SONY

SWITCHER PROCESSOR PACK

MVS-8000X-C
MVS-7000X-C

MULTI FORMAT SWITCHER PROCESSOR

MVS-8000X
MVS-7000X

MKS-7171X MKS-7210X MKS-7470X MKS-7471X
MKS-8110X MKS-8160X MKS-8170X MKS-8180X
MKS-8210X MKS-8440X MKS-8450X BZS-7200X
BZS-7420X BZS-7500X BZS-7510X BZS-7520X
BZS-7530X BZS-7540X BZS-7541X BZS-7560X
BZS-7561X BZS-8200X BZS-8420X BZS-8560X
HK-PSU05

OPERATION MANUAL English
1st Edition (Revised 2)

4189511030

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

THIS APPARATUS MUST BE EARTHED.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the 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.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For the customers in Canada
This Class A digital apparatus complies with Canadian ICES-003.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: THIS WARNING IS APPLICABLE FOR USA ONLY.
If used in USA, use the UL LISTED power cord specified below.
DO NOT USE ANY OTHER POWER CORD.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P Configuration)
Cord	Type SJT, three 16 or 18 AWG wires
Length	Minimum 1.5m (4 ft. 11in.), Less than 2.5 m (8 ft. 3 in.)
Rating	Minimum 10A, 125V

Using this unit at a voltage other than 120V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

WARNING: THIS WARNING IS APPLICABLE FOR OTHER COUNTRIES.
1. Use the approved Power Cord (3-core mains lead)/ Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
2. Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (Voltage, Ampere).

If you have questions on the use of the above Power Cord/ Appliance Connector/Plug, please consult a qualified service personnel.

For the customers in Europe
This product with the CE marking complies with the EMC Directive issued by the Commission of the European Community.
Compliance with this directive implies conformity to the following European standards:
- EN55103-1: Electromagnetic Interference (Emission)
- EN55103-2: Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environment: E4 (controlled EMC environment, ex. TV studio).

The manufacturer of this product is Sony Corporation, 1-7-1 Konan, Minato-ku, Tokyo, Japan.
The Authorized Representative for EMC and product safety is Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany.

This apparatus shall not be used in the residential area.

For the customers in Europe, Australia and New Zealand

WARNING
This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

For kundene i Norge
Dette utstyret kan kobles til et IT-strømfordelingssystem.

FORSIKTIG
For å redusere risikoen for støt, plugg inn strømtilførselsledningene i hver sin kurs, med separat jording.

For the customers in Taiwan only

廢電池請回收

AVERTISSEMENT

Afin de réduire les risques d'incendie ou d'électrocution, ne pas exposer cet appareil à la pluie ou à l'humidité.

Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

CET APPAREIL DOIT ÊTRE RELIÉ À LA TERRE.

Pour les clients au Canada
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

AVERTISSEMENT
1. Utilisez un cordon d'alimentation (câble secteur à 3 fils)/ fiche femelle/fiche mâle avec des contacts de mise à la terre conformes à la réglementation de sécurité locale applicable.
2. Utilisez un cordon d'alimentation (câble secteur à 3 fils)/ fiche femelle/fiche mâle avec des caractéristiques nominales (tension, ampérage) appropriées.

Pour toute question sur l'utilisation du cordon d'alimentation/ fiche femelle/fiche mâle ci-dessus, consultez un technicien du service après-vente qualifié.

Pour les clients en Europe
Ce produit portant la marque CE est conforme à la Directive sur la compatibilité électromagnétique (EMC) émise par la Commission de la Communauté européenne.
La conformité à cette directive implique la conformité aux normes européennes suivantes:
- EN55103-1 : Interférences électromagnétiques (émission)
- EN55103-2 : Sensibilité électromagnétique (immunité)

Ce produit est prévu pour être utilisé dans l'environnement électromagnétique suivant: E4 (environnement EMC contrôlé, ex. studio de télévision).

Le fabricant de ce produit est Sony Corporation, 1-7-1 Konan, Minato-ku, Tokyo, Japon.
Le représentant autorisé pour EMC et la sécurité des produits est Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Allemagne.

Ne pas utiliser cet appareil dans une zone résidentielle.

Pour les clients en Europe, Australie et Nouvelle-Zélande

AVERTISSEMENT
Il s'agit d'un produit de Classe A. Dans un environnement domestique, cet appareil peut provoquer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre des mesures appropriées.

WARNUNG

Um die Gefahr von Bränden oder elektrischen Schlägen zu verringern, darf dieses Gerät nicht Regen oder Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur qualifiziertem Fachpersonal.

DIESES GERÄT MUSS GEERDET WERDEN.

WARNUNG
1. Verwenden Sie ein geprüftes Netzkabel (3-adriges Stromkabel)/einen geprüften Geräteanschluss/einen geprüften Stecker mit Schutzkontakten entsprechend den Sicherheitsvorschriften, die im betreffenden Land gelten.
2. Verwenden Sie ein Netzkabel (3-adriges Stromkabel)/einen Geräteanschluss/einen Stecker mit den geeigneten Anschlusswerten (Volt, Ampere).

Wenn Sie Fragen zur Verwendung von Netzkabel/ Geräteanschluss/Stecker haben, wenden Sie sich bitte an qualifiziertes Kundendienstpersonal.

Für Kunden in Europa
Dieses Produkt besitzt die CE-Kennzeichnung und erfüllt die EMV-Richtlinie der EG-Kommission.
Angewandte Normen:
- EN55103-1: Elektromagnetische Verträglichkeit (Störaussendung)
- EN55103-2: Elektromagnetische Verträglichkeit (Störfestigkeit)

Für die folgende elektromagnetische Umgebung: E4 (kontrollierter EMV-Bereich, z.B. Fernsehstudio).

Der Hersteller dieses Produkts ist Sony Corporation, 1-7-1 Konan, Minato-ku, Tokyo, Japan.
Der autorisierte Repräsentant für EMV und Produktsicherheit ist Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Deutschland.

Dieser Apparat darf nicht im Wohnbereich verwendet werden.

Für Kunden in Europa, Australien und Neuseeland

WARNUNG

Dies ist eine Einrichtung, welche die Funk-Entstörung nach Klasse A besitzt. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.

Table of Contents

Overview

The MVS-8000X-C/MVS-7000X-C Switcher Processor Pack is a high-performance, multi-function, multi-format switcher processor for use in an MVS-8000X/MVS-7000X Multi Format Switcher system. It has a wide range of application, being usable in live production systems in studios and ENG/OB vans as well as in postproduction editing systems.

Features

Multi format support

MVS-8000X system

The MVS-8000X system is available in two configurations: the SD/HD multi-format configuration and a configuration supporting 1080P/59.94 and 1080P/50 formats. The SD/HD multi-format configuration can be upgraded to the 1080P/59.94 and 1080P/50 configuration.

- SD/HD multi-format configuration:
  1080i/59.94, 1080i/50, 1080PsF/29.97, 1080PsF/25, 1080PsF/23.976, 1080PsF/24, 720P/59.94, 720P/50, 480i/59.94, 576i/50
- 1080P/59.94, 1080P/50 configuration:
  Supports the following formats in addition to those supported by the SD/HD multi-format configuration
  1080i/59.94 (SMPTE-425M, level B), 1080P/50 (SMPTE-425M, level B)

MVS-7000X system

The MVS-7000X system is available in three configurations: an SD format configuration, an SD/HD multi-format configuration, and a configuration supporting only 1080P/59.94 and 1080P/50 formats. The SD format configuration can be upgraded to the SD/HD multi-format configuration and even to the 1080P/59.94 and 1080P/50 configuration.

