SONY

INTEGRATED CONTROL PANEL

ICP-X7000

MKS-X7011

MKS-X7017

MKS-X7018

MKS-X7019

MKS-X7020

MKS-X7024

MKS-X7026

MKS-X7031TB

MKS-X7033

MKS-X7035

MKS-X7075

MKS-X2700

MKS-X7700

MKS-X7701

MKS-X7702

MKS-X7040

MKS-X7041

PWS-100SC1

INSTALLATION MANUAL

1st Edition

4567461010

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

ICP-X7000 (SY)	Serial No. 10001 and Higher
MKS-X7011 (SY)	Serial No. 10001 and Higher
MKS-X7017 (SY)	Serial No. 10001 and Higher
MKS-X7018 (SY)	Serial No. 10001 and Higher
MKS-X7019 (SY)	Serial No. 10001 and Higher
MKS-X7020 (SY)	Serial No. 10001 and Higher
MKS-X7024 (SY)	Serial No. 10001 and Higher
MKS-X7026 (SY)	Serial No. 10001 and Higher
MKS-X7031TB (SY)	Serial No. 10001 and Higher
MKS-X7033 (SY)	Serial No. 10001 and Higher
MKS-X7035 (SY)	Serial No. 10001 and Higher
MKS-X7075 (SY)	Serial No. 10001 and Higher
MKS-X2700 (SY)	Serial No. 10001 and Higher
MKS-X2700 (CN)	Serial No. 50001 and Higher
MKS-X7700 (SY)	Serial No. 10001 and Higher
MKS-X7700 (CN)	Serial No. 50001 and Higher
MKS-X7701 (SY)	Serial No. 10001 and Higher
MKS-X7702 (SY)	Serial No. 10001 and Higher
MKS-X7040 (WW)	Serial No. 10001 and Higher
MKS-X7041 (WW)	Serial No. 10001 and Higher
PWS-100SC1 (SY)	Serial No. 10001 and Higher
PWS-100SC1 (CN)	Serial No. 50001 and Higher

For MKS-X2700/MKS-X7700/PWS-100SC1
Attention-when the product is installed in Rack:

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. **Internal air ambient temperature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

5. **Install the equipment while taking the operating temperature of the equipment into consideration**
   For the operating temperature of the equipment, refer to the specifications of the Operation Manual.

For ICP-X7000/MKS-X7011/MKS-X7075/PWS-100SC1

When installing the installation space must be secured in consideration of the ventilation and service operation.
- Do not block the ventilation slots at the left side and right side panels, and vents of the fans.
- Leave a space around the unit for ventilation.
- When the unit is installed on the desk or the like, keep the following space for service operation.

ICP-X7000
Front:	20 cm or more
Right, Left:	20 cm or more
Rear:	30 cm or more
Top:	50 cm or more

MKS-X7011
Front:	10 cm or more
Right, Left:	10 cm or more
Rear:	10 cm or more

PWS-100SC1
Right, Left:	4 cm or more
Rear:	10 cm or more

設置時には，通気やサービス性を考慮して設置スペースを確保してください。
- **ファンの排気部や通気孔（左側面および右側面）をふさがない。**
- **通気のために，セット周辺に空間をあける。**
- **作業エリアの確保や，サービス性を考慮し，机上などの平面に設置する場合は，以下の空間を確保してください。**

ICP-X7000
前面	**20 cm 以上**
左右両側面	**20 cm 以上**
後面	**30 cm 以上**
上面	**50 cm 以上**

MKS-X7011
前面	**10 cm 以上**
左右両側面	**10 cm 以上**
後面	**10 cm 以上**

PWS-100SC1
左右両側面	**4 cm 以上**
後面	**10 cm 以上**

For MKS-X2700/MKS-X7700/PWS-100SC1

安全のために，周辺機器を接続する際は，過大電圧を持つ可能性があるコネクターを以下のポートに接続しないでください。
: MKS-X2700: MVS，UTIL コネクター
: MKS-X7700: MVS，UTIL コネクター
: PWS-100SC1: LAN コネクター
上記のポートについては本書の指示に従ってください。

For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to the following ports.
: MKS-X2700: MVS, UTIL connectors
: MKS-X7700: MVS, UTIL connectors
: PWS-100SC1: LAN connector
Follow the instructions for the above ports.

For ICP-X7000/MKS-X7011/MKS-X7075/PWS-100SC1

警告

本機は電源スイッチを備えていません。
万一，異常が起きた際に，お客様が電源を切ることができるように，設置の際には，機器近くの固定配線内に専用遮断装置を設けてください。

WARNING
This unit has no power switch.
When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring, so that the user can turn off the power in case a fault should occur.

WARNUNG
Dieses Gerät hat keinen Netzschalter.
Beim Einbau des Geräts ist daher im Festkabel ein leicht zugänglicher Unterbrecher einzufügen, damit sich bei einer Funktionsstörung die Stromversorgung zum Gerät jederzeit unterbrechen läßt.

For MKS-X2700/MKS-X7700/PWS-100SC1

For kundene i Norge

Dette utstyret kan kobles til et IT-strømfordelingssystem.

For ICP-X7000/MKS-X7011/MKS-X7075

CAUTION for LAN port
For safety reason, do not connect the LAN port to any network devices that might have excessive voltage.
The LAN port of this unit is to be connected only to the devices whose power feeding meets the requirements for SELV (Safety Extra Low Voltage) and complies with Limited Power Source according to IEC 60950-1.

For ICP-X7000/MKS-X7011/MKS-X7075

CAUTION
These products are to be connected only to PoE networks without routing to the outside plant.

Table of Contents

Manual Structure

1. Installation

2. Installation of Options

3. Service Overview

Manual Structure

Purpose of this manual

This manual is the installation manual of Integrated Control Panel Pack ICP-X7000 and the optional units, MKS-2700and MKS-7700 and optional units, and Switcher Control Station PWS-100SC1.
This manual is intended for use by trained system and service engineers, and describes the information on installing the ICP-X7000.

