MS-6416

Master Control Switcher

User's Manual

Please be sure to read this！

VIDEOTRON CORP.

100410R02

For your safety

⚠ Warning

Wrong handling may cause such serious results as death, heavy injury and fire.

1. Power plug and cord

*Do not use other power voltages than indicated.
*Connections of electric instruments over the capacity of the indoor AC power supply for a long period will cause a fire.
*Plug in correctly. Dust and slacken plugging are dangerous.
*Avoid plugging in and out with your hands wet.
*Hold a plug to plug in or out. Do not pull out a plug holding a power cord.
*Do not get the power cords entangled with other cables such as the power cord of other instruments.
*Do not place heavy materials on the power cord. See that the cords will not be pressed or crushed under this equipment or others.
*When you removing your equipments such as in cleaning, be sure to pull out the plug after switching off the power switch.

2. When the main frame gets hot or when you smell something burning,

*Switch off the power switch immediately. Pull out the power plug , when the equipment is not shut down by the power switch.
*When the power is shut down by the protection circuitry, or when you hear a warning sound by buzzer, switch off the power switch or pull out the power plug immediately.
*Turn off the power switch of the equipment installed at the upper and lower area, or cut the main breaker.
*Check your air conditioning system.
*Do not touch the equipment for a while.
*The fan might have stopped. Please confirm, before installing your equipment, where the fan is located. We advise you to replace the fan every five years.
*Do not place the equipment at such a place as will block the ventilation from the equipment. Heat will be confined to cause a fire.
*We recommend that a fire extinguisher should be in your machine room for emergency.
*Contact us immediately.

3. No eating, drinking, smoking nor handling of fire should be allowed.

*Especially, smoking or handling of fire may cause a fire if the electric parts catch fire from it.
*The use of inflammable gas near the machines or in a closed room such as a machine room can be an ignition to cause a fire.
*It is also dangerous to spill coffee or alcohol over the electric parts.

4. Do not try to repair by yourself.

The below listed misbehaviors will ignite the electric parts to cause a fire.
*It is dangerous to misplace the parts (reverse electrodes etc.).
*It is dangerous to place or replace the parts when the power is on.
*It is dangerous to place the parts whose standards are not the same.

5. Others

*In case the equipment is not to be used for a long time, switch off the power switch and pull out the plug from the outlet.
*Do not try to carry heavy equipments by oneself, which may cause backache and other injuries. At least two persons should carry heavy equipments.
*Do not touch the fan while it is working. Make sure it is stopped when you want to touch it.

*When you want to use this equipment on a vehicle, be sure to place it in a fixed state, or it can fall down to hurt you.
*Fix firmly the rack mount for the main frame and the rack to the building, providing against disasters such as earthquakes.
In case of an earthquake, turn off the breaker or take other whatever necessary action appropriate to the situation, so that it may not ignite a fire. We recommend you to be well accustomed to disaster prevention measures through necessary training.
*Do not put or leave metal pieces or other conductive in the equipment, or the circuits can be shortened to cause a fire.
*When the peripheral equipments show abnormal state, switch off the power switch or pull out the plug of the main frame.

⚠ Caution

Wrong handlings of the equipment can possibly cause serious results such as damages to the equipment or to your other properties.

1. Avoid eating, drinking, or smoking at the operating panel.

You may spill your coffee or the like into the operating equipments to cause a break in the circuit or switch.

2. Be careful in carrying the equipment.

A shock from hitting such as dropping the machine on the floor will cause troubles in the machine. Also it will cause injuries such as fracture of a bone, when dropped at someone's foot.

> We recommend a periodical maintenance care.

A break in the circuit and trouble of the parts are mostly caused by dust and something foreign. Be sure to switch off the power switch then pull out the plug before you start your maintenance work.
*Clean the dust from the front panel and from the ventilation duct, and the foreign substance within the main frame and operating panel.
*Clean the dust on the fan.
*Clean the connector on the board of the card edge connector type.
*Do the above once a month.
Also the deteriorated parts owing to a long period of use such as electrolytic capacitors, batteries etc. will cause troubles. For the constantly safe use of our products, we highly recommend a periodical overhaul inspection (every five years) . Ask us for the term and expense of the periodical inspection.

Ask us for our assistance, whenever you suspect troubles with our products even other than described above.

Place of Contact:

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- The contact of Saturday, Sunday, and a public holiday

Answering machine	81-426-66-6311
Emergency	81-90-3230-3507
Registration time	9:00 - 17:00

We cordially ask for your kindness of understanding on our environmental preservation campaign

・Videotron Corporation is executing Environmental Preservation campaign.
・To economize on paper, entry density in our documents is more increased.

This manual described MS-6416HD model and MS-6416SD model.

In case using MS-6416SD model, please read MS-6416SD instead MS-6416HD and SD-SDI (SMPTE-259M-C) instead HD-SDI (SMPTE-292M).

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1. General

The MS-6416 is a master control switcher that enables you to perform switching operation allowing 16 channels of embedded HDTV or SDTV signals. It has three channels of DSK and two channels of audio over at the program output. The three liquid crystal level meters allow you to monitor the volume of the Preset, Program, and On-Air at the same time.

MS-6416HD, MS-6416SD and MS6416HD/SD models are available. And also AES/EBU signal inputs and machine controls are available adding options.

VIDEO Features

- Inputs 16 channels of HDTV or SDTV video signals.
- Each input provided with 1 line AVDL enabling you to match the switch timing
- Four kinds of switch specify the transition speed, which allows you to preset.
- The switch row selects the background color signal and color bar signal.
- Displays signal name on the 4-digit alphanumeric LED.
- DSK gives you three kinds of output by three-stage cascade connection.
- The preview of DSK allows you to monitor by selecting necessary channels.
- Adjustable DSK key level
- One AUX(iliary) bus
- Compatible with the 1080i and 720p format
- The Video Only allowed to switch separating from audio
- PST, PGM and ON-AIR pictures display on the LCD (option)

AUDIO Features

- Performs switching and synthesizing extracting the Embedded sound.
- The Embedded sound corresponding up to eight channels
- Process 48kHz sampling and 24 bits signal
- Controls so that no noise is generated at the switching point.
- The Audio Only allowed to switch separating from video
- The three liquid crystal bar graph meters monitor the sound level of the PST, PGM and On-Air.
- The level meter serves for the display of VU and PPM by switching alternately.
- The adjustment of the sound level allows presetting at every channel
- Voice-Over mixing of 2 channels of external input sounds
- Tone generator
- An AES/EBU input for the On-Air monitor
- 8 channels and 2 groups of D/A outputs for the sound monitor

General Features

- Dual power supply for the main chassis and the operation panel
- External APC control via RS422
- The liquid crystal display allows a variety of presets.
- Alarm outputs for the fan and the power supply
- The fan and the power supplies are in modules for easy maintenance.
- GPI inputs and Tallies output for DSK

2. Function Check

1.Package Contents

Main Chassis

No.	Nomenclature	Type・Standards	Quantity	Remarks
1	Main Chassis	MS-6416	1	
2	User's Manual		1	
3	Power Cable		2	
4	Mount Screws	5m/m	4	
5	Termination plug	BNC 75ohm	1	For REF in

Operation Panel

No.	Nomenclature	Type・Standards	Quantity	Remarks
1	Operating Panel		1	
2	Power Cable		2	
3	Control Cable	3C-2V 10m	1	

2. Wiring and Procedure of Checking

Basic Operation

(1) Connect the attached power cables to the main chassis AC IN A, B, and connect to the AC100 ~220V outlet.

(2) Connect the attached power cables to the operation panel AC IN A, B, and connect to the AC100 ~ 220V outlet.

(3) Connect the main chassis PANEL and the operation panel CONT with the attached control cable.

(4) Connect Tri-level SYNC or BBS signal to the main chassis REF IN.

The machine detects the signal and selects the mode automatically.

If you do not need bridge connect, terminate with 75ohm termination plug.* MS-6416HD accepts BBS only.

(5) Connect the input video signal 1 of the HD-SDI to the main chassis LINE IN1.

(6) Connect the input video signal 2 of the HD-SDI to the main chassis LINE IN2.

(7) Connect the main chassis CLEAN OUT to monitor A of the HD-SDI.

(8) Connect the main chassis PST OUT to monitor B of the HD-SDI.

(9) Select the HD format with MODE switch on P-1 PCB.

(10) Turn on the power switch of the Operation panel POWER A, B.

Every switch and the liquid crystal displays on the operation panel will be lit.

(11) Turn on the power switch of the main chassis POWER A, B.

(12) Select [1] on the switch row at the PGM side on the operation panel. (lit in red)

The image of the input video signal 1 will be outputted onto the monitor A.

(13) Select [2] on the switch row at the PST side on the operation panel. (lit in amber)

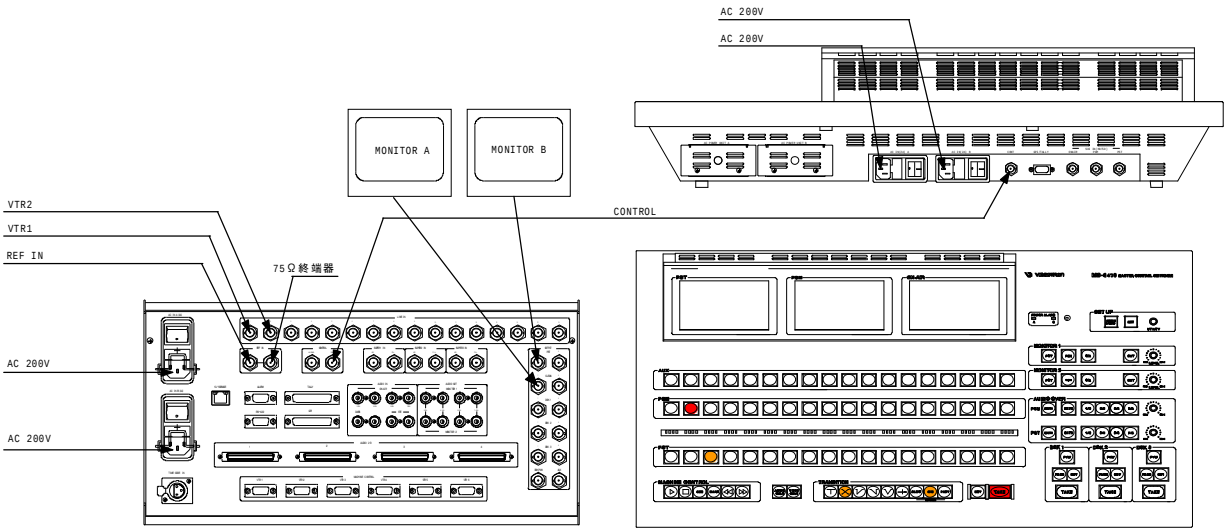
The image of the input video signal 2 will be outputted onto the monitor B.

(14) Select [X] in the TRANSITION section. (lit in amber)

(15) Select [MIX] in the TRANSITION section. (lit in amber)

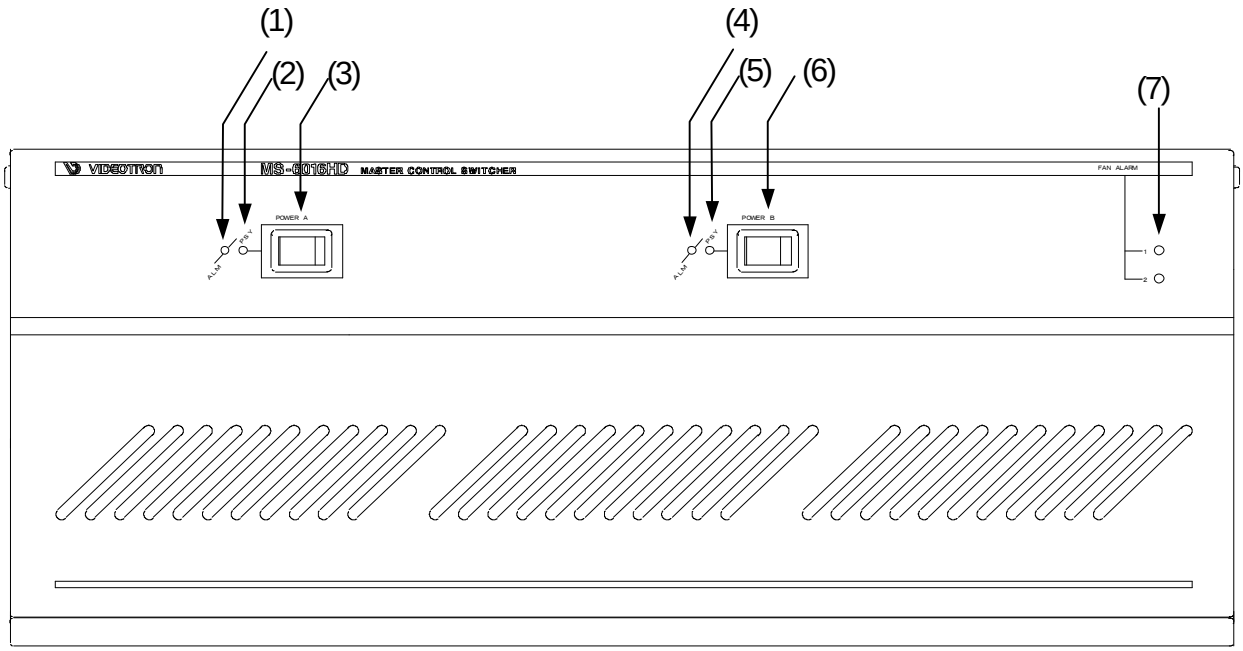
(16) Push [TAKE] switch. (blink in red while execute)

(17) The image on the monitor A will be changed signal 1 to signal 2.



3. Name and Function of Each part

1. Front, Main Chassis



(1) ALM Lamp(Unit A)

An alarm lamp of the power source unit A side. It will blink when the power switch of A side is OFF or in abnormal condition and in the case please refer to Trouble shootings (P.22)

(2) PSY Lamp(Unit A)

This will be lit when the switch of the power source unit A side is turned on. If it is not lit even when the switch of the A side is turned on, the power source unit is in abnormal condition.

(3) POWER A Switch

This is a power switch of the power source unit A side.

(4) ALM lamp(Unit B)

An alarm lamp of the power source unit B side. It will blink when the power switch of B side is OFF or in abnormal condition.

(5) PSY Lamp(Unit B)

This will be lit when the switch of the power source unit B side is turned on. If it is not lit even when the switch of the B side is turned on, the power source unit is in abnormal condition.

(6) POWER B Switch

This is a power switch of the power source unit B side.

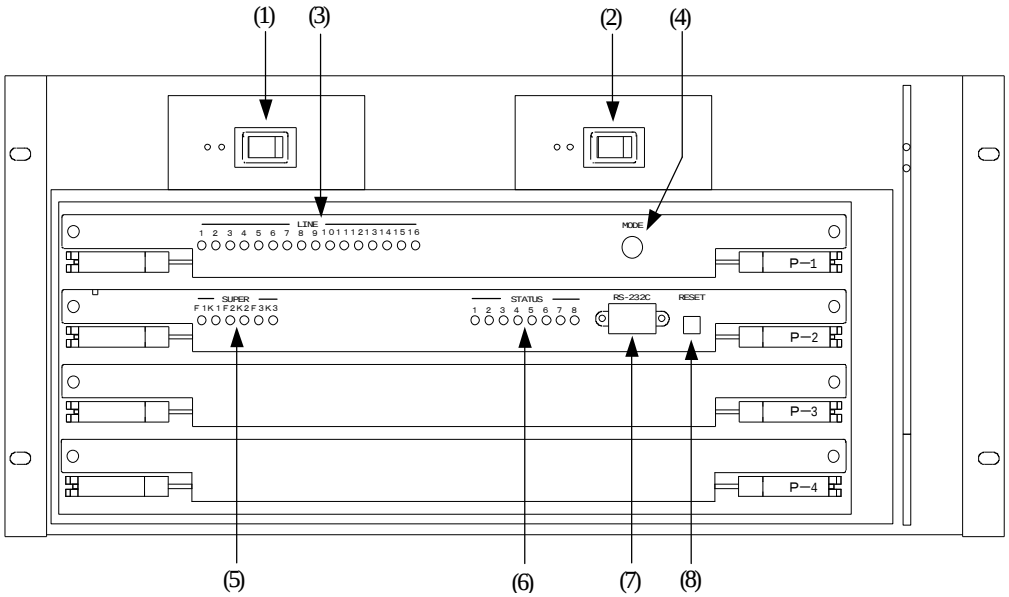
(7) FAN ALARM

This is an alarm lamp for the cooling fan built in the side. It will blink when the fan is in abnormal condition and in the case please refer to Trouble shootings (P.22)

1： an alarm lamp for the fan near the front of the main chassis.