- SD format configuration:
  480i/59.94, 576i/50
- SD/HD multi-format configuration:
  1080i/59.94, 1080i/50, 1080PsF/29.97, 1080PsF/25, 1080PsF/23.976, 1080PsF/24, 720P/59.94, 720P/50, 480i/59.94, 576i/50
- 1080P/59.94, 1080P/50 configuration:
  Supports the following formats in addition to those supported by the SD/HD multi-format configuration
  1080P/59.94 (SMPTE-425M, level B), 1080P/50 (SMPTE-425M, level B)

Key resizer functions

- Magnify, shrink, and move, plus, rotate either in the X- or Y-axisdirection and change aspect ratio
- As a standard feature, one resizer channel is provided for each keyer
- Each MKS-8210X/MKS-7210X board is provided with four (or eight) resizer channels (the maximum number of MKS-8210X/MKS-7210X boards that can be installed: five for MVS-8000X system; three for MVS-7000X system)
  However, when using 1080P/59.94 or 1080P/50 format, there is a maximum of four channels per MKS-8210X/MKS-7210X boards.

Note

It is not possible to install the MKS-8210X in the MVS-7000 system.

Format converter function

The inputs and outputs support up converter, down converter, cross converter, IP converter, and PI converter. (Future support for IP converter and PI converter)
The MVS-8000X system supports a maximum of 16 input channels (with two MKS-8450X boards), and the MVS-7000X system supports a maximum of eight input channels (with one MKS-8450X board). However, when using the IP converter and PI converter, one MKS-8450X provides a maximum of four channels.
The MVS-8000X/MVS-7000X system supports a maximum of four output channels (with MKS-8160X option installed; at least one MKS-8450X board required). However, when using the IP converter and PI converter, one MKS-8160X provides only one channel.

Note

These inputs and outputs are not available for 1080P/59.94 or 1080P/50 format. (The IP converter and PI converter will be supported in future.)

Highly expandable system configuration

By combining option boards, you can configure the optimum system for your requirements, selecting the number of inputs and outputs, and the number of M/E banks. The system's flexibility guarantees its ability to meet future expansion requirements.

High-performance keyers

Each M/E bank is equipped with eight high-performance keyers that provide the following standard functions. However, for 1080P/59.94 or 1080P/50 format, only four keyers can be used.

- Ability to apply transitions to keyers independently of the background
- Chroma key and color vector keys in each keyer
- FineKey™, and key borders up to 8H
- Color mixable matte generator available for both key fill and key borders

Simultaneous output of two programs

Each M/E bank is able to handle two simultaneous program outputs, with the ability to apply any of the four keys to program output. However, when using 1080P/59.94 or 1080P/50 format, you can select any of the four keys to apply. This gives the system the ability to handle a wide range of operating situations, for example simultaneous transmission of two programs.

Powerful preview functions

The system supports simultaneous output of look-ahead previews (next preview) and key previews, and also transition previews.

Extended frame memory function

- Two-input 16-output frame memory (Future support for 9 to 16 outputs)
  However, for 1080P/59.94 or 1080P/50 format, a maximum of eight outputs can be used (Future support for 1080P/59.94 and 1080P/50).
- Freeze function, mask function, reposition function, and image processing function format (Future support for reposition and image processing functions)
- Provides approximately 10G Bytes of memory (Future support for 5G Bytes of the 10G Bytes)
- Animation function provided
- Equipped with external hard disk drive connector

Links to DME functions

With an MVE-8000A or MVE-9000 DME Processor Pack, you can apply DME wipes and processed keys and a wide variety of other DME functions as if they were native switcher functions. All DME functions can be controlled from the center control panel of the MVS-8000X/MVS-7000X system.
For 1080P/59.94 and 1080P/50 formats, only an MVE-8000A can be used.

Backup power supply can be installed

By installing the optional HK-PSU05 Power Supply Unit, together with the power supply unit preinstalled at the factory, this provides a backup system. This reduces the risk of power supply problems, and increases the reliability of live operations.

High-performance color correction

Installation of the optional Color Corrector Software (BZS-8420X for MVS-8000X and BZS-7420X for MVS-7000X) provides a maximum of four channels (MVS-8000X) or two channels (MVS-7000X) of high-performance color correction functionality.
Note that only two color correction channels (MVS-8000X) or only one color correction channel (MVS-7000X) can be used in 1080P/59.94 or 1080P/50 format (for MVS-8000X, future support for channels 3 and 4 other than in 1080P/59.94 or 1080P/50 format).

Multi Program 2 Mode

By installing the Multi Program 2 Software option (BZS-8200X for MVS-8000X system and BZS-7200X for MVS-7000X), you can create two different backgrounds, with transition effects, in each M/E bank. M/E keyers can be assigned to these backgrounds for separate keying.
This allows you to create multiple programs within a single M/E bank by varying the keyer assignments and background video configuration.

Plug-in DME functionality

In the case of the MVS-7000X system, DME functionality can be built into the system by installing the MKS-7470X/MKS-7471X in the switcher processor.
A maximum of four DME channels can be supported in all formats.

Overview of the MVS-8000X/MVS-7000X Series Components

MVS-8000X Multi Format Switcher Processor

This is the main unit cabinet of the MVS-8000X Multi Format Switcher Processor unit (EIA 10RU size).
By default only SD/HD multi-format is supported, but by installing software, 1080P/59.94 and 1080P/50 formats are also supported.

- Two M/E banks installed as standard; can be extended to five M/E banks.
- 24 inputs installed as standard; can be extended to 144 inputs.
- 24 outputs installed as standard; can be extended to 48 outputs.
- Depending on the M/E configuration, a maximum of 20 M/E outputs (4M/E+P/P) are available as standard.
- The MKS-8170X DME Interface Board Set (option) can be installed.
- The BZS-8420X Color Corrector Software (option) can be used.
- Three power supply units fitted as standard.

MVS-7000X Multi Format Switcher Processor

This is the main unit cabinet of the MVS-7000X Multi Format Switcher Processor unit (EIA 8RU size). By default only SD format is supported, but by installing software, HD multi-format, 1080P/59.94 and 1080P/50 formats are also supported.

- The standard configuration include no M/E. In 1080P/59.94 or 1080P/50 format, it can be extended to include up to three M/Es. In HD multi-format and SD format, the configuration can be extended to include up to six M/Es. (Future support for 6th M/E)
- 20 inputs installed as standard. The input configuration can be extended to 80 inputs.
- 20 outputs installed as standard. The output configuration can be extended to 48 outputs.
- Plug-in DME options MKS-7470X and MKS-7471X can be installed.
- A DME interface can be configured by installing the MKS-8110X 20-Input Board and MKS-7171X Output Connector Board.
- The BZS-7420X Color Corrector Software (option) can be used.
- Two power supply units fitted as standard.

The following options can be installed, depending on the system.

MVS-8000X system

Board Name	Maximum installable number of boards
MKS-8110X 20-Input Board	6
MKS-8160X 24-Output Board Set	1
MKS-8170X DME Interface Board Set	1
MKS-8180X Cross Point Board Set	1
MKS-8210X Mix Effect Board	3
MKS-8440X Frame Memory Board Set	1
MKS-8450X Format Converter Board	2
HK-PSU05 Power Supply Unit	2

MVS-7000X system

Board Name	Maximum installable number of boards	
MKS-7171X DME Output Connector Board	1	
MKS-7210X Mix Effect Board	3	
MKS-7470X DME Board Set	1	
MKS-7471X Additional DME Board	1	
MKS-8110X 20-Input Board	Primary: 3	4
	DME interface: 1	
MKS-8160X 24-Output Board Set	1	
MKS-8440X Frame Memory Board Set	1	
MKS-8450X Format Converter Board	1	
HK-PSU05 Power Supply Unit	2	

MKS-7171X DME Output Connector Board

This can be installed only in the MVS-7000X system.
This is an interface board for output of video signals to the MVE-8000A and MVE-9000 Multi Format DME Processors. This board can also be used for output of plug-in DME V/K (video/key) signals and MON (monitor video) signals.

