        :  1/1
GPI  OUT :        :  =1  : =Out:GPI  OUTPUT01
```

24-1-3. OU GPI/O

The following [OU GPI/O] menu is for the GPI/TALLY OUT connector on the HVS-392OU/ROU/WOU rear. See section 2-4-5. "GPI/TALLY OUT Connector" for the default pin assignment.

(1) Turn F1 to select GPI OUT and press the F1 or the page down button to display the [SETUP - GPI/TLY - GPI OUT] menu.
(2) Turn F2 to select the pin number at **P NO**.
(3) Turn F3 to select the function to be assigned. (See the tables "GPI IN function" and "GPI OUT function" below for available functions.)
(4) Set other pin assignments in the same way.
(5) Turn F1 to set ON. This activates all GPI outputs set in this menu.

```
GPI/TLY :ENABLE :P NO :  FUNCTION         :  1/1
OU  GPI/O:  =ON    : =In1: =In:ME1  BKGD  AUTO  TRS
```

◆ GPI IN functions

FUNCTION setting	Triggers
NOT USED	No function is assigned.
ME1 BKGD AUTO TRS ME2 BKGD AUTO TRS	Performs Background AUTO transitions.
ME1 KEY1 AUTO TRS ME1 KEY2 AUTO TRS ME1 KEY3 AUTO TRS ME1 KEY4 AUTO TRS ME2 KEY1 AUTO TRS ME2 KEY2 AUTO TRS ME2 KEY3 AUTO TRS ME2 KEY4 AUTO TRS	Performs KEY1-2 AUTO transitions using background AUTO buttons.
ME1 NEXT AUTO TRS ME2 NEXT AUTO TRS	Performs AUTO transitions for the NEXT AUTO TRANSITION bus set in each transition section.
BLACK AUTO TRS	Performs BLACK transitions on the M/E2
M/E1 BKGD CUT TRS M/E2 BKGD CUT TRS	Performs Background CUT transitions.

ME1 KEY1 CUT TRS ME1 KEY2 CUT TRS ME1 KEY3 CUT TRS ME1 KEY4 CUT TRS ME2 KEY1 CUT TRS ME2 KEY2 CUT TRS ME2 KEY3 CUT TRS ME2 KEY4 CUT TRS	Performs KEY CUT transitions.
ME1 KEY1 USER TRS ME1 KEY2 USER TRS ME1 KEY3 USER TRS ME1 KEY4 USER TRS ME2 KEY1 USER TRS ME2 KEY2 USER TRS ME2 KEY3 USER TRS ME2 KEY4 USER TRS	Performs KEY USER transitions.
TRANS-TYPE M1BK-WIPE TRANS-TYPE M2 BK-WIPE	Changes the background transition type to WIPE.
TRANS-TYPE M1BK-MIX TRANS-TYPE M2 BK-MIX	Changes the background transition type to MIX.
TRANS-TYPE M1BK-CUT TRANS-TYPE M2 BK-CUT	Changes the background transition type to CUT.
TRANS-TYPE M1K1-WIPE TRANS-TYPE M1K2-WIPE	Changes the key transition type to WIPE.
TRANS-TYPE M1K1-MIX TRANS-TYPE M1K2-MIX TRANS-TYPE M1K3-MIX TRANS-TYPE M1K4-MIX	Changes the key transition type to MIX.
TRANS-TYPE M1K1-CUT TRANS-TYPE M1K2-CUT TRANS-TYPE M1K3-CUT TRANS-TYPE M1K4-CUT	Changes the key transition type to CUT.
TRANS-TYPE M2K1-WIPE TRANS-TYPE M2K2-WIPE	Changes the key transition type to WIPE.
TRANS-TYPE M2K1-MIX TRANS-TYPE M2K2-MIX TRANS-TYPE M2K3-MIX TRANS-TYPE M2K4-MIX	Changes the key transition type to MIX.
TRANS-TYPE M2K1-CUT TRANS-TYPE M2K2-CUT TRANS-TYPE M2K3-CUT TRANS-TYPE M2K4-CUT	Changes the key transition type to CUT.
USER BUTTON1 to18	Performs the function assigned to USER button1-18.
STILL STORE1 to 4	Performs still store.
XPT ME1 PGM BLACK	Selects BLACK for the M/E1 PGM bus.
XPT ME1 PGM IN01 to 24	Selects a primary input (IN01 to 24) for the M/E1 PGM bus.
XPT ME1 PGM STILL1 to 4	Selects a still (fill) for the M/E1 PGM bus.
XPT ME1 PGM STILLK1 to 4	Selects a still (key) for the M/E1 PGM bus.
XPT ME1 PGM MATT1 to 2	Selects a matte for the M/E1 PGM bus.
XPT ME1 PGM COLORBAR	Selects COLORBAR for the M/E1 PGM bus.
XPT ME1 PST BLACK	Selects BLACK for the M/E1 PST bus.
XPT ME1 PST IN01 to 24	Selects a primary input (IN01 to 24) for the M/E1 PST bus.
XPT ME1 PST STILL1 to 4	Selects a still for the M/E1 PST bus.
XPT ME1 PST STILLK1 to 4	Selects STILL KEY for the M/E1 PST bus.
XPT ME1 PST MATT1 to 2	Selects a matte for the M/E1 PST bus.
XPT ME1 PST COLORBAR	Selects COLORBAR for the M/E1 PST bus.
XPT ME2 PGM BLACK	Selects BLACK for the M/E2 PGM bus.
XPT ME2 PGM IN01 to 24	Selects a primary input (IN01 to 24) for the M/E2 PGM bus.

XPT ME2 PGM STILL1 to 4	Selects a still (fill) for the M/E2 PGM bus.
XPT ME2 PGM STILLK1 to 4	Selects a still (key) for the M/E2 PGM bus.
XPT ME2 PGM MATT1 to 2	Selects a matte for the M/E2 PGM bus.
XPT ME2 PGM COLORBAR	Selects COLORBAR for the M/E2 PGM bus.
XPT ME2 PST BLACK	Selects BLACK for the M/E2 PST bus.
XPT ME2 PST IN01 to 24	Selects a primary input (IN01 to 24) for the M/E2 PST bus.
XPT ME2 PST STILL1 to 4	Selects a still (fill) for the M/E2 PST bus.
XPT ME2 PST STILLK1 to 4	Selects a still (key) for the M/E2 PST bus.
XPT ME2 PST MATT1 to 2	Selects a matte for the M/E2 PST bus.
XPT ME2 PST COLORBAR	Selects COLORBAR for the M/E2 PST bus.
XPT AUX1 to 8 TRANS ENABLE	Toggles AUX1 to 8 Crossfade transitions On and Off.
XPT AUX1 to 8 BLACK	Selects BLACK for an AUX bus.
XPT AUX1 to 8 IN01-IN24	Selects a primary input (IN01 to 24) for an AUX bus.
XPT AUX1 to 8 STILL1 to 4	Selects a still (fill) for an AUX bus.
XPT AUX1 to 8 STILLK1 to 4	Selects a still (key) for an AUX bus
XPT AUX1 to 8 MATT1 to 2	Selects a matte for an AUX bus.
XPT AUX1 to 8 COLORBAR	Selects COLORBAR for an AUX bus.
XPT AUX1 to 8 M/E1 PGM	Selects M/E1 PGM for an AUX bus.
XPT AUX1 to 8 M/E1 PREV	Selects M/E1 PREV for an AUX bus.
XPT AUX1 to 8 M/E1 CLEAN	Selects M/E1 CLEAN for an AUX bus.
XPT AUX1 to 8 M/E1 KEY	Selects M/E1 KEY for an AUX bus.
XPT AUX1 to 8 M/E2 PGM	Selects M/E2 PGM for an AUX bus.
XPT AUX1 to 8 M/E2 PREV	Selects M/E2 PREV for an AUX bus.
XPT AUX1 to 8 M/E2 CLEAN	Selects M/E2 CLEAN for an AUX bus.
XPT AUX1 to 8 M/E2 KEY	Selects M/E2 KEY for an AUX bus.
XPT AUX1 to 8 MV1 to 2	Selects an MV output for an AUX bus.
EVENT No.0 to 9 RECALL	Recalls events.
MACRO 00 PLAY to MACRO 29 PLAY	Executes macros.

◆ **GPI OUT/TALLY function**

FUNCTION setting	Description
NOT USED	No function is assigned
GPI OUTPUT01 to 16	These functions are used in conjunction with USER buttons (GPI OUTPUT1 to 16 Push/Toggle). Push: Continues to output GPI pulses while the button is pressed. Toggle: Toggles GPI pulse On/Off.
M/E1 BKGD TRANS STS	Outputs pulse while M/E1 background transitions are processed.
M/E2 BKGD TRANS STS	Outputs pulse while M/E2 background transitions are processed.
ME1 KEY1 TRANS STS ME1 KEY2 TRANS STS ME1 KEY3 TRANS STS ME1 KEY4 TRANS STS ME2 KEY1 TRANS STS ME2 KEY2 TRANS STS ME2 KEY3 TRANS STS ME2 KEY4 TRANS STS	Outputs pulse while key transitions are processed.
M/E1 BKGD AUTO TRANS	Outputs pulse while M/E1 background AUTO transitions are processed.
M/E2 BKGD AUTO TRANS	Outputs pulse while M/E2 background AUTO transitions are processed.

ME1 KEY1 AUTO TRANS ME1 KEY2 AUTO TRANS ME1 KEY3 AUTO TRANS ME1 KEY4 AUTO TRANS ME2 KEY1 AUTO TRANS ME2 KEY2 AUTO TRANS ME2 KEY3 AUTO TRANS ME2 KEY4 AUTO TRANS	Outputs pulse while key AUTO transitions are processed.
ME1 CGW AUTO TRANS ME2 CGW AUTO TRANS	Outputs while CG WIPE AUTO transitions are processed.
TRSTYPE M1BK-CUT TRSTYPE M2BK-CUT	Outputs pulse while the BKGD transition type is set to CUT.
TRSTYPE M1K1-CUT TRSTYPE M1K2-CUT TRSTYPE M1K3-CUT TRSTYPE M1K4-CUT TRSTYPE M2K1-CUT TRSTYPE M2K2-CUT TRSTYPE M2K3-CUT TRSTYPE M2K4-CUT	Outputs pulse while the key transition type is set to CUT.
TRSTYPE M1BK-MIX TRSTYPE M2BK-MIX	Outputs pulse while the BKGD transition type is set to MIX.
TRSTYPE M1K1-MIX TRSTYPE M1K2-MIX TRSTYPE M1K3-MIX TRSTYPE M1K4-MIX TRSTYPE M2K1-MIX TRSTYPE M2K2-MIX TRSTYPE M2K3-MIX TRSTYPE M2K4-MIX	Outputs pulse while the key transition type is set to MIX.
TRSTYPE M1BK-WIPE TRSTYPE M2BK-WIPE	Outputs pulse while the BKGD transition type is set to WIPE.
TRSTYPE M1K1-WIPE TRSTYPE M1K2-WIPE TRSTYPE M2K1-WIPE TRSTYPE M2K2-WIPE	Outputs pulse while the key transition type is set to WIPE.
ME1 KEY1 ON TLY ME1 KEY2 ON TLY ME1 KEY3 ON TLY ME1 KEY4 ON TLY ME2 KEY1 ON TLY ME2 KEY2 ON TLY ME2 KEY3 ON TLY ME2 KEY4 ON TLY	Outputs tally signal when the specified key is on the background video.
FAN ERROR ALARM	Outputs fan alarm.
PS1 ERROR ALARM PS2 ERROR ALARM	Outputs power alarm
ALL ALARM	Outputs an alarm if any malfunction occurs.
AUX1 to 8 TRANS ENABLE	Outputs during the AUX transition.

RED TALLY-BLACK	
RED TALLY-IN01 to 24	
RED TALLY-STIL1 to 4	
RED TALLY-STILK1 to 4	
RED TALLY-MATT1 to 2	
RED TALLY-ME1	
RED TALLY-ME2	Outputs a red tally when the specified signal is sent to the red (tally color) bus.
RED TALLY-ME1 PGM	
RED TALLY-ME1 PREV	
RED TALLY-ME1 CLN	
RED TALLY-ME2 PGM	
RED TALLY-ME2 PREV	
RED TALLY-ME2 CLN	
GREEN TALLY-BLACK	
GREEN TALLY-IN01 to 24	
GREEN TALLY-STIL1 to 4	
GREEN TALLY-STILK1 to 4	
GREEN TALLY-MATT1 to 2	
GREEN TALLY-ME1	
GREEN TALLY-ME2	Outputs a green tally when the specified signal is sent to the green (tally color) bus.
GREEN TALLY-ME1 PGM	
GREEN TALLY-ME1 PREV	
GREEN TALLY-ME1 CLN	
GREEN TALLY-ME2 PGM	
GREEN TALLY-ME2 PREV	
GREEN TALLY-ME2 CLN	
COL1 to 6 TALLY-BLACK	
COL1 to 6 TALLY-IN01 to 24	
COL1 to 6 TALLY-STIL1 to 4	
COL1 to 6 TALLY-STILK1 to 4	
COL1 to 6 TALLY-MATT1 to 2	
COL1 to 6 TALLY-ME1 to 2	Outputs a COLOR1 tally when the specified signal is sent to the COLOR1 bus.
COL1 to 6 TALLY-ME1 PGM	Outputs tallies in the same way as for COLOR2 to COLOR6.
COL1 to 6 TALLY-ME1 PREV	
COL1 to 6 TALLY-ME1 CLN	
COL1 to 6 TALLY-ME2 PGM	
COL1 to 6 TALLY-ME2 PREV	
COL1 to 6 TALLY-ME2 CLN	

24-2. Tally Output

Tally information can be output from the GPI /TALLY OUT connectors on the HVS-390HS rear and HVS-392OU/ROU/WOU rear. See section 24-2-2. "Tally Output Settings (GPI /TALLY OUT)" for details on settings.

Tally outputs can be expanded by installing HVS-30TALR cards (optional). See section 24-2-3. "Tally Output Settings (HVS-30TALR)."
Tally information can also be output via the Tally Unit (the Hanabi series option), in which case the RS-422 connector is used for connection to tally units. See section 24-2-4 "Sending Tally Signals to Tally Units."

24-2-1. Tally Color Settings

(1) Display the [SETUP - GPI/TLY - TALLY COLOR] menu.
(2) Turn F1 to select M/E1 PGM, then turn F2 to select the tally color for PGM. Set the tally color for M/E1 PST, M/E2 PGM, M/E2 PST and AUX buses in the same way.

```
GPI/TLY : SELECT :  COLOR :           : 1/1
TLY COL :  =MEPGM:  =RED   :           :
```

The Tally Color settings made in this menu are shared with those for the GPI/TALLY OUT connectors, TALLY OUT connector (HVS-30TALR) and Tally Units.

24-2-2. Tally Output Settings (GPI/TALLY OUT)

Pin assignments for the GPI/TALLY OUT Connectors are performed as shown below. See sections 2-4-4 and 2-4-5 for the default pin assignments.

(1) Set tally colors for output buses in the [SETUP - GPI/TLY - TALLY COLOR] menu. (See section 24-2-1 "Tally Color Settings.")
(2) Select GPI OUT in the [SETUP - GPI/TLY] menu, and then press F1 or page down to display the [SETUP - GPI/TLY - GPI OUT] menu.
(3) Turn F2 to select the pin number under **P NO**.
(4) Turn F3 to select a tally to be assigned under **FUNCTION**. (See the table "TALLY function" below.)

```
GPI/TLY :        :P NO :  FUNCTION      : 1/1
GPI OUT :        : =1  : =Out:RED TALLY-IN01
```

◆ **TALLY function**
See the GPI OUT/Tally function table (p. 197).

200

◆ **Tally Control Example**

The setting example in the table below shows how to make tally settings in the following conditions. Pin 1-8 send On-air tallies and Pin 9-16 send Next tallies.

Conditions
● RED tally is used to indicate On-Air (M/E1 PGM bus).
● GREEN tally is used to indicate a next background signal (M/E1 PST bus).
● Pin 1-8 output RED tallies for IN01-IN08 respectively.
● Pin 9-16 output GREEN tallies for IN01-IN08 respectively.

Menu Setting

Menu	Items	Setting	Item	Setting
TALLY COLOR	SELECT	M/E1 PGM	COLOR	RED
	SELECT	M/E1 PST	COLOR	GREEN
GPI OUT	P NO	1 to 8	FUNCTION	RED TALLY IN01 to RED TALLY IN08 (default setting)
	P NO	9 to 16	FUNCTION	GREEN TALLY IN01 to GREEN TALLY IN08

24-2-3. Tally Output Settings (HVS-30TALR)

Up to two cards of HVS-30TALR (Tally Output Expansion Card) can be installed to the HVS-390HS. Each card has 18 channels, therefore up to 36 channels (two cards) available for tally output. See section 2-4-6 "TALLY OUT Connector (HVS-30TALR)" for the default pin assignments of the connector.

Selecting Tally Color for an Output Bus
See section 24-2-1 "Tally Color Setting." The Tally Color settings made in this menu are shared with those for the GPI/TALLY OUT connectors, TALLY OUT connector (HVS-30TALR) and Tally Units.

Setting Pin Assignments for TALLY OUT connector
(1) Press the page up or down button to return to the [SETUP - GPI/TLY] menu.
(2) Open the [SETUP - GPI/TLY - 30TALR] menu.

```
SETUP   :>TLY COL >GPI IN >GPI OUT>OU GPI/O
GPI/TLY :>TALLY1  >TALLY2 >TALLY3 >30TALR
```

```
GPI/TLY :ENABLE :P NO : FUNCTION      : 1/1
30TALR  : =ON    : =1-1: =Out:RED TALLY-IN01
```

(3) Turn F2 to select a channel under **P NO**.

Channels are specified as follows: [Card number]-[Channel number]. For example, "1-10" represents the 10th channel of Card 1. See "Card Number of HVS-30TALR" below.

(4) Turn F3 to select a tally to be assigned under **FUNCTION**. See the table "GPI/TALLY function." (p. 197)

(5) Set **Enable** to ON to enable all tally outputs of the TALLY OUT connector.

NOTE
The HVS-30TALR cards can send GPI outputs. To output GPI signals, select the desired GPI function under **FUNCTION**. See section 24-1-2 "GPI OUT" for details.

◆ Card Number of HVS-30TALR
The card number, Card 1 or Card 2, is chosen by the internal dip switch (DS 1) on the HVS-30TALR card.

If set to Card1:
   DS1-1: **ON**
   DS1-2: **OFF**

If set to Card2:
   DS1-1: **OFF**
   DS1-2: **ON**

DS1

HVS-30TALR card
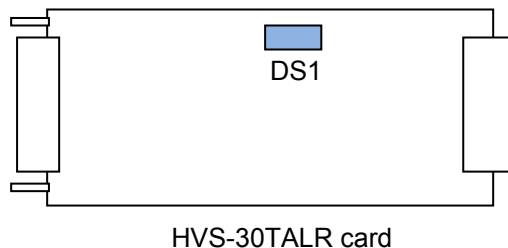
* DS1-3 to DS1-8 are all set to OFF, do not change the settings.

24-2-4. Sending Tally Signals to Tally Units

Up to three tally units can be connected. This section explains how to set up TALLY1 (the tally unit 1) as an example.

Selecting Tally Color for an Output Bus
See section 24-2-1 "Tally Color Settings." The Tally Color settings made in this menu are shared with those for the GPI/TALLY OUT connectors, TALLY OUT connector (HVS-30TALR) and the Tally Units.

Setting Pin Assignments for TALLY1
(1) Press the page up or down button to return to the [SETUP - GPI/TLY] menu.
(2) Open the [SETUP - GPI/TLY - TALLY1] menu.

```
SETUP    :>TLY COL >GPI IN >GPI OUT>OU GPI/O
GPI/TLY  :>TALLY1   >TALLY2 >TALLY3 >30TALR
```

(3) Turn F2 to select the pin number under **P NO**.
(4) Turn F3 to select a tally to be assigned under **FUNCTION**. See the table "GPI/TALLY function" (p. 197).
(5) Set other pin assignments in the same way.
(6) Turn F1 to set ON. This activates all tallies in TALLY1.