Related manuals

The following manuals are prepared for ICP-X7000 and the optional boards and units.

- **Operation Manual (Supplied with ICP-X7000)**
  This manual describes the overview, system connection example and specifications of options of ICP-X7000.

- **User's Guide (Supplied with ICP-X7000)**
  This manual describes the application and operation of ICP-X7000.

- **Service Manual (Available on request)**
  This manual describes service overview, error messages, periodic maintenance and inspection, replacement of main parts, and etc. of the unit to provide information required for block-level service.
  If this manual is required, please contact your local Sony Sales Office/Service Center.

- **Factory Service Manual (Available on request)**
  Parts list, circuit diagram, and board layouts of the unit are included to provide information required for part-level service.
  If this manual is required, please contact your local Sony Sales Office/Service Center.

Trademarks

Trademarks and registered trademarks described in this manual are as follows.
• Ethernet is a registered trademark of Xerox Corporation.

Other system names and product names written in this manual are usually registered trademarks or trademarks of respective development manufacturers.

Contents

This manual is organized by following section.

Section 1
Installation

1-1. Operating Environment (Common)

Operation guaranteed temperature: +5 ˚C to +40 ˚C
Performance guaranteed temperature: +10 ˚C to +35 ˚C
Operating humidity: 10 % to 90 %
Storage temperature: −20 ˚C to +60 ˚C
Mass
ICP-X7000 (4ME): Approx. 39.0 kg
ICP-X7000 (3ME): Approx. 30.0 kg
ICP-X7000 (2ME): Approx. 22.0 kg
MKS-X7075: Approx. 2.0 kg
MKS-X7011: Approx. 2.5 kg
MKS-X2700: Approx. 8.0 kg
MKS-X7700: Approx. 15.0 kg

Prohibited locations for installation

- Areas where the unit will be exposed do direct sunlight or any other strong lights.
- Dusty areas
- Areas subject to vibration.
- Areas with strong electric or magnetic fields.
- Areas near heat sources.
- Areas where is subject to electrical noise.
- Areas subject to static electricity

Ventilation

The inside of the MKS-X2700/MKS-X7700 is cooled by a fan (side on the rear).
The power supply can be damaged if the exhaust vent (side on the rear) and air intake (front panel) are blocked or the fan is stopped.

1-2. Power Supply

1-2-1. Power Specifications

A switching regulator is used for the power supply of MKS-X2700/MKS-X7700. A voltage within the range of 100 V to 240 V can be used without changing the supply voltage.
Power requirements: AC 100V to 240 V ±10 %
Power frequency: 50/60 Hz
Current consumption:
MKS-X2700: Maximum 0.5 A
MKS-X7700: Maximum 1.0 A

Note

As the inrush current flows at turn-on, the capacity of the AC power source must be commensurate with this load. If the capacity of the AC power is not adequately large, the AC power source breaker will operate or the unit will abnormally operate.

Inrush current:
MKS-X2700: Maximum 85 A (at peak)/20 A r.m.s (AC 240 V)
MKS-X7700: Maximum 90 A (at peak)/20 A r.m.s (AC 240 V)

2. ICP-X7000, MKS-X7075, MKS-X7011

ICP-X7000, MKS-X7075, and MKS-X7011 operate with power supplied from the PoE HUB or the supplied AC adaptor.
With respect to the model name of recommended PoE HUB, contact your local Sony Sales Office/Service Center.

AC adaptor power: AC100 V to 240 V 50/60Hz

Current consumption:
ICP-X7000 (per row): Maximum 0.3 A
MKS-X7075: Maximum 0.2 A
MKS-X7011: Maximum 0.3 A

Inrush current:
ICP-X7000 (per row): 70 A (at peak), 10 A r.m.s. (AC 240 V)
MKS-X7075: 70 A (at peak), 10 A r.m.s. (AC 240 V)
MKS-X7011: 70 A (at peak), 10 A r.m.s. (AC240 V)

1-2-2. Recommended Power Cord

This unit does not come with a power cord.
To get a power cord, please contact your local Sony Sales Office/Service Center.

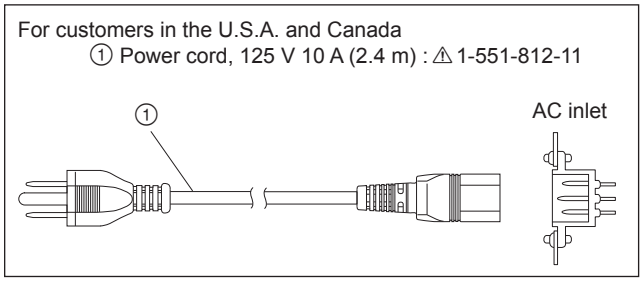
WARNING

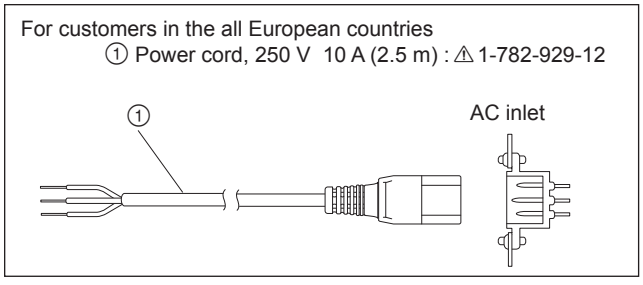
- Use the approved Power Cord (3-core mains lead)/Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
- Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (Voltage, Ampere).
  If you have questions on the use of the above Power Cord/Appliance Connector/Plug, please contact your local Sony Sales Office/Service Center.