MKS-7210X Mix Effect Board

This is an M/E board to be used for the MVS-8000X/MVS-7000X system.
The MVS-8000X has two M/E banks installed as standard, which can be extended to five M/E banks by installing this option.
The MVS-7000X system has no M/E bank as standard. When using the MVS-7000X system in 1080P/59.94 or 1080P/50 format, a maximum of three M/E banks can be configured by installing this option. When using the system in a format other than 1080P/59.94 and 1080P/50, a maximum of six M/E banks can be configured by installing three of these boards (Future support for 6th M/E).

MKS-7470X DME Board Set

This can be installed only in the MVS-7000X system.
The set comprises a DME board and a XPT board. The MKS-7470X supports two-channel DME functionality for all formats.

MKS-7471X Additional DME Board

This can be installed only in the MVS-7000X system.
This is a DME board. The MKS-7471X provides two additional channels for DME functionality. (The combination of MKS-7470X and MKS-7471X supports 4 channels for all formats.)

MKS-8110X 20-Input Board

This is a 20-input board.
The MVS-8000X has 24 inputs fitted as standard, and by installing 20 inputs at a time with this board, a maximum of 144 inputs (with six boards added) can be reached.
The MVS-7000X has 20 inputs fitted as standard, and by installing 20 inputs at a time with this board, a maximum of 80 inputs (with three boards added) can be reached.
When this board is installed in the DME interface slot of the MVS-7000X system, it can be used as inputs for video signals from the MVE-8000A and MVE-9000 Multi Format DME Processors, inputs for V/K (video/key) signals from the plug-in DME, and inputs for EXTV (external video) signals.

MKS-8160X 24-Output Board Set

This is a 24-output board set, of which one can be installed.

On the MVS-8000X/MVS-7000X system, this option increases the outputs to 48.

MKS-8170X DME Interface Board Set

This can be installed only in the MVS-8000X system. This is an interface board for input/output of video signals with the MVE-8000A and MVE-9000 Multi Format DME Processors.
By installing this board set, using 1080P/59.94 or 1080P/50 format you can use a maximum of four MVE-8000A units, and using formats other than 1080P/59.94 and 1080P/50 you can use a maximum of two MVE-8000A and MVE-9000 units.

MKS-8180X Cross Point Board Set

This can be installed only in the MVS-8000X system. This board set provides additional input cross-points and 20 PREMIUM INPUTS. Only one set can be installed. The PREMIUM INPUTS provide a function equivalent to that of primary inputs, and can be used to increase key signal inputs to five M/E banks and inputs to external DME.
To use primary inputs 71 to 140 requires an extra MKS-8110X.

MKS-8210X Mix Effect Board

This can be installed only in the MVS-8000X system. This is an M/E board. The MVS-8000X system has two M/E banks installed as standard, which can be extended to five M/E banks by installing this option.

Note

Note that the 5M/E configuration requires installation of the MKS-8180X Cross Point Board Set.

MKS-8440X Frame Memory Board Set

This is a frame memory board. A maximum of one can be installed in the MVS-8000X/MVS-7000X system.

MKS-8450X Format Converter Board

This is a format converter board. The MVS-8000X system can use up to two boards, and the MVS-7000X system can use one board.

BZS-7200X Multi Program 2 Software

This can be installed only in the MVS-7000X system. This is software which enables the creation of two different backgrounds utilizing transition effects in each of the M/E banks of the MVS-7000X.

BZS-7420X Color Corrector Software

This can be installed only in the MVS-7000X system. This is software to add a high-performance color correction function for a maximum of four channels, with support for SD/HD multi-format. However, for 1080P/59.94 or 1080P/50 format, only one channel can be used.

BZS-7500X Switcher Upgrade Software

This can be installed only in the MVS-7000X system. This software provides an upgrade of the SD format MVS-7000X system to an HD multi-format system.

BZS-7510X Switcher Upgrade Software

This can be installed only in the MVS-7000X system. This software upgrades the first MKS-7210X board supporting SD format so that it supports HD multi-format.

BZS-7520X Switcher Upgrade Software

This can be installed only in the MVS-7000X system. This software upgrades the second MKS-7210X board supporting SD format so that it supports HD multi-format.

BZS-7530X Switcher Upgrade Software

This can be installed only in the MVS-7000X system. This software upgrades the third MKS-7210X board supporting SD format so that it supports HD multi-format.

BZS-7540X DME Upgrade Software

This can be installed only in the MVS-7000X system. This software upgrades the SD format MKS-7470X so that it supports HD multi-format.

BZS-7541X DME Upgrade Software

This can be installed only in the MVS-7000X system. This software upgrades the SD format MKS-7471X so that it supports HD multi-format.

BZS-7560X Switcher Upgrade Software

This can be installed only in the MVS-7000X system. This software provides an upgrade to the SD/HD multi-format MVS-7000X for 1080P support (1080P/59.94 and 1080P/50).

BZS-7561X DME Upgrade Software

This can be installed only in the MVS-7000X system. This software provides an upgrade to the HD multi-format MKS-7470X/MKS-7471X for 1080P support (1080P/59.94 and 1080P/50).

BZS-8200X Multi Program 2 Software

This can be installed only in the MVS-8000X system.

This is software which enables the creation of two different backgrounds utilizing transition effects in each of the M/E banks of the MVS-8000X.

BZS-8420X Color Corrector Software

This can be installed only in the MVS-8000X system. This is software to add a high-performance color correction function for a maximum of four channels, with support for SD/HD multi-format.
Note that only two channels can be used in 1080P/59.94 or 1080P/50 format (Future support for channels 3 and 4 other than in 1080P/59.94 or 1080P/50 format).

BZS-8560X Switcher Upgrade Software

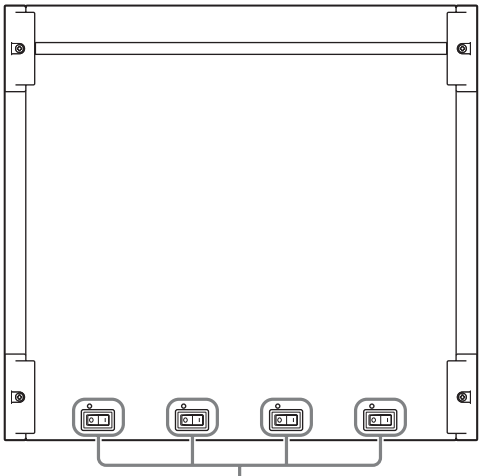
This can be installed only in the MVS-8000X system. This software provides an upgrade to the multi-format MVS-8000X for 1080P support (1080P/59.94 and 1080P/50).

HK-PSU05 Power Supply Unit

This is a backup power supply unit. The MVS-8000X system is equipped with three, and the MVS-7000X system is equipped with two, power supply units preinstalled at the factory. HK-PSU05 units can be installed in each system to increase the number of power supply units up to four, providing a fully redundant power supply.

Location and Function of Parts

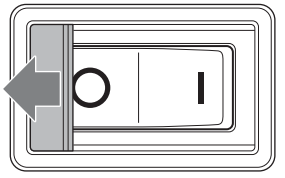
Front Panel



POWER A, B, C, D switches and status indicators
The POWER switches turn the unit on and off. The unit is powered on when the POWER switches are on the "**I**" side, and powered off when the POWER switches are on the "○" side. The status indicators light in green when the unit is powered on.
Depending on the configuration of your unit when shipped, the HK-PSU05 Power Supply Unit may not be installed. In this case, only the POWER A and POWER B switches are available. There is no POWER C and POWER D switches. The unit does not operate until two of the four power switches (A, B, C and D) are on.
When the HK-PSU05 is installed, operation continues as long as two power supplies are normal.