```
GPI/TLY : ENABLE: P NO :  FUNCTION        :  1/1
TALLY1  :  =ON   :  =1-01:  =Out:RED TALLY-IN01
```

The setting procedure for other tally units is the same as for TALLY1. See the HVS-TALOC/TALR 20/32 operation manual for details about tally connection and operation.

Connection Settings with Tally Units (RS-422 port setting)
Up to three tally units are connected in series to the switcher via RS-422 connector. The connection settings with Tally Units are made in the menu as shown below.

(1) Open the [SETUP - SYSTEM - RS-422] menu.
(2) Turn F1 to select PORT2.
(3) Turn F2 to select TALLY. Set the parity to EVEN. The baud rate is automatically set according to the tally unit.

```
SYSTEM   : SELECT : FUNC   : BAUDRAT: PARITY :  1/1
RS-422   :  =PORT2:  =TALLY:  =38400:  =EVEN  :
```

(4) Restart HVS-390HS. (See section 23-1. "Rebooting System.")

25. VTR / VDCP Control

The switcher can control video tape or video disk recorders via RS-422 or LAN using the VTR or VDCP protocol. Up to 4 channels are available. Connect a device to a desired RS-422 port, configure the port and select a channel for VTR or VDCP following the procedures in this chapter.

◆ **System Configuration Example**
1) Connect HVS-390HS to a VTR using an RS-422 port and configure the port. (See section 25-1.)
2) Assign a VTR channel to the RS-422 port. (See section 25-2.)
3) Control the VTR using the VTR/VDCP menu (see section 25-4) or using USER buttons (see section 25-5).
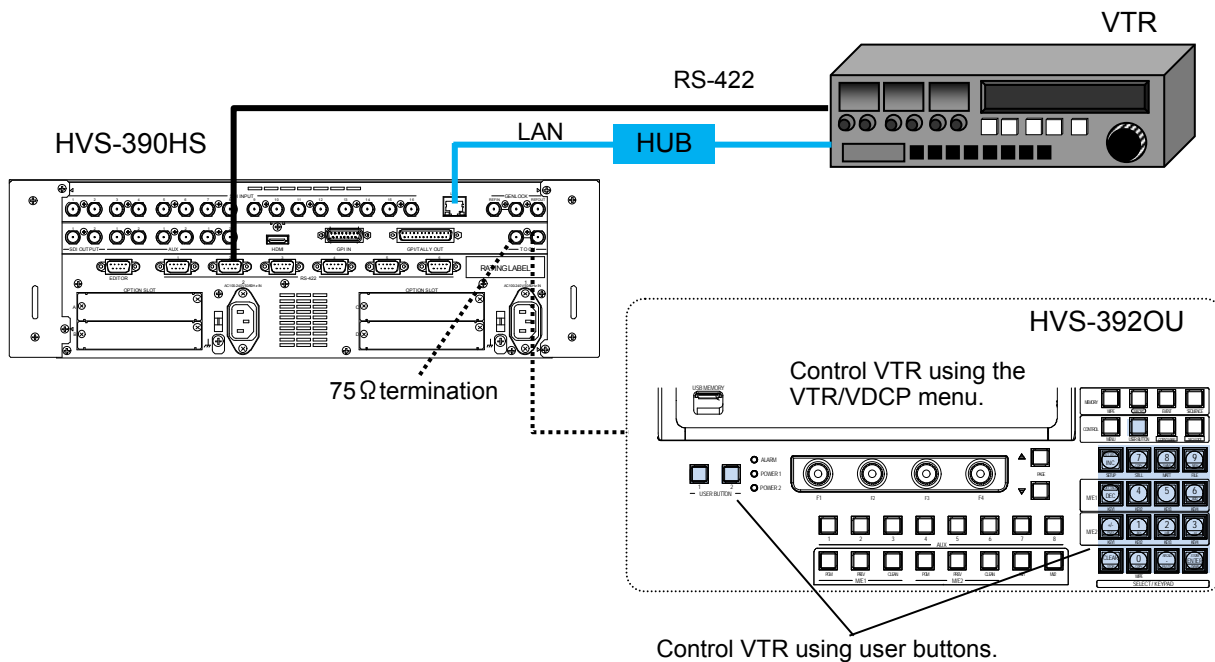
25-1. VTR Connection

◆ **RS-422 Connettion (VTR/VDCP)**
(1) Press MENU, then SETUP in the SELECT/KEYPAD block to display the [SETUP] top menu.
(2) Turn F1 to select SYSTEM. Press F1 to go to the [SETUP - SYSTEM] menu.
(3) Turn F1 to select RS-422. Press F1 to go to the [SETUP - SYSTEM - RS-422] menu.
(4) When connecting a VTR to RS-422 (1) port, set the menu as shown below.
   If your device supports VDCP protocol, set VDCP1 instead of VTR1 under **FUNC**.

```
SYSTEM   : SELECT   : FUNC     : BAUD      : PARITY   :  1/1
RS-422   :  =PORT1  :  =VTR1   :  =38400:  =ODD      :
```

(5) Change **BAUDRATE** and **PARITY** using F3 or F4, if needed.

> In some cases, setting BAUDRATE to 38400 may cause the system to malfunction. In such cases, re-establish the connection with either of the options below.
>   (a) Set **Stop Bit** to **1.5** or **2** in the target device.
>   (b) Set **Baudrate** to **39300** in the switcher.

(6) Reboot the switcher.
▶ See section 23-123-1. "Rebooting System.

25-2. Selecting a VTR or VDCP Channel

(1) Open the [SETUP - EXT I/F - VTR/VDCP] menu.

```
SETUP    : >EDITOR   >TSL/TLY >VTR/VDCP  >ROUTER
EXT I/F : >AUD XPT >AUX UNIT
```

(2) Select a VTR (VTR1 to VTR4) or VDCP (VDCP1 to VDCP4) channel under **SELECT**.

```
EXT I/F : SELECT  :        STOP: 00: 00: 00: 00 :  1/4
VTR/VDCP: =VTR1    :        DRCT REC=ON          :
```

```
EXT I/F : SELECT  :        STOP: 00: 00: 00: 00 :  1/7
VTR/VDCP: =VDCP1   :        DRCT REC=ON          :
```

(3) When the connection to the device is established, the device status and the current time code value will be displayed

25-3. Selecting the VDCP Type

Select a type when connecting to a VDCP device.

(1) Open the [SETUP - EXT I/F - VTR/VDCP] menu and go to PAGE 6.

```
EXT I/F :    MODEL        :              : 6/8
VTR/VDCP: =VDCP(RS422)    :              :
```

(2) Turn F1 to select the VDCP model type and connection method. (See the table below.)

MODEL setting	Description
VDCP(RS422)	VDCP device with RS-422 connection such as Abekas Mira Server
HVS-5ECD	FOR-A HVS-5ECD
VDCP(LAN)	VDCP device with LAN connection

Unavailable menu items and commands when working with Clip N Key:
- STEP-R and STEP-F >> See 25-4.
- CLIP ID setting. CLIP ID is automatically set when creating a new clip.
  >> See 25-6-5.
- REC DURATION setting. Stop recording manually. >> See 25-6-5.

25-4. Playback and Recording

Four pages of the [VTR/VDCP] menu contain the following control commands.

Item		F1 - F4 control		Description
1/4	SELECT	F1	Turn	Selects a VTR or VDCP channel for control.
	DRCT REC (DIRECT REC)	F3	Turn	Sets DIRECT REC mode to ON or OFF.
2/4	STOP	F1	Press	Stops the device operation.
	REC	F2+ F3	Press	Starts recording by pressing F3 while holding down F2 when DIRCT REC is Off.
		F2	Press	Starts recording by pressing F2 when DIRECT REC is ON.
	PLAY/PAUSE	F3	Press	Starts playback. Pauses playback while playing back video.
	REW/FF	F4	Press	Rewinds or fast-forwards tapes or other video storage media.
		F4	Turn	Switches between REW and FF.
3/4	CUE UP	F1	Press	Cues up to a location specified by time code value. Set the time code value in the following way.
	TC Input	F3	Press & turn	1) Press F3 to enable TC Input mode. 2) Enter a value by turning F3 or using the keypad. The time code for CUE UP should be set in hh/mm/ss/ff format. 3) Press F3 to set the time code.
			Turn	Increases or decreases the time code value in a per-frame basis by turning F3 without pressing F3 beforehand, if time code is already set.
4/4	SHTL	F1	Press	Changes the device to shuttle mode.
		F2	Turn	Selects the shuttle mode speed.
	VAR	F2	Press	Changes the device to variable mode.
		F2	Turn	Selects the variable mode speed.
	STEP-R	F3	Press	Reverses the current time code by one frame.
	STEP-F	F4	Press	Advances the current time code by one frame.

* VTR control does not support CTL timecode. TC display, CUE UP, STEP-R, and STEP-F do not work properly if the connected device uses CTL timecode.

25-5. Assigning Functions to User Buttons

The following VTR/VDCP functions can be assigned to user buttons.

● VTR/VDCP menu shortcut
● Channel Enable / Disable
    VTR1 SELECT   VDCP1 SELECT
    VTR2 SELECT   VDCP2 SELECT
    VTR3 SELECT   VDCP3 SELECT
    VTR4 SELECT   VDCP4 SELECT
● VTR commands
    REW, PLAY/PAUSE, FWD, STOP, REC, STEP FWD and STEP REW
● VDCP commands
    REW, PLAY/PAUSE, FWD, STOP, REC, STEP FWD, STEP REW
    MARK IN and MARK OUT

See section 22. "USER Button" for details on assigning functions to user buttons.

25-6. VDCP Operation

In addition to the commands listed in section 25-4. "Playback and Recording", the switcher can obtain video information (Clips) from the CLIP List stored in the connected VDCP device and edit the data. Apart from Clips in the VDCP device, the switcher can store two Playlists, in which the switcher's own information such as IN and OUT points are contained.

● Each Playlist contains the following information.
  ➢ CLIP ID (ID of the selected Clip stored in the connected device.)
  ➢ IN point, OUT point and Duration values

● The following operations are available:

Operation	Refer to
Creating Playlists	25-6-1
Specifying an IN-point and OUT-point for trimming	
Jumping to an IN-point	25-6-2
Jumping to an OUT-point	
Jumping to a location specified by time code	25-6-3
Changing CLIP ID (CLIP ID in the connected device is also changed.)	
Deleting Clips (They are also deleted from the connected device.)	
Copying and clearing Playlists	25-6-4

● The switcher can create new Clips (see section 25-6-5).

Note that some VDCP devices may not support all commands available on the switcher. In such a case, they cannot execute unsupported commands from the switcher.

25-6-1. Creating Playlists

◆ **Selecting a Playlist**
(1) Display the [SETUP - EXT I/F - VTR/VDCP] menu.
(2) Press the page down button to go to Page 5.
(3) Select 1 (Playlist 1) or 2 (Playlist 2) under **SELECT**.

```
EXT I/F : SELECT :                  : FUNC   :  5/8
VTR/VDCP: =1         : >ID SET: >TC SET:  >COPY :
```

◆ **Selecting a CLIP ID for the Playlist**
(1) Press F2 in Page 5 of the [SETUP - EXT I/F - VTR/VDCP] menu to display the [CLIP] menu.

```
EXT I/F : SELECT :                  : FUNC   :  5/8
VTR/VDCP: =1         : >ID SET: >TC SET:  >COPY :
```

(2) The [CLIP] menu will display the Clip List stored in the connected device. Turn F1 to select the CLIP ID of the desired Clip from the list and then press F1.

```
VTR/VDCP: CLIP0001      :                : 1/1
CLIP      : CLIP0002     : >RENAME : >CANCEL :
          : CLIP0003     :
          : CLIP0004     :
          : CLIP0005     :
          :      |       :
```

Select a CLIP ID from the CLIP List. (Up to 30 entries can be displayed.)

(3) Once a CLIP ID is selected, the display automatically returns to the previous menu. Check that the selected CLIP ID is displayed in the upper row. To cancel the operation, press F4.

```
EXT I/F : SELECT : CLIP0001      : FUNC   : 5/8
VTR/VDCP: =1        : >ID SET: >TC SET: >COPY :
```

◆ **Setting IN and OUT points**
IN / OUT points for the Clip can be set and stored in Playlists.

(1) Go to Page 5 of the [VTR/VDCP] menu. Turn F3 to select TC SET and then press F3 to display the [TC SET] menu.

```
EXT I/F : SELECT :               : FUNC   : 5/8
VTR/VDCP: =1        : >ID SET: >TC SET:  >COPY :
```

(2) Turn F1 to select IN or OUT.

```
VTR/VDCP: 00: 00: 01: 00  (STOP/00: 05: 00: 00) :  1/2
TC SET   : >IN        : >SET     : >CUE UP  :  >OK :  L=1
```

```
VTR/VDCP: 00: 00: 20: 00  (STOP/00: 05: 00: 00) :  1/2
TC SET   : >OUT       : >SET     : >CUE UP  :  >OK :  L=1
```

(3) Enter a time code- value for an IN or OUT point to the right in the upper row of the menu display. There are 3 methods of input. (See the table below.) The current status and time code are displayed to the right in the menu.

Input method			Description
Copy and paste the current time code. (MARK IN/MARK OUT)	F1	Press	Press F1. The current time code is copied into the time code field.
Adjust time code on a per-frame basis	F2	Turn	Turn F2 to increase or decrease the time code on a per-frame basis.
Enter time code using the keypad	F2	Press	Press F2. When the lights in the keypad turn on, enter the value. Press ENTER to apply the setting.

(4) After settings are complete, press F4 to return to the previous menu.

> Pressing F3 (CUE UP) can jump to the specified time code position. This is convenient for checking IN or OUT point images.

◆ **Checking the Playlist Data**
Press the page down button to go to Page 2 of the [TC SET] menu.
This menu displays the Playlist data: IN point, OUT point, current time code, duration and playlist number.

```
VTR/VDCP: IN /00: 00: 01: 00  TC /00: 00: 05: 00:  2/2
TC SET   : OUT/00: 00: 20: 00  DUR/00: 00: 10: 00:  L=1
```

25-6-2. Jumping to an IN or OUT point or a Specified Position

◆ **Selecting a Playlist**
(1) Display Page 5 of the [SETUP - EXT I/F - VTR/VDCP] menu.
(2) Set 1 or 2 under SELECT to select Playlist 1 or 2.

```
EXT I/F : SELECT :                    : FUNC   : 5/8
VTR/VDCP: =1        : >ID SET: >TC SET:  >COPY :
```

◆ **Jumping to Specified Positions**
(1) Turn F3 to select TC SET, then press F3 to display the [TC SET] menu.
(2) Set a time code value.
   -Turn F1 to select IN (or OUT). The current setting is displayed in the menu upper row.
   -Press F2 and then enter a time code value. See Step (3) in the previous page for details on entering time codes.
(3) Press F3 (CUE UP) to jump to an IN or OUT point.

```
VTR/VDCP: 00:00:01:00  (STOP/00:05:00:00) : 1/2
TC SET  : >IN       : >SET     : >CUE UP  : >OK : L=1
```

(4) Press F4 (OK) to return to the previous menu.

25-6-3. Changing CLIP ID and Deleting Clips

◆ **Changing CLIP ID**
(1) Press F2 in Page 5 of the [SETUP - EXT I/F - VTR/VDCP] menu to display the CLIP menu.

```
EXT I/F : SELECT :                    : FUNC   : 5/8
VTR/VDCP: =1        : >ID SET: >TC SET:  >COPY :
```

(2) The CLIP menu displays the Clip List stored in the connected device.
   Turn F1 to select a CLIP ID of the desired CLIP and then press F1.

```
VTR/VDCP: CLIP0001        :              : 1/1
CLIP      : CLIP0002      : >RENAME : >CANCEL :
```

(3) Turn F3 to select RENAME. Then press F3 to enter RENAME mode.

```
VTR/VDCP: CLIP0001        :              : 1/1
CLIP      : CLIP0002      : >RENAME : >CANCEL :
```

(4) Turn F1 to select a position in the name string, and then turn F2 to select a character to be changed. In the same way, set a new name on a per-character basis. Press F3 to apply the new name. Up to 8 alphanumeric characters can be used.

◆ Deleting Clips

(1) Refer to above "Changing CLIP ID" to select a Clip.
(2) Turn F3 to select DELETE and then press F3.

```
VTR/VDCP: CLIP0001     :             :  1/1
CLIP      : CLIP0002   : >DELETE  : >CANCEL  :
```

(3) Turn F2 to select OK. Then press F2 to delete the Clip. The Clip in the connected device
    is also deleted. To cancel the operation, select CNCL and press F3.

25-6-4. Copying and Clearing Playlists

◆ Clearing Playlists

(1) Display Page 5 of the [SETUP - EXT I/F - VTR/VDCP] menu.
(2) Set 1 or 2 under SELECT to select Playlist 1 or 2.
(3) Turn F4 to select CLEAR, then press F4.

```
EXT I/F : SELECT :                 : FUNC   :  5/8
VTR/VDCP: =1      : >ID SET: >TC SET:  >CLEAR:
```

(4) Turn F3 to select YES. Then press F3 to clear the playlist data. To cancel the operation,
    select NO and press F3.

◆ Copying Data between two Playlists

(1) Display Page 5 of the [SETUP - EXT I/F - VTR/VDCP] menu.
(2) Set 1 or 2 under SELECT to select Playlist 1 or 2 for copying data.
(3) Turn F4 to select COPY, and then press F4.

```
EXT I/F : SELECT :                 : FUNC   :  5/8
VTR/VDCP: =1      : >ID SET: >TC SET:  >COPY :
```

(4) Turn F1 to select a destination (Playlist 1 or 2) for copying.

```
EXT I/F : SELECT :                 : FUNC   :  5/8
VTR/VDCP: =2      : >ID SET: >TC SET:  >PASTE:
```

(5) Turn F4 to select PASTE, and then press F4. The data is copied from one playlist to the
    other.

25-6-5. Creating New Clips (Recording using VDCP)

Recording video and creating new Clips are possible. They are stored in the connected
device. To create a new clip, proceed as follows:

(1) Display Page 7 of the [SETUP - EXT I/F - VTR/VDCP] menu.
(2) Press F3 to change to ID input mode.
(3) To enter a new CLIP ID, set a character for each cell: Turn F3 to select the first cell and
    then turn F4 to select a character for it. Repeat this process until the new ID is set. Press
    F3 to apply the new ID.

```
EXT I/F : REC DURATION : ID: NEW0001      :  7/8
VTR/VDCP: =00: 00: 15: 00  : >RENAME      : REC    :
```

(4) To set recording duration, turn F1 to enter values. The procedure for setting durations is almost the same as that for setting time codes (See section 25-6-1. "Creating Playlists.").

```
EXT I/F : REC DURATION : ID: NEW0001        :  7/8
VTR/VDCP: =00: 00: 15: 00  : >RENAME      : REC    :
```

(5) Press F4 to start recording, if DIRECT REC is set to ON.
   Press F4 while holding down F1 to start recording, if DIRECT REC is set to OFF.

```
EXT I/F : REC DURATION : ID: NEW0001        :  7/8
VTR/VDCP: =00: 00: 15: 00  : >RENAME      : REC    :
```

◆ **Setting DIRECT REC to ON or OFF**
(1) Press the page up button to go to Page 1 of the [VTR/VDCP] menu.
(2) Turn F4 to set DIRECT REC to ON or OFF.