WARNING

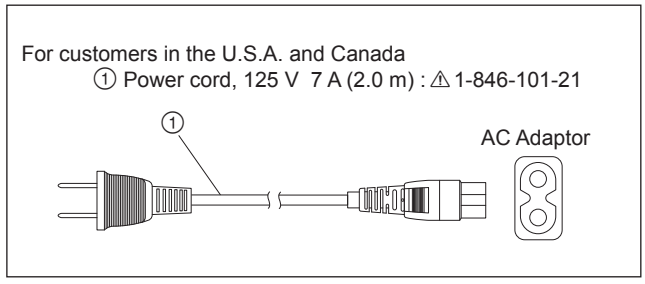
- Never use an injured power cord.
- Plugging the power cord in the AC inlet, push as far as it will go.

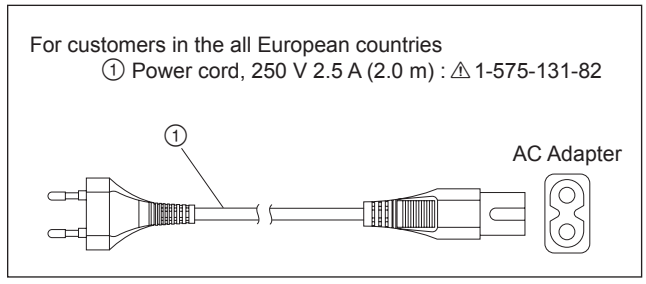
Specified power cord
For MKS-X2700/MKS-X7700





For ICP-X7000,MKS-X7075, MKS-X7011
(For AC adaptor)