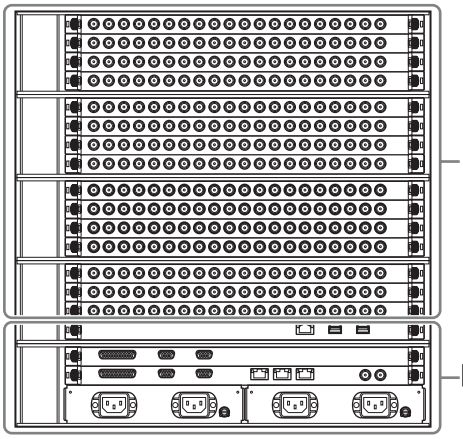
Notes

- When installing the HK-PSU05 in your unit, be sure to contact your Sony service representative.
- If a status indicator does not light when you turn a POWER switch on, there may be a fault in the power circuits. Turn the POWER switch off and contact your Sony service representative.
- If you cannot press the "**I**" side of the POWER switch to power on, slide the red cover in the direction of the arrow shown in the figure, then press.

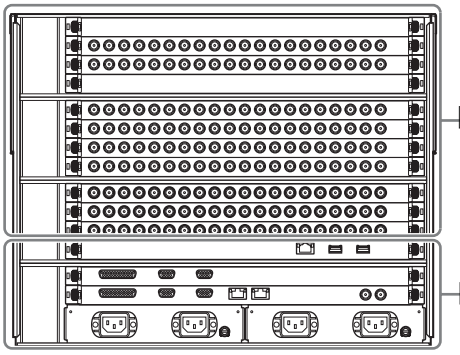


Rear Panel

MVS-8000X

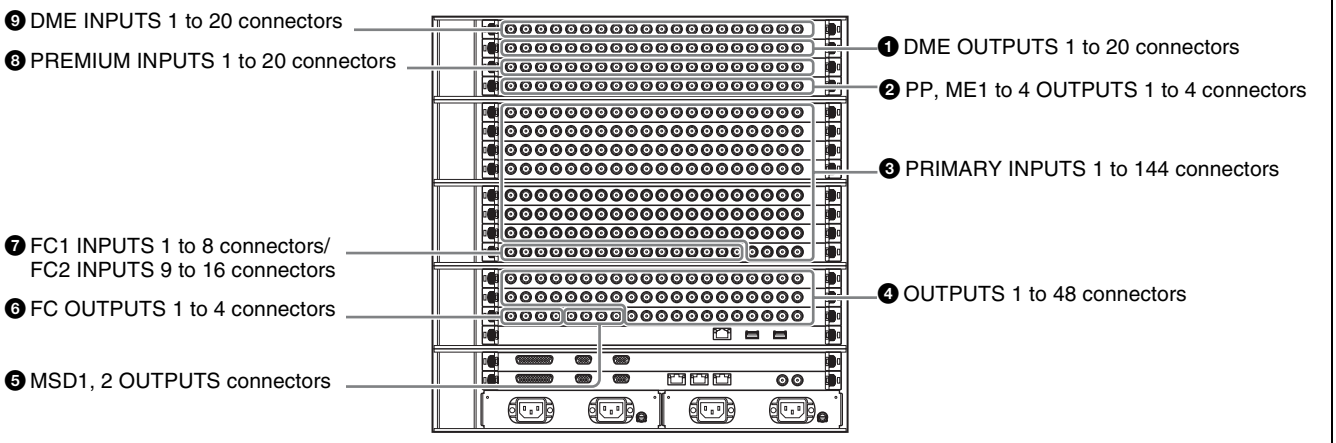


MVS-7000X

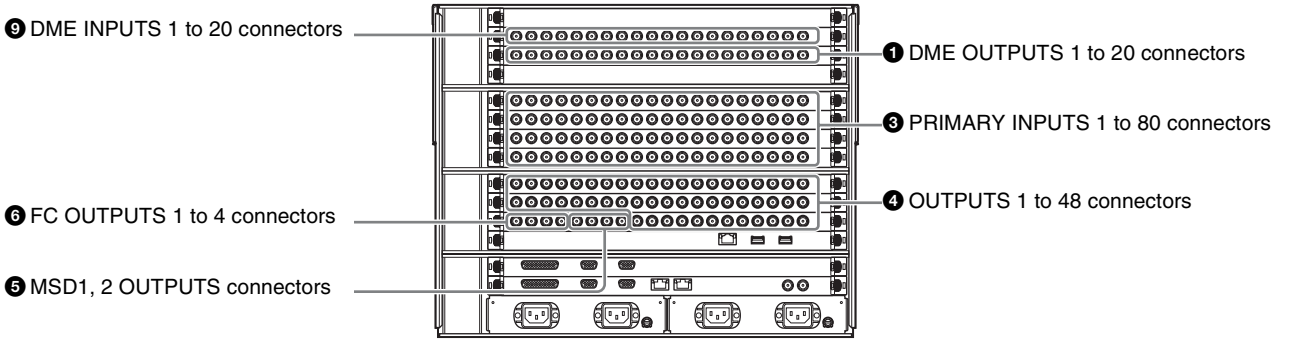


1 Connector panel (upper section)

MVS-8000X



MVS-7000X



❶ DME (Digital Multi Effect) OUTPUTS 1 to 20 connectors (BNC-type)

These connectors provide 20 serial digital video signal outputs for use as external DME inputs.

MVS-8000X: 16 outputs for use as external DME (MVE-8000A/MVE-9000) inputs (Future support for 17 to 20 connectors)

MVS-7000X: eight plug-in DME V/K outputs, four MON outputs, and eight outputs for use as external DME (MVE-8000A/MVE-9000)

❷ PP, ME1 to 4 OUTPUTS 1 to 4 connectors (BNC-type)

This can be installed only in the MVS-8000X system.

These connectors output four channels of M/E1 to 4, P/P output serial digital video signals.

The number of outputs depends on the number of optional MKS-8210X boards that are installed in the unit.

❸ PRIMARY INPUTS

1 to 144 connectors (BNC-type): MVS-8000X

1 to 80 connectors (BNC-type): MVS-7000X

These connectors allow you to input up to 144 or up to 80 serial digital video signals to the MVS-8000X or MVS-7000X system.

The number of these connectors (slots) depends on the number of optional MKS-8110X boards that are installed in the unit.

❹ OUTPUTS 1 to 48 connectors (BNC-type)

These connectors output serial digital video signals. You can assign them freely as program output, preview output, AUX output, and so on.

Outputs 23, 24, 47, 48 are each constituted by two BNC-type connectors, and outputs 1 to 22, 25 to 46 are each constituted by one BNC-type connector.

Make output assignments on the MVS-8000X/MVS-7000X system center control panel.

The number of connectors (slots) depends on the number of optional MKS-8160X boards that are installed in the unit.

Refer to the User's Guide for information about signals that may be assigned.

❺ MSD (Multi Source Display) 1, 2 OUTPUTS connectors (BNC-type)

These connectors can output serial digital video signals that provide a multi-screen view of a number of output signals. There are a maximum of two output channels.
Assign the outputs on the center control panel of the MVS-8000X/MVS-7000X system.
The number of outputs depends on the number of optional MKS-8160X boards that are installed in the unit.

❻ FC OUTPUTS 1 to 4 connectors (BNC-type)

These connectors output signals converted with the format converter function. There are a maximum of four output channels.
Assign the outputs on the center control panel of the MVS-8000X/MVS-7000X system.