```
EXT I/F : SELECT  :        (STOP: 00: 00: 00: 00):  1/8
VTR/VDCP: =VDCP1   :        DRCT REC=ON           :
```

26. Connecting to FOR-A MFR Series Router

The switcher can connect and control a FOR-A MFR series routing switcher. Router crosspoint switches can be performed on the switcher's control panel by assigning the router control to a user button.

In addition to the router control, video titles on the router can be handed to the switcher. If the switcher accepts video signals from the router and their title links (MFR link) are enabled, Video names on the switcher control panel are changed in accordance with crosspoint switches on the router. When an MFR series is connected to the switcher, router control commands and title data can be transferred through a single RS-422 connection. Refer to the MFR series router manual for details on router settings.

Manageable number of sources, destinations and levels are:

Level	16
Source	1,024
Destination	256

Connect an MFR series to an RS-422 port (from 1 to 4) on the HVS-390HS using an RS-422 straight-through cable. Then configure the RS-422 port for the router control. Crosspoint switches can be performed by using a user button, AUX1-8 and KEY/AUX bus buttons.

◆ **System Example**

212
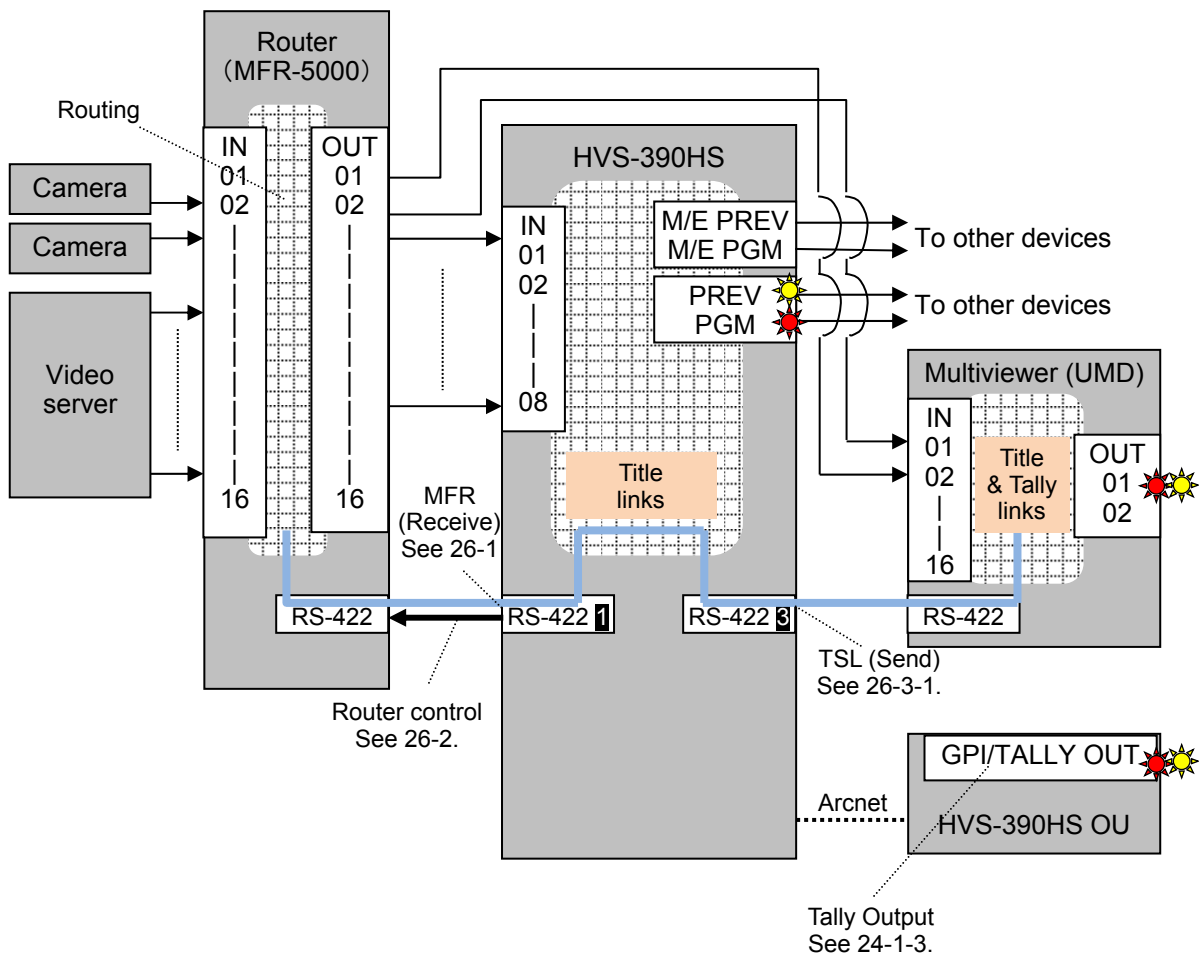
26-1. Assigning Router Channel to RS-422 port

26-1-1. Assigning Router Control Function

(1) Open the [SETUP - SYSTEM - RS-422] menu.

```
SETUP    : >FORMAT   >REF I/O  >ARCNET   >ETHERNET
SYSTEM   : >RS-422   >TIME     >INIT     >REBOOT
```

(2) Turn F1 to select an RS-422 port for router control.
(3) Select ROUTER under **FUNC**.
(4) Set **BAUD** (baudrate) to 57600 and **PARITY** to NONE.

```
SYSTEM   : SELECT   : FUNC    : BAUD    : PARITY  :  1/1
RS-422   : =PORT1   : =ROUTER : =57600 : =NONE   :
```

(5) After settings are complete, reboot the switcher. (See section 23-1. "Rebooting System.")

26-1-2. Setting MFR Link

When the title link display is set to ON, the switcher accepts video titles with video signals from a router and displays them on the control panel in accordance with crosspoint switches on the router.

(1) Open the [SETUP - EXT I/F - ROUTER] (6/6) menu.

```
EXT I/F  : LINK    : CHARA   : SELECT  : DISPLAY:  6/6
ROUTER   : =MFR    : =SHORT  : =INO1   : =ON     :
```

(2) Turn F1 to select MFR and then press F1.
(3) Turn F2 to select name link type from SHORT, LONG and BOTH. Both types of names are stored in the switcher.
(4) Title link should be set respectively for each video. First, turn F3 to select a video, then turn F4 to set the title link display to ON or OFF.

26-2. Router Control

26-2-1. Crosspoint Switches using the Menu

To execute the following commands:

Select a router level.
Connect Source channel 2 to Destination channel 1.
Connect Source channel 4 to Destination channel 2.

Proceed as follows:
(1) Display the [SETUP - EXT I/F - ROUTER] (2/6) menu.
(2) Turn F1 to select a level. Press F1 or press ENTER on the keypad to confirm the setting.
(3) Turn F2 to select 1 under **DEST** (destination). The currently connected source is displayed under **SRC** (source).
(4) Turn F3 to select 2, and then press F3 to switch the source. The HVS-390HS sends the crosspoint switch command to the router.
(5) The switcher displays 2 under **SRC** after having received a successful response from the router.

```
EXT I/F :  LEVEL :  DEST  :  SRC   :       :  2/6
ROUTER  :  =1    :  =1    :  =2    :       :
```

(6) In the same way, select 2 under **DEST** and 4 under **SRC**.

```
EXT I/F :  LEVEL :  DEST  :  SRC   :       :  2/6
ROUTER  :  =1    :  =2    :  =4    :       :
```

26-2-2. Crosspoint Switches with Bus Buttons (Setup)

Crosspoint switches on the control panel are possible using a user button, AUX buttons (1-8) in the BUS SELECT block and the KEY/AUX bus buttons. Before switching crosspoints, these buttons should be set for controlling a router.

◆ **Assigning the Router Control ON/OFF function to a User button**
(1) Press USER BUTTON in the CONTROL block to display the [USER BUTTON] menu.
(2) Select a desired user button under **SELECT**. The selected button will blink.
(3) Select OTHER under **TYPE**. Press F2 or ENTER on the keypad to confirm the selection.
(4) Turn F3 to select ROUTER ENABLE, and then press F3. The user button allows you to enable or disable the router control buttons (AUX1 to AUX8 in the BUS SELECT block and the KEY/AUX bus buttons).

```
USER     : SELECT:  TYPE   :  FUNC(F3)
BUTTON   :  =OU-1:  =OTHER:   =ROUTER ENABLE
```

◆ **Assigning Destinations and Sources to Buttons**
(1) Open the [SETUP - EXT I/F - ROUTER] (1/6) menu.
(2) Select a button under **DST BTN** from AUX1 to AUX8.
(3) Select a destination channel to be assigned to the button.
(4) Repeat steps (2) and (3) to assign destinations to other buttons.

```
EXT I/F : DST BTN: DST CH : SRC BTN: SRC CH :  1/6
ROUTER  :  =1     :  =1     :  =1     :  =1     :
```

(5) Select a button on the KEY/AUX bus under **SRC BTN**.
(6) Select a source channel to be assigned to the button.

(7) Repeat steps (5) and (6) to assign sources to other buttons.

```
EXT I/F : DST BTN: DST CH : SRC BTN: SRC CH :  1/6
ROUTER  :  =1      : =1      : =1      : =1      :
```

◆ **Selecting a Level**
(1) Open the [SETUP - EXT I/F - ROUTER] (2/6) menu.
(2) Turn F1 to select a level under **LEVEL**.

```
EXT I/F :  LEVEL :  DEST  :  SRC   :        :  2/6
ROUTER  :  =1     : =1      : =1      :        :
```

26-2-3. Crosspoint Switches using the Bus Buttons

◆ **Assume that router functions are assigned to the router control buttons as shown in the table below.**

Router control ON/OFF	USER 1 on the control panel
Destination channels 1 to 8	AUX 1 to AUX 8
Source channels 1 to 8	KEY/AUX bus buttons 1 to 8

To execute the following commands:

Connect Source channel 2 to Destination channel 1.
Connect Source channel 4 to Destination channel 2.

Proceed as follows:
(1) Press USER1 to enable the router control buttons.
(2) Press AUX1 to select Destination 1. The source channel button currently connected to Destination 1 will light up orange.
(3) Press 2 on the KEY/AUX bus to change the source channel to 2. The HVS-390HS sends the crosspoint switch command to the router. The bus button 2 on the KEY/AUX will turn orange after having received a successful response from the router.
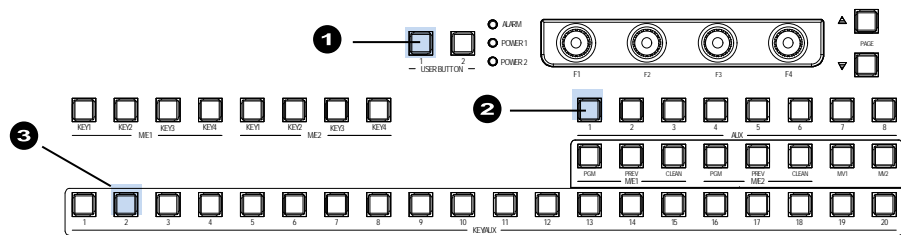
(4) In the same way, press AUX2,
(5) Then press 4 on the KEY/AUX bus.

26-2-4. Displaying Destination / Source Settings

The switcher can obtain and display the current destination / source settings (crosspoints) on the router as in the procedure below.

(1) Open the [SETUP - EXT I/F - ROUTER] (4/6) menu.
(2) Turn F1 to select a level.

```
EXT I/F :  LEVEL :  XPT    : PRESET :        :  4/6
ROUTER  :  =1     : >       : >       :        :
```

(3) Press F2. The current crosspoint pairs (**Destination - Source**) on the router are listed as shown below: up to 6 pairs can be displayed per menu page. Use the page up or down button to move among pages.

```
ROUTER  :   1-1      2-2      3-3   :        :  1/XX
XPT     :   4-4      5-5      6-6   :  >BACK :
            7-7      8-8      9-9
           10-10    11-11    12-12
             |        |        |
```

26-2-5. Saving and Loading Crosspoints

A set of all crosspoints (destination and source pairs) on the router can be saved to and loaded from the switcher.

◆ Saving Crosspoints
(1) Open the [SETUP - EXT I/F - ROUTER] (5/6) menu.

```
EXT I/F :  LOAD   : SAVE    :              :  5/6
ROUTER  :  >      :  >      :              :
```

(2) Press F2. The switcher will start to store the data and the message "DATA SAVING" is displayed on the display.

```
EXT I/F :  LOAD   : SAVE    :              :  5/6
ROUTER  :      DATA SAVING                 :
```

(3) After saving is complete, the message "COMPLETED" is displayed.

◆ Loading Crosspoints
(1) Open the [SETUP - EXT I/F - ROUTER] (5/6) menu.
(2) Press F1 to load the crosspoints from the memory. The message "DATA LOADING" is displayed during processing.

```
EXT I/F :  LOAD   : SAVE    :              :  5/6
ROUTER  :      DATA LOADING                :
```

(3) After loading is complete, the message "COMPLETED" is displayed.

26-2-6. Simultaneous Switching Using Take

Multiple crosspoints (destination/source pairs) can be switched simultaneously in the menu using stored crosspoint data.

◆ **Setting Crosspoints**
(1) Open the [SETUP - EXT I/F - ROUTER] (3/6) menu.
(2) Turn F1 to select a level.
(3) Turn F2 to select a destination channel. If a source to be paired has been set, the source channel number is displayed.
(4) Turn F3 to select a desired source and then press F3 to save the destination / source pair.
(5) The source setting under **SRC** is applied, after the crosspoint preset on the router have been changed.

```
EXT I/F : LEVEL : DEST  : SRC   : TAKE  : 3/6
ROUTER  : =1    : =1    : =2    : >EXEC :
```

(6) Repeat steps (3) and (4) to set all destination / source pairs to be saved.

◆ **Executing Multiple Switches Simultaneously**
(1) In the [SETUP - EXT I/F - ROUTER] (3/6) menu, turn F4 to select EXEC.
(2) Press F4 to execute multiple switches.

```
EXT I/F : LEVEL : DEST  : SRC   : TAKE  : 3/6
ROUTER  : =1    : =1    : =2    : >EXEC :
```

◆ **Displaying Preset Crosspoints**
(1) Open the [SETUP - EXT I/F - ROUTER] (4/6) menu.
(2) Turn F1 to select a level.

```
EXT I/F : LEVEL : XPT   : PRESET :      : 4/6
ROUTER  : =1    : >     : >      :      :
```

(3) Press F3. The preset crosspoints are displayed. To move among menu pages, use the page up and down buttons.

```
ROUTER :   1-1      2-2      3-3  :       : 1/XX
XPT    :   4-4      5-5      6-6  : >BACK :
           7-7      8-8      9-9
          10-10    11-11    12-12
            |        |        |
```

◆ **Clearing the Preset Crosspoints**
(1) In the [SETUP - EXT I/F - ROUTER] (3/6) menu, turn F4 to select CANCEL.
(2) Press F4 to clear the settings.

26-3. Linking Titles by Sending TSL messages

26-3-1. TSL Tally

The switcher's TSL tally function uses the TSL protocol (developed by Television Systems Ltd.) and allows users to send tally information to TSL devices as shown in the procedure below. To set up external devices, see their manual pages.

◆ Connecting to External Devices (RS-422 Setting)
Use an RS-422 cable to connect HVS-390HS and an external device. Connect the cable to an RS-422 port (Port 1 to 6) on HVS-390HS.

(1) Display the [SETUP - SYSTEM - RS-422] menu.
(2) Select TSL for the RS-422 port for use.
(3) Set **PARITY** to EVEN and **BAUD** (Baud rate) to 38400. (These settings vary depending on external devices.)

```
SYSTEM   : SELECT : FUNC   : BAUDRAT: PARITY :   1/1
RS-422   : =PORT3:  =TSL    : =38400:  =EVEN  :
```

(4) After all changes are complete, reboot the MU to apply the changes. (See section 23-1. Rebooting System."

◆ Connection Example using TSL's Tally
The following diagram shows how video titles of IN01-08 are handed over and their tally data are transferred. To configure a system like this, follow the below procedure.
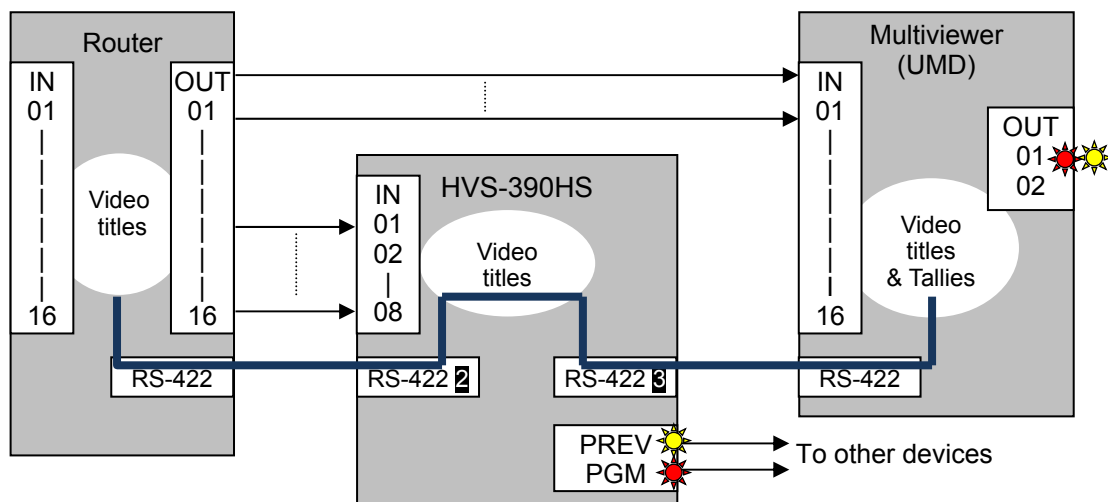
* The above example assumes that same signals are sent to both HVS-390HS (IN01-08) and the Multiviewer (IN01-08).

To use the TSL tally information of IN01 and IN02 in the connection example above, set up TSL tally as shown below.

(1) Display the [SETUP - EXT I/F - TSL TLY] menu.
(2) Select IN01 for **DISP1** (DISPLAY 1).

```
FUNCTION: DISP   : SIGNAL : TALLY   :         : 1/1
TSL TLY  : =1     : =IN01  :  =ON     :         :
```

(3) Select IN02 for **DISP1** (DISPLAY 1).
(4) Set for IN03 to IN08 in the same way.
(5) Turn F3 to set TSL tally to ON. Video titles on the multiviewer display are changed in accordance with the Router's crosspoint switches and tally indications on the multiviewer display are changed in accordance with the HVS-390HS transitions.

27. Connecting to Routers

The switcher can also connect to a router other than FOR-A MFR series routers.

> The router control is based on the HARRIS Pass-Through protocol.
>
> To connect a router other than an MFR series router, two RS-422 interfaces, one for controlling the router and the other for receiving TSL protocol, are required.

27-1. Assigning a Router Channel to an RS-422 port

(1) Display the [SETUP - SYSTEM - RS-422] menu.

```
SETUP    : >FORMAT   >REF I/O >ARCNET   >ETHERNET
SYSTEM   : >RS-422   >TIME    >INIT     >REBOOT
```

(2) Turn F1 to select a port for connecting a router.
(3) Select ROUTER under **FUNC**.
(4) Set **BAUD** (baudrate) to 57600 and **PARITY** to NONE. (These settings may vary depeding on routers. Refer to your router's User Manual.)

```
SYSTEM   : SELECT   : FUNC    : BAUD    : PARITY  :  1/1
RS-422   :  =PORT1  : =ROUTER:  =57600:  =NONE   :
```

(5) Reboot the switcher after settings are complete. (See section 23-1. "Rebooting System.")

27-2. Router Control

The router can be controlled in the same way as described for MFR series routers. See section 26-2. "Router Control."

27-3. Linking Titles and Tallies in the System via TSL Protocol
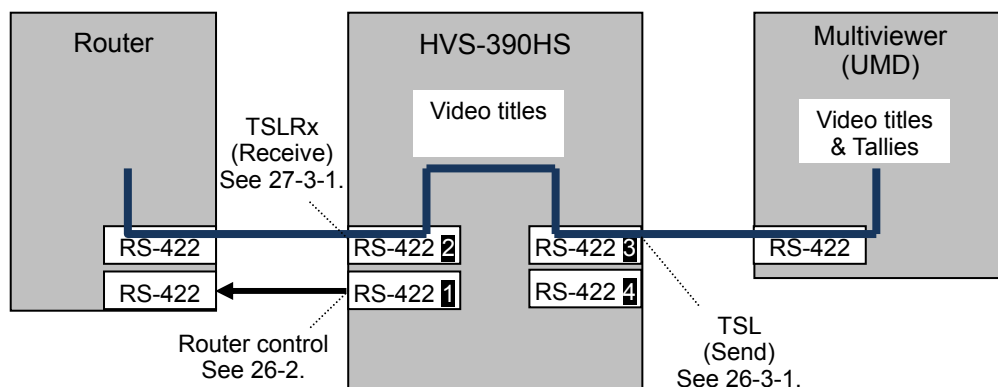
27-3-1. Linking Titles in the System by Receiving TSL messages

The switcher can accept video titles with video signals from a router and display them on the control panel in accordance with crosspoint switches on the router using TSL protocol. To do this, in addition to the router control connection, another serial connection for TSL protocol is needed.

To configure title links, connect a router to an RS-422 port (from 1 to 6) on the HVS-390HS using an RS-422 cable. Then configure the RS-422 port as in the procedure below. Refer to your router's User Manual for how to set up the router.

◆ **Assigning TSL to the RS-422 port**
(1) Display the [SETUP - SYSTEM - RS-422] menu.
(2) Select TSLRx for the RS-422 port used for TSL connection to the router.
(3) To configure the port, set **PARITY** to EVEN, and **BAUD** (baudrate) to 38400. (The settings may vary depending on routers.)