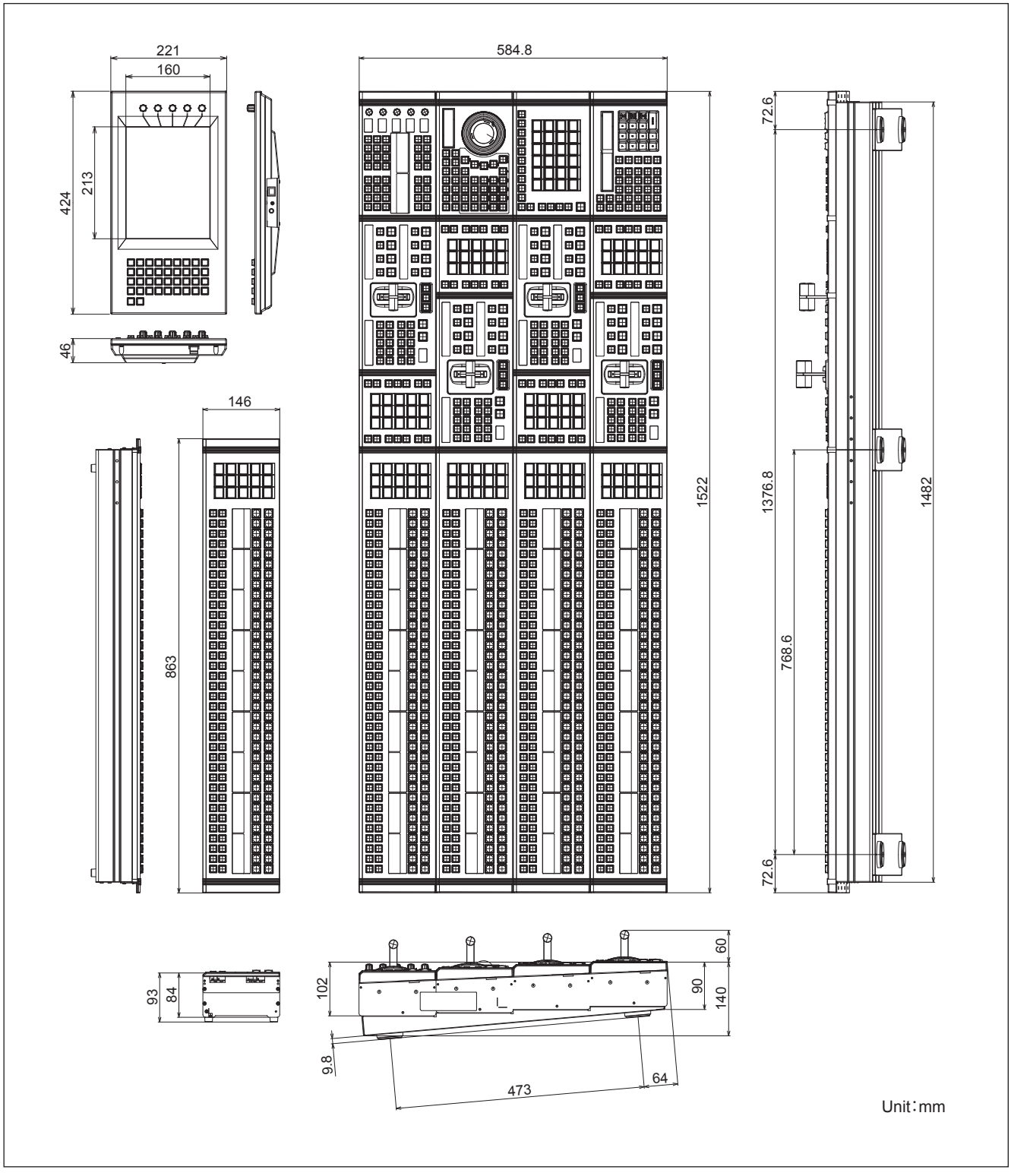


1-3. Installation Space

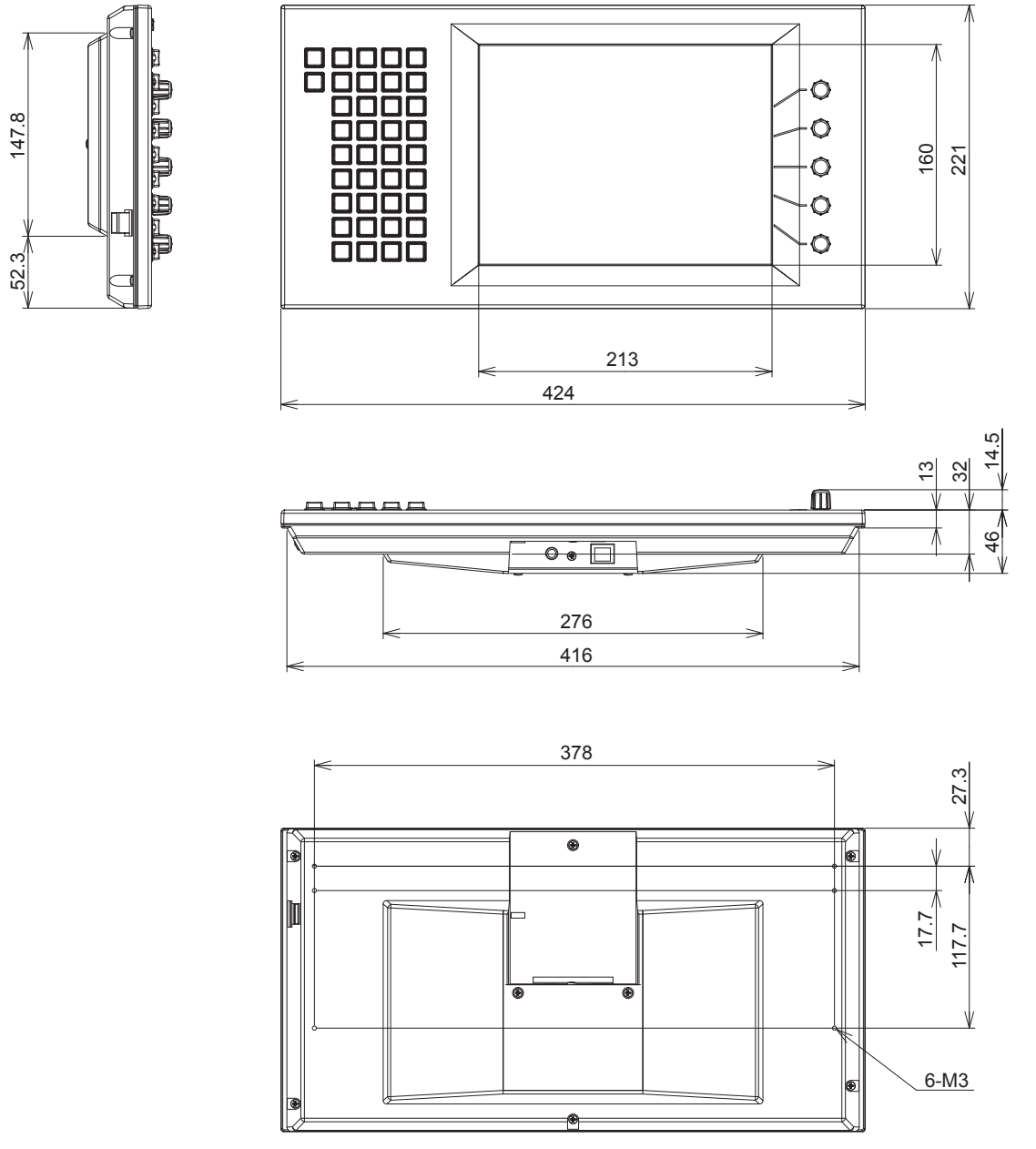
1-3-1. External Dimensions

Main panel/AUX panel*/Menu panel

* A configuration using MKS-X7017/X7018/X7019 independently is called “AUX panel” in this manual.