❼ FC1 INPUTS 1 to 8 connectors (BNC-type)
FC2 INPUTS 9 to 16 connectors (BNC-type)

This can be installed only in the MVS-8000X system.
These connectors allow you to input 16 serial digital video signals as format converter inputs.
Using the format converter requires the optional MKS-8450X.
Using the FC1 INPUTS 1 to 8 connectors requires an MKS-8450X in slot 13, and using the FC2 INPUTS 9 to 16 connectors requires an MKS-8450X in slot 14.

❽ PREMIUM INPUTS 1 to 20 connectors (BNC-type)

This can be installed only in the MVS-8000X system.
These connectors allow you to input 20 serial digital video signals that can be used for DME, M/E, PGM/PST, or frame memory, or that can be output from multi-purpose output boards.
Note that the fifth M/E (slot 1) can only select these signals on the KEY bus.

❾ DME INPUTS 1 to 20 connectors (BNC-type)

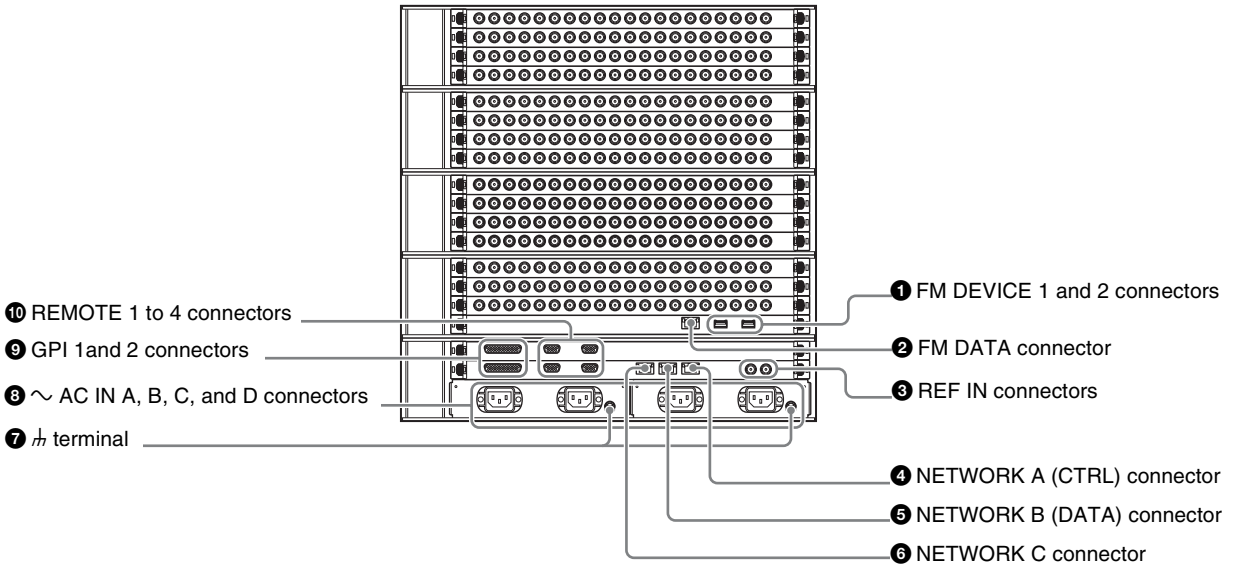
These connectors allow you to input 20 serial digital video signals from external DME outputs.

MVS-8000X: 16 inputs from external DME (MVE-8000A/MVE-9000) (Future support for 17 to 20 connectors)

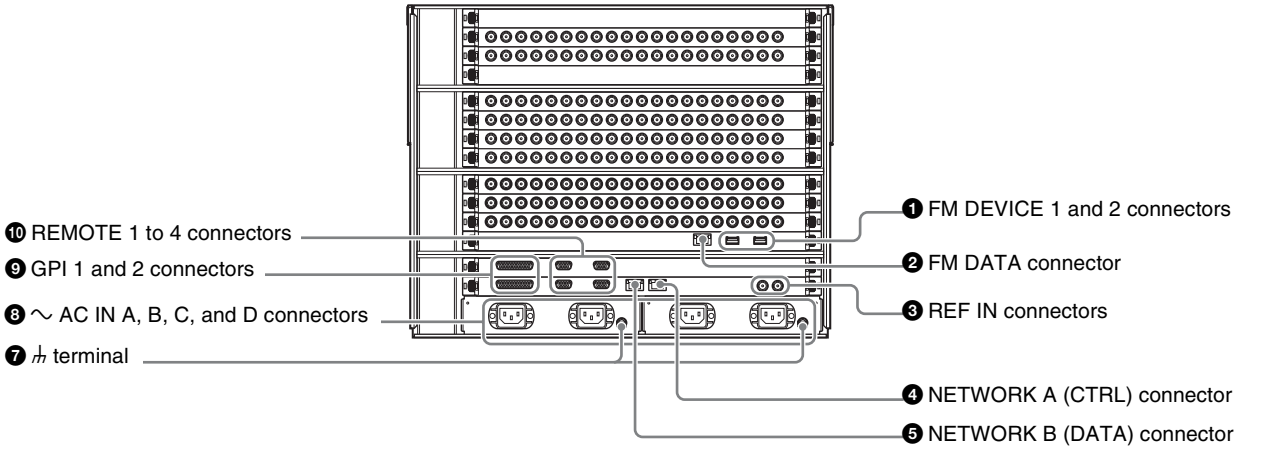
MVS-7000X: eight plug-in DME V/K inputs, four EXTV inputs, and eight inputs from external DME (MVE-8000A/MVE-9000)

2 Connector panel (lower section)

MVS-8000X



MVS-7000X



❶ FM (frame memory) DEVICE 1 and 2 connectors (USB2.0 compliant)

This connector is for attaching an external hard disk drive for frame memory.

For details of hard disk drives that can be used with the MVS-8000X/MVS-7000X system, consult your Sony service representative.

❷ FM DATA (frame memory data) connector (RJ-45 compliant)

Connect to an Ethernet [1)] switch.
This is a dedicated LAN connector for image data.

❸ REF IN (reference video input) connectors (BNC-type)

If you wish to synchronize this unit to an external reference signal, input the reference signal. For an HDTV system, input an HD tri-level sync signal, black burst signal, or analog sync signal. For an SDTV system, input a black burst signal or analog sync signal.
The two connectors have a loop-through configuration. Signal input to one connector can be output from the other connector. If you will not be using the loop-through output, be sure to terminate the unused connector with the supplied 75Ω terminator.

❹ NETWORK A (CTRL) connector (RJ-45 compliant)

Connect to an Ethernet [1] switch.

The MVS-8000X/MVS-7000X system's center control panel is connected in the same way to the Ethernet switch to form a network for exchange of signals between the devices. This network is used primarily to control the various devices from the center control panel of the MVS-8000X/MVS-7000X system.

❺ NETWORK B (DATA) connector (RJ-45 compliant)

Connect to an Ethernet [1] switch.

The MVS-8000X system's center control panel is connected in the same way to the Ethernet switch to form a network for exchange of signals between the devices. This network is used primarily for exchange of various types of data (key frame effects, snapshots, etc.) and still pictures of frame memory.

CAUTION

- When you connect the FM DATA connector, NETWORK A (CTRL) connector, NETWORK B (DATA) connector and NETWORK C connector (MVS-8000X system only) of the unit to peripheral devices, use a shielded-type cable to prevent malfunction due to radiation noise.
- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to the following port(s).
  - FM DATA (frame memory data) connector
  - NETWORK A (CTRL) connector
  - NETWORK B (DATA) connector
  - NETWORK C connector (MVS-8000X only)

Follow the instructions for the above port(s).