```
SYSTEM  : SELECT :  FUNC  :  BAUD  : PARITY :  1/1
RS-422  :  =PORT2:  =TSLRx:  =38400:  =EVEN  :
```

(4) Reboot the switcher after settings are complete. (See section 23-1. "Rebooting System.")

◆ **Setting Title Links**
(1) Display the [SETUP - EXT I/F - ROUTER] (6/6) menu.
(2) Turn F1 to select TSL, and then press F1.
(3) Turn F2 to select the type of names on the switcher linked to the video titles on the router: SHORT, LONG or BOTH.
(4) To link video and display addresses, turn F3 to select a video and then turn F4 to select an address from 1 to 127 or OFF (not linked). The links should be set for each video.

```
EXT I/F :  LINK   :  CHARA  : SELECT  : DISPLAY:  6/6
ROUTER  :  =TSL   :  =SHORT:  =IN01  :  =1     :
```

27-3-2. TSL Tally by Sending TSL messages

A TSL tally connection in the system can be configured in the same way as described for the MFR series. See section 26-3. "Linking Titles by Sending TSL messages." To set up external devices, see their manual pages.

28. Audio Mixer Control

The switcher can connect and control an Audio Mixer remotely via RS-422 using ESAM II protocol. The Audio Follow Video function is available, which allows users to set audio playback to follow video images.

28-1. Connecting Audio Mixers

◆ Connecting the HVS-390HS to an Audio Mixer
Use an RS-422 cable to connect HVS-390HS to an Audio Mixer. Connect the cable to an RS-422 port (Port 1 to 4) on HVS-390HS. Refer to the Audio Mixer user's manual to connect the cable to the audio mixer.

◆ Assigning a Audio Mixer Channel to an RS-422 port
(1) Display the [SETUP - SYSTEM - RS-422] menu.
(2) Turn F1 to select an RS-422 port under **SELECT**.
(3) Turn F2 to set MIXER for **FUNC**. Press F2 to confirm the setting.
(4) Verify that **PARITY** is set to EVEN and **BAUD** to 38400. (If **FUNC** is set to MIXER, **PARITY** and **BAUD** will be automatically set.)

```
SYSTEM   : SELECT : FUNC   :  BAUD   : PARITY :  1/1
RS-422   : =PORT1 : =MIXER : =38400 : =EVEN  :
```

(5) Restart the switcher.

28-2. Audio-Follow-Video Setting

(1) Display the [SETUP - EXT I/F] menu.
(2) Turn F1 to select >AUD MXR, then press F1 to display the[AUD MXR (AUDIO MIXER)] menu.

```
SETUP    : >EDITOR   >TSL TLY >VTR/VDCP>ROUTER
EXT I/F  : >AUD MXR
```

(3) Set **ENABLE** to ON to enable Audio-Follow-Video. (The Audio-Follow-Video ON/OFF can be assinged to a user button.)
(4) Select a video bus between M/E1 and M/E2 under **BUS**.
(5) Select a video signal under **SIGNAL**.
(6) Select an audio (audio crosspoint) following the selected video under **AUD XPT**. Press F4 to confirm the setting.

```
EXT I/F  : ENABLE :  BUS    : SIGNAL : AUD XPT:  1/1
AUD MXR  : =ON     : =M/E1  : =IN04  : =1      :
```

In the above setting example, the audio playback is set to No. 1 on the Audio Mixer, when the M/E1 bus signal is changed to **IN04** on the switcher.

AUD XPT Setting

Setting	Description
NONE	Audio selection is not changed, maintaining the last selection, whenever any video signal is selected.
1-64	When the specified video signal (set under SIGNAL parameter) is selected on an M/E, Audio Mixer changes audio to the specified bus
FLWME	This setting is available only for M/E1 (re-entry) on the M/E2. Audio Mixer changes audio to the same bus as assigned to the input signal selected on the M/E1 PGM. (See the setting example in the next page.)

Setting Example when using Re-entry

In the following menu settings, if the M/E1 bus signal is changed to **IN04** on the switcher, the audio playback is changed to No. 1 on the Audio Mixer.

In addition, when the M/E2 bus is set to **FLWME** for the M/E1 signal as shown below, the audio playback is set to No. 1 on the Audio Mixer if the M/E1 re-entry signal is selected on the M/E2 bus and the M/E1 bus signal is changed to **IN04**,

```
EXT I/F : ENABLE :  BUS    : SIGNAL : AUD XPT:  1/1
AUD MXR :  =ON     : =M/E1  : =IN04:  =1        :
```

```
EXT I/F : ENABLE :  BUS    : SIGNAL : AUD XPT:  1/1
AUD MXR :  =ON     : =M/E2  : =M/E1:  =FLWME:
```

Default Video and Audio Assignments

Video	Audio bus
BLACK	NONE
IN01 to IN24	1 to 24
STILL1 to 4	NONE
STILLKEY	NONE
MATTE1	NONE
MATTE2	NONE
COLORBAR	NONE
M/E1	NONE

29. Editor Control (Option)

The switcher can be controlled from an editor. See section 29-1."Editor Control Settings" for controlling the editor and section 29-2 "Connection Settings with Editor (EDITOR port setting)" for editor connection.

> The HVS-39ED software option is required for editor control.

29-1. Editor Control Settings

(1) Open the [SETUP - EXT I/F - EDITOR] menu.

```
SETUP    : >EDITOR    >TSL TLY >VTR        >ROUTER
EXT I/F  : >AUD XPT >AUX UNIT
```

(2) Select a protocol at **TYPE** between DVS(SONY DVS/BVS series compatible) and GVG-K/Z.
(3) Set **ENABLE** to ON to enable the editor control. (The Editor Control On/Off function can be assigned to a USER button. See section 0. "USER Button.")

```
FUNCTION: TYPE   : ENABLE : SELECT :  WIPE  :  1/2
EDITOR   : =DVS    :  =ON   :  =ME   :  =NORML:
```

(4) If DVS is used, the bus to be controlled from the editor must be specified. Refer to the table below to set the bus under **SELECT**. If PREV, PREV ON or ALL is set, AUX1 will be the edit preview bus and with crosspoint number is 35. Set your editor accordingly.

Setting	Description
ME	Controls the M/E bus when **ENABLE** is ON.
PREV	Controls the preview bus when **ENABLE** is ON.
ALL	Controls both M/E bus and preview bus when **ENABLE** is ON.
ME ON	Always controls the M/E bus regardless of **ENABLE** setting. Controls both M/E bus and preview bus when **ENABLE** is ON.
PREV ON	Always controls the preview bus regardless of **ENABLE** setting. Controls both M/E bus and preview bus when **ENABLE** is ON.

(5) If G-K/Z (GVG protocol) is used, select the pattern control mode between two below at **WIPE**.

Setting	Description
NORMAL	Same wipe pattern numbers (0-99) as in the switcher are used in the editor. (default setting)
LIST	Ten wipe patterns saved to Direct Pattern memory are used in the editor as Direct Pattern Nos. 90-99. (GVG-Protocol only)

(6) Press the page down button to go to PAGE2.

```
FUNCTION: XPT CTL: WIP CTL: KEY CTL:        :  2/2
EDITOR   :  =INPUT:  =ON    :  =ON   :        :
```

(7) Select the crosspoint control mode between two below at **XPT CTL.**

INPUT	Specify a signal by using the input number from the editor. (Default setting)
BUTTON	Specify a signal by using the button number from the editor.

BUTTON(HVS-392OU)

Selected bus	Button number
1-40	1-40

BUTTON(HVS-392ROU)

Selected bus	Button number
1-24	1-24

BUTTON(HVS-392WOU)

Selected bus	Button number
1-56	1-56

INPUT

Input number	Source signal
0	BLACK
1-24	IN01-IN24
29-32	STILL1-4
37	COLOR BAR
38, 39	MATT1-2

(8) Set to enable/disable the wipe pattern control under **WIP CTL**.
(9) Set to enable/disable the KEY control under **KEY CTL**. (Be careful that in such case KEY will not turn automatically OFF when ALL STOP is received in the switcher.)

29-2. Connection Settings with Editor (EDITOR port setting)

The connection settings with an editor are made in the [SETUP - SYSTEM - RS-422] menu as shown below.

(1) Open the [SETUP - SYSTEM - RS-422] menu.

```
SYSTEM  : SELECT : FUNC   : BAUDRAT: PARITY :  1/1
RS-422  : =EDITR:  =EDIT  : =38400:  =ODD   :
```

(2) Turn F1 to select EDITR (EDITOR).
(3) Turn F2 to select EDIT (EDITOR)
(4) Turn F3 to select the baud rate. (It is normally not necessary to change this.)
(5) Turn F4 to select the parity. (It is normally not necessary to change this.)

30. AUX Bus Control Units

30-1. HVS-AUX8/16/32

HVS-AUX8/16/32 units allow you to remotely change an AUX bus signal. An AUX unit can control a single AUX output. HVS-AUX8 units can select up to 8 signals (14 if using SHIFT). HVS-AUX16/32 units can select combined signals (PGM, PREV, and CLEAN) as well as input signals. Up to 5 AUX units can be connected to the switcher.

30-1-1. Connecting AUX Units

AUX units are connected to the switcher through a specialized **ARCNET** network.
Connect AUX units to the switcher in a cascade as shown below and terminate both ends of the network chain with 75-ohm terminators.

◆ **ARCNET ID Numbers**
Arncet ID numbers from **1 to 255** are used to uniquely identify a network terminal.
The Arcnet ID number for **HVS-390HS** is set to **250** as factory default.
Note: Do **not** duplicate an Arcnet ID number.
▶ See the "HVS-AUX8/16/32 Operation Manual" for more details.

Arcnet cable: 75Ω BNC (5C2V equivalent or higher)
Total cable length: Less than 100 m

HVS-392OU/ROU/WOU rear panel

Arcnet ID
1

75Ω terminator

1 m or more
for each

ID	HVS-AUX8
240	(for AUX1)

ID	HVS-AUX8
241	(for AUX2)

ID	HVS-AUX16
242	(for AUX3)

ID	HVS-AUX16
243	(for AUX4)

Arcnet ID
250

HVS-390HS rear panel

Use an Arcnet Hub (up to 2 units) if the total cable length exceeds 100 m.
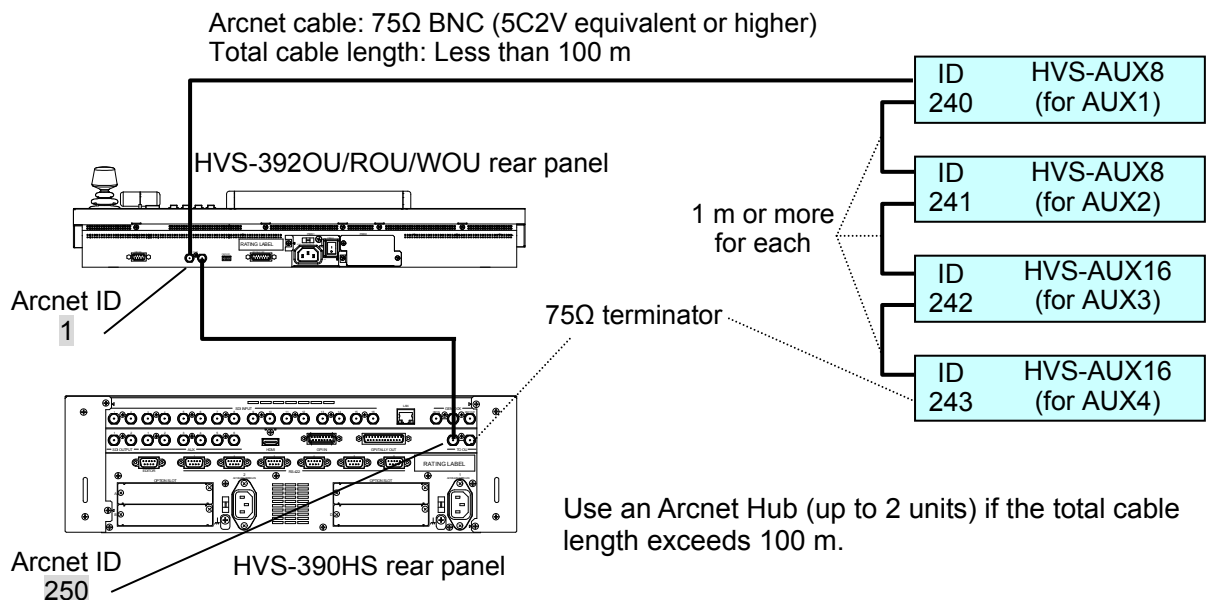
◆ **To Change the Switcher ARCNET ID Number**
The Arcnet ID number for **HVS-390HS** is set to **250** and an OU is set to **1** as factory default and does not normally need to be changed. Change the ID number in the [SETUP - SYSTEM - ARCNET] menu only when necessary.

```
SYSTEM  : OU ID : OU NO : CTRL MU :        : 1/2
ARCNET  : = 1   : =OU1  : =250    :        :
```

```
SYSTEM  : MU ID :                          : 2/2
ARCNET  : = 250 :                          :
```

To apply the change, turn the switcher power Off, then On.

30-2. HVS-AUX16A/16B/32A/64A

HVS-AUX16A/16B/32A/64A units allow users to remotely change AUX output signals or recall events of the switcher. A sigle AUX unit can manage all AUX outputs. Up to 16 (32 with SHIFT) actions can be assigned to buttons on HVS-AUX16A/16B, 32 (64 with SHIFT) on HVS-AUX32A and 64 on HVS-AUX64A. Up to 10 AUX units can be connected to the switcher.

A LAN cable is required for the AUX unit connection.

30-2-1. Connecting AUX Units

AUX units should be connected to the switcher through LAN cables.
To connect an AUX unit directly to the switcher, use a **cross-over** cable.
To connect an AUX unit via a network hub, use a **straight-through** cable.

◆ **AUX ID Number**
AUX ID numbers from 1 to 255 are used to uniquely identify an AUX unit.
To connect to the HVS-390HS unit, use **ID1 to ID10**. (Default setting: ID1)
The ID numbers should not be duplicated when connecting to a switcher.

▶ See the "HVS-AUX16A/16B/32A/64A Operation Manual" for more details.

Cross-over cable

HVS-AUX16A rear panel

HVS-390HS rear panel
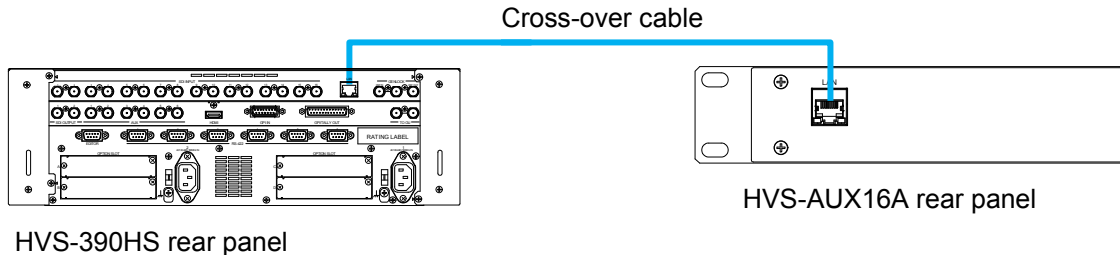
◆ **Checking AUX Unit MAC Addresses**
AUX unit MAC addresses can be checked from the switcher.
The following example shows how to check the connected HVS-AUX16A MAC address.

(1) Open [SETUP - EXT I/F - AUX UNIT] menu PAGE 1.
(2) Select **UNIT1**[xxBTN] under **SELECT**.
(3) Open [SETUP - EXT I/F - AUX UNIT] menu PAGE 5.
The unit's MAC address is displayed as shown below.

```
AUX UNIT:    MAC ADDRESS              : 5/5
MAC ADDR:  00-00-00-00-00-00         :
```

30-2-2. Assigning Actions to AUX Unit Buttons

Assigning actions to AUX unit buttons should be performed in the switcher menu.

Ex.) To "Output the PGM signal from the AUX3 bus on UNIT 1:
There are two ways to perform this action.
- Assign "**AUX3 XPT M/E1 PGM**" to a button and press the button.
- Assign "**AUX3 bus**" to a button and "**PGM signal**" to another button, then press these buttons.

◆ **If Using Only a Single AUX Unit Button:**
(1) Open [SETUP - EXT I/F - AUX UNIT] menu PAGE 1.
(2) Select **UNIT1** under **SELECT**. Note that the total number of buttons are displayed in parentheses.

```
AUX  UNIT:  SELECT       :  AUX  SEL:      :  1/5
SELECT   :   =UNIT1[xxBTN]:   =AUX1 :       :
```

AUX ID Number

(3) Open [SETUP - EXT I/F - AUX UNIT] menu PAGE 4.
(4) Set the menu as shown below.

```
AUX  UNIT:  SELECT:  TYPE   :  FUNC(F3)       :  4/5
PANEL    : =1      : =AUX3  : =AUX3  XPT  M/E1  PGM
```

Button number   Action type (See the   Action (See the table in
                       table in the next page.)   the next page.)

(5) Press Button 1 on UNIT 1. The AUX 3 output signal is changed to PGM.

◆ **If Using Two AUX Unit Buttons:**
(1) Select UNIT 1 on PAGE 1 in the same way as above.
(2) Set as shown below for Button 1 in [SETUP - EXT I/F - AUX UNIT] menu PAGE 4.

```
AUX  UNIT:  SELECT:  TYPE   :  FUNC(F3)     :  4/5
PANEL    : =1      : =AUX   : =AUX3  XPT  SELECT
```

(3) Set the menu as shown below for Button 2.

```
AUX  UNIT:  SELECT:  TYPE   :  FUNC(F3)     :  4/5
PANEL    : =2      : =AUX   : =AUX  XPT  M/E1  PGM
```

(4) Press Button 1 then Button 2 on UNIT 1. The AUX 3 output signal is changed to PGM.

◆ TYPE and FUNC Settings

AUX unit buttons light as shown below to indicate the status.

   When an action is assigned to a button: **Dim-lit**

   When an action is being performed: **Lit green**

TYPE Setting	FUNC (action) Setting	Description
NONE	(NOT ASSIGN)	
AUX	AUX1 XPT SELECT AUX8 XPT SELECT	Selects an AUX bus.
	AUX XPT BLACK AUX XPT IN1-24 AUX XPT STILL1-4 AUX XPT STILL1-4 KEY AUX XPT COLORBAR AUX XPT MATTE1-2 AUX XPT M/E1 PGM AUX XPT M/E1 PREV AUX XPT M/E1 CLEAN AUX XPT M/E1 KEYOUT AUX XPT M/E2 PGM AUX XPT M/E2 PREV AUX XPT M/E2 CLEAN AUX XPT M/E2 KEYOUT AUX XPT P/P PGM AUX XPT P/P PREV AUX XPT P/P CLEAN AUX XPT P/P KEYOUT AUX XPT MV1-2	Selects a signal to be output an AUX bus. Note that an AUX bus should be selected using buttons assigned to "**AUX1 XPT SELECT**" to "**AUX8 XPT SELECT**" above before pressing a signal selection button. If an AUX bus is not selected when pressing a signal selection button, the selected signal is applied to the AUX bus set under **AUX SEL** in [SETUP - EXT I/F - AUX UNIT] menu PAGE 1 on the HVS-390HS. (See "Note on the AUX SEL parameter" below.)
	AUX1 TRANS ENABLE AUX8 TRANS ENABLE	Sets AUX crossfade switches to On/Off.
AUX1	AUX1 XPT BLACK AUX1 XPT MV AUX1 TRANS ENABLE	Selects a signal to be output from an AUX bus.
|	|	
AUX8	AUX8 XPT BLACK AUX8 XPT MV AUX8 TRANS ENABLE	Selects a signal to be output from an AUX bus.
EVENT	EVENT NO.00-99 RECALL	Loads an event.
MACRO	MACRO NO.00-39 RECALL	Recalls a macro.
R DST	ROUTER DST NO.001-256	Selects a destination on the router.
R SRC	ROUTER SRC NO.001-256	Selects a source on the router.

<Note on the AUX SEL parameter>

The **AUX SEL** setting in menu PAGE 1 indicates the default control AUX bus.

For example, if you press Button 1 on the AUX unit in the following menu settings:

```
AUX UNIT: SELECT       : AUX SEL: LOCK  : 1/5
SELECT  :  =UNIT1[xxBTN]:  =AUX1 : =OFF   :
```

```
AUX UNIT: SELECT: TYPE  : FUNC(F3)        : 4/5
PANEL   : =1     : =AUX  : =AUX XPT M/E1 PGM
```
- The **AUX1** bus signal changes to M/E1 PGM.