2： an alarm lamp for the fan near the rear of the main chassis.

**Each power source unit has the main power source switch on the rear of its body. If the PSY lamp is off even when you turn on the power switch of each unit, please check the main power source switch.



(1) Power switch (Unit A)

(2) Power switch (Unit B)

(3) LINE 1 - 16 Indicators for line inputs.

The indicator will be lit if the line input is inputted.

(4) MODE Code switch for video format.

0: 1080i(59.94Hz) 1: 720p(59.94Hz) 2 - F: undefined.

Power off the machine while setting this switch.

(5) SUPER Indicators for DSK Fill and Key inputs.

The indicator will be lit if the signal is inputted.

(6) STATUS Indicators for MPU operations.

1: INT CLOCK

2: PANEL COMM(unication)

3: PROCSS(ing)

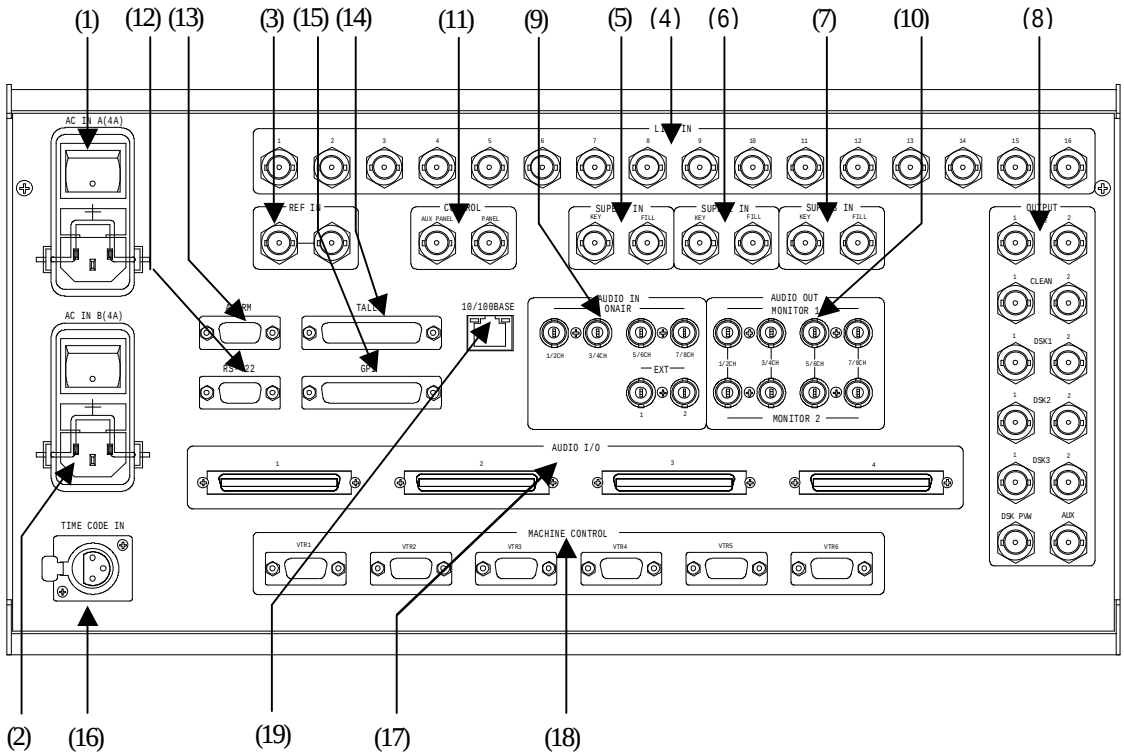
4 - 7: not defined

8: VD CLOCK (VD is present)

(7) RS-232C Connector for external control. (undefined)

(8) RESET MPU reset and restart software program.

3. Rear, Main Chassis



(1) AC IN A

Upper： Main power source switch of the power supply unit A side.

Lower： Three terminal power source connector of the power supply unit A side.

It is with the fuse holder. The fuse of 4A is put. Please refer (P.22)

(2) AC IN B

Upper： Main power source switch of the power supply unit B side.

Lower： Three terminal power source connector of the power supply unit B side.

It is with the fuse holder. The fuse of 4A is put. Please refer (P.22).

(3) REF IN

Input terminals of the external synchronizing signals. Input here Tri-level SYNC or BBS signal of the system. The machine detects the signal and selects the mode automatically.

Both terminals are connected inside. When you do not bridge the input signal to other instruments, connect here a 75 Ω terminating device. .*MS-6416SD accepts BBS only.

(4) LINE IN(HD-SDI SMPTE-292M)

Input terminals for LINE IN1 - 16.

(5) SUPER1 IN(DSK1、HD-SDI)

KEY：Input terminal for the key signal of DSK1.

FILL：Input terminal for the fill signal of DSK1.

(6) SUPER2 IN(DSK2、HD-SDI)

KEY：Input terminal for the key signals of DSK2.

FILL：Input terminal for the fill signals of DSK2.

(7) SUPER3 IN(DSK3、HD-SDI)

KEY：Input terminal for the key signal of DSK3.

FILL：Input terminal for the fill signal of DSK3.

(8) OUTPUT(HD-SDI)

PST：Output terminals for PST BUS.

There are 2 outputs.

CLEAN：Output terminals for CLEAN.

There are 2 outputs.

DSK1：Output terminals for DSK1.

There are 2 outputs.

DSK2：Output terminals for DSK2.

There are 2 outputs.

DSK3：Outputs terminals for DSK3.

There are 2outputs.

AUX：Output terminals for AUX BUS.

DSK PVW：Output terminals for DSK PVW.

(9) DIGITAL AUDIO IN

(AES/EBU DIGITAL AUDIO signals)

ON AIR：Input terminals for On air monitor, 1/2CH、3/4CH、5/6CH、7/8CH.

EXT：Input terminals for OVER AUDIO. There are 2 channels, EXT1 and EXT2.

(10) DIGITAL AUDIO OUT

MONITOR1 OUT：Output terminals for digital audio monitor. There are four connectors for 1 - 8CH.

MONITOR2 OUT：Output terminals for digital audio monitor. There are four connectors for 1 - 8CH.

(11) CONTROL

AUX PANEL： connect to AUX PANE via a coaxial cable.

PANEL： connect to MAIN PANEL via a coaxial cable.

Please refer (P.24).

(12) RS-422

Used for external control by editors etc.

(13) ALARM

When abnormal situation occurs to the power source or the fan of the main chassis, you will have a tally output.

Please refer (P.28).

(14) TALLY

Outputs to tally LINE、EXT、DSK that are on air.

Please refer (P.28).

(15) GPI

For expansion, not defined now.

(16) TIME CODE IN

For LTC time code signal input, not defined now.

(17) AUDIO I/O

Connect AES/ESU input/output breakout panel.(Option)

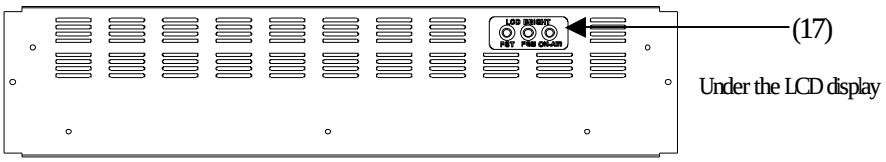
(18) MACHINE CONTROL

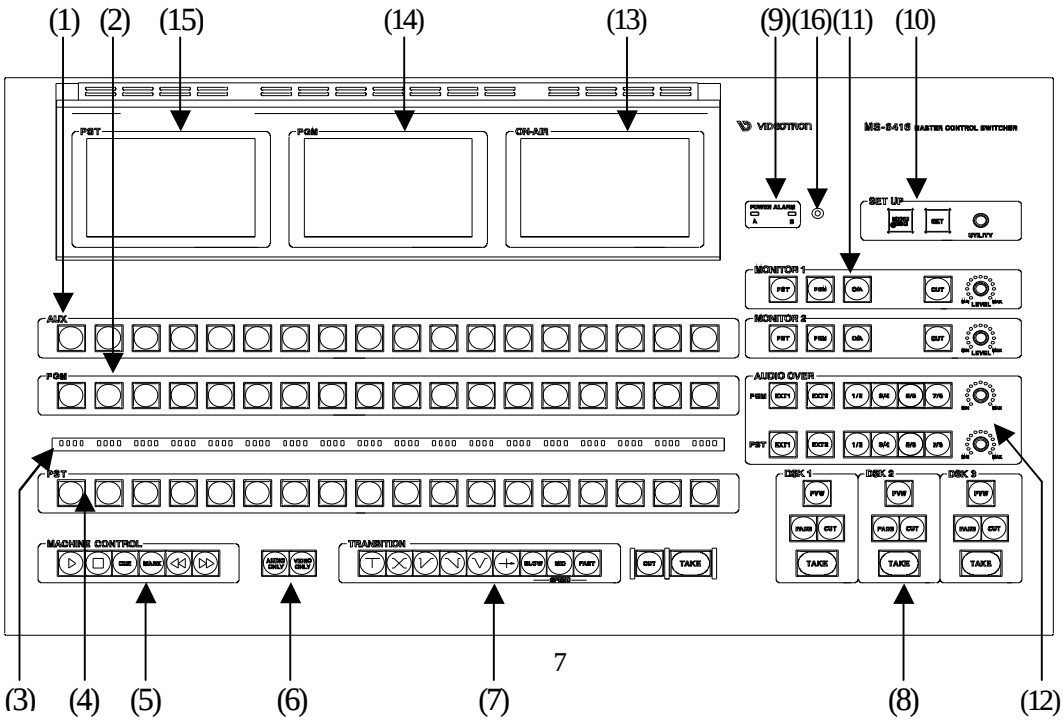
Connect RS422 controls for machine control. (Option)

(19) 10/100BASE

For expansion, not defined now.

4. Front, Operation Panel





(1) AUX BUS Section

Selects the AUX output signal.

BLACK : internally generating black signal

1 - 16 : input signal o each LINE IN terminal.

BACK COLOR : internally generating matte or color bar signal.

Set Up (P.18) will set the matte or color bar.

(2) PGM BUS Section

Selects the PGM output signal.

BLACK : internally generating black signal

1 - 16 : input signal o each LINE IN terminal.

BACK COLOR : internally generating matte or color bar signal.

PST BUS performs the setting of matte or color bar.

(3) Display for input allotment

The set-up mode sets and displays each name of input allotment.

(4) PST BUS Section

Select the PST signal that appears at the next transition.

Although each switch works just as (1)PGM BUS section, only BACK COLOR turns into matte when lit in amber, and into color bar when lit in green.

The color set for BACK COLOR of the PST BUS section will become a common background color to PGM BUS.

If you repeat keeping pressing and releasing BACK COLOR for a second, the lit color of the switch repeat lighting in amber and green alternately and the background color will repeat matte and color bars.

Set Up (P.18) will set the color of the background color.

(5) MACHINE CONTROL Section

If the machine control option is installed, each switch controls the machine that is selected in PST bus.

 : execute PLAY the machine.

 : execute STOP the machine.

 : execute CUE UP to the marked point.

 : Mark the mark point with inputed time code.

 : Execute STEP BACK or REWINDE (push more than one second)

 : Execute STEP FORWORD or FAST FORWORD (push more than one second)

(6) AUDIO･VIDEO ONLY Section

Execute the transition of audio only or video only.

 : execute transition of audio only that selected in PST bus.

 : execute transition of video only that is selected in PST bus.

(7) TRANSITION Section

Determines and executes the content of the edition to be done at the next transition.

 : executes cut operation

 : dissolve operation

 : cut in and cut out operation

 : fade in and cut out operation

 : fade in and fade out operation

 : execute wipe operation

 : Dissolve and fade transition time become slow.

 : Dissolve and fade transition time become middle.

 : Dissolve and fade transition time become fast.

CUT : executes cut change directory

TAKE : executes transition automatically

**Set wipe direction in SET UP menu.

Otherwise, keep pressing  for a second to enter the setting mode, and adjust to your desired direction with the UTILITY knob, and finally determine it by pressing SET.

**Set the transition time in SET UP menu.
Otherwise, keep pressing each SLOW, MID and FAST for a second to enter the setting mode, and adjust to your desired time with the UTILITY knob, and finally determine it by pressing SET.

(8) DSK1、DSK2、DSK3 Section
Performs ON/OFF of the down-stream key.
PVW : inserts the down-stream key into DSK PVW output.
FADE : The ON/OFF of the down-stream key is done in fade operation.
** Set the fade time in SET UP menu.
Otherwise, keep pressing FADE for a second to enter the setting mode, and adjust to your desired time with the UTILITY knob, and finally determine it by pressing SET.
CUT : The ON/OFF of the down-stream key is done in cut operation.
TAKE : executes transition automatically.

(9) POWER ALARM Section
The alarm lamp blinks when the power source of the operation panel is in abnormal condition. Please refer Trouble Shootings(P.22).

(10) SETUP Section
Enters the set up mode, and sets the system parameters.
MENU : enters the set up mode, and the main menu will appear on the ON-AIR display of the operation panel.
SET : determines each parameter.
Knob : selects and sets each parameter.
**See Set Up (P.18) for the set up mode.

(11) MONITOR1、MONITOR2 Section
Selects an audio and adjusts its level to be putted out to the MONITOR(1,2) OUT.
PST : selects PSI audio at the MONITOR OUT.
PGM : selects PGM audio at the MONITOR OUT
O/A : selects ON-AIR audio at the MONITOR OUT
**MONITOR OUT turn on and off the external(EXT1 and EXT2) audio at the AUDIO OVER section.
CUT : turns on and off the selected audio in cut operation.
LEVEL knob : adjusts the audio level of the MONITOR OUT.
**Keep pressing each PST , PGM or O/A for a second to enter the adjust mode and adjust the level, press SET to determine it.

(12) AUDIO OVER Section
You are allowed to turn on and off, in fade of cut operation, the external (EXT1, EXT2) audio at the OUTPUT(CLEAN, DSK1, DSK2, DSK3 PVW), and MONITOR OUT. Select audio over signal in PST bus and press TAKE then go to PGM bus with video. The transition would be executed with the selected TRANSITION.
AUDIO OVER has two modes; one is over on program audio and another one is exchange with program audio. Set it in SETUP menu.

PST bus
EXT1 : allows you to mix the EXT1 audio with PST output.
EXT2 : allows you to mix the EXT2 audio with PST output.
1/2 , 3/4 , 5/6 and 7/8 switches are allow you to adjust audio level of each channels which is selected in PST bus. If you want to cancel the selected channel, press the switch again then lamp will be off.
Adjust the level with the knob. The audio level of selected channel will be changed from each channel was set last time.
The level that you set in PST bus goes to PGM bus after TAKE transition.

PGM bus

EXT1 : allows you to mix the EXT1 audio with clean, DSK1, 2, 3 outputs.

EXT2 : allows you to mix the EXT2 audio with clean, DSK1, 2, 3 outputs.

1/2 , 3/4 , 5/6 and 7/8 switches are allow you to adjust audio level of each channels which is selected in PGM bus.

Adjust the level with the knob. The audio level of selected channel will be changed from each channel was set last time.

The level that you set in PGM bus will be canceled after TAKE transition.

(13) ON-AIR DISPLAY Section

Displays the ON-AIR audio level.

**When the set up mode is on, a menu will be displayed.

(14) PGM DISPLAY Section

Displays the PGM audio level.

(15) PST DISPLAY Section

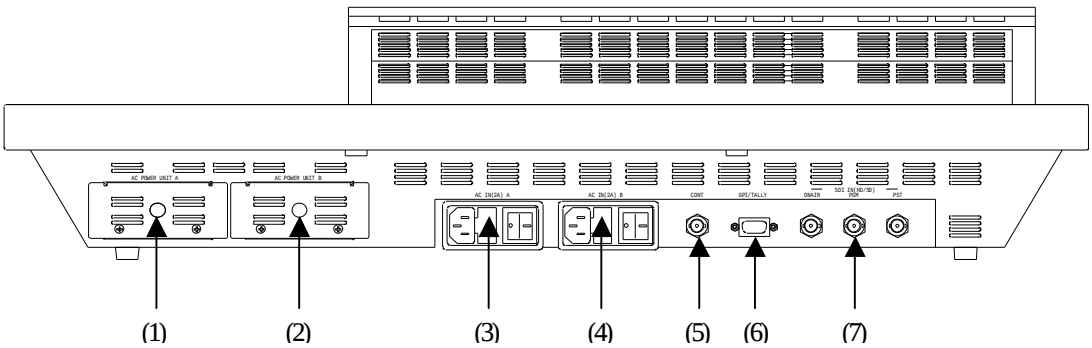
Displays the PST audio level.