1) For information about Ethernet switches that can be used in the MVS-8000X/7000X system, contact your Sony service representative.

ATTENTION

Par mesure de sécurité, ne raccordez pas le connecteur pour le câblage de périphériques pouvant avoir une tension excessive aux ports suivants.

- FM DATA connecteur
- NETWORK A (CTRL) connecteur
- NETWORK B (DATA) connecteur
- NETWORK C connecteur (MVS-8000X seulement)

Suivez les instructions pour les ports ci-dessus.

VORSICHT

Aus Sicherheitsgründen nicht mit einem Peripheriegerät-Anschluss verbinden, der zu starke Spannung für diese Buchse haben könnte.

- Buchse FM DATA
- Buchse NETWORK A (CTRL)
- Buchse NETWORK B (DATA)
- Buchse NETWORK C (nur MVS-8000X)

Folgen Sie den Anweisungen für die oben aufgeführten Buchsen.

For more information about Ethernet switch connectors, see "MVS-8000X/MVS-7000X System Configuration" (page 16).

For more information about setting up the Ethernet switch, refer to the documentation supplied with the switch.

❻ NETWORK C connector (RJ-45 compliant)

This connector is reserved for future system expansion.

❼ ⏚ (signal ground) terminal

Connect to the system ground.

❽ ∼ AC IN (AC power input) A, B, C, and D connectors (3-pin)

Connect to 100 to 240 V AC power supply with the optional AC power cords.

Note

When the HK-PSU05 Power Supply Unit is not installed in the front-side slot inside the switcher processor, it is not possible to use the ∼ AC IN connector on the rear panel of the processor.

For more information about installing an HK-PSU05 Power Supply Unit, contact your Sony service representative.

❾ GPI (General Purpose Interface) 1 and 2 connectors (D-sub 25-pin)

Connect to external devices for input and output of trigger signals. Up to eight inputs and eight outputs are possible, with input and output conditions set on the center control panel (Future support for GPI 2 connector).

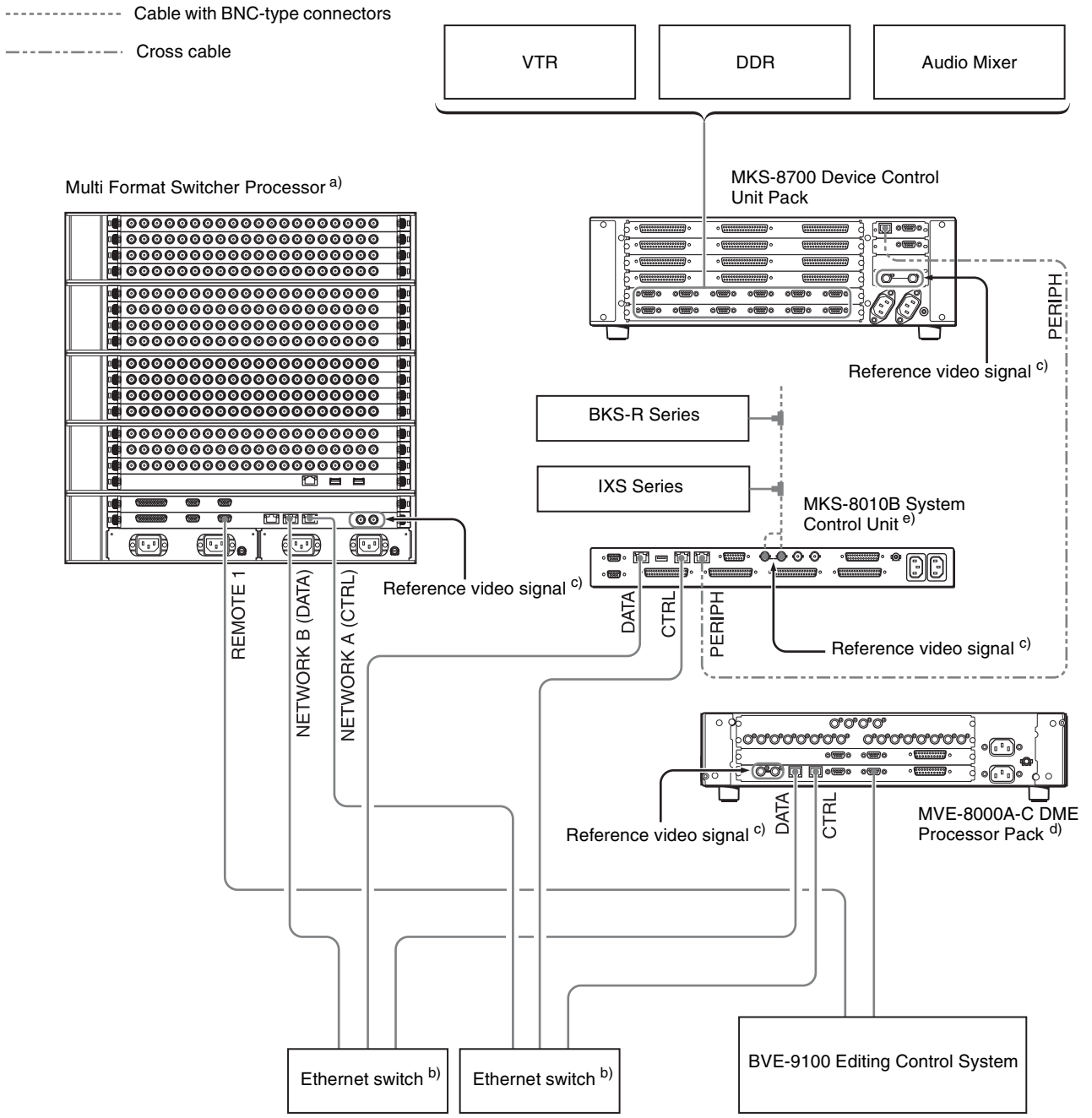
❿ REMOTE 1 to 4 connectors (D-sub 9-pin, RS-422A compliant)

These connectors are used to control the auxiliary bus of the MVS-8000X/MVS-7000X series from external devices, or to operate the MVS-8000X/MVS-7000X from editing control systems such as the BVE-9100.

Define the types of the connected devices on the center control panel.