```
AUX UNIT: SELECT: TYPE  : FUNC(F3)        : 4/5
PANEL   : =1     : =AUX3 : =AUX3 XPT M/E1 PGM
```
- The **AUX3** bus signal changes to M/E1 PGM.

30-2-3. Assigning the SHIFT or TAKE Function

HVS-AUX16A/16B/32A units can use additonal 16/32 buttons by using the SHIFT function. In addition, HVS-AUX16A/16B/32A/64A units can use the TAKE (confirmation) function.

Note that the SHIFT and TAKE functions cannot be used simultanelusly. The TAKE function is always enabled by setting TAKE to ON in the menu regardless of SHIFT state.

◆ **Using the SHIFT function**
(1) Open [SETUP - EXT I/F - AUX UNIT] menu PAGE 2.
(2) Select **TGL** (Toggle) or **NOR** (Normal) under **SHIFT**.
(3) Set **TAKE** to **OFF**.

```
AUX  UNIT:    BRIGHTNESS :  SHIFT :  TAKE   :  2/5
SELECT  :  H=8       L=1  :  =TGL   :  =OFF     :
```

With these settings, HVS-AUX16A/16B/32A units can use additonal 16/32 buttons using the SHIFT/TAKE button. Refer to the table in the next page for details on how to use this button.

Parameter	Default	Setting	Description
SHIFT	OFF	OFF	Additional buttons cannot be used.
		TGL	Pressing the SHIFT/TAKE button enables SHIFT and pressing the button again disables SHIFT.
		NOR	SHIFT is enabled while the SHIFT/TAKE button is pressed.

◆ **Using the TAKE (Confirmation) Function**
(1) Open [SETUP - EXT I/F - AUX UNIT] menu PAGE 2.
(2) Set TAKE to ON.

Parameter	Default	Setting	Description
TAKE	OFF	OFF	An action is immediately executed (by pressing the action button) without pressing TAKE.
		ON	An action is executed by pressing TAKE after pressing the action button. Press TAKE within 5 seconds after pressing an action button. Otherwise, the operation will be canceled.

30-2-4. Adjusting Light Levels for AUX Unit Buttons

Light levels for AUX unit buttons can be adjusted in [SETUP - EXT I/F - AUX UNIT] menu PAGE 2 as shown below.

```
AUX  UNIT:    BRIGHTNESS :  SHIFT :  TAKE   :  2/5
SELECT  :  H=8       L=1  :  =OFF   :  =OFF     :
```

Parameter		Default	Setting	Description
BRIGHTNESS	H	8	5 - 8	Adjusts the normal lighting level.
	L	1	0 - 4	Adjusts the dim lighting level.

30-2-5. Setting LOCK Button on AUX Boxes

Open [SETUP - EXT I/F - AUX UNIT] menu PAGE 3 to enable/disable the LOCK button on AUX Boxes.

```
AUX UNIT: LIGHT :INHIBIT:              :  3/5
LOCK BTN: =OFF  : =DISBL:              :
```

Parameter	Default	Setting	Description
LOCK	OFF	OFF	Button lights are turned off while the AUX box is locked.
		LIGHT	Button lights are turned on while the AUX box is locked.
INHIBIT	DISBL	DISBL ENABL	Enables/disables the LOCK button.

31. SmartDirect Control (Option)

The switcher can connect to the FOR-A all-in-one productin system, SmartDirect, and execute Direct Buttons' actions.
Consult your FOR-A reseller for more details on SmartDirect.

> An HVS-39VR software option is required for SmartDirect connection.

31-1. Connecting to SmartDirect via Ethernet

◆ **Connection Example**
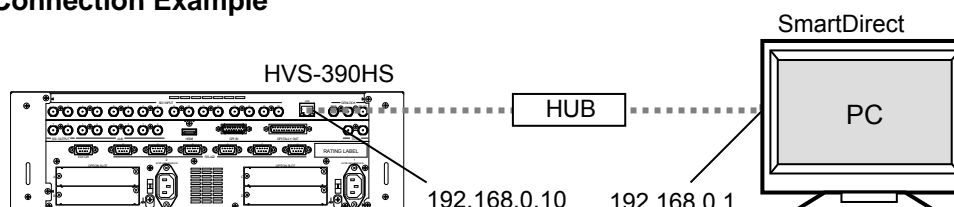
Check and set the SmartDirect IP address.
(1) Open the [SETUP - FUNCTION - SMRT DIR] menu.
(2) Go to PAGE 2.
(3) The procedure example for changing the fourth octet to 1 is as follows:

   (a) Press F2 four times.
   (b) Turn F2 to change 001.
   (c) Press F2.

```
FUNCTION:        : IP ADDRESS              :  2/2
SMRT DIR:        : =192.168.000.001        :
```

(4) Go to PAGE 1.
(5) Set **ENABLE** to ON.

   Once the switcher is connected to SmartDirect, Direct Button names can be displayed as shown below.
   If a Direct Button name is changed while displaying PAGE1, reopen PAGE 1.

```
FUNCTION: ENABLE :  DIRECT BUTTON          :  1/2
SMRT DIR:  =ON    : >DirectButton1         :
```

> Maximum of 230 Direct Button names with up to 16 alphanumeric letters per name can be displayed in the menu. Direct Button names must be unique.

31-2. Executing Direct Buttons

The following two methods are available for executing Direct Buttons.

31-2-1. Executing in the Menu

(1) Open the [SETUP - FUNCTION - SMRT DIR] menu.

```
FUNCTION: ENABLE :  DIRECT  BUTTON           :  1/2
SMRT DIR:  =ON    :  >DirectButton1          :  P.00
```

(2) Turn F2 to select Direct Button name.
(3) Press F2. The Direct Button can be performed on the SmartDirect.

31-2-2. Executing Using Macros

Direct Buttons of SmartDirect can be registered to switcher's macros and then executed using them.

◆ **Registering Direct Buttons to Macros**
The following example procedure shows how to register DirectButton1 to Macro 01.

(1) Press MACRO.
(2) Press STORE (ENTER) on the Keypad to start recording. The following menu will appear.

```
MACRO    : STEP->000    : ACTION            :  1/1
STORE    : TIME->00000  : >DirectButton1    :  P.00
```

(3) Turn F3 to select **Direct Button1**.
(4) Press F3.
(5) Press STORE (ENTER) to stop recording.
(6) Press 1 on the Keypad.
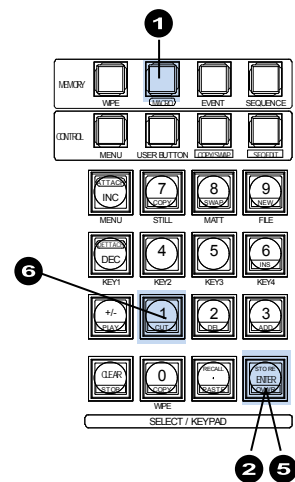
※ Direct Button names are not updated if you change them while recording the macro .

◆ **Executing Macro01**
(1) Press MACRO.
(2) Press 1.
(3) Press RECALL.

See section 18. "Macros" for more details on macros.
Macros can be edited in the Web-based control GUI (see "Appendix 3).

32. Network Settings

32-1. Arcnet

◆ **Connecting HVS-392OU/ROU/WOU to the Main Unit (HVS-390HS)**
For the main unit (hereafter called MU), HVS-392OU, HVS-392ROU or HVS-392WOU (hereafter called OU for both) to communicate, use the BNC cable to connect an Arcnet port on each unit. If you want to connect other devices to the Arcnet, use the other Arcnet port of the switcher or the control panel. If either or both of them are the last devices in the network, the other port has to be 75 ohm-terminated. Refer to section 3-3. "How to Connect between MU and OU" for details.

◆ **ARCNET Menu**
The factory default settings for the ARCNET are shown in the table below. Change ARCNET settings only when necessary. The settings can be made in the [SETUP - SYSTEM - ARCNET] menu.

```
SYSTEM  : OU ID :OU NO :CTRL MU : MU ID : 1/2
ARCNET  : = 1   : =OU1  : =250   : =250  :
```

```
SYSTEM  : MU ID :                        : 2/2
ARCNET  : = 250 :                        :
```

Item	Description	Default setting	Setting range
OU ID	Sets Arcnet ID for the OU.	1	1-255
OU NO	Selects the OU group number. Note that OUs in the same group share the same panel settings such as bus assignments and user transition settings.	OU1	OU1 to OU3
CTRL MU	Selects Arcnet ID of the MU controlled by the OU.	250	1-255
MU ID	Sets Arcnet ID for the MU.	250	1-255

If you are configuring one MU and OU each via ARCNET, connect them by using the BNC connectors and leave them to their factory default-set ID numbers (250 and 1 respectively). Turning F2 displays the accessible MU ID(s) under **CTRL MU ID** in the menu. Select an MU to be controlled. If you want to disconnect the MU from the OU on the Arcnet, select --- under **CTRL MU ID**.

◆ **Changing the MU ID**
If you want to change the MU ID, connect the MU to the OU and disconnect other devices from the network. Power on both MU and OU and change the MU ID. Turn the power of all units off, re-connect the units in the system, and turn the system power back on to re-configure the network. Note that the new ID will not be valid until the units are powered ON again.

◆ **Notes on Network Configuration**
● 75-ohm BNC cables (5C2V equivalent or higher) are required for ARCNET connection
● ARCNET is configured as a simple Bus topology network. BNC terminators equipped with a 75-ohm resistor should be installed on both ends of a bus network segment.
● Total network cable length should be less than 100 m. If more than 100 m is required, use ARCNET hubs (up to 2).
● Minimum distance between ARCNET devices is 1 m.
● To connect 8 or more ARCNET devices in a network, use an ARNCET hub.
Please consult your FOR-A reseller for more information.

◆ **Adding ARCNET devices to the Arcnet LAN**
If you want to connect other ARCNET devices to the MU and the OU, additional connection cables are required and the network should be reconfigured again. Consult your FOR-A resellers for more details.

Be careful not to use the same ARCNET ID for two different units. If an ARCNET ID conflict has occurred and network communication fails, turn the unit power OFF at one of the conflicting units and disconnect it from the network. Power on the conflicting unit and change the ID to a valid network ID. Note that the new ID will not be valid until units are powered ON again.

> Before loading system data from an installed memory card, verify that the ARCNET ID numbers that are currently assigned to the OU and MU for operation are the same as those in the data being loaded. If a conflicting ARCNET ID (one assigned to another OU or MU in the network) is applied by loading the system data, network operation will fail after loading is complete.

32-2. Ethernet

The Ethernet connection is used for connecting a computer or transferring image data. (See section 32-3. "Image Data Transfer.")

◆ **Connecting to LAN**
Use the twisted pair, Category 5 (UTP) cable (straight- through type) to connect the main unit (MU) to LAN. If connecting the MU to a PC directly, use the cross-connect type cable.

◆ **IP Address, Net mask and Default Gateway Setting**
Open the [SETUP - SYSTEM - ETHERNET] menu. The default settings for IP address, Net mask and Default Gateway are as shown below.

```
SYSTEM   :      IP ADDRESS       :          : 1/4
ETHERNET: =192. 168. 000. 010    :          :
```

```
SYSTEM   :        NET MASK       :          : 2/4
ETHERNET: =255. 255. 255. 000    :          :
```

```
SYSTEM   :    DEFAULT GATEWAY  :            : 3/4
ETHERNET: =192. 168. 000. 001    :
```

◆ **Changing IP Address, Net mask and Default Gateway**
(1) Open the IP address page (or the net mask page).
(2) Press F1.
(3) The first octet (192 in the IP address example above) will be highlighted.
(4) Turn F1 to change the number.
(5) Press F1.
(6) The second octet (168 in the IP address example above) will be highlighted.
(7) Repeat (4) and (5) to change the IP address.
(8) Reboot the main unit. (See section 23-1. "Rebooting System.")

IMPORTANT
You should consult your network administrator before connecting the HVS-390 series to a LAN network.

◆ **MAC Address**
The MAC address of the network card is displayed on PAGE 4.

```
SYSTEM   :      MAC ADDRESS    :            : 4/4
ETHERNET: 00-00-00-00-00-00 :                :
```

32-3. Image Data Transfer

The HVS-390HS series can send and receive image data used for stills and video clips through an Ethernet. The FTP protocol is used for transferring files between the switcher and the computer. The main unit works as an FTP server.

32-3-1. Setup before Connection

◆ PC Requirements
An Ethernet port (100BASE-TX/1000BASE-T) and FTP client function are required for the personal computer. Any type of computer or OS can be used. In this section a Windows XP or 7-installed PC is used as an example.

◆ Network Setting

IP Address	192. 168.0.10 (default)	Main unit
Subnet mask	255. 255. 255.0(default)	

IP Address	192. 168.0.1 to 192. 168.0.254 (Do not set the same IP as the main unit)	Computer
Subnet mask	255. 255. 255.0	

Refer to the procedure below to open the setting dialog and change the computer network settings, if necessary.

Setting the IP Address in Windows XP
Go to **Start** > **My Network Places**. Right-click **My Network Places**, and choose **Properties**. Right-click the **Local Area Connection** icon and choose **Properties**. Select the **Internet Protocol (TCP/IP)** check box, and click **Properties**.

Setting the IP Address in Windows 7
Go to **Start** >> **Control Panel** >> **Network and Internet** >> **Network and Sharing Center,** and then click **Change adapter settings**. Right-click the **Local Area Connection** icon and choose **Properties**. Click the **Internet Protocol Version 4(TCP/IPv4)** check box, and click **Properties**.

NOTE
The setting example above is for connecting the computer and the main unit. Although you can change the IP address of the main unit, normally change the IP of the computer. See section 32-2. "Ethernet" for network setting in the main unit. If you want to connect the computer and the switcher to the existing LAN, be sure to consult the network administrator before connecting to the LAN and use suitable cables and settings.

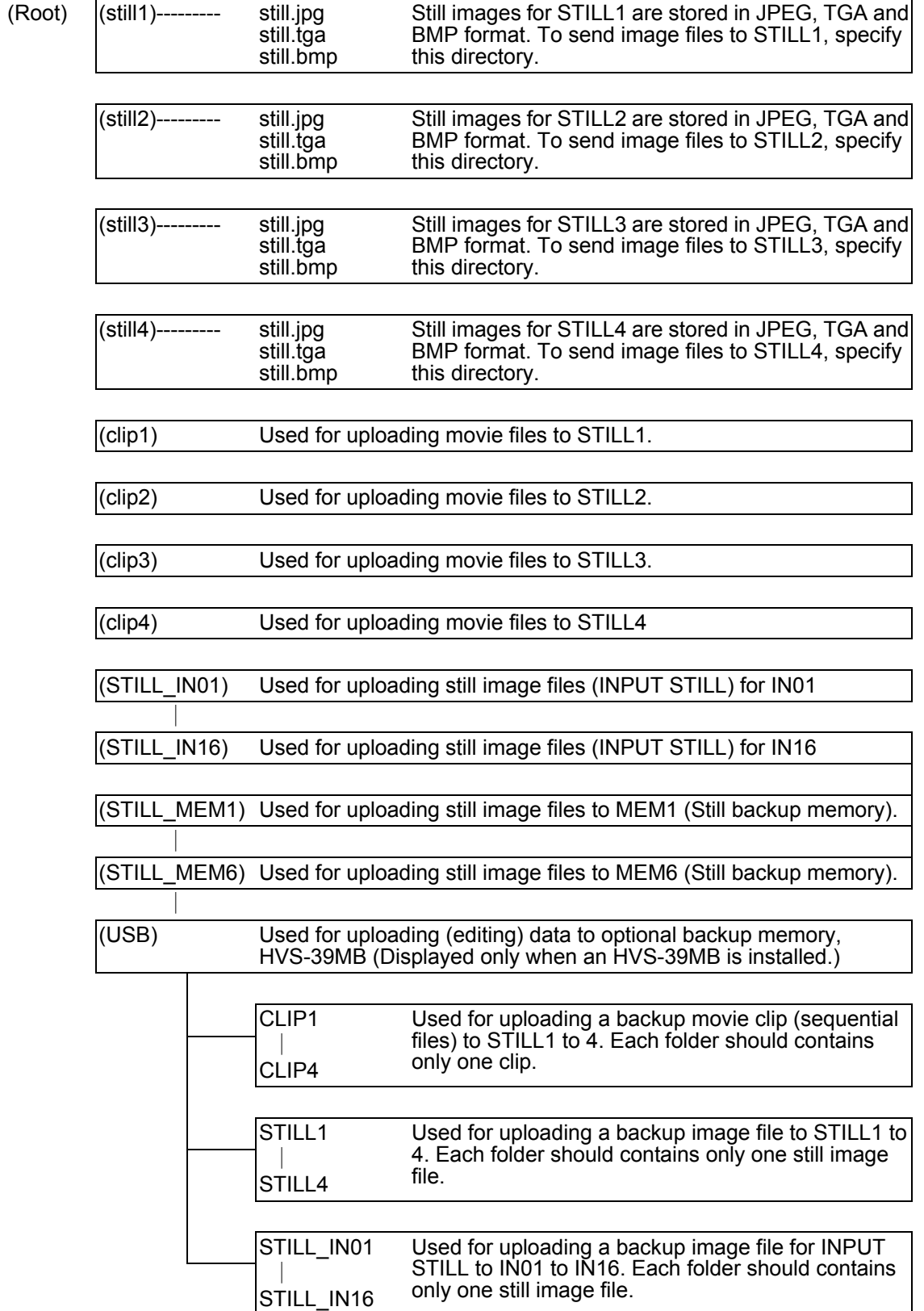### ◆ Supported Image files
Image File Format: JPEG, TARGA and BITMAP (See the table below.)
Image Size: Less than 1920 x 1080 [pixels]
File Name Format: (any file name).jpg, (any file name).tga and (any file name).bmp
Use the three-letter extension after the period. Any length of any characters can be used for file names.

See "Appendix 1. Supported Files" for details on supported image files.

◆ Still Directory Structure in the Main Unit

(Root)

(still1)---------	still.jpg still.tga still.bmp	Still images for STILL1 are stored in JPEG, TGA and BMP format. To send image files to STILL1, specify this directory.

(still2)---------	still.jpg still.tga still.bmp	Still images for STILL2 are stored in JPEG, TGA and BMP format. To send image files to STILL2, specify this directory.

(still3)---------	still.jpg still.tga still.bmp	Still images for STILL3 are stored in JPEG, TGA and BMP format. To send image files to STILL3, specify this directory.

(still4)---------	still.jpg still.tga still.bmp	Still images for STILL4 are stored in JPEG, TGA and BMP format. To send image files to STILL4, specify this directory.

(clip1)	Used for uploading movie files to STILL1.

(clip2)	Used for uploading movie files to STILL2.

(clip3)	Used for uploading movie files to STILL3.

(clip4)	Used for uploading movie files to STILL4

(STILL_IN01)	Used for uploading still image files (INPUT STILL) for IN01

(STILL_IN16)	Used for uploading still image files (INPUT STILL) for IN16

(STILL_MEM1)	Used for uploading still image files to MEM1 (Still backup memory).

(STILL_MEM6)	Used for uploading still image files to MEM6 (Still backup memory).

(USB)	Used for uploading (editing) data to optional backup memory, HVS-39MB (Displayed only when an HVS-39MB is installed.)

CLIP1 | CLIP4	Used for uploading a backup movie clip (sequential files) to STILL1 to 4. Each folder should contains only one clip.

STILL1 | STILL4	Used for uploading a backup image file to STILL1 to 4. Each folder should contains only one still image file.

STILL_IN01 | STILL_IN16	Used for uploading a backup image file for INPUT STILL to IN01 to IN16. Each folder should contains only one still image file.

* When uploading image or clip data to a USB sub folder in the HVS-39MB, its previous data must be removed from the folder.

* For still images, refer to section 12. "Still Store." For clip operations, refer to section 13. "Managing Clips." For INPUT STILL, refer to section 5-5. "INPUT STILL (Freezing Input Video)." For HVS-39MB, refer to section 12-4. "Backing-up Still and Clip Data (HVS-39MB)."

* If a subfolder in the USB folder is accidentlly erased, reboot the switcher, a new subfolder will be created.

32-3-2. Sending / Receiving Still Images

(1) Connect between the Ethernet ports of PC and the Main Unit directly with a LAN cross-over cable (UTP).
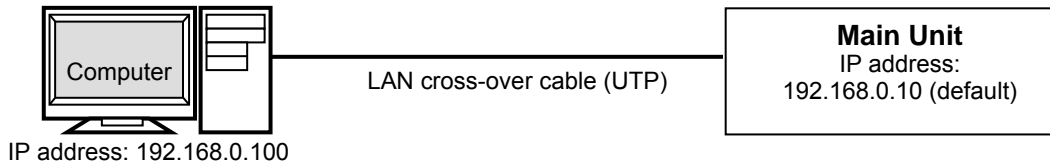
(2) Click on the **Start** button and then click on the **Control Panel** option.
(3) Enable the passive mode as shown below.

    (a) Click on **Network and Internet** (Windows 7) or **Network and Internet Connection** (Windows XP), then **Internet Options**.
    (b) Click at the **Advanced** tab.
    (c) Click to select the **Use Passive FTP (for firewall and DSL modem compatibility)** check box.
    (d) Click **OK**.

(4) Click on the **Start** button and then select **My Computer** (XP) or **Computer** (7).
(5) Enter "**ftp://192.168.0.10**" in the address bar.
(6) A dialog appears and asks you to input username and password. Enter them as shown below.

    Username: **hvs390hs** (Username cannot be changed.)
    Password: **fora** (Password cannot be changed.)

(7) Once you have accessed the FTP server, the following folders will be displayed in the window.

    STILL1 to STILL4
    CLIP1 to CLIP4
    STILL-IN01 to STILL-IN16
    STILL_MEM1 to STILL_MEM6

NOTE
Use PING or other network commands for checking if any connection problem occurs.

Uploading Images to the Switcher
(1) Open the folder where your images are stored.
(2) Select the image to be uploaded and drag and drop it to a still folder (**STILL1** to **STILL4**) of the FTP server. It takes about 30 seconds to complete receiving data. Then display the still image in the monitor by operating the switcher to check that the still image is properly sent.

Downloading Still Images from the Switcher
Open a still folder (**STILL1** to **STILL4**) of the FTP server. Select an image file to be downloaded. Drag and drop it to any folder of your computer.

32-3-3. Sending Images to Clip Memory

◆ **Preparation**

(1) Prepare sequential image files in the following name format.

File name: [STILL**XXX**.**yyy**]

       XXX: Indicates Serial numbers.
                     Available from **000** to **059** (**000** to **123** with HVS-39MEM)
       yyy: Indicates a file extension. **bmp**, **jpg** or **tga**

    WARNING: "STILL" must be in upper case.

(2) Connect the PC to the Main Unit, referring to (1) to (6) in the previous page.

◆ **Uploading Sequential Images to Clip Memory in the switcher**

(1) Open the folder on the PC, in which sequential files are stored.
(2) Select all sequential files to be uploaded and drag and drop them to a clip folder (**CLIP1 to CLIP4**) of the FTP server. Data of 60 image files can be transferred in about 3 minutes.

33. Status Information

The STATUS menu indicates the current status of the cooling fan, power and genlock and the versions of hardware and software.

33-1. Checking Alarm Status

(1) Open the [SETUP - STATUS] menu. Turn F1 to select ALARM, then press F1 or the page down button to display the submenu.