(16) MPU reset. Restart the software program.

(17) Brightness adjust for LCD

Adjust brightness of each LCD with a screwdriver.

5. Rear, Operation Panel



(1) POWER UNIT A

The A side power source unit.

(2) POWER UNIT B

The B side power source unit.

(3) AC IN A

Right : A power switch for the A side power source unit.

Left : A three terminal AC power source connector for the A side power source unit.

It is with the fuse holder. The fuse of 2A is put.

(4) AC IN B

Right : A power switch for the B side power source unit.

Left : A three terminal AC power source connector for the B side power source unit.

It is with the fuse holder. The fuse of 2A is put.

(5) CONT

A communication connector with the main chassis.

(6) GPI/TALLY

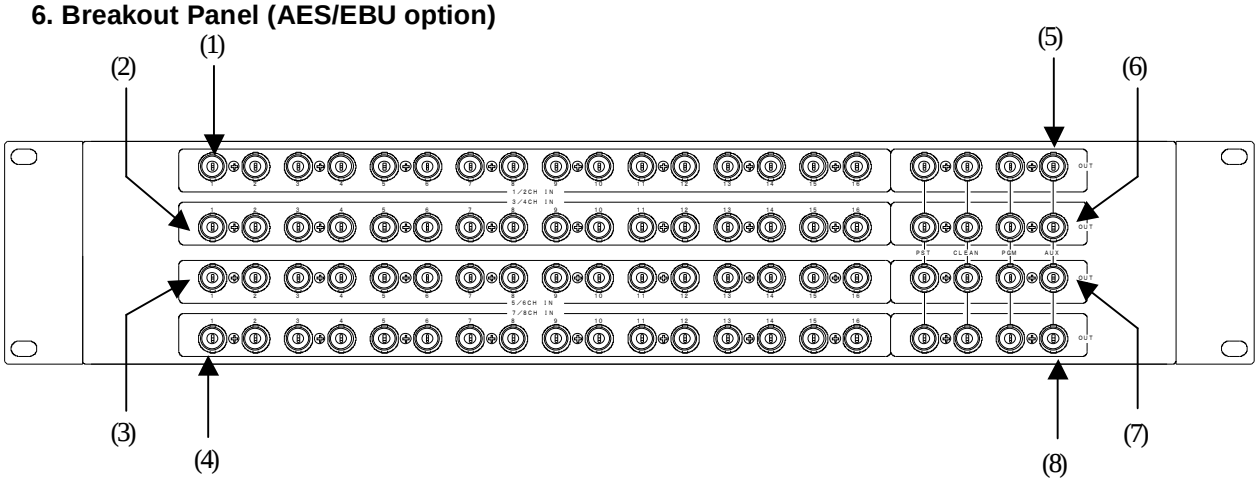
A GPI control input for DSK purpose and TALLY output connector.

(7) SDI IN (HD/SD)

Connect SDI signal for video monitor option. Connecters are ON-AIR, PGM and PST input from right side.

HD or SD SDI signal acceptable

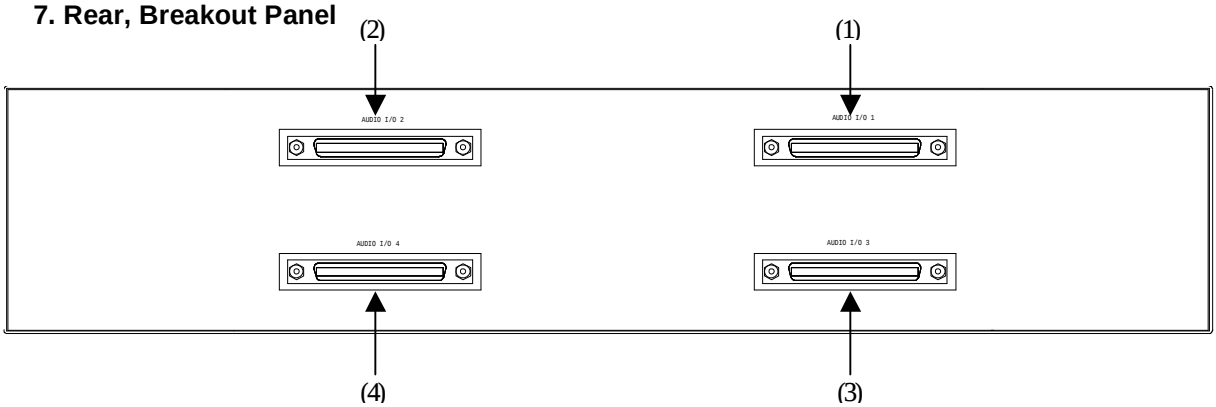
6. Breakout Panel (AES/EBU option)



(1) 1/2CH IN
16 AES/EBU input for 1 and 2ch.
(2) 3/4CH IN
16 AES/EBU input for 3 and 4ch.
(3) 5/6CH IN
16 AES/EBU input for 5 and 6ch.
(4) 7/8CH IN
16 AES/EBU input for 7 and 8ch.

(5) 1/2CH OUT
PST, CLEAN, PGM and AUX out for 1 and 2ch.
(6) 3/4CH OUT
PST, CLEAN, PGM and AUX out for 3 and 4ch.
(7) 5/6CH OUT
PST, CLEAN, PGM and AUX out for 5 and 6ch.
(8) 7/8CH OUT
PST, CLEAN, PGM and AUX out for 7 and 8ch.

7. Rear, Breakout Panel



(1) AUDIO I/O 1
(2) AUDIO I/O 2
(3) AUDIO I/O 3
(4) AUDIO I/O 4

All four connecters must be connected to mainframe with the cable that supplied from manufacturer.

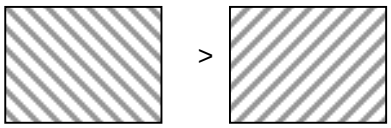
4. Step of Operation

1. LINE Switching

Here we will indicate ON and OFF concerning the switches necessary for operation.

The switches that this explanation does not refer to are placed in OFF (light off) state principally.

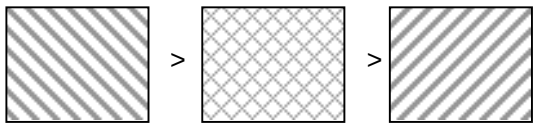
Example 1: We will change from the LINE IN1 to the IN2 in cut operation.



IN1 IN2

1) Select [1] on the PGM bus. (lit in red)
The LINE IN1 will be outputted as the CLEAN OUT image.
2) Select [2] on the PST bus. (lit in amber)
The LINE IN2 will be outputted as the PST OUT image.
3) Press [T] in TRANSITION. (lit in amber)
4) Press [TAKE] in TRANSITION.
The image of the CLEAN OUT will change from the LINE IN1 to the LINE IN2.
The switch row of the PGM side turns [2] .(lit in red)
The switch row of the PST side turns [1] .(lit in amber)
The image of the PST OUT changes to the LINE IN1.

Example 2: We will change from the LINE IN1 to the IN2 in fade operation.



IN1 IN1／IN2 IN2

1) Select [IN1] on the PGM bus. (lit in red)
The LINE IN1 will be outputted to the CLEAN OUT.
2) Select [IN2] on the PST bus. (lit in amber)
The LINE IN2 will be outputted to the PST OUT.
3) Turn on [X] in TRANSITION.(lit in amber)
The editions of the LINE group will operate in fade operation.
4) Turn on [MID] in TRANSITION.(lit in amber)
5) Keep pressing [MID] for a second to enter the setting mode, then set your desired value with the UTILITY knob.
The transition time of the TRANSITION：MID is set here.
The TRANSITION：[SLOW],[MID],[FAST] allows you the setting in the below shown range.
SLOW:0 - 300 frames(10 frame steps)
MID: 0 - 150 frames (10 frame steps)
FAST:0 - 100 frames (1 frame step)
Press [SET] to end the setting mode.
**0 frame performs cut operation.
The setting of a transition time is also made in the set up mode.
6) Press [TAKE] in the TRANSITION.(blink amber during a transition is being done)
The image of the CLEAN OUT will change from the LINE IN1 to the IN2 at the speed set to [MID] .
The switch row of the PGM bus turns [2] .(red)
The switch row of the PST bus turns [1] . (amber)
The image of the PST OUT changes to the LINE IN1.

2. ON/OFF of DSK

Here we will indicate ON and OFF concerning the switches necessary for operation.
The switches that this explanation does not refer to are placed in OFF (light off) state principally.
As to from the OUTPUT DSK1 to the DSK3, the super of the DSK3 will be displayed at the top.
OUTPUT DSK1 superimposes SUPER IN 1 on CLEAN out.
OUTPUT DSK2 superimposes SUPER IN 2 on DSK1 out.
OUTPUT DSK3 superimposes SUPER IN 3 on DSK2 out.

(1) How to key a super
Example 1: Here we will use the SUPER IN1 input and key it onto LINE IN1 in fade operation.

IN1 IN1＋SUPER IN1

1) Select 1 on the PGM bus. (red)
The LINE IN1 will be outputted to the DSK OUT.
2) Select 1 on the PST bus.(amber)
The LINE IN1 will be outputted to the PST OUT.
**You can select any switch you desire.
3) Turn on FADE in DSK1. (amber)
The DSK1 will act in fade operation.
4) Keep pressing FADE for a second to enter the setting mode, then set your desired value with the UTILITY knob.
The transition time of the DSK1：FADE is set.
The setting from 0 to 100 frames are allowed for your setting.
Press SET to end the setting mode.
**0 frame performs in cut operation.
5) Press TAKE in DSK1.(blink amber during the execution of transition)
On the image of the DSK OUT, the SUPER1 will be keyed onto LINE IN1 at the set speed.
While the SUPER1 is keyed, the DSK1：TAKE will be lit in red.

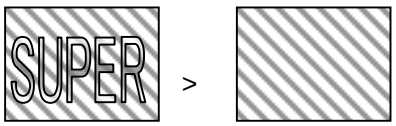
(2) How to take off the super being keyed

Example 2: Here we will take off the SUPER1 being keyed onto the LINE IN1 in fade operation.

IN1＋SUPER1 IN1

1) On the PGM side switch row, IN1 is selected.(red)
On the DSK OUT image, the SUPER1 is being keyed onto the IN1.
Since the super is being keyed now, the DSK1：TAKE is lit in red.
2) On the PST side switch row, select your desired switch.
On the image of the DSK OUT, the SUPER1 is keyed onto the LINE IN1.
Since the super is being keyed, the DSK1：TAKE is lit in red.
2) Select your desired switch on the PST side switches.
**Here, for example, we will select IN1. (amber)
The LINE IN1 will be outputted to the PST OUT.
3) Turn on the DSK1：FADE. (amber)
The edition of the DSK1 will act in fade operation.
4) Keep pressing the DSK1：FADE for a second to enter the setting mode, then set your desired speed value turning the UTILITY： knob.
Now we have the transition time of the DSK1：FADE.
10 - 100 frames are available for your setting.
Press SET to end the setting mode.
5) Press the DSK：TAKE.(amber during the execution of transition)
On the image of the DSK OUT, the SUPER1 will go off at the set speed.
Since the SUPER1 is OFF, the light of the DSK1：TAKE is gone off.

Example 3: We will take off the SUPER1 being keyed onto the IN1 in cut operation.



IN1＋SUPER1 IN1

1) On the PGM side switch row, IN1 is selected.(red)

**Here, for example, let's select IN1. (amber)
On the PST OUT image, the SUPER IN1 will be outputted.
3) Press the DSK1：CUT.
On the DSK OUT image, the SUPER1 will go off.

Since the SUPER1 is OFF, the light on the DSK : TAKE will go off.

3. How to adjust MONITOR LEVEL

Here we will indicate ON and OFF concerning the switches necessary for operation.
The switches not referred here are principally placed in OFF (light off) state.

Example 1: We will select here the PGM audio for the MONITOR1 OUT.

1) MONITOR1 : Select PGM .(amber)
2) MONITOR1 : Press CUT , the CUT goes off.
The voice of the MONITOR1 OUT will change to the one of the LINE IN selected in PGM.
3) MONITOR1 : Adjust the audio level of the MONITOR1 OUT with the LEVEL knob.
**Keep pressing PGM for a second to enter the adjusting mode and adjust the level with the LEVEL knob, press SET to determine it.
**LEVEL adjusting range is from –20dB to +20dB

4. How to adjust AUDIO OVER

Here we will indicate ON and OFF concerning the switches necessary for operation.
The switches not referred here are principally placed in OFF (light off) state.
AUDIO OVER will be changed from PST to PGM with video when TAKE is executed. The transition is followed in TRANSITION section.

Example: Here we will mix the EXT1 audio with the voice of the OUTPUT

1) Select EXT1 in PST bus. (amber)
2) Select (CUT) in TRANSITION section.(amber)
3) Press TAKE in TRANSITION section.

The EXT1 audio will be mixed with OUTPUT audio in cut transition.
The lamp of EXT1 in PST bus was turned off and the lamp of EXT1 in PGM bus will be lit in amber.

4) Press more then 1second EXT1 in PGM.
The lamp will be blinked and goes to level-adjusting mode. You can adjust the EXT1 audio level.
Press the EXT1 again, the lamp will be lit and finished the level-adjusting mode.

**The adjusted level in this mode is used in EXT1 and EXT2.
**The adjusted levels in Setup menu are used separately.

5) Set next program in PST bus and press TAKE, the audio over will be cut and the EXT1 goes off.

5. How to adjust AUDIO level

Allow you adjusting the audio level to press the switch in AUDIO OVER section. Audio level of the channels that lit in amber will be adjusted at a same time with the knob. The channel switches turn on and off alternately.
The audio channels in PGM bus allow you adjusting the OUTPUT level directly. The audio channels in PST bus allow you adjusting PST output level. This PST level adjustment goes to PGM OUTPUT when you press TAKE.

**Adjusting range of levels are-20dB ～ +20d.

6. How to use UTILITY

Some switches have variable setting value depending on the function.

(1) There are two ways in selecting functional items when you change set values.

1) To press the UTILITY : MENU, then select each functional item in the set up mode.
2) Directly press to select the switch that represents the function that you wish to change.

(a) Keep pressing for a second a changeable button in the TRANSITION family and the DSK family.
(b) Change the set value by turning the UTILITY knob.
(c) The set value will be displayed on the ON-AIR liquid crystal screen.
(d) When you wish to register the changed value, press the SET .

If you press other switches without pressing SET , the change you made will not be registered but cancelled.

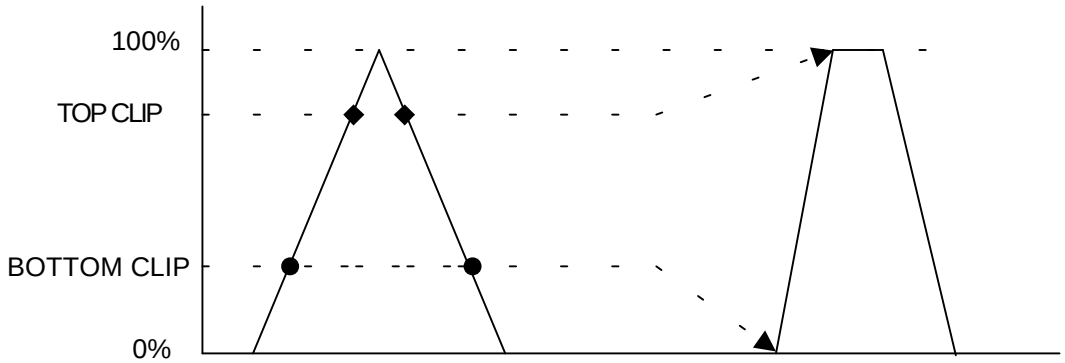
(2) Switches that have setting value

1) TRANSITION row : SLOW Transition time of dissolve and fade SLOW
2) TRANSITION row : MID Transition time of dissolve and fade MID
3) TRANSITION row : FAST Transition time of dissolve and fade FAST
4) TRANSITION row : Selection of wipe direction H, REV H,V and REV V.
5) AUDIO OVER row : EXT1 Adjust level of over audio1.
6) AUDIO OVER row : EXT2 Adjust level of over audio2.
7) DSK1 : FADE Fading time of DSK1 FADE
8) DSK2 : FADE Fading time of DSK2 FADE
9) DSK3 : FADE Fading time of DSK3 FADE

7. How to adjust KEY Signal Level

We have two methods: one is to produce a KEY from the input KEY signal, and the other is a self-key function, which produces a KEY from the Y and C components of the FILL signal.
We adjust the KEY level to obtain the best clear-cutness of a super.