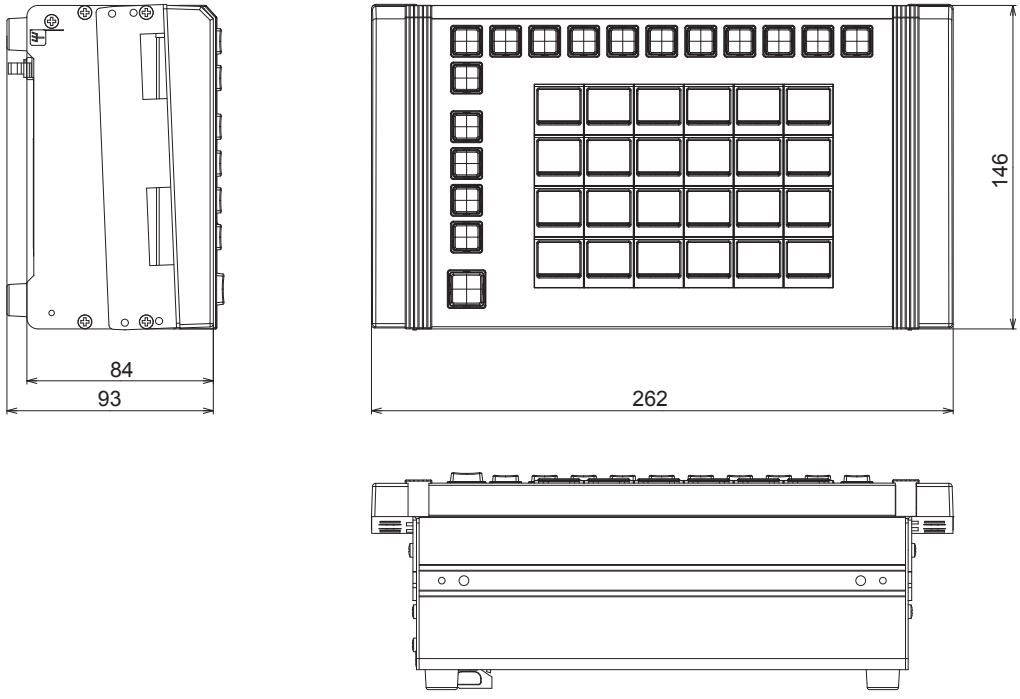


Menu panel (MKS-X7011) detailed dimensions



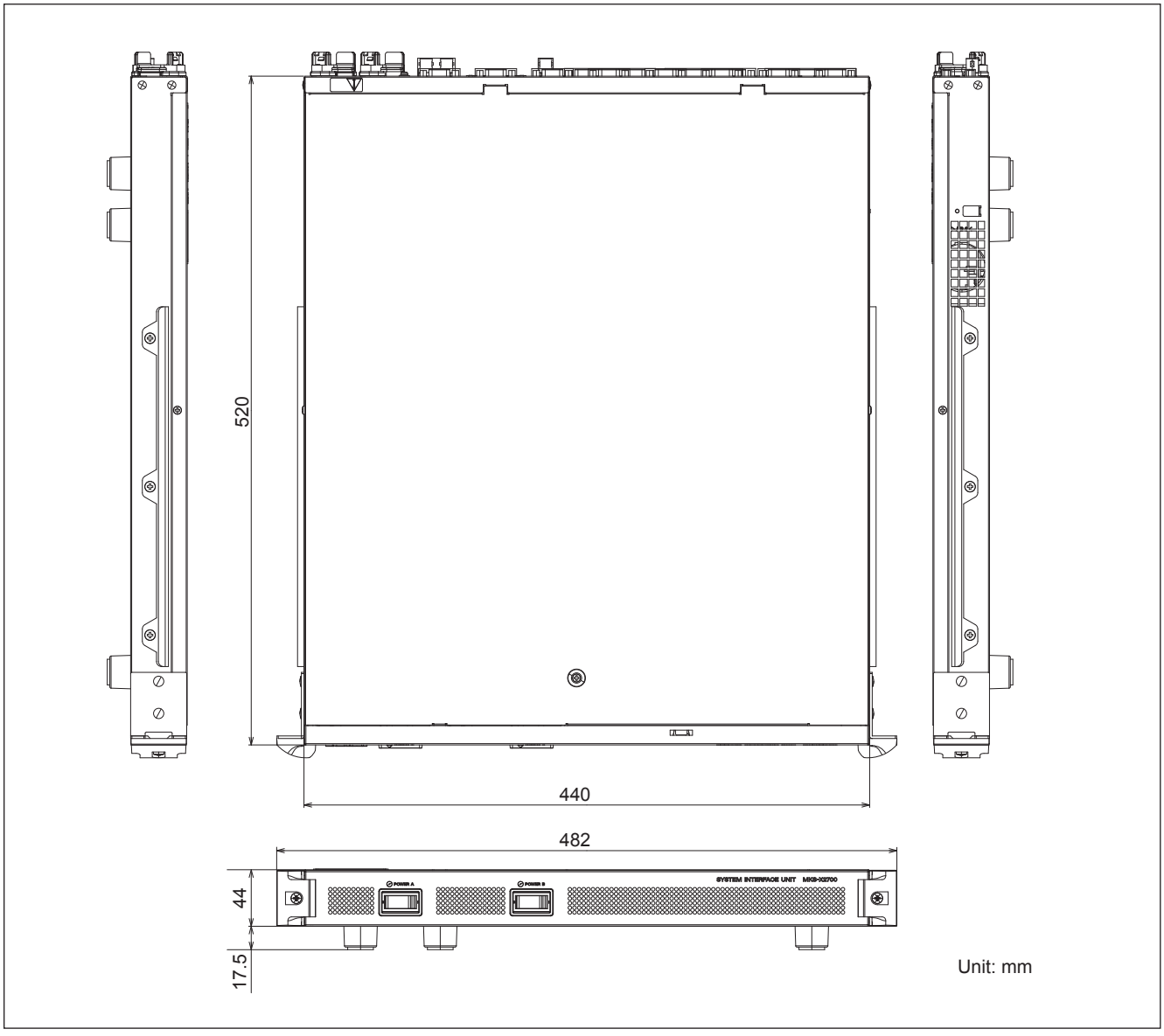
Unit: mm

Extension adaptor (MKS-X7075)