```
SETUP    : >ALARM    >VERSION >OPTION
STATUS   :
```

(2) The STATUS submenus display the current status of the cooling fan, power and genlock as shown below.

```
STATUS   : FAN1:NOR   2:NOR                   : 1/3
MU ALARM:  PS1:NOR   2:NOR                     :
```

```
STATUS   : GENLOCK:External Lock              : 2/3
MU ALARM:MEM CARD:Installed                   :
```

```
STATUS   : PS1:NOR   2:NOR                     : 3/3
OU ALARM:                                      :
```

Item	Display	Description
FAN1 FAN2	NOR	Indicates that FAN works properly.
	ERR	Indicates that FAN has failed. Power off the switcher and consult your FOR-A reseller.
PS1 PS2	NOR	Indicates that POWER works properly.
	ERR	Indicates that POWER has failed. Power off the switcher and consult your FOR-A reseller.
GENLOCK	External Lock	Indicates that a valid reference signal is present and video signals are properly locked to the reference signal.
	Internal Lock	Indicates that the internal reference is being used. In such case, a reference signal is not present, its level is too low. Or a reference signal with a different format from the switcher is present.
MEM CARD	Installed	Indicates that the standard still/clip memory card is properly installed and the memory can be used.
	Not installed	Indicates an error in the still/clip memory card. It is not properly installed or the card may be broken.

33-2. Verifying Versions

To verify the version of software and FPGA firmware installed in the HVS-390HS, open the [SETUP - STATUS - VERSION] menu. Before upgrading the switcher, be sure to check the relevant version in this menu.

```
STATUS   : SOFT  MAIN: v1.00.0   SUB: v1.00.0 :  1/7
VERSION  :           GUI: v1.00.0              :
```

```
STATUS   : SOFT    OU: v1.00.0                 :  2/7
VERSION  :           RU1: v1.00.0   RU2: v1.00.0 :
```

```
STATUS   : FPGA  CNFG: v01-00   CPU : v01-00  :  3/7
VERSION  : (MU)  SDI1: v01-00   SDI2: v01-00  :
```

```
STATUS   : FPGA   IN : v01-00   OUT : v01-00  :  4/7
VERSION  : (MU)   MV : v01-00                 :
```

```
STATUS   : FPGA  ME1 : v01-00   DVE1: v01-00  :  5/7
VERSION  : (MU)  DVE2: v01-00                 :
```

```
STATUS   : FPGA  ME2 : v01-00   DVE3: v01-00  :  6/7
VERSION  : (MU)  DVE4: v01-00                 :
```

```
STATUS   : FPGA  CPU1: v01-00   CPU2: v01-00  :  7/7
VERSION  : (OU)  CNFG: v01-00                 :
```

Item	Description	
SOFT MU MAIN	HVS-390HS	Software version
SOFT MU SUB	HVS-390HS	Software version
SOFT MU GUI	HVS-390HS	Software version
SOFT OU	HVS-392OU/ROU/WOU	Software version
SOFT RU1-2	HVS-30RU	Software version
FPGA (MU) CNFG	HVS-390HS	CPLD firmware version for configuration
FPGA (MU) CPU	HVS-390HS	FPGA firmware version for CPU
FPGA (MU) SDI1-2	HVS-390HS	FPGA firmware version for SDI1-2
FPGA (MU) IN	HVS-390HS	FPGA firmware version for INPUT
FPGA (MU) OUT	HVS-390HS	FPGA firmware version for OUTPUT
FPGA (MU) ME1-2	HVS-390HS	FPGA firmware version for ME1 -2
FPGA (MU) MV	HVS-390HS	FPGA firmware version for MV
FPGA (MU) DVE1-4	HVS-390HS	FPGA firmware version for DVE1-4
FPGA (OU) CPU1-2	HVS-392OU/ROU/WOU	FPGA1-2 firmware versions
FPGA (OU) CNFG	HVS-392OU/ROU/WOU	CPLD firmware version

33-3. Installed Options

To check the options installed to the switcher, open the [SETUP - STATUS - OPTION] menu. The menu shows the hardware and software option installed to the switcher as shown below.

```
STATUS   : SLOT-A      >HVS-30HSDI  : v01-00  : 1/9
OPTION   : SLOT-B      >HVS-30HSAI  : v01-00  :
```

```
STATUS   : SLOT-C      >HVS-30HSDO  : v01-00  : 2/9
OPTION   : SLOT-D      >HVS-30PCO   : v01-00  :
```

```
STATUS   : HVS-39MEM>INSTALLED          : 3/9
OPTION   : HVS-39ED >INSTALLED          :
```

```
STATUS   : HVS-39VR >INSTALLED          : 4/9
OPTION   : HVS-39MB >INSTALLED          :
```

```
STATUS   : UNIT1 SOFT: v-.--.- HARD: v-----  : 5/9
AUX UNIT: UNIT2 SOFT: v-.--.- HARD: v-----  :
```

```
STATUS   : UNIT3 SOFT: v-.--.- HARD: v-----  : 6/9
AUX UNIT: UNIT4 SOFT: v-.--.- HARD: v-----  :
```

```
STATUS   : UNIT5 SOFT: v-.--.- HARD: v-----  : 7/9
AUX UNIT: UNIT6 SOFT: v-.--.- HARD: v-----  :
```

```
STATUS   : UNIT7 SOFT: v-.--.- HARD: v-----  : 8/9
AUX UNIT: UNIT8 SOFT: v-.--.- HARD: v-----  :
```

```
STATUS   : UNIT9 SOFT: v-.--.- HARD: v-----  : 9/9
AUX UNIT: UNIT10SOFT: v-.--.- HARD: v-----  :
```

34. Upgrading an Operational Version

Consult your FOR-A supplier in order to upgrade your switcher.

Before upgrading, check the current version of the software and firmware in the [SETUP - STATUS - VERSION] menu.

You will need to use the FILE special menu function to download and apply operational software files in a USB flash memory. The files listed below contain the software upgrades for your switcher.

◆ **Upgrade Files for HVS-390HS**

File extension	Description
MCB	For software updates (main data)
MDB	For software updates (sub data)
MDH	For software updates
MFB	For FPGA firmware updates
MVF	For MV firmware updates

◆ **Upgrade Files for HVS-392OU/ROU/WOU**

OCD	For HVS-392OU/392ROU/392WOU/391OU software updates
OUF	Bitmap images for the control panel bus buttons. (See section 34-4.)
OFB	For HVS-392OU/392ROU/392WOU/391OU FPGA firmware updates

◆ **Upgrade Files for HVS-30RU**

RUB	For HVS-30RU software updates

◆ **Option Setting Files for HVS-390HS**

SOP	For installing HVS-390HS options

34-1. Upgrade Procedure

Once the system is upgraded, the setting data will be lost and returns to the factory default settings. Important setting data should be backed up by saving it to USB flash memory.

To upgrade your switcher, follow the procedure below:

Step	Description	Refer to
1	Save current setting data to USB flash memory.	19-3
2	Upgrade the software	34-2
3	Reboot the switcher.	23-1
4	Initialize the switcher.	23-2
5	Load the setting data saved at step 1.	34-3
6	Reboot the switcher.	23-1
7	Turn power off then On at the control panel	

IMPORTANT
Once the saved system data is loaded, you will have to restart the switcher. (Power the unit OFF then ON.) The ARCNET ID is applied only after the switcher is restarted.

34-2. Upgrading HVS-390HS

(1) Insert the USB flash memory that contains the upgrade data into the USB port.
(2) Press MENU in the CONTROL block, then press FILE to open the FILE top menu.
(3) Turn F1 to select UPDATE, and then press F1 or the page down button to open the [FILE - UPDATE] menu.

```
FILE     : >LOAD      >SAVE       >UPDATE
TOP      :
```

```
FILE     :  EXT    :  LOAD   :  <DIR>             1/1
UPDATE   :  =MCB   :         :          XXXXXXXX  101MB
```

(3) Turn F1 to select MCB to the **EXT** (File Extension) item.
(4) Turn F3 to select an MCB file.
(5) Press F3 to start upgrading.

IMPORTANT
DO NOT turn the power of your units OFF or try to remove the USB flash memory from the port until the file downloads are complete!

(6) In the [FILE-UPDATE] menu screen the pop-up status window appears showing the file transfer progress.
(7) The lamp buttons on the panel will go dark after 30 seconds. (The data starts writing to the switcher flash ROM.)
(8) After about 1 minute, panel indications will return to normal. (Download / ROM write complete.)
(9) When the HVS-390HS is automatically restarted, the upgrade is successfully complete.

IMPORTANT
Proceed to upgrade your switcher system with other upgrade files in the same manner as that of the above HVS-390HS upgrade. To complete upgrade procedures, however, restart the switcher system manually.
Installation times are: 　　　Approximately 4 minutes for MCB, MDB, MDH and MFB files respectively 　　　Approximately 10 seconds for OCD, OFB, OUF and RUB files respectively

34-3. Loading Setting Data

All previously set switcher menu settings can be reset by loading the "DATA.ALL" file from the USB Disk.

(1) Insert the USB flash memory device with saved data into the USB port.
(2) Press FILE to display the top page of the FILE menu.
(3) Turn F1 to select LOAD, then press F1 or the page down button to display the [FILE - LOAD] menu.
(4) Turn F1 to select ALL to the **EXT** (File Extension) item.
(5) Turn F3 to select data. (The file name of the data must be "DATA.ALL", if it is not renamed.)
(6) Press F3 (or F2) to start loading the file.
(7) The data transfer will take approx. 30 minutes to complete.
(8) After loading the data, reboot the switcher.

34-4. Bitmap Images for Control Panel Bus Buttons

Bus button displays on the control panel display signal names assigned to bus buttons. Signal names can be replaced with bitmaps using the following procedure.

◆ **Creating Bitmap Images**

Bitmap images for bus buttons can be created using **Windows Paint**, a standard Windows program. Use the following format to create bus button images and save them as **one monochrome bmp file**.

<Ex.>
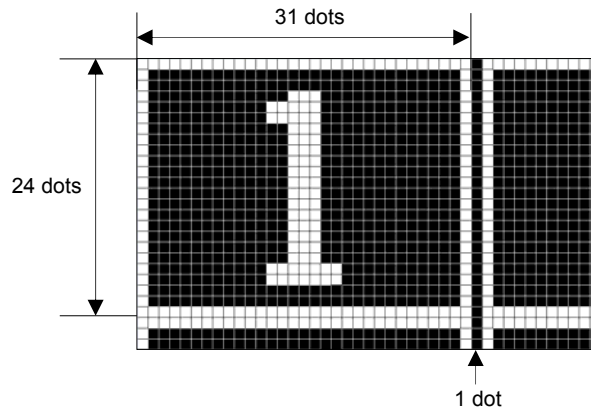
Each button display size	31 dots x 24 dots (with one-dot white inner border)
Vertical boundary lines	Insert 7 vertical black lines of one-dot every 32 dots.
Horizontal size (width)	224 dots (32 dots x 7)
Vertical size (height)	144 dots (24 dots x 6)
File format	Monochrome bitmap
Display order	In default assignments, signal images are arranged as shown below.
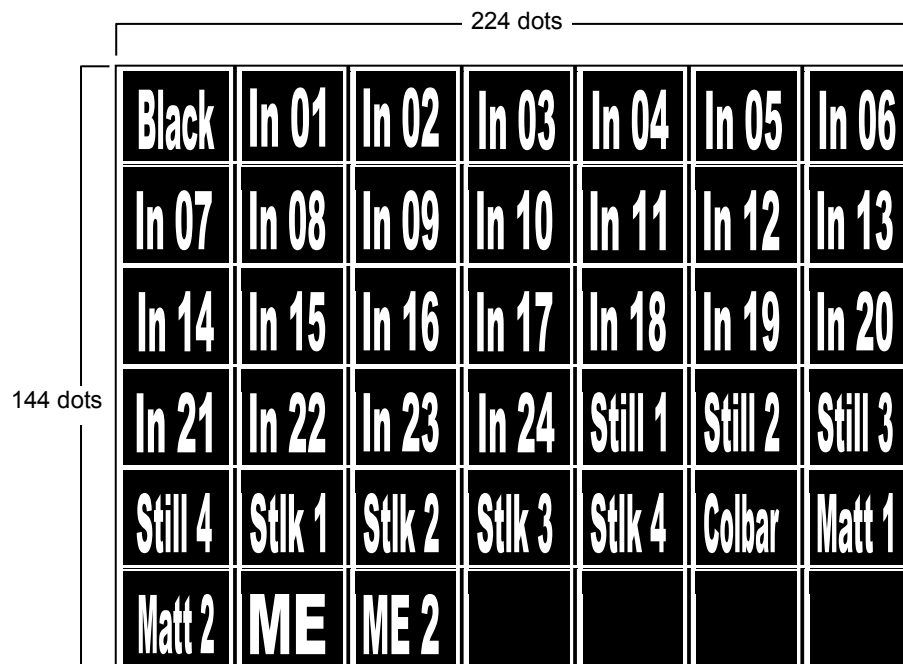
Note that each dot is displayed with the aspect ration of 9:11 (width : height) on the control panel. White dots turn on display lights and black dots turn them off.

◆ **Loading the bitmap file**
(1) Change the file extension of your bitmap file from **bmp** to **ouf** manually on the computer. (For example, image.bmp -> image.ouf) Save the file to your USB flash drive.
(2) Display the [FILE - UPDATE] menu.
(3) Turn F1 to select OUF.
(3) Turn F3 to select the OUF file (image file).

```
FILE     :  EXT   :  LOAD   :  <DIR>            1/1
UPDATE   :  =OUF  :         :         image.ouf  101MB
```

(5) Press F3. All lights on the control panel will turn off. When the images are successfully loaded to the control panel, the panel lights will turn on again.

◆ **Displaying the Loaded Bitmap Images**
(1) Open [SETUP - INPUT - ASSIGN] PAGE 3.
(2) Turn F1 to display a bus button.
(3) Turn F2 to select BMP. The created image will appear on the bus button display.

```
INPUT    : BUTTON :  TYPE   :  INV   :        :  3/6
BUS DISP:  =01    :  =BMP   :  =OFF  :        :
```

Refer to section 5-3. "How to Display Signal Names on the Bus Section" for more details.

35. Connecting Control and Remote Panels

The HVS-390HS system can accommodate a maximum of three control panels (HVS-392OU/ ROU/WOU and HVS-30OU) and two remote panels (HVS-30RU). Two or three of the same or different models can be connected. The HVS-390HS stores setting data (excluding several settings such as Arcnet ID) of these OU and RUs, which contain:

- Signal assignments of bus buttons
- Function assignments of user buttons
- USER TRANS and ADV CTRL settings

System Connection Example
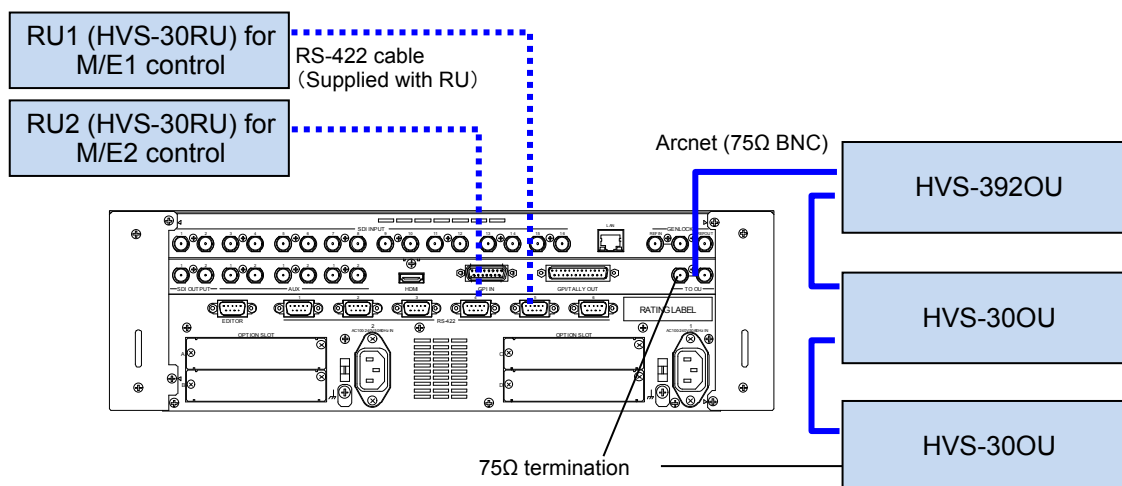
35-1. Connecting Remote Panels (HVS-30RU)

Up to two HVS-30RU units can be connected to the HVS-390HS via RS-422.

IMPORTANT
RS-422 Port 1 on the HVS-390HS is set as a factory default to allow RU1 to be connected. Therefore, once an HVS-30RU is connected to Port 1, it is recognized as RU1 in the HVS-390HS system. To connect HVS-30RU units to Port 2 through Port 6, the following settings on the **HVS-392OU/ ROU/WOU or HVS-30OU** are necessary.

(1) Open the [SETUP - SYSTEM - RS-422] menu on the HVS-392OU/ROU/WOU or HVS-30OU.
(2) Turn F1 to select the connection port.
(3) Turn F2 to select between 30RU1 and 30RU2. (RU1 and RU2 must be unique. Two RU units cannot have the same setting.)