(1) Below shown is hot to produce a KEY from the external KEY signal



KEY IN INPUT
KEY signal

Top Clipped and Bottom Clipped
KEY signal

Out of the 0% - 100% signal level of the KEY signal, we adopt the usable level as a KEY, determining the TOP CLIP(Upper level) and the BOTTOM CLIP(Lower level).

We produce a KEY by converting the clipped upper level to 100%, and the lower level to 0%.

**If you make the TOP CLIP 100 and the BOTTOM CLIP 0, the input signal will become a KEY with its level as it is.

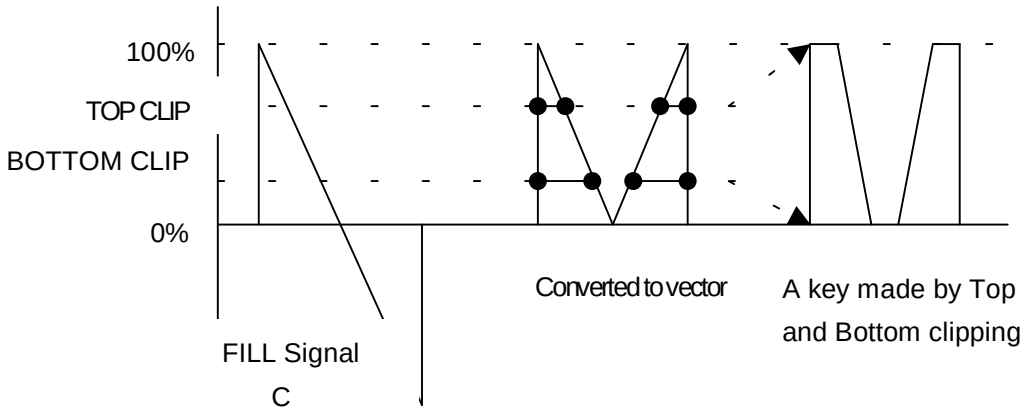
(2) How to adjust the external KEY

1) Press MENU, and select DSK PRESET with UTILITY knob, and press SET , select either one of the DSK1 - DSK3.
Then, press SET and select the KEY SEL:EXT.

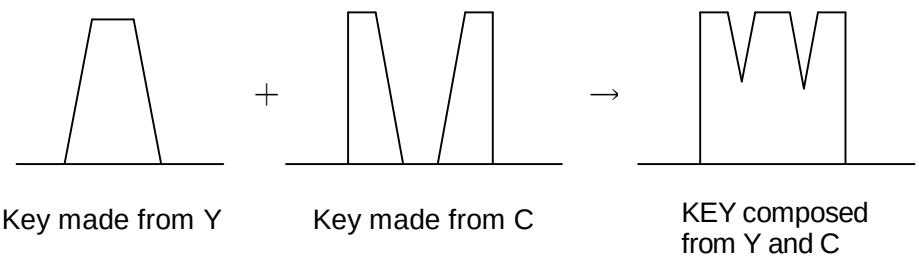
2) Press SET to enter the change mode.
Turn the UTILITY knob to adjust to a KEY level with the most suitable TOP and BOTTOM CLIP.
3) After adjusting the level, press the SET .
You will hear a beep and the set value will be registered.

(3) Here is how to produce a KEY from a FILL signal.(Self-Key)

1) The process of producing a KEY from the Y component is similar to the one of producing a KEY from a KEY signal.
2) Below show is how we produce a KEY from the C component.



3) Now we nam(Non-additive-mix) the KEY produced from each Y and C component



Out of each 0% - 100% signal level of the Y and C components of the FILL signal, we adopt the usable level as a KEY, determining the TOP CLIP(Upper level) and the BOTTOM CLIP(Lower level).

(4) How to adjust a self-key

**If you make the TOP CLIP 100 and the BOTTOM CLIP 0, the input signal will become a KEY with its level as it is.
Now we produce a KEY by mixing non-additively (Non-additive-mix) each KEY produced from the Y and the C component.
1) Turn the MENU : DSK PRESET and press SET . Select either one of the DSK1 - DSK3.
Press SET, then select the KEY SEL:SELF.

2) Press SET to have the change mode.
Turn the UTILITY knob and adjust a KEY level with most suitable Y TOP CLIP, Y BOTTOM CLIP, C TOP CLIP, and C BOTTOM CLIP.
**A KEY is produced from the Y and C component of the FILL signal.
3) After adjusting the level, press SET .
You will hear a beep and the set value will be registered.

8. Switches that change their functions

(1) BACK COLOR in PST bus.

Below shown are two kinds of BACK COLOR, which are distinguished by the colors of the switches.

1) When **lit in amber** : You are handling **background colors**. The set up mode changes the color.
2) When **lit in green** : **Color bars** are generated.

If you repeat keeping pressing and releasing BACK COLOR for a second, the state of the switches will change as 1) > 2) > 1) ・・・alternately.
When you have the background color, keep pressing BACK COLOR for a second.
You will hear a beep and the light of BACK COLOR will turn into green.
BACK COLOR will become color bars.

If you return to the background color, keep pressing BACK COLOR for a second again.
You will hear a beep and the light of BACK COLOR will turn into amber.
BACK COLOR will become background color.

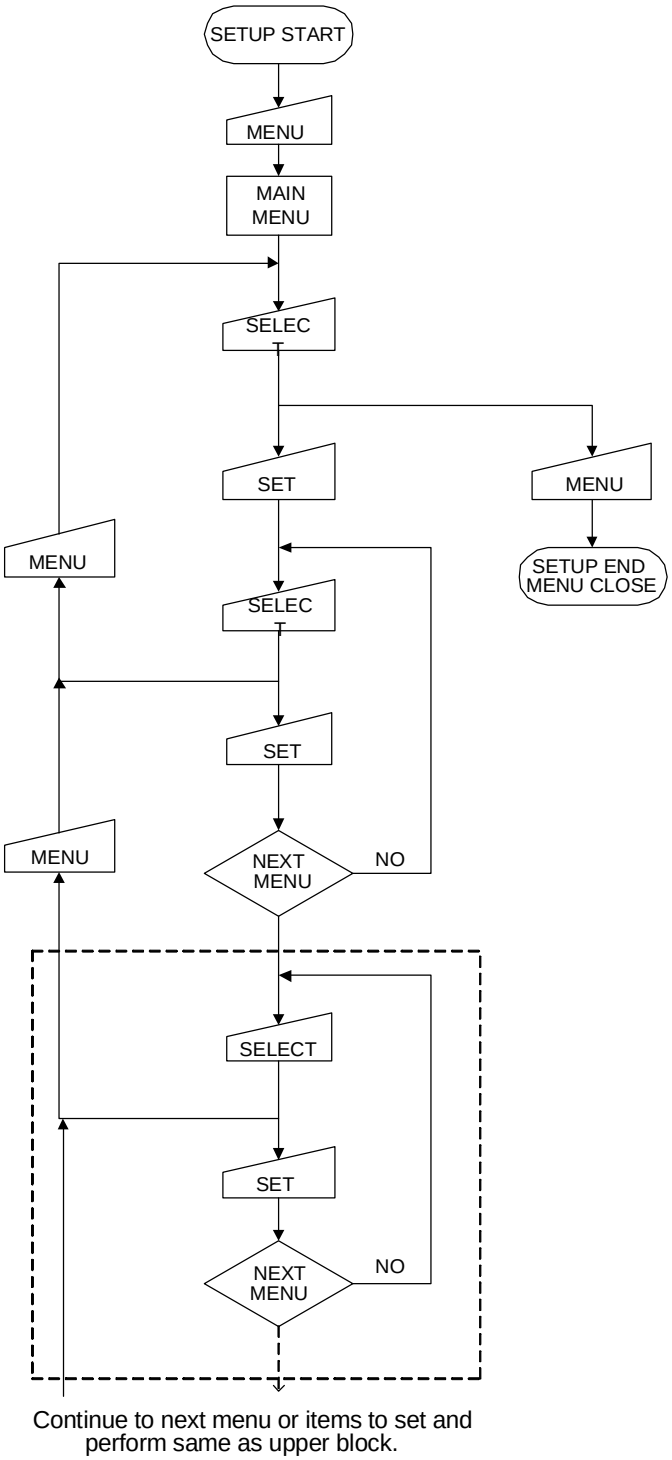
9. Setup

To setup system parameters, use MENU switch, SET switch, UTILITY rotary knob and a LCD display on the Operation Panel. Press MENU switch to go to setup.
The pressed MENU switch will be turn on (the LED will be ON) and MAIN MENU appears on the LCD display, replaced with ON-AIR Audio level meter.

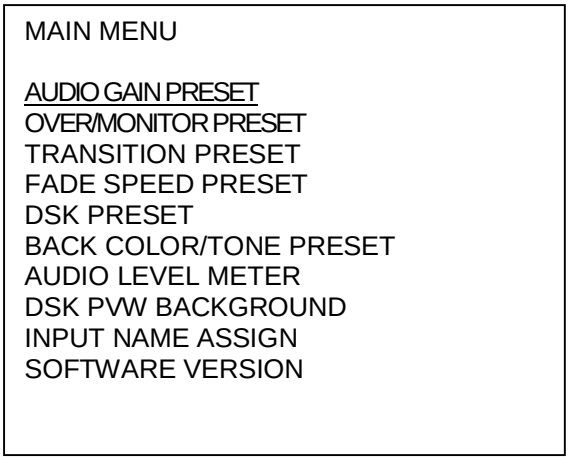
(1) Setup items

1) MAIN MENU
2) AUDIO GAIN
3) OVER/MONITOR PRESET
4) TRANSITION PRESET
5) DSK PRESET
6) BACK COLOR/TONE PRESET
7) AUDIO LEVEL METER
8) DSK PVW BACKGROUND
9) INPUT ASSIGN
10) SOFTWARE VERSION

(2) The flowchart shows setup procedure.

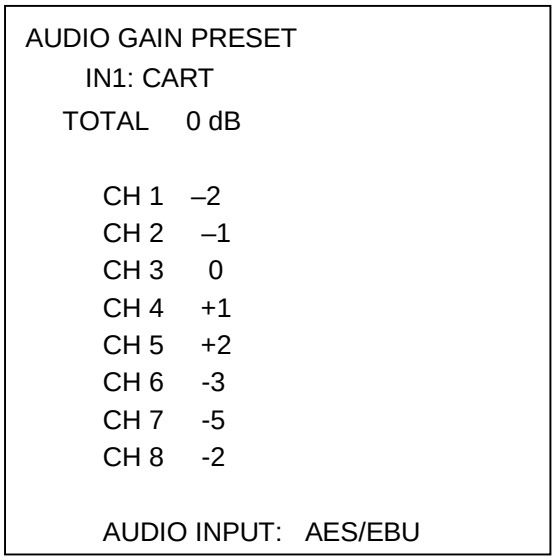


1) MAIN MENU



Press MENU switch then MAIN MENU appear on the LCD display.
Select the item to setup with UTILITY rotary knob, underlined cursor guide you the item.
Press SET switch to terminate the item, selected setup menu appear on the LCD display.
MENU switch performs ending the SETUP mode and closing the MAIN MENU.

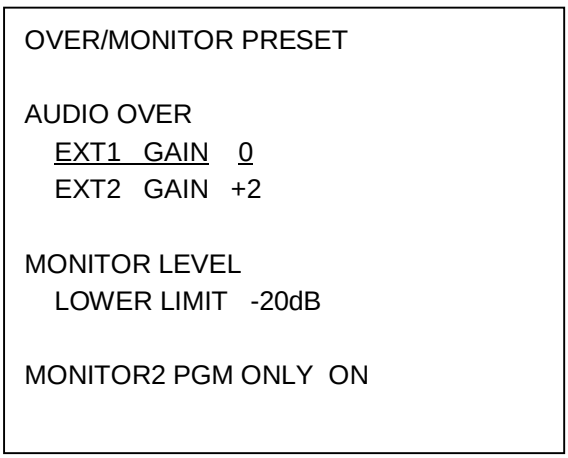
2) AUDIO GAIN PRESET



Preset gain for each INPUT channel and adjust gain for each sound channel.
Select INPUT channel with UTILITY, display shows TOTAL and adjust gains which were set before.
Press SET to select setting channel.
Press SET to setting gain for the channel.
Press SET to set the gain.
Press MENU to return to channel selection, without gain setting.

Adjustment
TOTAL: -20 - +20dB, 1dB step
CH: -20 - +20dB, 1dB step
AUDIO INPUT: AES/EBU / EMB

3) OVER/MONITOR PRESET



Adjustment:
EXT 1,2 GAIN: -20 ··· +20dB, 1dB step
PGM GAIN: -20 ··· 0dB, 1dB step
MONITOR LOWER LIMIT ··· -20dB/-∞dB
MONITOR2 PGM ONLY *On/Off*
PST and O/A cannot be chosen when MONITOR2 PGM ONLY is ON. Also CUT becomes null and void.

4) TRANSITION PRESET

```
TRANSITION PRESET
 FADE SPEED
          SLOW  250  FRAMES
          MIDDLE 130
          FAST   75

   WIPE DIRECTION
         REV HORIZONTAL
```

Preset fade speed for video and audio transitions.
Select item to set.
Press SET to terminate the item, and adjust speed.
Press SET to terminate the speed, and moved to next item.
Press MENU to return to MAIN MENU.

Adjustment:
SLOW: 0 - 300frames, 10frames step
MIDDLE: 0 - 150frames, 10frames step
FAST: 0 - 100frames, 1frame step
WIPE DIRECTIN H / V / REV H / REV V

5) DSK PRESET

```
DSK PRESET
DSK: 1
      FADE SPEED  50  FRAME
      KEY SEL       EXT
      TOP CLIP      75  IRE
           BOTTOM CLIP 10  IRE

           or

           FADE SPEED    50  FRAME
           KEY SEL       SELF
           Y TOP CLIP    75  IRE
           Y BOTTOM CLIP 10  IRE
           C TOP CLIP    75  IRE
           C BOTTOM CLIP 10  IRE
```

Preset clip levels and fade speed for DSK.
Select item to set.
Press SET to select setting channel.
Press SET to terminate the item, and adjust level or speed.
Press SET to terminate level or speed, and moved to next item.
Press MENU to return to MAIN MENU.

Adjustment:
FADE SPEED: 10 - 100frame, 1frame step
KEY SEL: EXT or SELF key
TOP CLIP: 1 - 100IRE, 1IRE step
BOTTOM CLIP: 0 - 99IRE, 1IRE step

6) BACK COLOR/TONE PRESET

```
BACK COLOR/TONE PRESET
 BC/CBAR: BACK COLOR

 BC LUMI:  40 IRE
 BC SAT:   30 IRE
 BC HUE:  120 DEG

TONE GENERATOR:  ON
 FREQ: 400 Hz
 LEVEL: -4 dB
```

Assign BC/CBAR switch as BACK COLOR or COLOR BAR.
Press SET at BC/CBAR, and then select BACK COLOR or COLOR BAR.
Press SET to terminate setting. The LED indicator on the BC/CBAR switch will be lit as you set.
You can preset the color of BACK COLOR using menu of BC LUMI(nous), BC SAT(uration) and BC HUE. To monitor the color, use AUX output.

Adjustment:
BC/CBAR: BACK COLOR / COLOR BAR
BC LUMI: 10 - 100IRE, 1IRE step
BC SAT: 10 - 100IRE, 1IRE step
BC HUE: 0 - 359 DEG, 1degree step
TONE GENERATOR: ON / OFF
TONE FREQ: 400Hz/1000Hz
TONE LEVEL: -4dB - +8dB, 1dB step

7) AUDIO LEVEL METER

```
AUDIO LEVEL METER

INPUT NAME   ON1
SCALE        PPM VU
DESIGN       OVERLAY

     SAMPLES
     SCALE    VU
                PPM-VU
                PPM-FS
                PPM-0dBFS
   DESIGN  NORMAL
           OVERLAY
           UNDER
```

Setting meter scale for audio level display.
Select VU, PPM-VU, PPM-FS or PPM-0dBFS with UTILITY.
Press SET to terminate setting.
Press MENU to return to MAIN MENU.