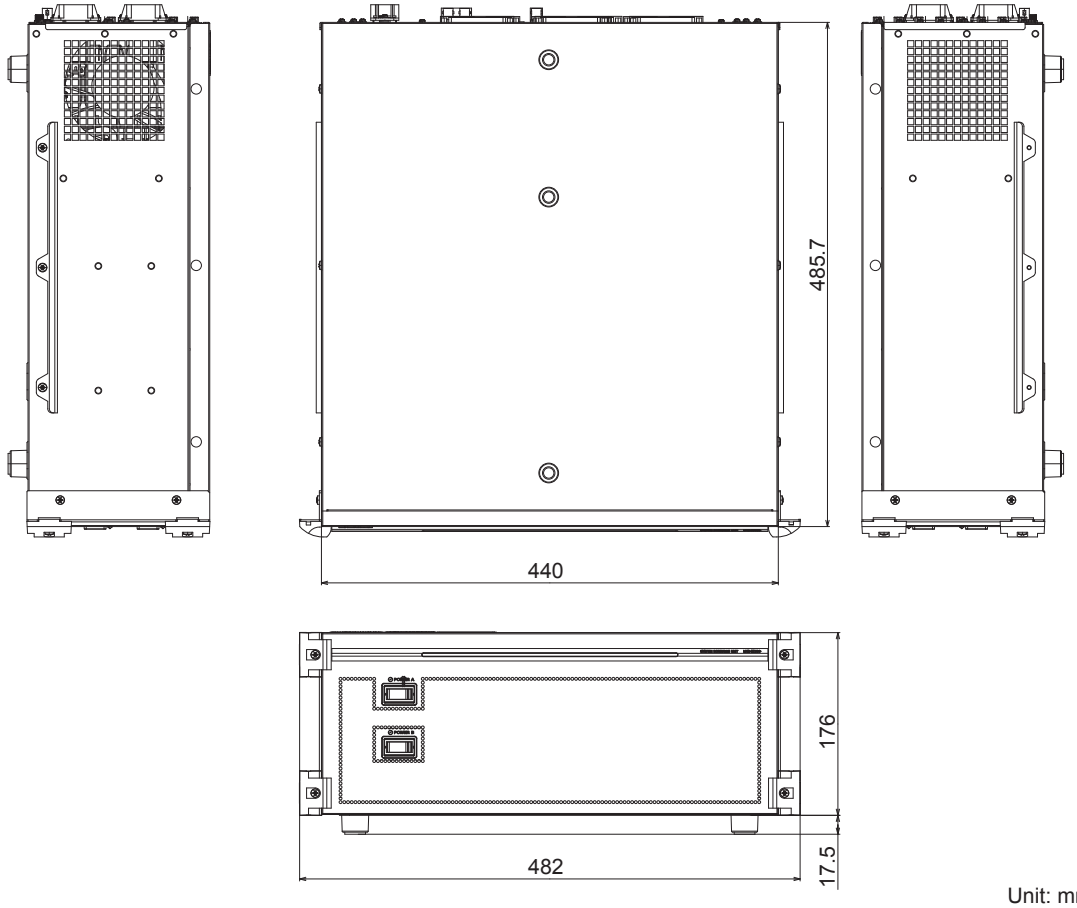


Unit: mm

System interface unit (MKS-X2700)



System interface unit (MKS-X7700)

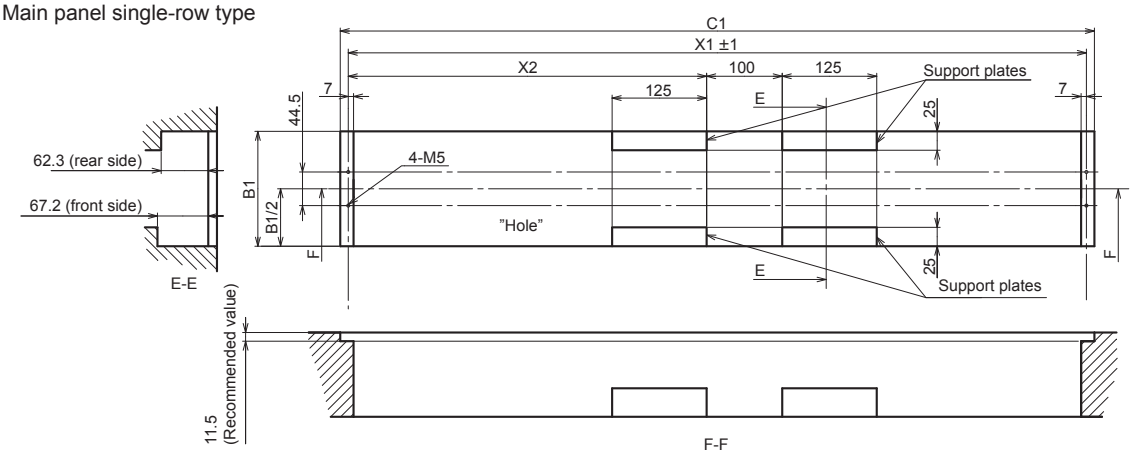


1-3-2. Installation Space

- When using the main panel or the AUX panel to be fit in the adjustment console, drill holes in the adjustment console with dimensions shown below.
- For dimensions B1, B2, B3, B4, B5, C1, and C2 in the figure below, refer to “Detailed dimensions of main panel/AUX panel” in Section 1-3-3 below.
- NARROW: A panel consisting of a module (row: XPT, width: 137 mm) and a module (row: XPT, width: 284 mm)

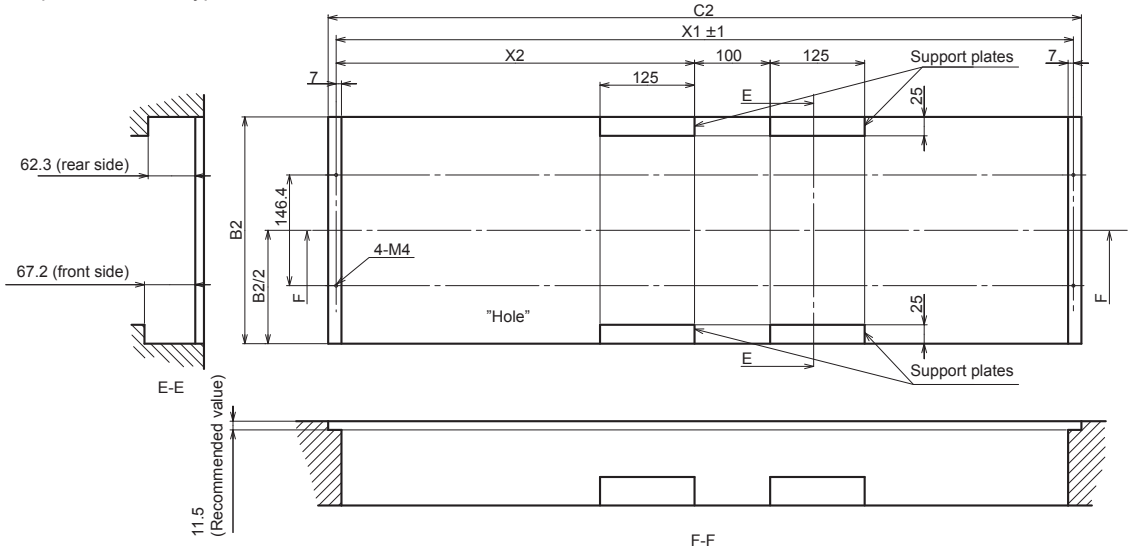
  STANDARD: A panel consisting of a module (row: XPT, width: 137 mm), a module (row: XPT, width: 210.5 mm), and a module (row: XPT, width: 284 mm)