Example System Configuration

MVS-8000X/MVS-7000X System Configuration

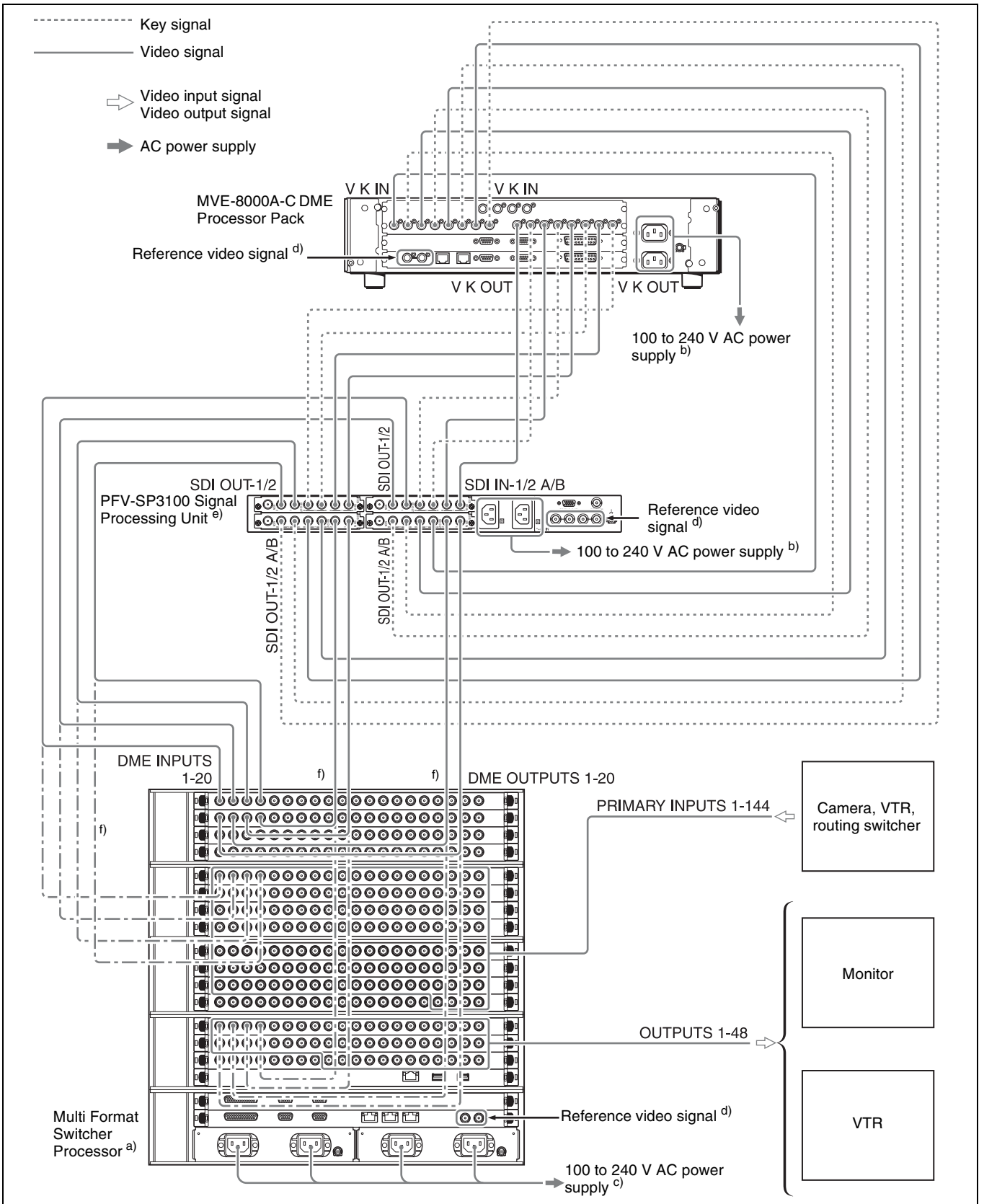


a) The illustration represents the MVS-8000X.
b) It is recommended that the CTRL and DATA LAN networks be configured by connecting separate Ethernet switches for each LAN.
c) Terminate with the supplied 75Ω terminators.
d) This figure shows the rear panel when one MKE-8021A is installed in the MVE-8000A.

e) The following cannot be used for connection to the MVS-8000X/MVS-7000X.

Model	Relevant serial numbers
MKS-8010	All
MKS-8010A	10001 to 11196
MKS-9011A	10001 to 12000
MKS-9012A	10001 to 21000

Flow of Video Signals



a) The illustration represents the MVS-8000X.
b) For the AC power cord, refer to the MVE-8000A Operation Manual.
c) For the AC power cord of this unit, *see page 19*.
d) Terminate with the supplied 75Ω terminators.
e) This figure shows the PFV-SP3100 with HKSP-1530 and HKSP-3015 installed.
f) Connection for SDI interface mode

Power Supply Unit Status Indicators

The power supply unit status indicators show the status of the power supply unit during operation and when the unit is powered on. Whenever a power error is detected, it is reflected immediately by the indicator.

Meaning of status indicator displays

Indicator color	Status	Description	Steps to take
Green	Lit	Operating normally	–
Red	Lit	Power supply unit fault	Exchange the power supply unit
–	Not lit	Power supply unit fault	Exchange the power supply unit

Note

When the system is powered on, the status indicators may momentarily light red, and when powered off the status indicators may light red for several seconds. This is not a malfunction.

Immediately after powering off, if the status indicators are lit red, wait until they have all gone off before powering on again.

Switch on all of the installed power supplies.

Specifications

The following specifications show the reference performance for this unit and individual option boards/units.

Design and specifications are subject to change without notice.

MVS-8000X Multi Format Switcher Processor

General

Power requirements
100 to 240 V ±10% AC, 50/60 Hz

Current consumption
100 V: 15 A, 240 V: 6.5 A

Peak inrush current
(1) Power ON, current probe method: 100 A (100 V), 200 A (240 V)
(2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 165 A (230 V)

Operating guaranteed temperature
5ºC to 40ºC (41ºF to 104ºF)

Performance guaranteed temperature
10ºC to 35ºC (50ºF to 95ºF)

Storage temperature
–20ºC to +60ºC (–4ºF to +140ºF)

Operating humidity
10% to 90%

Dimensions (w/h/d, excluding projections)
440×443×497 mm
($17^3/_8$×$17^1/_2$×$19^5/_8$ inches)

Mass
Approx. 58 kg (128 lb 14 oz)
(when equipped with all installable option boards and option power supply unit)

Remote control connectors

NETWORK A (CTRL)
RJ-45, complies with 100BASE-TX standard, 1000BASE-T standard

NETWORK B (DATA)
RJ-45, complies with 100BASE-TX standard, 1000BASE-T standard

NETWORK C
RJ-45, complies with 100BASE-TX standard, 1000BASE-T standard

REMOTE 1, 2, 3, 4
D-sub 9-pin, female
Comply with RS-422A standard

Data transfer rate: 38.4 Kbps

GPI 1, 2
D-sub 25-pin, female
TTL inputs: 8
Relay contact outputs: 4 (30 V AC/DC, 0.1 A)
Open collector outputs: 4

Reference input

REF IN
BNC type, 75Ω with loop-through output
HDTV systems:
HD tri-level sync/SDTV analog black burst/SDTV analog sync
SDTV systems:
Analog black burst/analog sync

Return loss
–40 dB

Frame memory input and output

FM DATA
RJ-45, complies with 100BASE-TX standard, 1000BASE-T standard

FM DEVICE 1, 2
Complies with USB2.0

Video input

Inputs
24 (Primary), 16 (Format Converter) (BNC type)

Signal format
SMPTE259M-C/SMPTE292M/SMPTE424M

Signal level
0.8 Vp-p ±10%

Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps

Return loss
–15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 GHz to 2.97 GHz)

Video output

Outputs
24 (BNC type)
MSD 1, 2: BNC 2 outputs
1 to 22, FC OUT1 to 4, PPOUT, ME1 to 4OUT: BNC 1 outputs

Signal format
SMPTE259M-C/SMPTE292M/SMPTE424M

Signal level
0.8 Vp-p ±10%

Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps

Return loss
–15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 MHz to 2.97 GHz)

AC input

AC IN A, B, C, D
3-pin AC connector

Accessories supplied

75Ω terminator (1)
Brackets (4)
Support angles (2)
Rack fittings (2)
Screws (+B4×10) (8)
Screws (+PSW4×10) (8)
Screws (+B4×6) (6)
Operation Manual (1)
Installation Manual (1)

Accessories not supplied

AC power cord (for USA and Canada only) (125 V 10 A 2.4 m (8 ft.)) (Part No.: 1-551-812-31)
AC power cord (for Europe only) (250 V 10 A 2.4 m (8 ft.)) (Part No.: 1-782-929-12)

MVS-7000X Multi Format Switcher Processor

General

Power requirements
100 to 240 V ±10% AC, 50/60 Hz

Current consumption
100V: 15A, 240V: 6.5A

Peak inrush current
(1) Power ON, current probe method: 100 A (100 V), 200 A (240 V)
(2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 165 A (230 V)