Adjustment:
INPUT NAME: ON1/ON2/OFF
SCALE: VU / PPM-VU / PPM-FS / PPM-0dBFS
DESIGN: NORMAL/OVERLAY/UNDER

8) DSK PVW BACKGROUND

```
DSK PVW BACKGROUND

 PGM
```

Setting background picture for DSK PVW output.
Select PGM or PST with UTILITY.
Press SET to terminate setting.
Press MENU to return to MAIN MENU.

9) INPUT ASSIGN

```
INPUT ASSIGN
IN1: CART   IN2: VTR1
IN3: VTR2   IN4: VTR3
IN5: VTR4   IN6: VTR5
IN7: VTR6   IN8: VTR7
IN9: VST1   IN10: A/ST
IN11: B/ST  IN12: D/ST
IN13: E/ST  IN14: F/ST
IN15: CBAR  IN16: R/SW

ABCDEFGHIJKLMNOPQRST
UVWXYZ 1234567890-+/:
```

Assign name for each INPUT channel.
Select INPUT number to assign.
Press SET to terminate the INPUT channel.
Cursor will be indicating setting position.
Select character to set.
Press SET to determine the character.
Press MENU to move the cursor backward.
Press SET at the last character, to terminate the assign and move to next INPUT channel.

Example:

IN1: INPUT1 is not assigned now, press SET to assign this item.
IN1: A Cursor moved to first character. Select the character with UTILITY then press SET.
IN1: VA Cursor moved to second character. Select with UTILITY then press SET.
IN1: VTA Cursor moved to third character. Select character and then press SET.
IN1: VTSA Cursor moved to fourth character.
IN1: VTS Found mistake in third character, press MENU, and then cursor move backward.
IN1: VTRA Select "R", then press SET.
IN1: VTR1 Select "1", then press SET. INPUT1 is assigned for "VTR1".
IN2: VTR3 Cursor move to INPUT2, INPUT2 is assigned for VTR3 already.
IN2: VTR3 If you want to change number "3" to "2", move cursor to "3" with MENU switch.
IN2: VTR2 Select character then press SET.
IN3: VTR4 Cursor moved to next INPUT channel.

Any name to assign must be four characters, use space character if it was less than four.

SOFTWARE VERSION

Main Ver.
01.07 2005/06/24
Panel Ver.
01.05 2005/05/26

10) SOFTWARE VERSION

You can check the software version of the main chassis and the panel The power supply of the main chassis and the panel must be turned on.

5. Trouble Shooting

Here are some countermeasures when you have some troubles.
(> mark in the sentences indicates a countermeasure)

Trouble The operation panel refuses my operation !

Cause:

・Is the control cable connected？

・Is the power switch of the operation panel set to the ON side？

・Is the power switch of the main chassis set to the ON side？

・Is the plug of the power cable of the operation panel inserted into the outlet？

・Aren't the fuses of the operation panel burned out？

> If the fuse or fuses burn up right after replacement, immediately stop using the machine and contact to our Customer service.

Trouble : The ALM lamp of POWER A or B on main chassis goes on and off.

Cause :

・Is the power switch on rear side of the each power unit set to the ON side?

・Is the power switch on front side of the each power unit set to the ON side?

・Aren't the fuses of the power unit burned out？ Please refer (P.35).

> If the fuse or fuses burn up right after replacement, immediately stop using the machine and contact to our Customer service.

> If the ALM lamp goes on and off nevertheless power ON, the power unit would be fault. Disconnect the power cable and contact to our Customer service.

Trouble : The FA ALM1 or 2 lamp of the main chassis goes on and off!

Cause:

・Doesn't the rotation of the FAN fall down?

> Clean it when clogged with dust and so on.

・Doesn't the FAN stop?

> The exchange of the FAN unit is necessary. Please contact to our Customer service.

FAN1: It is located front side..

FAN2: It is located rear side.

Trouble : The ALM lamp of POWER ALARM A or B of the operation PANEL goes on and off!

Cause :

・Is a control panel rear each power unit switch ON side?

・Doesn't the fuse of the power unit A orB in the rear of the body blow? Please refer (P.35).

> It is fault of the power unit when an ALM lamp goes on and off nevertheless power ON Please contact to our Customer service.

Trouble : I cannot register the data set by each function switch.

Cause :

・Didn't you select other functional switches after changing your set value ?

> After setting your value, press the UTILITY : SET to register it.

If you do so, you will hear a beep that notifies you the completion of your registration.

Trouble : An image doesn't come out to the each output.

Cause :

・Are a body and the power supply of the control panel ON?

・Is an input signal connected?

Confirm INPUT indicator of the main chassis.

> If indicator isn't turned on, please confirm of the input signal.

・Is the channel chosen from the control panel correct?

・Isn't an input and output cable out?

Trouble : An output image falls into the disorder.

Cause :

・Is FORMAT of the input signal correct?

> Change the MODE switch of the chassis in accordance with FORMAT of the input signal.

・Is a REF signal connected?

> Do the confirmation of the terminal of 75Ω when a bridge is connected.

> Install a 75Ω termination if bridge isn't connected.

> Confirm the output of other channels when an image still falls into the disorder.

Please contact to our Customer service.

Trouble : A super input can't keying in the DSK OUTPUT.

Cause :

・Is a super signal connected?

> Confirm INPUT indicator of the main chassis.

> If the indicator isn't turned on, it asks for the confirmation of the input signal.

・Is there a problem in the connection of each input and output?

> SUPER IN 3 can't key in DSK2.

> SUPER IN2 or SUPER IN3 can't key in DSK1.

・Isn't an input and output cable out?

Trouble : Sound doesn't come out.

Cause :

・Isn't the switch of MONITOR1 and 2 of the control panel, ON?

・Isn't AUDIO GAIN PRESET of setting up MENU -∞?

> Change it to the voice level which is used for.

・Isn't the level indication of MONITOR1or 2 of the control panel, MIN?

・Is there a problem in the connection of each input and output?

6. Specifications

1. Specifications

(1) main chassis

Input signals

・LINE w/audio HD-SDI SMPTE-292M*
BNC 16Chs

・DSK FILL HD-SDI SMPTE-292M* BNC 3Chs

・DSK KEY HD-SDI SMPTE-292M* BNC 3Chs

・REF(erence) Tri level SYNC 0.6Vp-p/75 Ω
or BBS 0.45Vp-p/75 Ω**
BNC1 Channel (Loop through)

*MS-6416SD model uses SD-SDI SMPTE-259M-C

**MS-6416SD model uses BBS only.

Audio Input signals

・EXT AUDIO AES-3 SMPTE-276M 48kHz BNC 2Chs

・ONAIR1,2 AES-3 SMPTE-276M 48kHz BNC 1Ch

・ONAIR3,4 AES-3 SMPTE-276M 48kHz BNC 1Ch

・ONAIR5,6 AES-3 SMPTE-276M 48kHz BNC 1Ch

・ONAIR7,8 AES-3 SMPTE-276M 48kHz BNC 1Ch

Output signals

・CLEAN HD-SDI SMPTE-292M* BNC 2Chs

・DSK1 HD-SDI SMPTE-292M* BNC 2Chs

・DSK2 HD-SDI SMPTE-292M* BNC 2Chs

・DSK3 HD-SDI SMPTE-292M* BNC 2Chs

・PST HD-SDI SMPTE-292M* BNC 2Chs

・AUX HD-SDI SMPTE-292M* BNC 1Ch

・DSK PVW HD-SDI SMPTE-292M* BNC 1Ch

Audio Output signals

・MONITOR1-1 - 8 AES-3 SMPTE-276M BNC 1Ch each

・MONITOR2-1 - 8 AES-3 SMPTE-276M BNC 1Ch each

Video format

・1080i 1920 × 1080i (59.94Hz) (MS-6416HD)

・720p 1280 × 720p (59.94Hz) (MS-6416HD)

・525i 720 × 487i (59.94Hz) (MS-6416SD)

** HD and SD format must not be intermingled at inputs, and output format follow the input format.

Control / Tally

・FAN&POWER ALARM MAKE contact D-sub9pin female 1Ch

・ON-AIR TALLY MAKE contact D-sub25pin female 1Ch

・OPE panel 75 ohms BNC

GPI MAKE contact D-sub25pin female 1ch

Serial ports RS-422 D-sub9pin female 1Ch

LAN RJ-45 (for future extension) 1Ch

Machine Control (option) VTR1～6 RS-422 D-sub9-pin female 6Chs

Power AC90 - 230V 50/60Hz

Dimensions 420W × 221H × 500D(mm) (excluding projections)

Weight 30kg

Operating Temperature 0 - 40℃

・

(2) MS-6416 Operating panel

Control signal 75 ohms BNC

Power A C90 - 230V 50/60Hz

Dimensions 704W × 95H × 399D(mm)
(excluding projections)

Weight 15kg

Operating Temperature 0 - 40℃

(3) Audio Breakout (option)

Input signals

INPUT 1/2,3/4,5/6,7/8ch AES-3 SMPTE-276M BNC 16Chs each

Output signals

CLEAN 1/2, 3/4, 5/6, 7/8ch AES-3 SMPTE-276M BNC 1Ch each

PGM 1/2, 3/4, 5/6, 7/8ch AES-3 SMPTE-276M BNC 1Ch each

PST 1/2, 3/4, 5/6, 7/8ch AES-3 SMPTE-276M BNC 1Ch each

AUX 1/2, 3/4, 5/6, 7/8ch AES-3 SMPTE-276M BNC 1Ch each

Dimensions 420W × 88H × 33D(mm) (excluding projections)

2. Performance

(1) LINE input signals

Sampling frequency74.18MHz/59.94Hz(MS-6416HD)

13.5MHz/59.94Hz(MS-6416SD)

Resolution 10bit

DelayME 1H

KEY 1H

Pull-in range -0.7 - +0.2H

(2) DSK FILL and DSK KEY signals

Sampling frequency74.18MHz/59.94Hz(MS-6416HD)

13.5MHz/59.94Hz(MS-6416SD)

DelayDSK 1H

Pull-in range -0.7 - +0.2H

(3) Audio signals

Sampling frequency48kHz

Resolution 24bit

Delay 2.5mS

3. Function

(1)Switcher

Inputs LINE1 - 16, BLACK, BACK COLOR

Transition Fade, Mix, Cut

Dissolve, Wipe Speed5 - 300 Frames

(2)COLOR

Coloring BACK COLOR

VARI 1 Channel

(3)DSK

Transition Fade, Cut

Dissolve speed 5 - 300 Frames

(4)Audio

Transition Fade, Mix, Cut

Mixing Two external stereo inputs

Tone generator 400Hz/1000Hz, -4 - +8dB, 1dB/step adjustable

7. APC Control specifications (option)

1. Protocol

1. Communications Signal

a) Asynchronous bit serial, word serial

b) Conforms to EIA RS-422

c) Full duplex communications channel

d) Transfer rate: 38400bps

2. Bit configuration

a) 1 start bit (space)

b) 8 data bit

c) 1 parity bit (odd)

d) 1 stop bit (mark)

e) Byte time = 0.286 ms

2. Packet structure

1.COMMAND message (2-256 Bytes)

1) STX: Start of Transmission Code (02)

2) Byte 1,2. BC: Byte Count, Binary format count number from BC to Checksum

3) Byte 3. CMD-1: Command 1 consists of two nibbles; a command type nibble and a unit address nibble, which defines the address of a subsystem within a device. The unit address will not be used by the system.

4) Byte 4. CMD-2: Command code, it identifiers the syntax of the data

5) DATA: The number of data bytes is determined by the command.

The value of DATA is given with ASCII code.

6) Checksum: From CMD1 to DATA n checksum, 2's complement of the LS byte.

STX	Byte Count1	Byte Count2	CMD-1	CMD-2	DATA 1	DATA 2	DATA n	Checksum

2. COMMAND Execution

1) The machine should respond the COMMAND within 6msec after received it.

2) The machine should not request the status within the frame.

3) The machine should be requested the status, if the machine was not respond within 100ms.

3. COMMAND Specifications

n 20.01; Request Transition/Take

Executes Transition as Preset (20.03).

DATA 1 contains the ID for execution.

0 (30) On-Air the Preset Channel and reports the Status Change (30.01).

1 (31) Drop the On-Air Over level.

2 (32) Drop the On-Air Key level.

Return (20.81): OK ('O' = 0x4f **) or Not OK ('N'** = 0x4e **)**

※In case using MS-6416SD, 20.01(Request Transition/Take) must be sent after eight frames from 20.03(Request Preset) was sent

n 20.02; Request Direct Program Channel Change

Change the Program Source directly as following Channel.

DATA 1-2 contains On-Air Video channel number, two Decimal digits. (ex. 0x30. 0x31)

DATA 3-4 contains On-Air Audio Channel number, two Decimal digits. (ex. 0x30. 0x31)

Return (20.82): OK ('O') or Not OK ('N')

n 20.03; Request Preset

Preset the Preset Bus, Transition Type, Transition Rate

DATA 1-2 contains Preset Video Channel number, two Decimal digits. (ex. 0x31. 0x36)

DATA 3-4 contains Preset Audio Channel number, two Decimal digits. (ex. 0x31. 0x36)

DATA 5 contains Transition Type.

T (0x54) Cut-out and cut-in

M (0x4d) Dissolve or Mix

F (0x46) Fade-out

> (0x3e) Fade-out and Cut-in

< (0x3c) Cut-out and Fade-in

DATA 6 contains Transition Rate.

C (0x43) Cut

F (0x46) Fast transition rate

M (0x4d) Middle transition rate

S (0x53) Slow transition rate

Return (20.83): OK ('O') or Not OK ('N')

n 20.04; Request Over Direct In/Out

Execute Over In or Out directly.

DATA 1 is 0 to Over In, 1 to Over out. (0x30 or 0x31)

DATA 2 contains Over Channel number. (0x31 or 0x32)

DATA 3 contains Transition Type, must be 'O' only. (0x4f)

DATA 4 contains Transition Rate.

F (0x46) Fast transition rate

C (0x43) Cut In or Cut out

Return (20.84): OK ('O') or Not OK ('N')

n 20.05; Request Key Direct In/Out

Execute Key In or Key Out directly.

DATA 1 is 0 to Key In, 1 to Key Out. (0x30 or 0x31)

DATA 2 contains Key Channel number. (0x31, 0x32 or 0x33)

DATA 3 contains Transition Type, must be 'K' only. (0x4b)

DATA 4 contains Transition Rate.

F (0x46) Fast transition rate

C (0x43) Cut In or Cut out.

Return (20.85): OK ('O') or Not OK ('N')

n 20.10; Request Machine Status

Send the Machine Status.

DATA 1 contains ID for the Request.

0 (0x30) Send All Status of On-Air and Preset

Return (20.90); Report Machine Status

DATA 1-2 contains On-Air Video Channel number, two Decimal digits. (ex. 0x30.0x31)

DATA 3-4 contains On-Air Audio Channel number, two Decimal digits. (ex. 0x30.0x31)

DATA 5 contains DSK Key In Channel number.

0 (0x30) All DSK are Key Out

1 (0x31) DSK1 is Key In

2 (0x32) DSK2 is Key In
3 (0x33) DSK3 is Key In
4 (0x34) DSK1 and 2 are Key In
5 (0x35) DSK1 and 3 are Key In
6 (0x36) DSK2 and 3 are Key In
7 (0x37) DSK1, 2 and 3 are Key In
DATA 6 contains Audio Over Channel number.
0 (0x30) All Over are off
1 (0x31) EXT1 Audio Over
2 (0x32) EXT2 Audio Over
3 (0x33) EXT1 and EXT2 Audio Over
DATA 7-8 contains Preset Video Channel number, two Decimal digits. (ex. 0x31.0x36)
DATA 9-10 contains Preset Audio Channel number, two Decimal digits. (ex. 0x31.0x36)
DATA 11 contains Preset Transition Type.
T (0x54) Cut-out and cut-in
M (0x4d) Dissolve or Mix
F (0x46) Fade-out
> (0x3e) Fade-out and Cut-in
< (0x3c) Cut-out and Fade-in
DATA 12 contains Transition Rate.
C (0x43)Cut
F (0x46) Fast transition rate
M (0x4d) Middle transition rate
S (0x53) Slow transition rate

n 30.01; Report Status Change

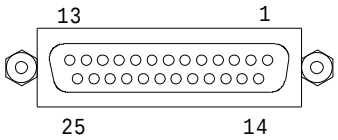
The Switcher should report the Status when Interrupt is occurred.
DATA 1 contains Show Interrupt.
0 (0x30) No Change.
1 (0x31) Show Interrupt is occurred.
DATA 2 contains End of Transition Interrupt.
0 (0x30) No Change
1 (0x31) End of Transition Interrupt is occurred.
DATA 3 contains Bottom Interrupt.
0 (0x30) No Change
1 (0x31) Button Interrupt is occurred.