Main panel single-row type



TYPE		X1	X2
NARROW	36XPT	1285	783
	28XPT	1131	628
	20XPT	976	474
STANDARD	36XPT	1505	783
	28XPT	1351	628
	20XPT	1196	474

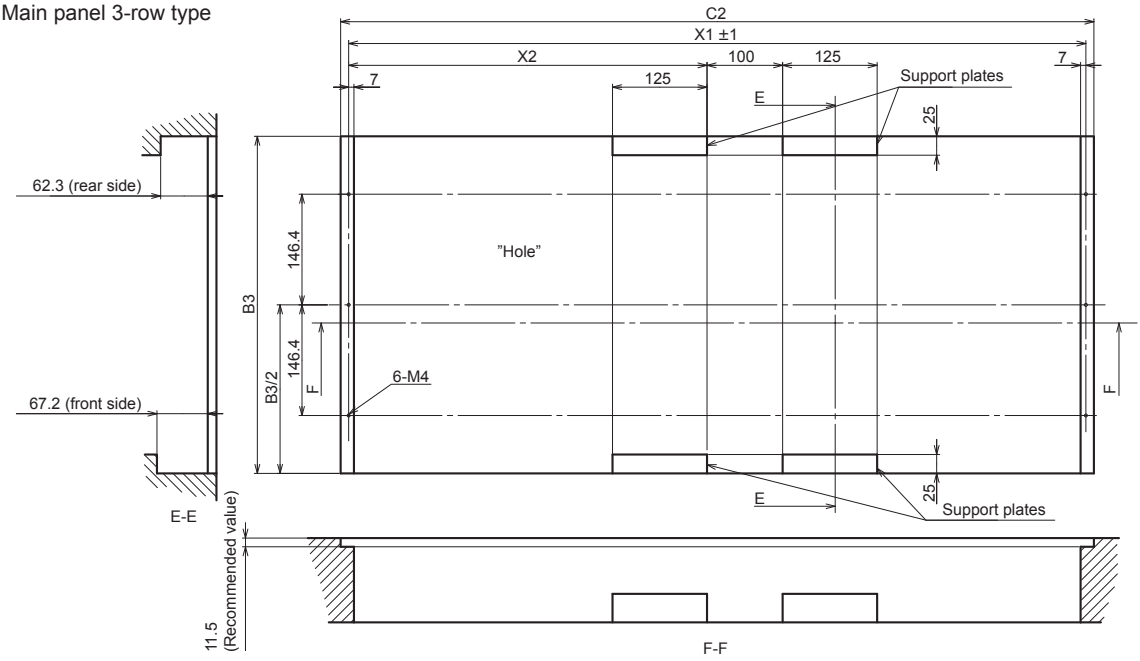
Main panel dual-row type



TYPE		X1	X2
NARROW	36XPT	1284	783
	28XPT	1130	628
	20XPT	975	474
STANDARD	36XPT	1504	783
	28XPT	1349	628
	20XPT	1195	474

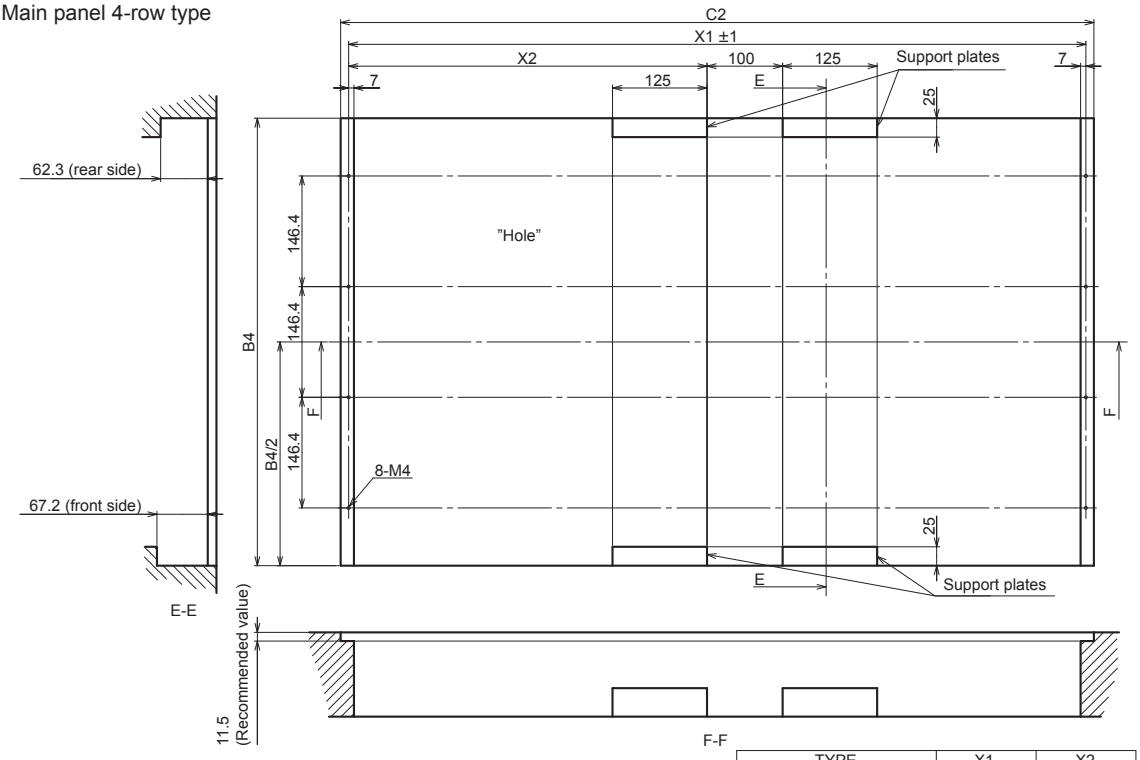
Unit: mm

Main panel 3-row type



TYPE		X1	X2
NARROW	36XPT	1284	783
	28XPT	1130	628
	20XPT	975	474
STANDARD	36XPT	1504	783
	28XPT	1349	628
	20XPT	1195	474

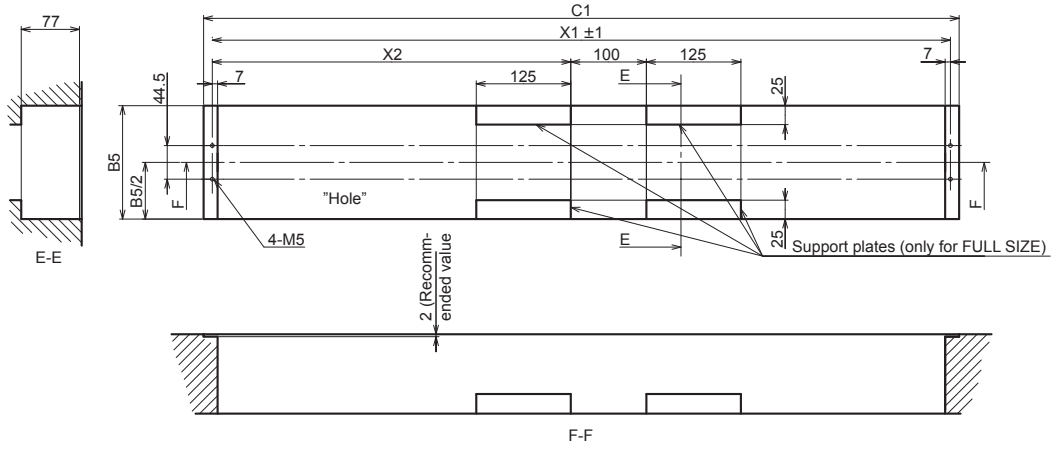
Main panel 4-row type



TYPE		X1	X2
NARROW	36XPT	1284	783
	28XPT	1130	628
	20XPT	975	474
STANDARD	36XPT	1504	783
	28XPT	1349	628
	20XPT	1195	474

Unit: mm

AUX panel



TYPE		X1		X2
		SHORT SIZE	FULL SIZE	FULL SIZE