```
SYSTEM :  SELECT:  FUNC  :  BAUD  :PARITY :  1/1
RS-422 :  =PORT1:  =30RU1:  =153K :  =NONE :
```

(4) Open PAGE 6 of the [SETUP - INPUT - ASSIGN] menu.
(5) Turn F1 to select RU1 or RU2.
(6) Turn F4 to select a Mix Effect bus for control.
    Options are **M/E1**, **M/E2** and **P/P**, which is enabled in 2.5M/E mode (see section 35-3).
    RU1 and RU2 can select the same or different Mix Effect Bus.

```
INPUT  : SELECT :  SHIFT :  LINK  : CONTROL:  6/6
ASSIGN :  =RU1   :  =OFF   :  =OFF   :  =M/E1 :
```

35-2. Connecting Control Panels

Up to three control panel units (HVS-392OU / HVS-392ROU / HVS-392WOU / HVS-391OU can be connected to the HVS-390HS via Arcnet. The HVS-390HS stores three sets of panel settings, which allow you to control the MU in the same way or differently from the control panels.

IMPORTANT
To change the Arcnet ID of a control panel, connect the control panel and HVS-390HS **one to one**. The Arcnet **ID** numbers and **OU NO** must be unique. Do not assign the same ID number to two different devices. See section 3-3. "How to Connect between MU and OU Units."

Each control panel can use different assignments for bus buttons and user buttons, and two HVS-30OU units can control the MU differently, one for M/E1 and the other for M/E2, as shown below.
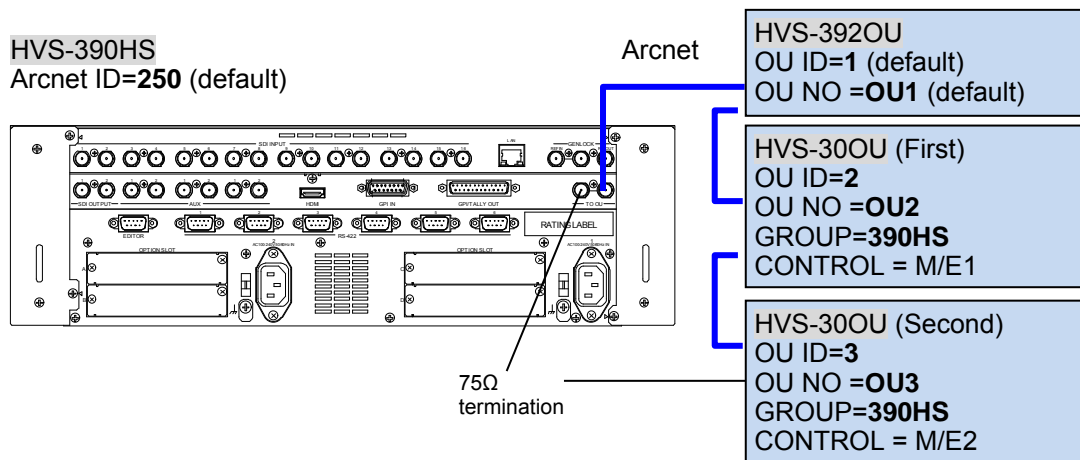
To set up the above configuration, proceed as follows:

(1) Connect the first HVS-30OU and set the ARCNET menu as shown below:

```
SYSTEM : OU ID : OU NO :CTRL MU: GROUP :  1/2
ARCNET :  = 2    : =OU2   : =250   : =390HS:
```

(2) Connect the second HVS-30OU and set the ARCNET menu as shown below:

```
SYSTEM : OU ID : OU NO :CTRL MU: GROUP :  1/2
ARCNET :  = 3    : =OU3   : =250   : =390HS:
```

(3) Set the [SETUP - INPUT - ASSIGN] menu for the second HVS-30OU as shown below:

```
INPUT    :SELECT :  SHIFT :  LINK :CONTROL:  6/6
ASSIGN   : =OU   :  =OFF  :  =OFF  : =M/E2 :
```

(4) Connect the HVS-390HS and all control panels. Each control panel uses a different set of settings in its assignments to control the MU.

35-3. 2.5 M/E Mode

When an **HVS-39EXTME** option is installed, the switcher can operate in **2.5 M/E** mode, in addition to regular **2 M/E** mode.
When changing to 2.5M/E mode, a **P/P** bank is available as well as the **M/E1** and **M/E2** banks. The P/P bank provides background CUT and MIX transitions and 4 key operations (by assigning KEY3 and KEY4 of M/E1 and M/E2). Re-entry inputs of M/E1 and M/E2 are also available.
A control or remote panel (HVS-391OU, HVS-30OU or HVS-30RU) is required for P/P operation.

IMPORTANT
Note that **AUX7** and **AUX8 cannot be used** on the switcher in 2.5 M/E mode.
2.5M/E mode can**not** be selected if **NTSC** or **PAL** is set for the system format. Furthermore, the virtual option (**HVS-39VR**) and 2.5 M/E mode can**not** be used at the same time.

◆ **Switcher Control Image**
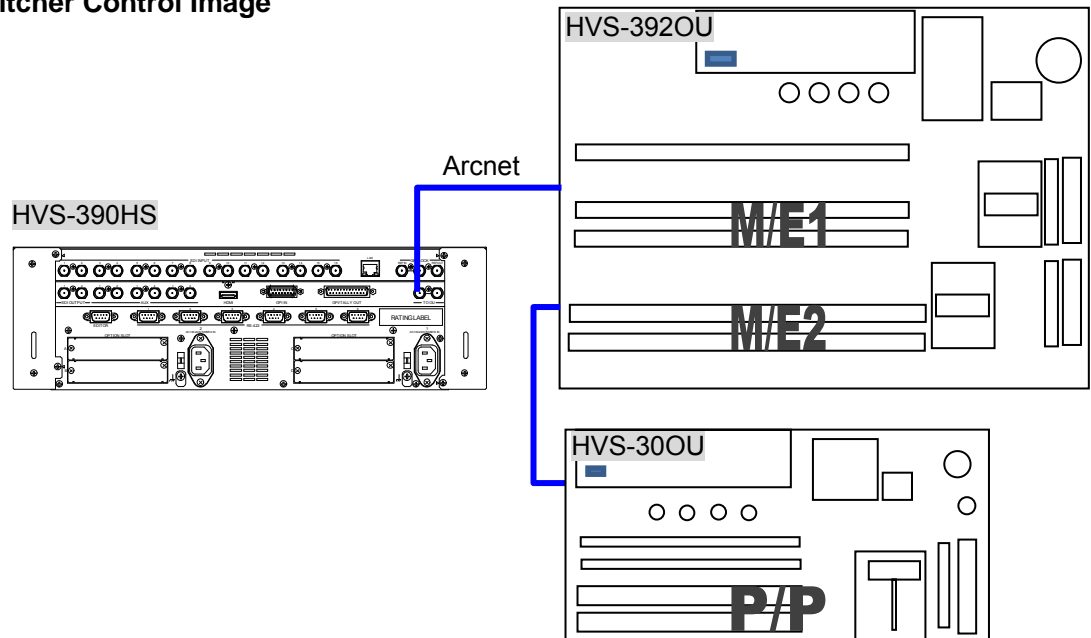
◆ **Changing to 2.5 M/E Mode**
(1) Open the [SETUP - FUNCTION - M/E_KEY] menu on the control panel.
(2) Turn F4 to set **EXT ME** to 2.5M/E.

```
FUNCTION: TRSEDGE: KEY LNK:        : EXT ME :  1/2
M/E_KEY :  =ON    :  =ON    :       :  =2.5ME:
```

35-3-1. P/P Setup

◆ **Connecting a control (remote) panel for P/P control to the switcher system**
This section explains how to connect and set a control panel for P/P to the switcher system, using HVS-30OU as an example.
Refer to the previous section to connect HVS-30OU units to the HVS-390HS system. If the second HVS-30OU is used for P/P control, open the [SETUP - INPUT - ASSIGN] menu on the HVS-30OU and set the menu page as shown below.

```
INPUT    :SELECT :  SHIFT :  LINK   :CONTROL: 6/6
ASSIGN   :  =OU    :  =OFF  :  =OFF  :  =P/P   :
```

◆ **Assigning P/P Composite Images to Outputs**
OUT1, OUT2 and AUX1 to AUX6 can output P/P composite images. In order to assign the P/P program and preset images respectively to AUX1 and AUX2, open the [SETUP - OUTPUT - OUT XPT] menu and set the menu as shown below. (See section 6-2-2. "Selecting Video from Menu Selection" for details.)

```
OUTPUT   :SELECT :  XPT    :INHIBIT:AUX TRS: 1/4
OUT XPT  :  =AUX1  :  =PPPG  :  =OFF  :  =OFF  :
```

```
OUTPUT   :SELECT :  XPT    :INHIBIT:AUX TRS: 1/4
OUT XPT  :  =AUX2  :  =PPPV  :  =OFF  :  =OFF  :
```

◆ **Assigning Video Sources to P/P Bus Buttons**
When using the system setup in the previous section (The **OU NO** setting is different between HVS-392OU and HVS-30OU.), different source assignments from those on the HVS-392OU can be set on the HVS-30OU. Refer to section 5-2. "How to Assign Sources to Bus Buttons" to open the [SETUP - INPUT - ASSIGN] (1/6) menu on the HVS-30OU and assign video sources to bus buttons. Note that M/E (M/E1 composite image) and M/E2 (M/E2 composite image) are also available on the P/P.

```
INPUT    :BUTTON :  SIGNAL NAME   :INHIBIT: 1/6
OU ASSGN:  =O1    :  =INO4 :  =INO4 :  =OFF  :
```

◆ **Using KEY1 to KEY4 on the P/P**
KEY3 and KEY4 on the M/E1 and M/E2 can be freely assigned to and used as KEY1 to KEY4 on the P/P. Open [SETUP - FUNCTION - M/E KEY] PAGE2 and set the menu page, for example, as shown below.

```
FUNCTION:ME1kEY3:ME1kEY4:ME2kEY3:ME2kEY4: 2/2
KEY ASGN:  =PPK1  :  =PPK2  :  =PPK3  :  =PPK4  :
```

35-3-2. P/P Control

◆ **Transition**
CUT and MIX transitions are available for the background.
KEY ON AIR and KEY AUTO buttons are available for key in/out effects.

◆ **GPI IN / GPI OUT / TALLY**
The GPI IN/GPI OUT/ TALLY functions in the next page become operable by enabling the P/P.

GPI IN functions

FUNCTION setting	Triggers
P/P BKGD AUTO TRS	Performs Background AUTO transitions.
P/P KEY1-4 AUTO TRS	Performs KEY1-2 AUTO transitions using background AUTO buttons.
P/P NEXT AUTO TRS	Performs AUTO transitions for the NEXT AUTO TRANSITION bus set in each transition section.
P/P BLK AUTO TRS	Performs BLACK transitions.
P/P BKGD CUT TRS	Performs Background CUT transitions.
P/P KEY1-4 CUT TRS	Performs KEY CUT transitions.
P/P KEY1-4 USER TRS	Performs KEY USER transitions.
TRANS-TYPE PP BK-MIX	Changes the background transition type to MIX.
TRANS-TYPE PPBK-CUT	Changes the background transition type to CUT.
TRANS-TYPE PPK1-MIX TRANS-TYPE PPK2-MIX TRANS-TYPE PPK3-MIX TRANS-TYPE PPK4-MIX	Changes the key transition type to MIX.
TRANS-TYPE PPK1-CUT TRANS-TYPE PPK2-CUT TRANS-TYPE PPK3-CUT TRANS-TYPE PPK4-CUT	Changes the key transition type to CUT.
XPT AUX1-6 P/P PGM	Selects P/P PGM for an AUX bus.
XPT AUX1-6 P/P PREV	Selects P/P PREV for an AUX bus.
XPT AUX1-6 P/P CLEAN	Selects P/P CLEAN for an AUX bus.
XPT AUX1-6 P/P KEY	Selects P/P KEY for an AUX bus.

GPI OUT functions

FUNCTION setting	Description
P/P BKGD TRANS STS	Outputs pulse while P/P background transitions are processed.
P/P KEY1-4 TRANS STS	Outputs pulse while key transitions are processed
P/P BKGD AUTO TRANS	Outputs pulse while P/P background AUTO transitions are processed.
P/P KEY1-4 AUTO TRANS	Outputs pulse while key AUTO transitions are processed.
TRSTYPE PPBK-CUT	Outputs pulse while the BKGD transition type is set to CUT.
TRSTYPE PPK1-CUT TRSTYPE PPK2-CUT TRSTYPE PPK3-CUT TRSTYPE PPK4-CUT	Outputs pulse while the key transition type is set to CUT.
TRSTYPE PPBK-MIX	Outputs pulse while the BKGD transition type is set to MIX.
TRSTYPE PPK1-MIX TRSTYPE PPK2-MIX TRSTYPE PPK3-MIX TRSTYPE PPK4-MIX	Outputs pulse while the key transition type is set to MIX.

Tally functions

FUNCTION setting	Description
P/P KEY1-4 ON TLY	Outputs tally signal when the specified key is on the background video.
RED TALLY-PGM RED TALLY-PREV RED TALLY-CLN	Outputs a red tally when the specified signal is sent to the red (tally color) bus.
GREEN TALLY-PREV GREEN TALLY-CLN	Outputs a green tally when the specified signal is sent to the green (tally color) bus.

36. Setup Setting for HVS-30RU

The PGM/PST bus buttons and free functional (USER) buttons on the HVS-30RU can be set on the HVS-392OU/ROU/WOU by using menu. The setting procedures are almost the same as those of the control panel buttons. Selecting which bus is to be controlled with the PGM/PST bus on the HVS-30RU between M/E1 and M/E2 is also possible.
If an OU (HVS-392OU/ROU/WOU) is used with HVS-30RU, you can select the same or different signal assignments for the M/E1 and M/E2 between OU and RU units.

36-1. Assigning Sources to PGM/PST Bus buttons

◆ **To control M/E1 with Same Assignments between OU and RU:**
(1) Press MENU in the CONTROL block and then press SETUP to display the SETUP menu top page.
(2) Turn F1 to select INPUT. Press F1 or the page down button to display the [SETUP - INPUT] menu.

```
SETUP    : >SIGNAL   >PROC AMP>RENAME   >ASSIGN
INPUT    : >CC       >COLORBAR
```

(3) Turn F1 to select ASSIGN. Press F1 or the page down button to display the [SETUP - INPUT - ASSIGN] menu. Press the page down button to go to PAGE 6.

(4) Turn F2 to select RU1 or RU2 under **SELECT**.
(5) Select a group to be joined from OU1 to OU3 under **LINK.**
(6) Select M/E1 under **CONTROL**

```
INPUT   : SELECT: SHIFT : LINK  : CONTROL: 6/6
ASSIGN  : =RU1   : =NORML: =OU1  : =M/E1  :
```

◆ **To control M/E2 with Different Assignments between OU and RU:**
(1) In the [SETUP - INPUT - ASSIGN](6/6) menu, set **LINK** to OFF and select M/E2 under **CONTROL**

```
INPUT   : SELECT: SHIFT : LINK  : CONTROL: 6/6
ASSIGN  : =RU1   : =NORML: =OFF  : =M/E2   :
```

(2) Press the page up button to go back to the [SETUP - INPUT - RU1 ASSIGN] (4/6) menu or the [SETUP - INPUT-RU2 ASSIGN] (5/6) menu.

```
INPUT    : BUTTON : SIGNAL NAME   : INHIBIT: 4/6
RU1 ASGN: =O1     : =INO4   =CAM4 : =ON    :
```

(3) Turn F1 to select a button under **BUTTON**.
(4) Turn F2 to select the signal to be assigned under **SIGNAL**. Users can also select a signal by turning F3 under the **NAME** parameter. **SIGNAL** and **NAME** are linked to each other. (See section 5-1. "How to Assign User Names to Source" for more details.)
(5) Users can inhibit specific buttons. If **INHIBIT** is set to ON for a button, the selected button is inactive. This is useful in helping to reduce the risk of wrong input selection.

36-2. Setting USER Buttons

◆ **USER Button Default Assignments in HVS-30FP**

Button	Default setting
USER button 1 on RU1-1, RU2-1 and HVS-30RU1/2	AUX XPT SELECT
USER button 2 on RU1-2, RU2-2 and HVS-30RU1/2	KEY XPT SELECT

◆ **Assigning Functions to USER Buttons**
(1) Press USER BUTTON in the CONTROL block to display on the [USER BUTTON] menu.
(2) Turn F1 to select a USER button for use.
(3) Turn F2 to select OTHER to **TYPE** and press F2.
(4) Turn F3 to select a function to be used and press F3. See the "HVS-30FP/RU operational manual" for assignable functions.