8. Interface connectors

1. TALLY out

Contact point output of ON-AIR Tally. Between LINE IN 1 and LINE IN 16 contact will be closed when the input is selected in PGM bus. DSK1, DSK2 and DSK3 contact will be closed when each input is used. EXT1and EXT2contact will be closed when the each input is used in PGM bus.

Connector: D-sub 25pin Female

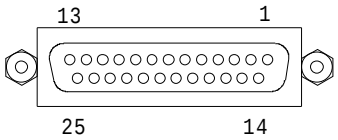


Pin No.	Signal Name	Pin No.	Signal Name
1	LINE IN1	14	LINE IN14
2	LINE IN2	15	LINE IN15
3	LINE IN3	16	LINE IN16
4	LINE IN4	17	DSK1
5	LINE IN5	18	DSK2
6	LINE IN6	19	DSK3
7	LINE IN7	20	EXT1
8	LINE IN8	21	EXT2
9	LINE IN9	22	COMMON
10	LINE IN10	23	COMMON
11	LINE IN11	24	COMMON
12	LINE IN12	25	COMMON
13	LINE IN13		

2. GPI

Between GPI1 and GPI4 are used for input..(GPI3 and 4 are intact now) Remote control of the CUT operation and TRANSITION TAKE is carried out by external control, such as GPI of an editing machine. Between GPI5 and GPI8 are used for output. (All I/O are not defined now)

Connector: D-sub 25pin, Female



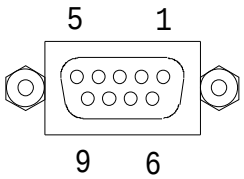
Pin No.	Signal Name	Pin No.	Signal Name
1	TRANSITION TAKE SWITCH	14	Not Connect
2	CUT SWITCH	15	Not Connect
3	GPI3	16	Not Connect
4	GPI4	17	Not Connect
5	COMMON	18	Not Connect
6	GPI5	19	Not Connect
7	GPI6	20	Not Connect
8	GPI7	21	Not Connect
9	GPI8	22	Not Connect
10	COMMON	23	Not Connect
11	Not Connect	24	Not Connect
12	Not Connect	25	Not Connect
13	Not Connect		

3. ALARM

Alarm output for power supply failure and fan failure.

Contacts will be closed when something wrong in the power supply and fan.

Connector: D-sub 9pin, Female

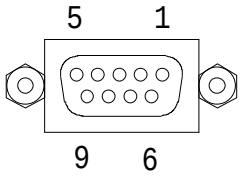


Pin No.	Signal Name	Pin No.	Signal Name
1	POWER ALARM	6	POWER ALARM return
2	FAN ALARM	7	FAN ALARM return
3	Not Connect	8	Not Connect
4	Not Connect	9	Not Connect
5	Not Connect		

4. RS-422

Serial port for control this machine. Usually used for APC control.

Connector: D-sub 9pin, Female



Pin No.	Signal Name	Pin No.	Signal Name
1	FRAME GND	6	GND
2	TXD-	7	TXD+
3	RXD+	8	RXD-
4	GND	9	FRAME GND
5	Not Connect		

5. GPI/TALLY（on panel）

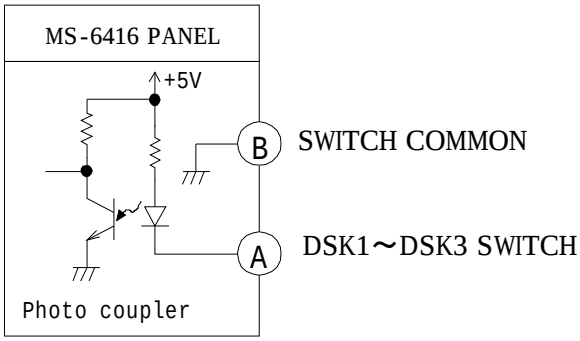
Control input and tally output for DSK1, DSK2 and DSK3.

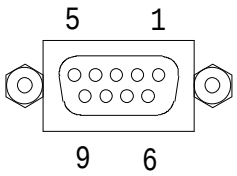
Tally output is +12V and maximum current is100mA.

Connector: D-sub 9pin, Female

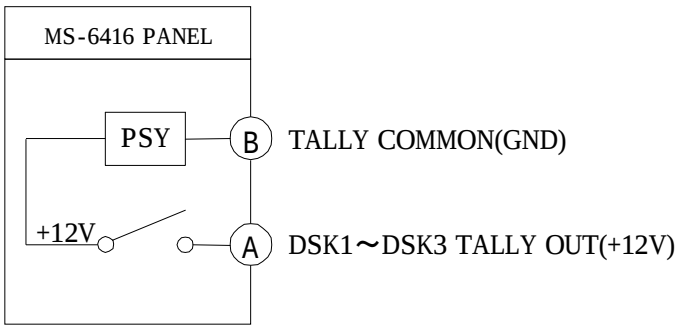
Pin No.	Signal Name	Pin No.	Signal Name
1	DSK1 TALLY	6	DSK1 SWITCH
2	DSK2 TALLY	7	DSK2 SWITCH
3	DSK3 TALLY	8	DSK3 SWITCH
4	TALLY COMMON	9	SWITCH COMMON
5	TALLY COMMON		

GPI IN





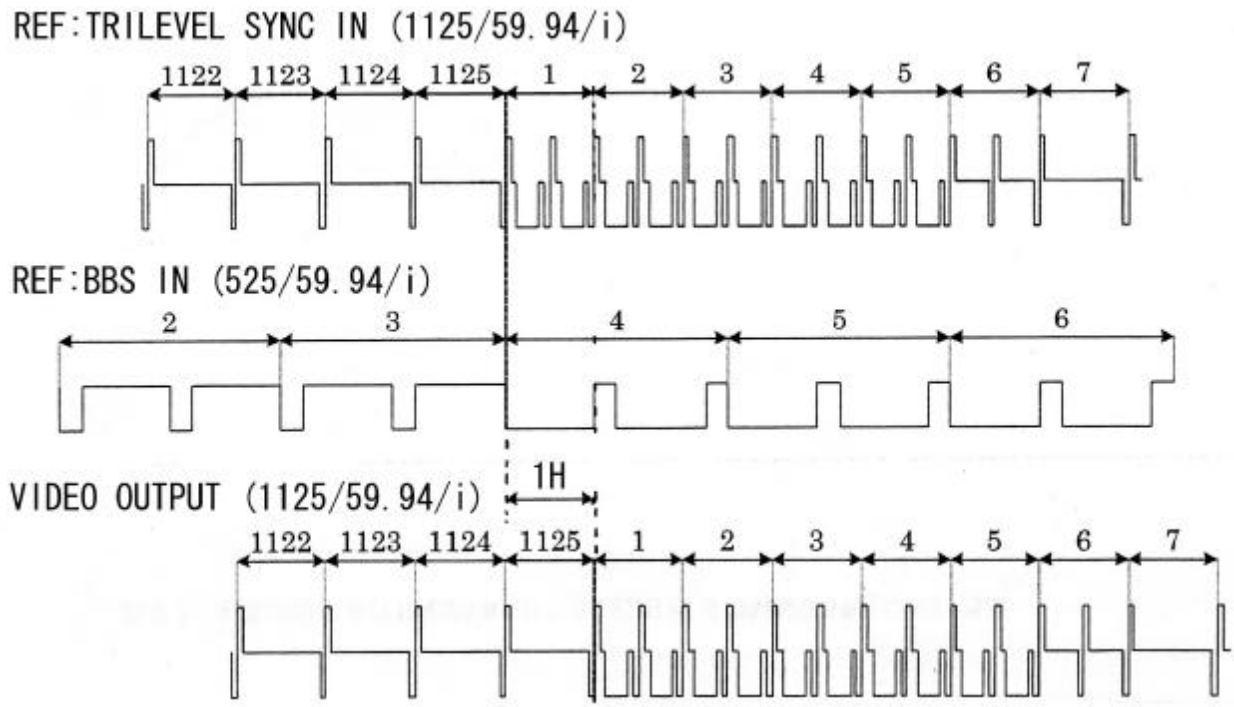
TALLY OUT



6. Timing between Video Output and Gen-lock input

Video outputs are pulled-in to the Gen-lock input, and Timing is shown as following.

The timing of all video inputs must be within +/-1/2H from Gen-lock input.



9. Monitor option

Here, the case where Monitor option is added is explained.

This monitor option displays PGM, PST, and the ON-AIR images on the audio level meters of the panel.

There are three display mode which select able in the menu..

NORMAL: only audio level meter is displayed using the full screen area.

* It is the same display as the former panel design.

OVERLAY: full screen audio level meter is overlaid on the image.

UNDER: audio level meter is displayed on 1/4 height of the screen, image is displayed on upper 3/4 height of the screen.

10 Functional Check (Monitor option)

1. Composition

[Operation panel]

No.	Nomenclature	Type/Standard	Quantity	Remarks
1	Operation panel		1	
2	Power cable		2	
3	Control cable	3C-2V 10m	1	

2. Connection and Check Procedure

(1) Connect an attached power cable to the main chassis (AC IN A, B), and connect to the AC100~AC220V outlet.

(2) Connect an attached power cable to the operation panel (AC IN A, B), and connect to the AC100~AC220V outlet.

(3) Connect the main chassis (PANEL) and operation panel (CONT) with the attached control cable.

(4) Connect the tri-level SYNC or a BBS signal to the main chassis (REF IN).

The machine detects the signal and selects the mode automatically.

If you do not need bridge connect, terminate with 75ohm termination plug.

(5) Connect the input video signal 1 of HD-SDI to a main chassis (LINE IN1).

(6) Connect the input video signal 2 of HD-SDI to a main chassis (LINE IN2).

(7) Connect a main chassis (CLEAN OUT1 or 2) to the HD-SDI monitor A.

(8) Connect a main chassis (PST OUT1 or 2) to the HD-SDI monitor B.

(9) Connect a main chassis (CLEAN OUT1 or 2) to PGM on the back of the panel.

(10) Connect a main chassis (PST OUT1 or 2) to PST on the back of the panel.

(11) Connect a main chassis (DSK OUT3-1 or 2) to ONAIR on the back of the panel.

(12) Select the HD format with MODE switch on P-1 PCB.

(13) Turn on the power switch of the Operation panel (POWER A, B).

Every switch and the liquid crystal displays on the operation panel will be lit.

(14) Turn on the power switch of the main chassis (POWER A, B).

(15) Select 1 on the switch row at the PGM side on the operation panel. (lit in red)

The image of the input video signal 1 will be outputted onto the monitor A.

(16) Select 2 on the switch row at the PST side on the operation panel. (lit in amber)

The image of the input video signal 2 will be outputted onto the monitor B.

(17) Select X in the TRANSITION section. (lit in amber)

(18) Select MIX in the TRANSITION section. (lit in amber)

(19) Press MENU switch. (lit in amber)

(20) Turn a UTILITY knob and choose AUDIO LEVEL METER, then press SET switch.

(21) Turn a UTILITY knob and choose DESIGN, then press SET switch.

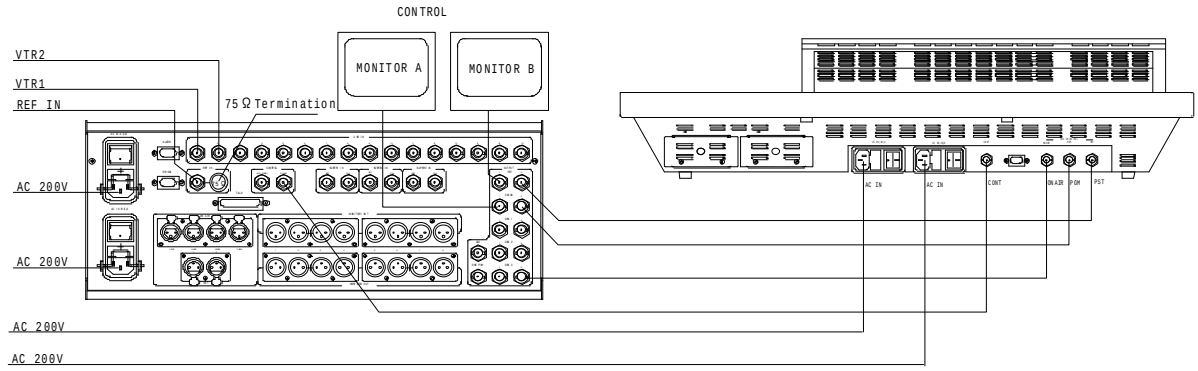
(22) Turn a UTILITY knob and choose OVERLAY or UNDER, then press SET switch.

(23) Press MENU switch twice to escape from MAIN MENU.

(24) Press TAKE switch. (blink in red while execute)

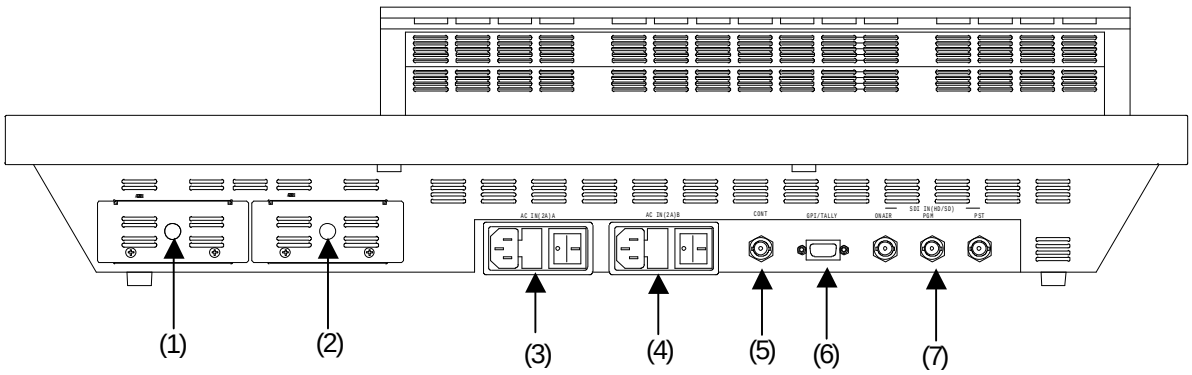
(25) The image on the monitor A will be changed signal 1 to signal 2.

<The example of connection>



11. Name and Function of each part (Monitor option)

1. Operation Panel Back



(1) POWER UNIT A

The A side power source unit.

(2) POWER UNIT B

The B side power source unit.

(3) AC IN A

Right: A power switch for the A side power source unit.

Left: A three terminal AC power source connector for the A side power source unit.

It is with the fuse holder. The fuse of 2A is put.

(4) AC IN B

Right: A power switch for the B side power source unit.

Left: A three terminal AC power source connector for the B side power source unit.

It is with the fuse holder. The fuse of 2A is put.

(5) CONT

A communication connector with the main chassis.

(6) GPI/TALLY

A GPI control input for DSK purpose and TALLY output connector.

(7) SDI IN (HD/SD)

PST It is an input video signal connector for PST DISPLAY.

PST OUT1 or 2 of the back of a main chassis is connected.

PGM It is an input video signal connector for PGM DISPLAY.

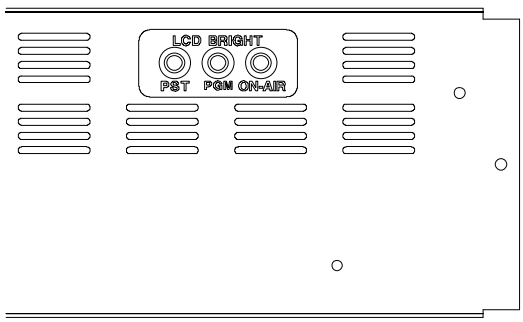
PGM OUT1 or 2 of the back of a main chassis is connected.

ONAIR It is an input video signal connector for ONAIR DISPLAY.

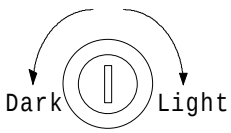
Arbitrary input video signals are connectable.

Display brightness adjustment

You can adjust the brightness of PST, PGM and ON-AIR display. The adjusters are located bihaind thedisplays. Adjust each brightness with a screwdriver.



**Turn right to lighter brightness.



12. Operation (Monitor option)

To setup system parameters, use MENU switch, SET switch, UTILITY rotary knob and a LCD display on the Operation Panel. Press MENU switch to go to setup.