Operating guaranteed temperature
5ºC to 40ºC (41ºF to 104ºF)

Performance guaranteed temperature
10ºC to 35ºC (50ºF to 95ºF)

Storage temperature
–20ºC to +60ºC (–4ºF to +140ºF)

Operating humidity
10% to 90%

Dimensions (w/h/d, excluding projections)
440×355×497 mm ($17^3/_8$×14×$19^5/_8$ inches)

Mass
Approx. 49 kg (108 lb 0.42 oz) (when equipped with all installable option boards and option power supply unit)

Remote control connectors

NETWORK A (CTRL)
RJ-45, complies with 100BASE-TX standard, 1000BASE-T standard

NETWORK B (DATA)
RJ-45, complies with 100BASE-TX standard, 1000BASE-T standard
REMOTE 1, 2, 3, 4
D-sub 9-pin, female
Comply with RS-422A standard
Data transfer rate: 38.4 Kbps
GPI 1, 2 D-sub 25-pin, female
TTL inputs: 8
Relay contact outputs: 4 (30 V AC/DC, 0.1 A)
Open collector outputs: 4

Reference input

REF IN BNC type, 75Ω with loop-through output
HDTV systems:
HD tri-level sync/SDTV analog black burst/SDTV analog sync
SDTV systems:
Analog black burst/analog sync
Return loss –40 dB

Frame memory input and output

FM DATA RJ-45, complies with 100BASE-TX standard, 1000BASE-T standard
FM DEVICE 1, 2
Complies with USB2.0

Video input

Inputs 20 (Primary) (BNC type)
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p ±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss –15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 GHz to 2.97 GHz)

Video output

Outputs 24 (BNC type)
MSD 1, 2: BNC 2 outputs
1 to 22, FC OUT1 to 4: BNC 1 outputs
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p ±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss –15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 MHz to 2.97 GHz)

AC input

AC IN A, B, C, D
3-pin AC connector

Accessories supplied

75Ω terminator (1)
Operation Manual (1)
Installation Manual (1)

Accessories not supplied

AC power cord (for USA and Canada only) (125 V 10 A 2.4 m (8 ft.)) (Part No.: 1-551-812-31)
AC power cord (for Europe only) (250 V 10 A 2.4 m (8ft.)) (Part No.: 1-782-929-12)
RMM-10 Rack Mount Kit

MKS-7171X DME Output Connector Board

General

Power requirements
12V DC
Power consumption
Max. 10 W
Dimensions (w/d)
370×130.5 mm ($14^5/_8 \times 5^1/_4$ inches)
Mass Approx. 1 kg (2 lb 3.3 oz)

Output

Outputs 20 (BNC type)
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss
–15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 GHz to 2.97 GHz)

Accessories supplied

Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-7210X Mix Effect Board

Power requirements
12 V DC
Power consumption
Max. 150 W

Dimensions (w/d)
370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
Mass Approx. 2 kg (4 lb 6.1 oz)
Accessories supplied
Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-7470X DME Board Set

Power requirements
12 V DC
Power consumption
Max. 150 W
Dimensions (w/d)
DVP board: 370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
XPT board: 370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
Mass Approx. 3 kg (7 lb 7.4 oz)
Accessories supplied
Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-7471X Additional DME Board

Power requirements
12 V DC
Power consumption
Max. 120 W
Dimensions (w/d)
370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
Mass Approx. 2 kg (4 lb 6.1 oz)
Accessories supplied
Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-8110X 20-Input Board

General

Power requirements
12 V DC
Power consumption
Max. 15 W
Dimensions (w/d)
370×130.5 mm ($14^5/_8 \times 5^1/_4$ inches)
Mass Approx. 1 kg (2 lb 3.3 oz)

Input

Inputs 20 (BNC type)
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p ±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss –15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 GHz to 2.97 GHz)

Accessories supplied

Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-8160X 24-Output Board Set

General

Power requirements
12 V DC
Power consumption
Max. 75 W
Dimensions (w/d)
OUT board: 370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
CN board: 370×130.5 mm ($14^5/_8 \times 5^1/_4$ inches)
Mass Approx. 2.5 kg (5 lb 8.3 oz)

Output

Outputs 24 (BNC-type)
47, 48: BNC 2 outputs
25 to 46: BNC 1 outputs
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p ±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss –15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 MHz to 2.97 GHz)

Accessories supplied

Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-8170X DME Interface Board Set

General

Power requirements
12 V DC
Power consumption
Max. 65 W

Dimensions (w/d)
XPT board: 370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
CN board: 370×130.5 mm ($14^5/_8 \times 5^1/_4$ inches)
(two CN boards supplied)
Mass Approx. 2.5 kg (5 lb 8.3 oz)

Input

Inputs 20 (BNC type)
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p ±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss –15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 GHz to 2.97 GHz)

Output

Outputs 20 (BNC type)
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p ±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss –15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 MHz to 2.97 GHz)

Accessories supplied

Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-8180X Cross Point Board Set

General

Power requirements
12 V DC
Power consumption
Max. 70 W
Dimensions (w/d)
XPT board: 370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
CN board: 370×130.5 mm ($14^5/_8 \times 5^1/_4$ inches)
Mass Approx. 2 kg (4 lb 6.1 oz)

Input

Inputs 20 (BNC type)
Signal format SMPTE259M-C/SMPTE292M/SMPTE424M
Signal level 0.8 Vp-p ±10%
Signal transfer rate
270 Mbps, 1.485 Gbps, 1.485/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps
Return loss –15 dB (5 MHz to 1.485 GHz)
–10 dB (1.485 GHz to 2.97 GHz)

Accessories supplied

Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-8210X Mix Effect Board

Power requirements
12 V DC
Power consumption
Max. 150 W
Dimensions (w/d)
370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
Mass Approx. 2 kg (4 lb 6.1 oz)
Accessories supplied
Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-8440X Frame Memory Board Set

Power requirements
12 V DC
Power consumption
Max. 100 W
Dimensions (w/d)
MY board: 370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
CN board: 370×130.5 mm ($14^5/_8 \times 5^1/_4$ inches)
Mass Approx. 2 kg (4 lb 6.1 oz)
Accessories supplied
Operation and Installation Guide (1)
(supplied only when product is purchased separately)

MKS-8450X Format Converter Board

Power requirements
12 V DC
Power consumption
Max. 50 W
Dimensions (w/d)
370×317 mm ($14^5/_8 \times 12^1/_2$ inches)
Mass Approx. 1.5 kg (3 lb 4.9 oz)

Accessories supplied
Operation and Installation Guide (1)
(supplied only when product is purchased separately)

HK-PSU05 Power Supply Unit

Power requirements
Input power: 100 to 240 V ±10% AC, 50/60 Hz
Output power: 12 V DC ±0.3 V
Current consumption
10 to 5 A
Secondary power supply
Max. 60 A
Dimensions (w/h/d)
91.5×39.6×336 mm ($3\frac{5}{8}$×$1\frac{9}{16}$×$13\frac{1}{4}$ inches)
Mass Approx. 2 kg (4 lb 6.1 oz)
Accessories supplied
Operation and Installation Guide (1)
(supplied only when product is purchased separately)

For Customer in China

根据中华人民共和国信息产业部第39号令《电子信息产品污染控制管理办法》及标准中要求的“有毒有害物质或元素名称及含量”等信息，本产品相关信息请参考以下链接:

http://pro.sony.com.cn

出版日期：2011年5月

Sony Corporation

MVS-8000X/MVS-7000X
(SY)
4-189-511-**03** (1)

http://www.sony.net/

Printed on recycled paper.

Printed in Japan
2011.05 32