```
PANEL   :SELECT : TYPE  : FUNC(F3)     : 1/1
USER BTN: =RU1-1: =OTHER: =AUX XPT SELECT
```

37. Specifications and Dimensions

37-1. Specifications

Number of M/Es	1 M/E 2 M/E (with HVS-39EXTME)	
Control Panel	5 types	HVS-391OU: 20-button, 1M/E HVS-392OU: 20-button, 2M/E HVS-392ROU: 12-button, 2M/E HVS-392WOU: 28-button, 2M/E HVS-30OU: 12-button, 1M/E HVS-30RU: 12-button, 1M/E
Video Formats	1080/59.94i, 1080/50i, 1080/24PsF, 1080/23.98PsF, 1080/25PsF, 1080/29.97PsF, 720/59.94p,720/50p 525/60 (NTSC), 625/50 (PAL)	
Video Input	HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 16 * Frame synchronizer on each input	
Video Input (option)	HVS-30HSDI HVS-30HSDI-A	HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 4
	HVS-30HSAI	HD analog component SD analog component Analog composite
	HVS-30PCIN (DVI-D)	XGA to WUXGA (1080i) (HDCP incompatible), XGA to WXGA (720p) (HDCP incompatible), VGA to XGA (SD) (HDCP incompatible)
	(RGB)	XGA to WUXGA (1080i) , XGA to WXGA (720p) , VGA to XGA (SD)
Number of Inputs	Standard: 16 (SDI), Max.: 24 (with HSDI x 2 or HSDI-A x 2)	
Video Output	HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 8 (SDI OUTPUT1. 2 and AUX1-AUX6)	
	HDMI	HDTV (1080i, 720p) SVGA compatible, HDCP imcompatible
Video Output (option)	HVS-30HSDO	HD-SDI: 1.5 Gbps or SD-SDI: 270 Mbps 75Ω BNC x 2
	HVS-30HSAO	HD analog component SD analog component Analog composite
	HVS-30PCO (DVI-D)	SXGA to WUXGA/HDTV (1080i) (HDCP incompatible) , SXGA/WXGA (720p) (HDCP incompatible) , SVGA (SD) (HDCP incompatible)
	(RGB)	SXGA to WUXGA (1080i) SXGA/WXGA (720p) SVGA (SD)
	(YPbPr)	HDTV(1080i)
Number of Outputs	Standard: 9 (SDI x 8 , HDMI x 1) Max.: 13 (with 2 output cards)	
AUX Outputs	Standard: 6 Max.: 8 * Crosspoint switching with effects available on each output	
Signal Processing	4:2:2 Digital component	
Quantization	HD/SD-SDI: 10-bit	

Effect	WIPE	100 patterns, Border and Softness
	DVE	56 patterns or more (2D, 3D and 2-channel)

Transition	Execution: Fader lever, AUTO or CUT button Type: MIX or WIPE (DVE included)
Still/Clip Memory	4 still buffers with backup feature 4 clip buffers (Recording capacity: 2 seconds for each, expandable up to 4 seconds with HVS-39MEM)
Key	8 channels (4 keys on each M/E) Luminance, Full or Bus key, 2D DVE on each channel KEY1, KEY2: Chroma key, Edge/shadow effects KEY3, KEY4: Direct display on AUX outputs possible
Multiviewer	2 channels with 4-, 10- or 16-way split views Display: Title, Tally, Audio Level Meter, Safety Area and Frame Border 1 frame delay relative to PGM output
Process Amp	Process Amp feature on each input
Color Correction	4 channels (2 channels for each M/E) Correction mode: Balance, Differential and Sepia Clip mode: YPbPr, RGB
Event Memory	100 events
Sequence Memory	10 sequences (up to 60 steps for each)
Genlock Input	BB: NTSC: 0.429 Vp-p/PAL: 0.45Vp-p or Tri-level Sync: 0.6 Vp-p 75Ω BNC x 1, loop-through (Terminate with 75Ω terminator, if unused.)
System Phase Adjust	Horizontal: -1/2H to +1/2H
Genlock Output	BB: NTSC: 0.429 Vp-p/PAL: 0.45Vp-p or Tri-level Sync: 0.6 Vp-p 75Ω BNC x 1

I/O Delay	Minimum delay:	HD: 1H, SD: 1.7H
	If FS or Up-resize engine used:	1 to 2 frames + Minimum delay
	If FS or Up-resuze engine plus DVE used:	2 to 3 frames + Minimum delay
	FS or Up-resize engine plus Output resize engine and DVE used:	3 to 4 frames + Minimum delay

Interfaces	
Ethernet	100Base-TX/100BASE-T RJ-45 x 1
GPI IN	15-pin D-sub (female) x 1 (inch screw) 10 inputs, TTL negative logic pulse or Make-contact
GPI/TALLY OUT	25-pin D-sub (female) x 1(inch screw) 20 outputs
GPI IN/TALLY OUT (HVS-392OU/ROU/ WOU)	15-pin D-sub (female) x 1 (inch screw) 6-input/6-outputs, TTL negative logic pulse or Make-contact
TALLY OUT (with HVS-30TALR)	37-pin D-sub (female) x 1 (with inch screws), Make-contact (18 outputs added per card, up to 2 cards available)
RS-422	9-pin D-sub (female) x 6 (with inch screws) * For HVS-30RU, VTR, router and tally unit connection
EDITOR	9-pin D-sub (female) x 1 (with inch screws) BVS-3000 or GVG protocol
ARCNET	75Ω BNC x 1, loop-through (Terminate with 75Ω terminator, if unused.) * For control panel and AUX remote panel connection

Temperature	0°C to 40°C
Humidity	30% to 90% (no condensation)
Power	100VAC to 240 VAC ±10%, 50/60Hz
Consumption	HVS-390HS: 510 W (at 100-120 VAC) 460 W (at 220-240 VAC) HVS-392OU: 43 W (at 100-120 VAC) 40 W (at 220-240 VAC) HVS-392ROU: 28 W (at 100-120 VAC) 26 W (at 220-240 VAC) HVS-392WOU: 39 W (at 100-120 VAC) 37 W (at 220-240 VAC)
Dimensions	HVS-390HS: 430 (W) x 450 (D) x 132 (H) mm HVS-392OU: 576 (W) x 409 (D) x 132 (H) mm HVS-392ROU: 430 (W) x 409 (D) x 132 (H) mm HVS-392WOU: 800 (W) x 409 (D) x 132.6 (H) mm
Weight	HVS-390HS: 17 kg (in Standard), 20 kg (in Full Option) HVS-392OU: 8.5 kg HVS-392ROU: 7.5 kg HVS-392WOU: 10.5 kg
Consumables	HVS-390HS:　　　Power supply unit. Replace every 5 years. 　　　　　　　　　Cooling fan. Replace every 4 years HVS-392OU/ROU/WOU: Power supply unit. Replace every 6 years.
Accessories	Manual, AC cord, Rack mount brackets and BNC cable (10 m)
Options	◇HVS-30HSDI: SDI Input card w/ up-resize engine ◇HVS-30HSDI-A: SDI Input card w/o up-resize engine ◇HVS-30HSAI: Analog Input card ◇HVS-30PCIN: PC Input card ◇HVS-30HSDO: SDI Output card ◇HVS-30HSAO: Analog Output card ◇HVS-30PCO: PC Output card ◇HVS-30TALR: Tally Relay Output card (18-output) ◇HVS-30EXTME: M/E Expansion card ◇HVS-39ED: Editor Interface software ◇HVS-39MEM: Clip Memory Expansion card ◇HVS-39MB: Still and Clip Backup Memory ◇HVS-39VR: Virtual Link software ◇HVS-39PSM: Redundant Power Supply Unit for Main Unit ◇HVS-39PSO: Redundant Power Supply Unit for Operation Unit ◇HVS-AUX8/16/32: AUX Unit (Arcnet type) ◇HVS-AUX16A/16B/32A/64A: AUX Unit (Ethernet type) ◇HVS-TALR20/32: Tally Relay Output unit (20/32-output) ◇HVS-TALOC20/32: Tally Open Collector Output unit (20/32-output)

37-2. External Dimensions

37-2-1. HVS-390HS
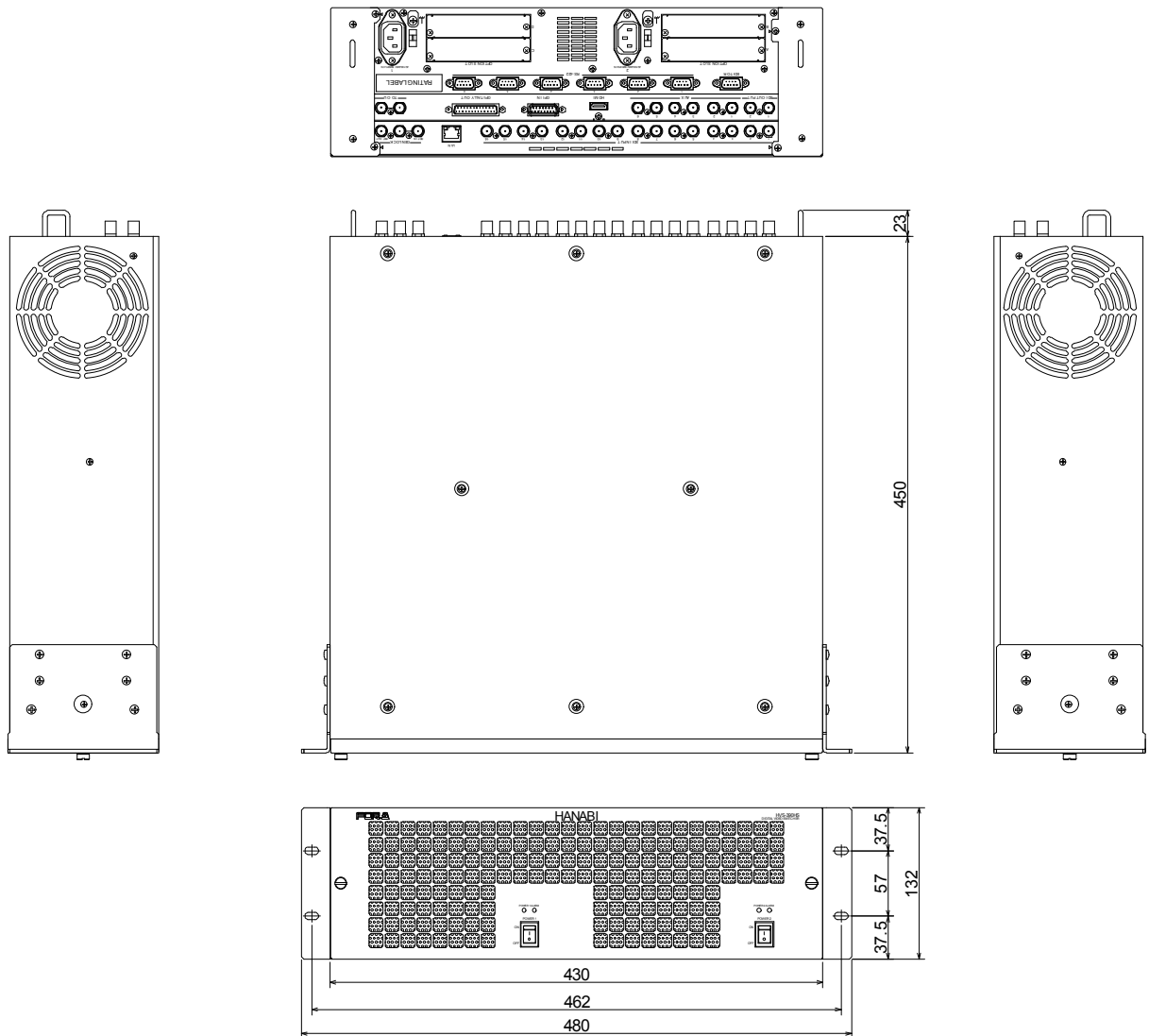
(All dimensions in mm)

37-2-2. HVS-392OU

37-2-3. HVS-392ROU

258
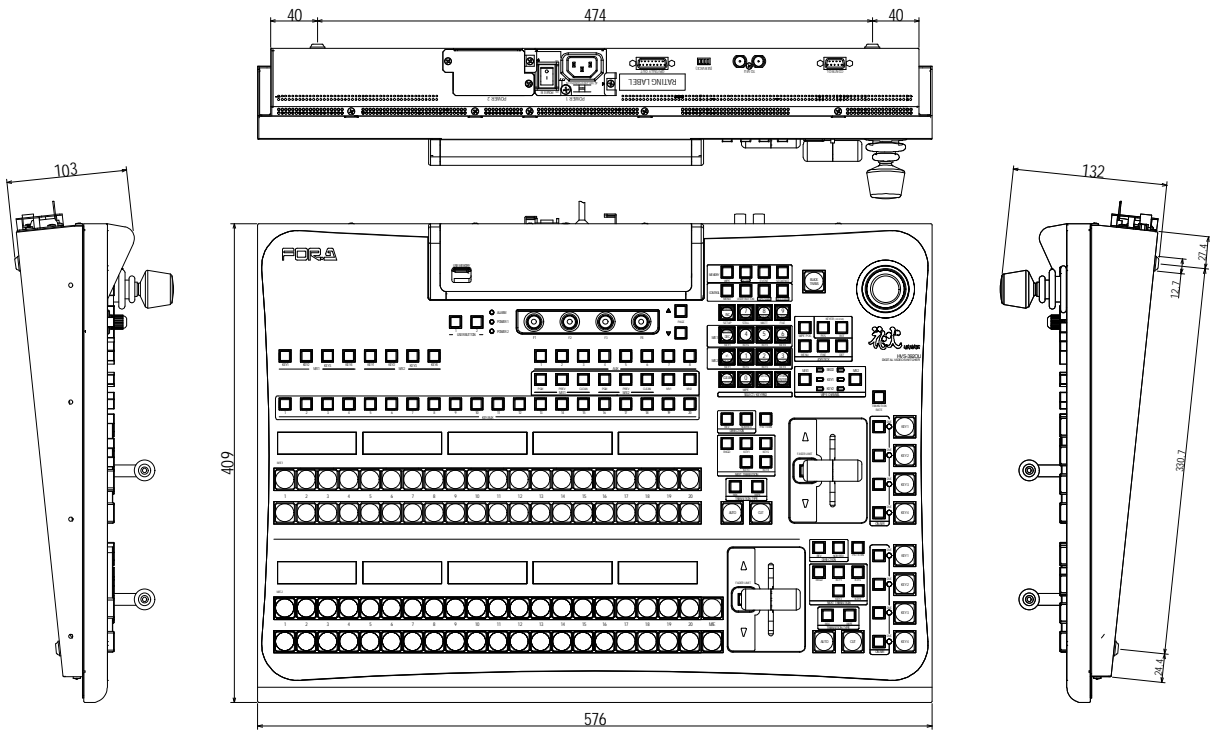
37-2-4. HVS-392WOU

(All dimensions in mm)
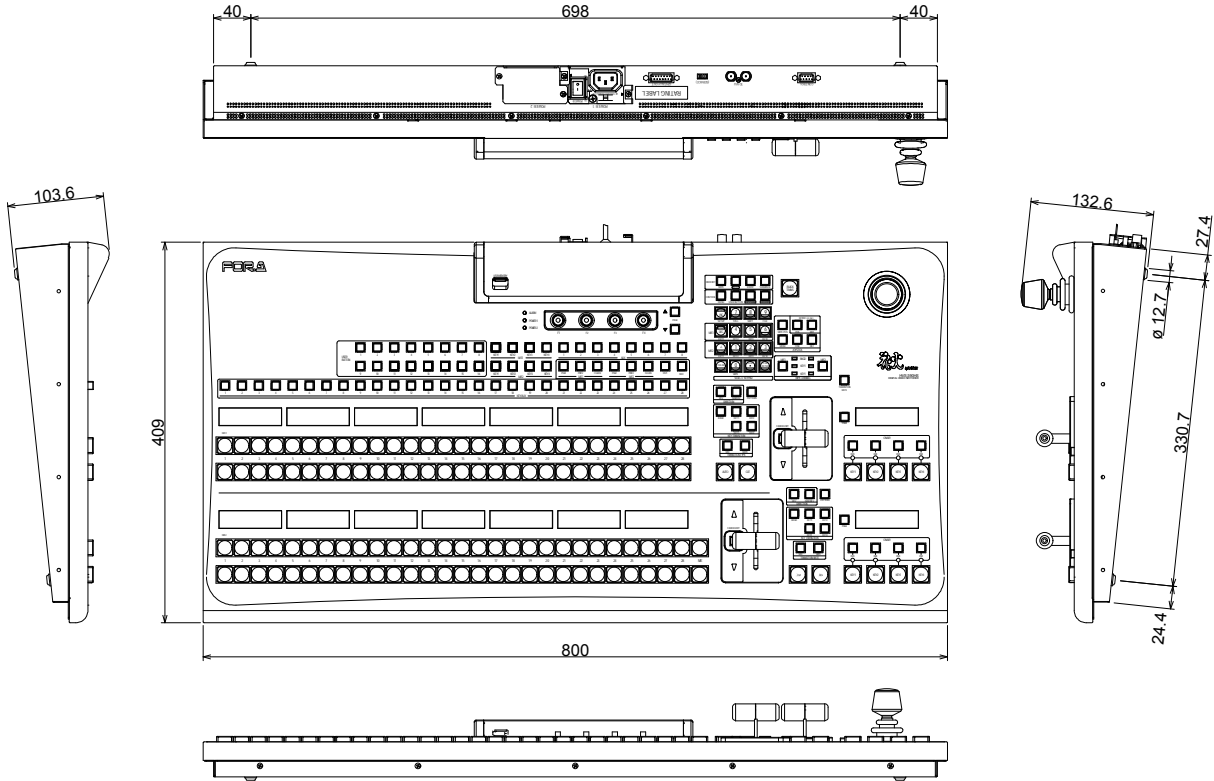
Appendix 1. Supported Files

Menu Setting Files and Image Files (via USB flash memory or Ethernet connection)

File Extension	File Name (*1)	File Data Description
all	DATA.all	System data, all wipe data and event memory data
sys	HVS390.sys	System data
mem	EVENT.mem	All event memory data
seq	SEQDAT**.seq	Each sequence data
mcr	MACRO.mcr	All macro data
jpg (*2)	*.jpg	JPEG images (standard RGB) JPEG sequential images
	STILL1.jpg to STILL4.jpg	Stored still images in JPEG format
tga (*2)	*.tga	8-, 24- and 32-bit TARGA images (uncompressed RGB and RLE encoded) TARGA sequential images
	STILL1.tga to STILL4.tga	Stored still images in TARGA format
bmp (*2)	*.bmp	24-bit BITMAP images (uncompressed RGB) BITMAP sequential images
	STILL1.bmp to STILL4.bmp	Stored still images in BITMAP format

Note that file names are limited to max. 8 characters in length (ASCII code).

(*1) Files are automatically named to their correct name as shown in the table above when saving to USB flash memory.

(*2) When loading a jpeg, targa or bitmap file from USB flash memory, you can select a centered or tiled format as well as a normal one. In such case, a centered or tiled format image file is saved to STILL as a jpg, tga or bmp file.

Factory Tested USB Flash Memory Drives

Manufacturer	Series Name	Model Name
SanDisk	Cruzer micro, Cruzer mini Series	SDCZ2-256
I/O DATA	TB-ST Series	ToteBag
Transcend	JetFlash150 Series	
TOSHIBA	TransMemory Series	U2B-256MT

WIPE Type

000 001 002 003 004 005 006 007 008 009

010 011 012 013 014 015 016 017 018 019

020 021 022 023 024 025 026 027 028 029

030 031 032 033 034 035 036 037 038 039

040 041 042 043 044 045 046 047 048 049

050 051 052 053 054 055 056 057 058 059

060 061 062 063 064 065 066 067 068 069

070 071 072 073 074 075 076 077 078 079

080 081 082 083 084 085 086 087 088 089

090 091 092 093 094 095 096 097 098 099
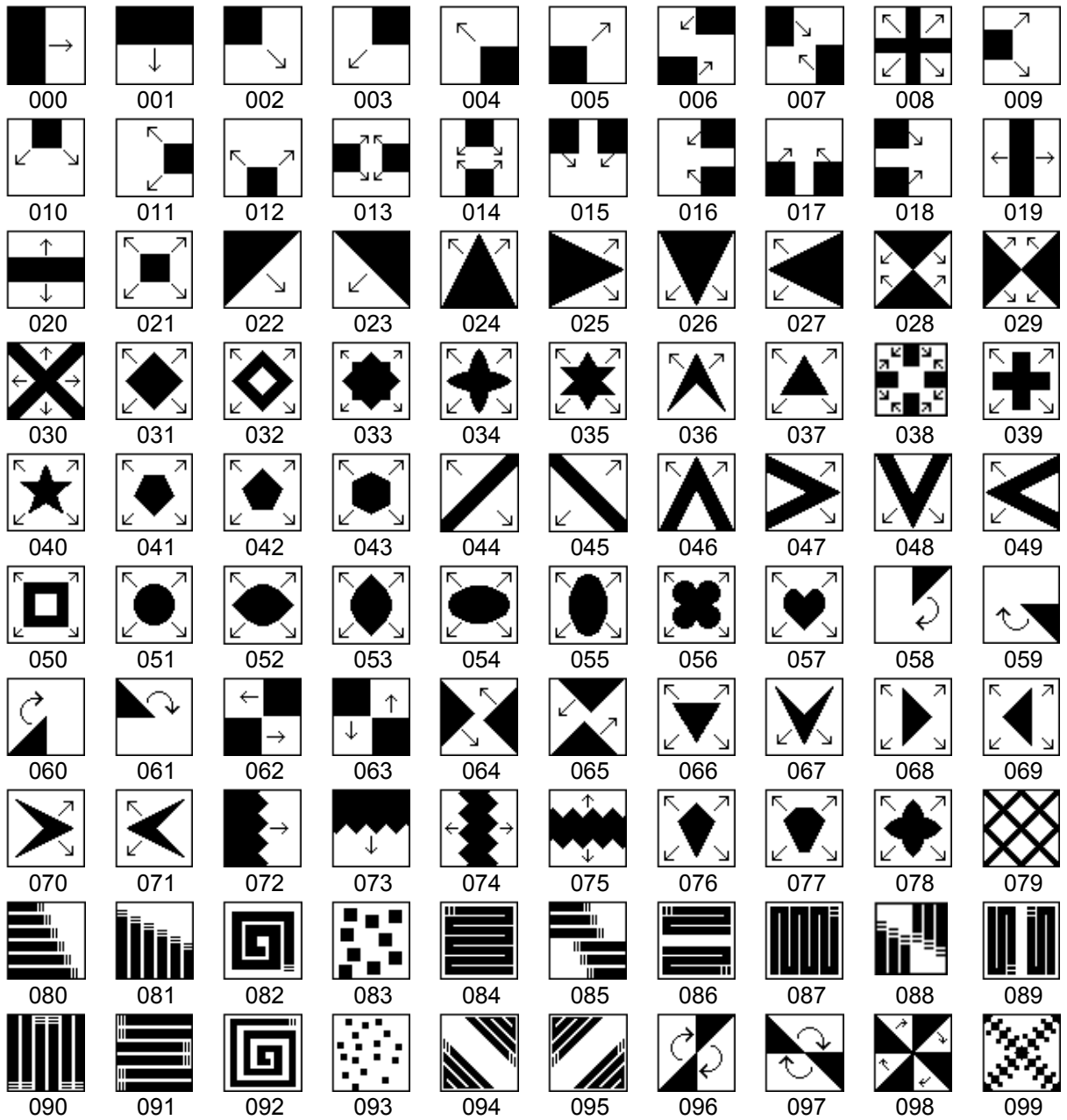
DVE Type

◆ Normal direction

100	101	102	103	104	105	106	107	108	109

110	111	112	113	114	115	116	117	118	119

120	121	122	123	124	125	126	127	128	129

130	131	132	133	134	135	136	137

140	141	142	143	144	145	146	147

150	151	152	153	154	155	156	157

161	162

170	170	172	173	174	175	176	177	178	179

180	181

Index

Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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