The pressed MENU switch will be turn on (the LED will be ON) and MAIN MENU appears on the LCD display, replaced with ON-AIR Audio level meter.

1) MAIN MENU

```
MAIN MENU

AUDIO GAIN PRESET
OVER/MONITOR PRESET
FADE SPEED PRESET
DSK PRESET
BACK COLOR/TONE PRESET
AUDIO LEVEL METER
DSK PVW BACKGROUND
INPUT NAME ASSIGN
SOFTWARE VERSION
```

Press MENU switch then MAIN MENU appear on the LCD display.
Select the item to setup with UTILITY rotary knob, underlined cursor guide you the item.
SET switch terminates the item, press the switch, selected setup menu appear on the LCD display.
MENU switch performs ending the SETUP mode and closing the MAIN MENU in this menu.

In this case select AUDIO LEVEL METER.

2) AUDIO LEVEL METER

```
AUDIO LEVEL METER

INPUT NAME  OFF
SCALE       VU
DESIGN      NORMAL

  SAMPLES:
   SCALE   VU
           PPM-VU
           PPM-FS
           PPM-0dBFS
   DESIGN  NORMAL
           OVERLAY
           UNDER
```

Setting meter for audio level display.
Select INPUT Name, SCALE or DESIGN with UTILITY.
Press SET switch to terminate setting.
Press MENU switch to return to MAIN MENU.

Adjustment:
INPUT NAME: ON1 / ON2 / OFF
ON1: superimpose with box
ON2: superimpose character only
SCALE: VU / PPM-VU / PPM-FS / PPM-0dBFS
DESIGN: NORMAL / OVERLAY / UNDER

13 Trouble Shooting (Monitor option)

Here are some countermeasures when you have some troubles.

(› mark in the sentences indicates a countermeasure)

Trouble: PST-PGM-ON-AIR -- a screen overlay is not carried out to each display!

Cause:

・Is the BNC cable of an input image inserted certainly?

・Isn't the BNC cable disconnected?

・Is switch selection of the PST BUS section and the PGM BUS section correct?

・Isn't selection of the PST BUS section and the PGM BUS section BLACK?

・Is AUDIO LEVEL METER set upped in setup menu -- DESIGN -- OVERLAY -- or UNDER?

・Is the power switch of a main chassis and a navigational panel turned on?

・Is the plug of the power cable of a navigational panel inserted in the wall socket?

14. Specifications (Monitor option)

1. Specifications

Input signal

Video signal PGM, PST, ON-AIR

・HD-SDI SMPTE-292M

・SD-SDI SMPTE-259M-C(MS-6416SD Only)

conformity One BNC each

Video format

・1080i 1920 × 1080i/59.94Hz

・720p 1280 × 720p/59.94Hz

・525i 720 × 487i/59.94Hz(MS-6416SD Only)

Image display area

320x180 dots (panel size 320 × 240 dots)

Panel weight 11kg (at the time of monitor option wearing)

Operating temperature 0-40 degrees C

2. Performance

PGM, PST, ON-AIR incoming signal Sampling frequency

・1080i,720p 74.18MHz/59.94Hz

・525i 13.5MHz/59.94Hz(MS-6416SD Only)

3. Function

Level meter display selection

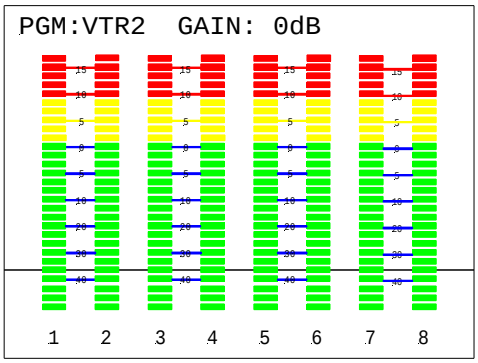
NORMAL: only audio level meter is displayed using the full screen area.

* It is the same display as the former panel design.

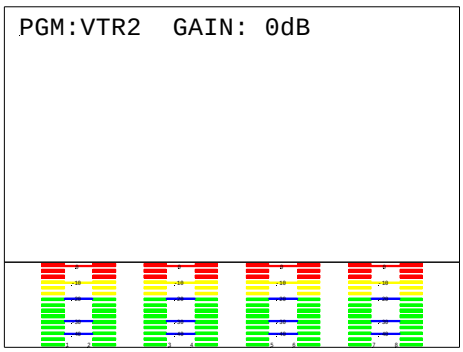
OVERLAY: full screen audio level meter is overlaid on the image.

UNDER: audio level meter is displayed on 1/4 height of the screen, image is displayed on upper 3/4 height of the screen.

<Level meter at NORMAL or OVERLAY mode>

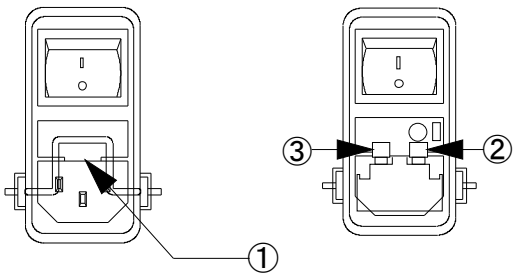


<UNDER mode>



15. FUSE Replacement Procedure

We will show you here how to replace the power supply fuse of the main chassis and the operating panel when the fuse is blown.
FUFUSE replacement is a dangerous work. Be sure to do it after the power is turned out.
If a fuse is blown right after replacement, stop using the machine instantly and contact our customer service.



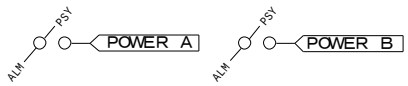
(1) Turn off the power of the main chassis or the operating panel.
(2) Remove the power supply cable.
(3) Apply a flathead driver etc. to the dent ① and pull out the FUSE BOX toward this side.
(4) Portion ② is the power supply fuse. Check if the fuse is blown.
(5) If the fuse is blown, replace it with the spare fuse ③.
(6) Insert the pulled-out FUSE BOX back to where it was.

※ A FUSE is attached to the accessories.
※ Mount a FUSE of the specified capacity.
（4A for Main chassis; 2A for Operating panel）

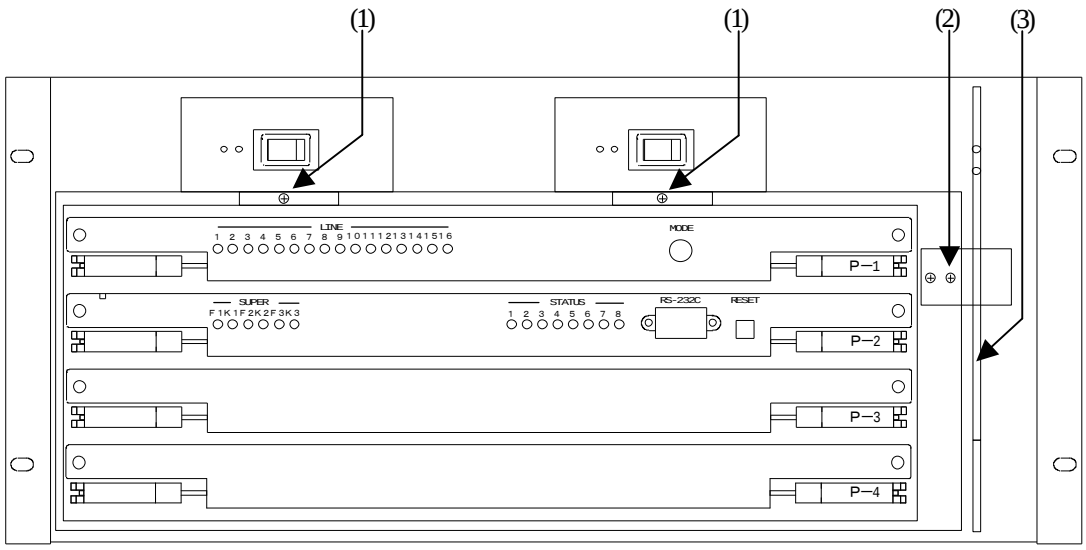
16. Replacement Procedure of Power Supply Unit

1. Replace the power supply unit of the main chassis.

Here is how to replace the power supply unit when the power supply alarm lamp blinks.
Power supply replacement is a dangerous work. Be sure to turn off the power before you do this.



You can confirm which of the A and B power supply unit is in abnormal condition by the ALM lamp on the front panel of the main chassis.
（If ALM lamp blinks, the power supply unit is abnormal.）



(1)When the ALARM lamp blinks, first confirm the ON/OFF of the power switch. (※1)
(2)When the power switch is ON and the ALARM lamp blinks, the power supply unit is out of order. Replacement of the power supply unit is required here.
(3)The main chassis has dual power supply units. one of them operates as a redundant power supply (※2)
(4)To replace the power supply unit, remove the screws of (1) in the above diagram with a Phillips screwdriver.
(5)Pull out the power supply unit toward this side.
(6)Insert the new power supply unit fitting to the guides of the both sides. Pay attention to the direction in which you insert the power supply unit.
(7) Fix the removed screws (1).

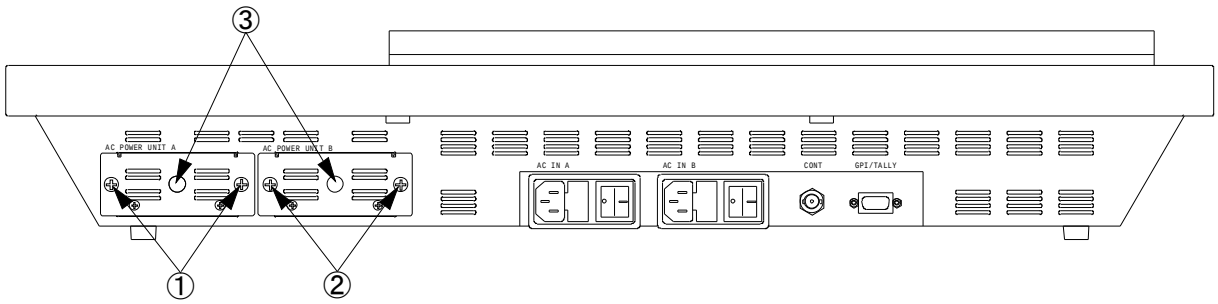
(※1) The main power switch is located on the rear side of the mainchassis.
(※2) When you operate the machine with only one the power supply unit, turn off the power of the failed power supply unit or remove the power cable from the AC outlet. Also be sure to remove the failed power supply unit before using the machine.
※When you need a power supply unit, please contact our customer service.

2. Replacement of power supply unit in panel

Here is how to replace the power supply unit when the power supply alarm lamp blinks.

Power supply replacement is a dangerous work. Be sure to turn out the power before you do this.

You can confirm which of the A and B power supply unit is in abnormal condition by the power alarm lamp on the operating panel.
(If POWER ALARM lamp blinks, the power supply unit is abnormal.)



(1) When the ALARM lamp blinks, first confirm the ON/OFF of the power switch.
(2) When the power switch is ON and the ALARM lamp blinks, the power supply unit is out of order. Replacement of the power supply unit is required here.
(3) The main chassis has dual power supply units. one of them operates as a redundant power supply (※1)
(4) To replace the power supply unit, remove the screws of ① or ② in the above diagram with a Phillips screwdriver.
(5) Hold the portion ③, then pull out the power supply unit toward this side.
(6) Insert the new power supply unit.
※Pay attention to the direction in which you insert the power supply unit.
(7) Fix the removed screws ① or ②.

(※1) When you operate the machine with only one of the power sources, turn off the power of the failed power supply unit or remove the power cable from the AC outlet. Also be sure to remove the failed power supply unit before using the machine.

※When you need a power supply unit, please contact our customer service.

17. Cleaning and Replacement Procedure of FAN unit

Here is how to clean and replace the FAN unit when the FAN alarm lamp blinks.

FAN unit replacement is a dangerous work. Be sure to turn off the power before you do this.

FAN ALARM

The blinking FAN ALARM lamp shows that the fan is out of order

1 : An alarm lamp for the fan near the front of the main chassis.
2 : An alarm lamp for the fan near the back of the main chassis.

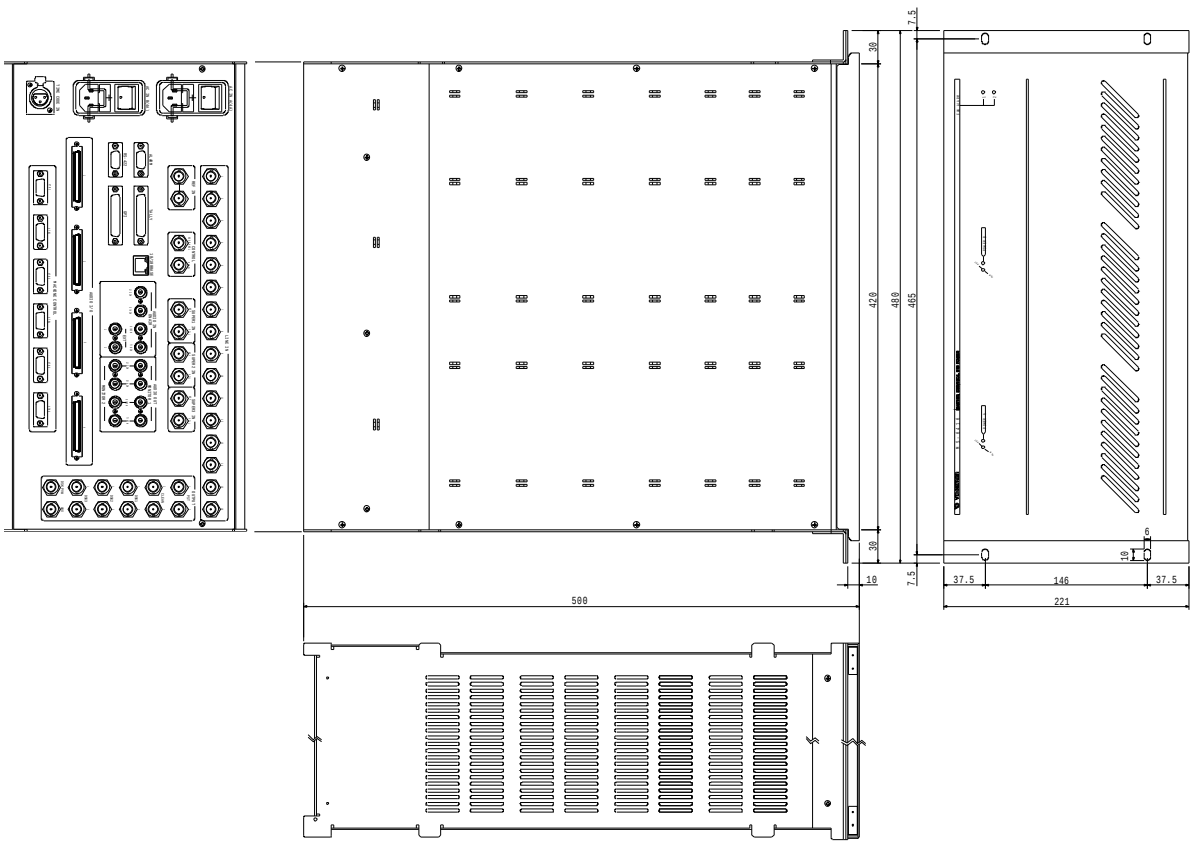
(1) First confirm whether the FAN is rotating or stopped.
(2) Turn off the power of the main chassis.
(3) Loosen the screw of the anti-drop-off metal fitting ② with a Phillips screwdriver.
(4) Slide the anti-drop-off metal fitting to the left hand side.
(5) Hold the handle of portion ③ and pull out the printed circuit board toward this side.
(6) When the FAN is rotating, dust etc. can sometimes clog up the fan.
(7) Suck up the dust etc. with a vacuum cleaner etc.
(8) When the FAN is not rotating, replace the FAN unit whole.

※When the FAN is rotating but the alarm lamp blinks, the FAN is in bad condition, or has been wearing out due to lapse of time. We recommend replacement of the FAN unit.

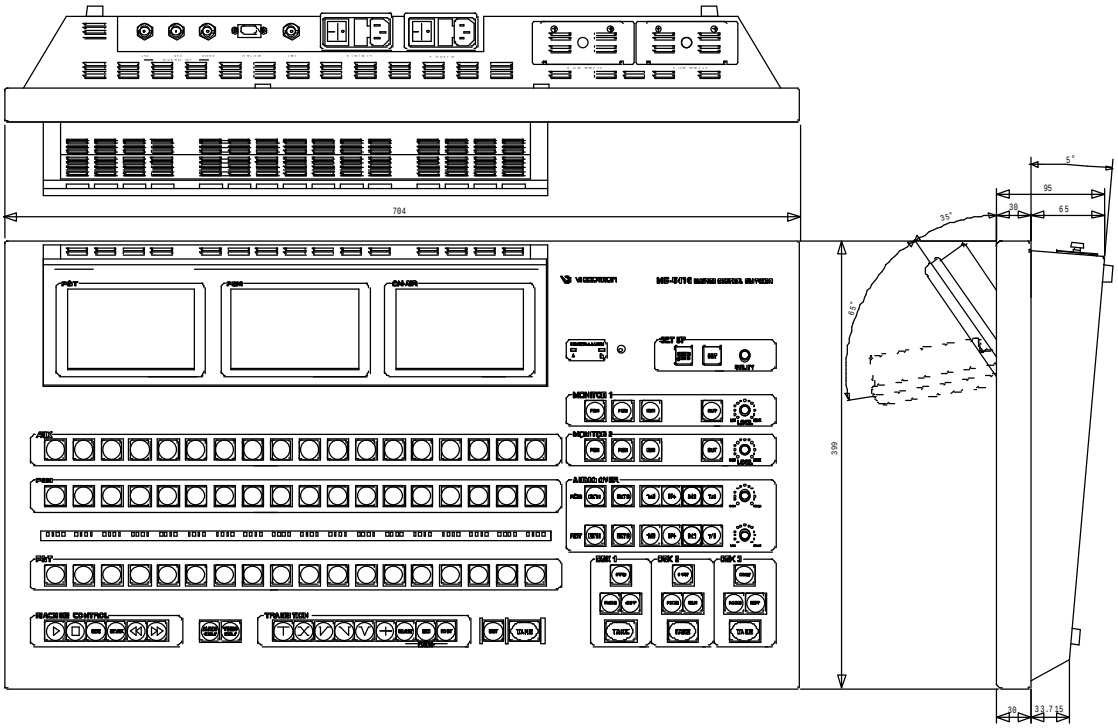
※When you need a FAN unit, please contact our customer service.

18. Dimensions

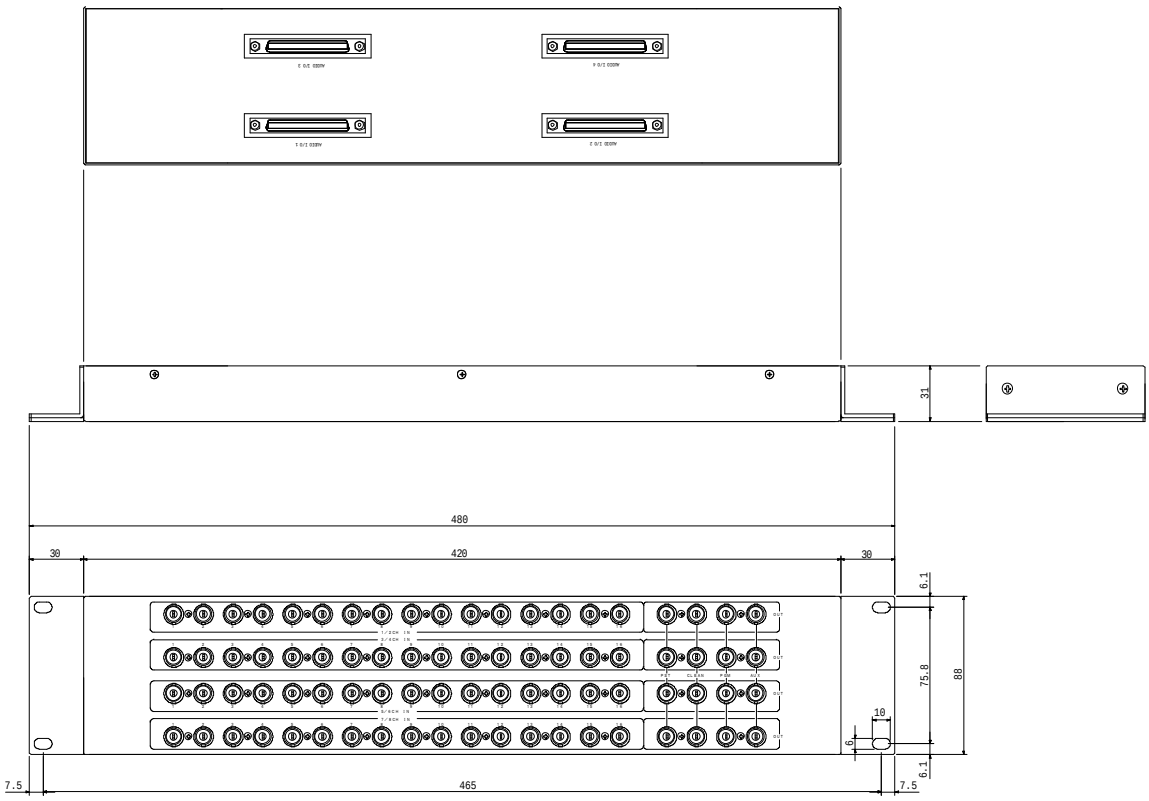
1. Main chassis



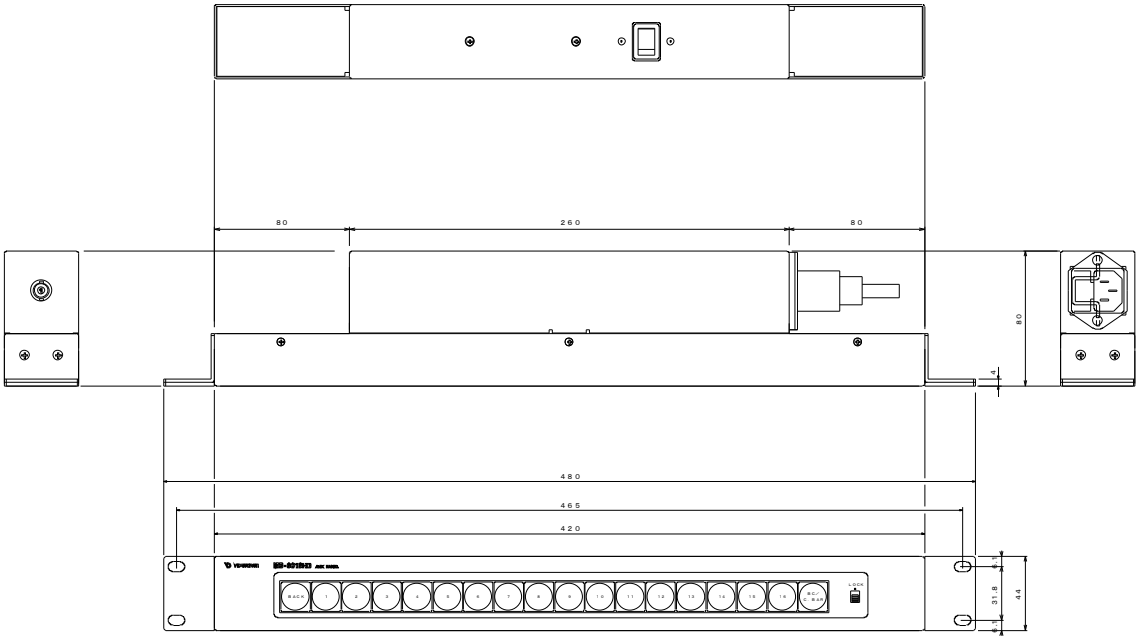
2. Operation Panel



3. Audio Breakout (Opion)

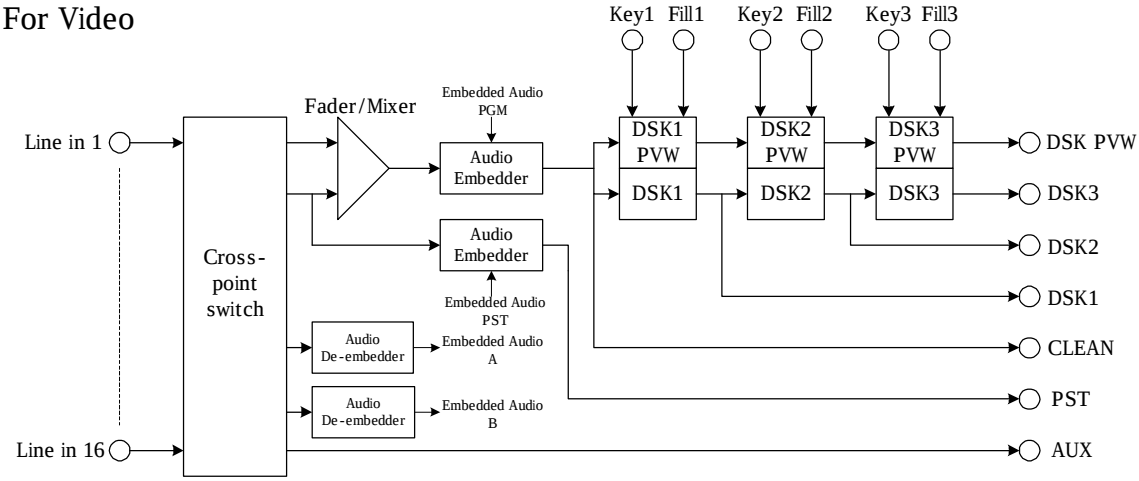


4. AUX Panel (Option)

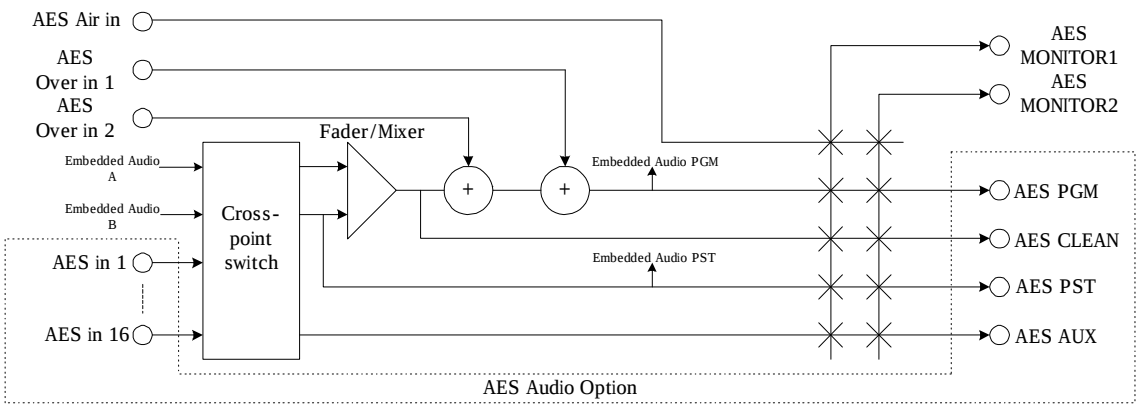


19.Block Diagram

For Video



For Audio



20.Postscript AUX PANEL OPTION

1.General

The AUX panel option can perform the same motion as AUX and BUS selection of the operation panel. Using DIP switch, PST BUS selection and PGM BUS selection can also be performed.

2. Functional Check

(1) Construction

[AUX panel]

NO.	Nomenclature	Type/Standard	Quantity	Report
1	AUX panel		1	
2	Power cable		1	
3	Mounting screw	5m/m	4	
4	Control cable	3C-2V 10m	1	

(2) Connection and check procedure

(1)Set up the DIP switch on SW1 of the main chassis by BUS selection.

The main chassis side VIDEO SELECT BOARD SW1

		SW1-1	SW1-2
SELECTION	AUX BUS	OFF	OFF
	PST BUS	ON	OFF
	PGM BUS	ON	ON

(2) Connect the main chassis (AUX PANEL) and AUX panel (CONT) with an attached control cable.

(3) Connect an attached power cable to the AUX panel (AC IN), and connect to an AC220V outlet.

(4) Switch on the power source of the main chassis and the operation panel, and make it active state.

(5) Turn on an AUX panel (POWER) power switch.

The switch row of BUS of the same operation panel as the BUS SELECT specified with the DIP switch lights up.

(6) Select 1 on the switch row at the AUX panel.

1 switch of BUS of the same operation panel as the BUS SELECT specified with the DIP switch lights up.

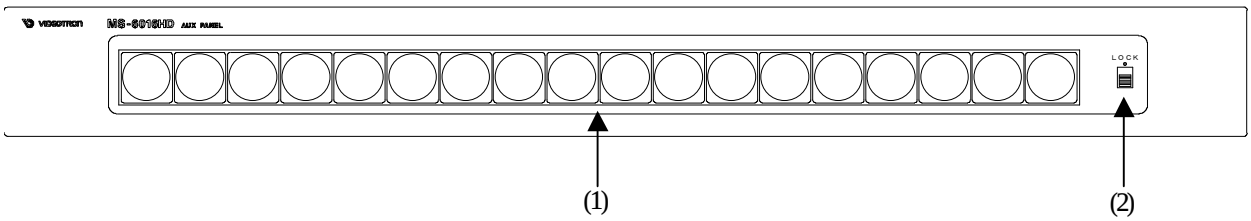
The color of the AUX panel switches is same as the operation panel.

(7) Select 2 on the switch row of the same operation panel as the BUS SELECT specified with the DIP switch.

2 switch of BUS on the AUX panel lights up.

3. Name and Function of each part

(1) AUX panel, Front view



(1) AUX BUS section

Select the background signal to be outputted at AUX OUT.

BLACK : The black signal of bulk generation.

1 ~ 16 : The input signal of each LINE IN terminal.

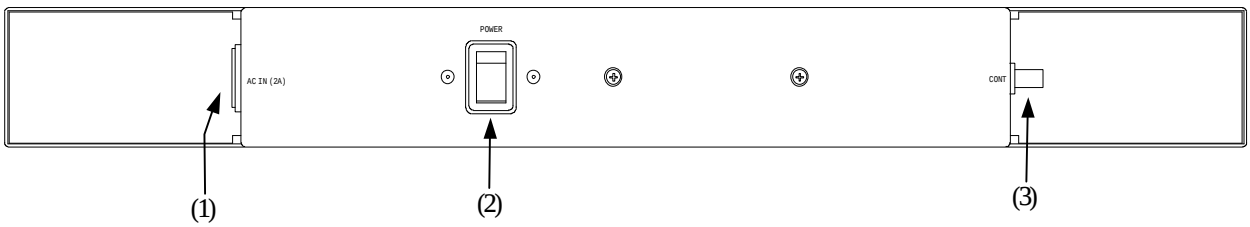
BACK COLOR : The mat or color bar signal of bulk generation.

**DIP switch setting allows to select the background signal to be outputted at PST BUS or PGM BUS.

(2) LOCK switch

While keeping the LOCK switch above, (1) switch functions will be forbidden.

(2) AUX panel, Rear view



(1) AC IN

This is AC power connector with three terminals.

It connects an attached power cable to the AC200V outlet.

**It has the fuse holder, and put 2A fuse in. Please refer to (P.29) for how to exchange the fuse.

(2) POWER switch

This is a power switch of AUX PANEL.

(3) CONT

This is a connector for communication with the main chassis.

4. Operating Instructions

(1) Setup

AUX BUS/PST BUS/PGM BUS is changed by SW1 of DIP switch on the main chassis. After changing, please switch on a power source again or press a reset switch to reboot the main chassis. The BUS switch which you specified becomes effective after a reboot.

(2)Operation at the time of selecting AUX BUS

It is same function as the operation panel. Regardless of the position on the operation panel or the AUX panel, the latest button you pressed becomes effective. Like the operation panel, keep pressing button for one second or more allows to change BACK COLOR or COLOR BAR. When LOCK SW is ON, inputting of the AUX panel cannot be performed, but the condition of AUX BUS is displayed. The operation panel enables user to confirm that AUX BUS is selected.

(3)Operation at the time of selecting PST BUX

It is same function as the operation panel. Like the operation panel, keep pressing BC/C.BAR for one second or more allows to change BACK COLOR/COLOR BAR. When LOCK SW is ON, inputting of the AUX panel cannot be performed, but the condition of PST BUS is displayed. The operation panel enables user to confirm that PST BUS is selected. When AUDIO ONLY or VIDEO ONLY is ON, the choice to separate can be performed like the operation panel. The lighted state after separating becomes the same as the operation panel.

(4)Operation at the time of selecting PGM BUS

It is same function as the operation panel. When LOCK SW is ON, inputting of the AUX panel cannot be performed, but the condition of PGM BUS is displayed. The operation panel enables user to confirm that PGM BUS is selected.