NARROW	36XPT	845.7	1285	783
	28XPT	691.3	1131	628
	20XPT	536.9	976	474
STANDARD	36XPT	845.7	1505	783
	28XPT	691.3	1351	628
	20XPT	536.9	1196	474

Unit: mm

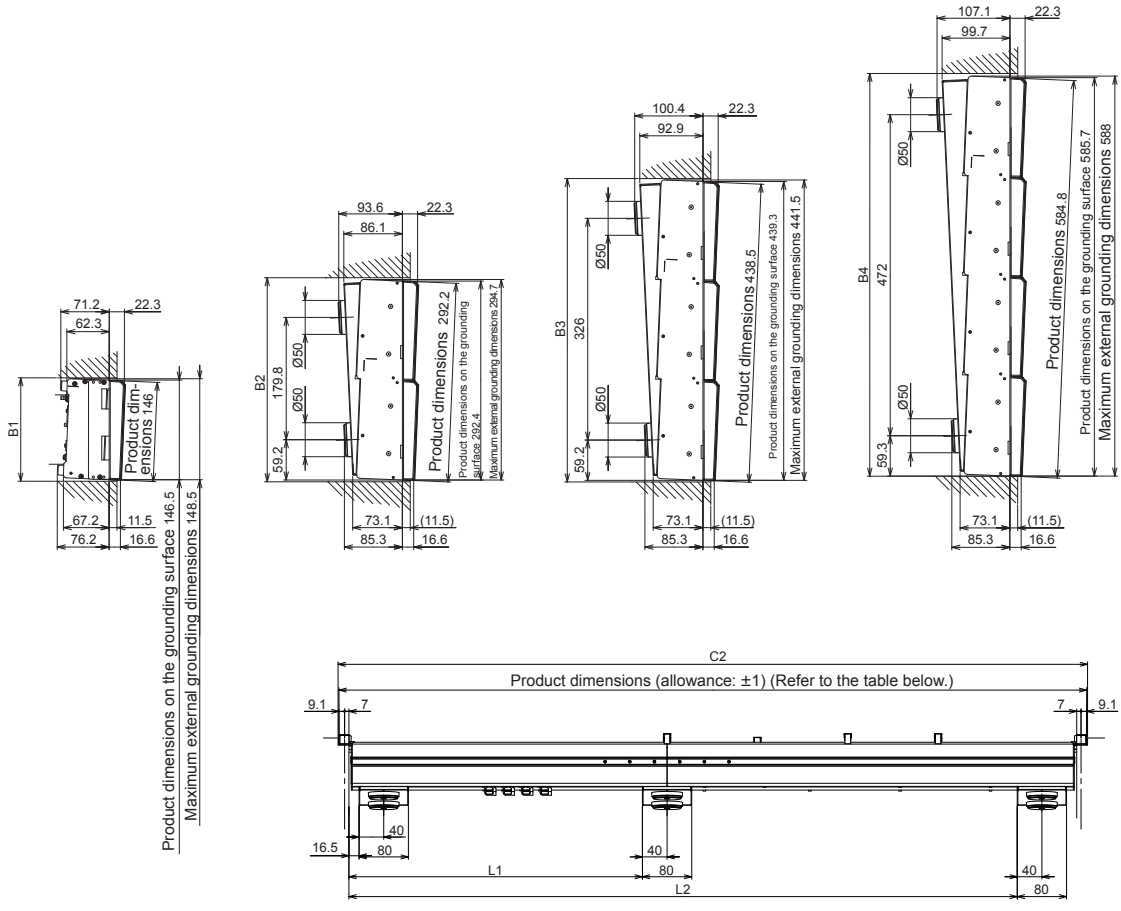
∗ SHORT SIZE: A panel consisting of only MKS-X7017/X7018/X7019
∗ FULL SIZE: A panel consisting of a combination of MKS-X7017/X7018/X7019 and the following model MKS-X7020/X7024/X7026/X7031TB/X7033/X7035, etc.

1-3-3. Detailed Dimensions

Detailed dimensions of main panel/AUX panel

Determine appropriate values for dimensions B1, B2, B3, B4, B5, C1, and C2 in the figures below, considering product dimensions, product dimensions on the mounting surface, and maximum external dimensions for installation so that the clearance between panel and adjustment console is not too large.

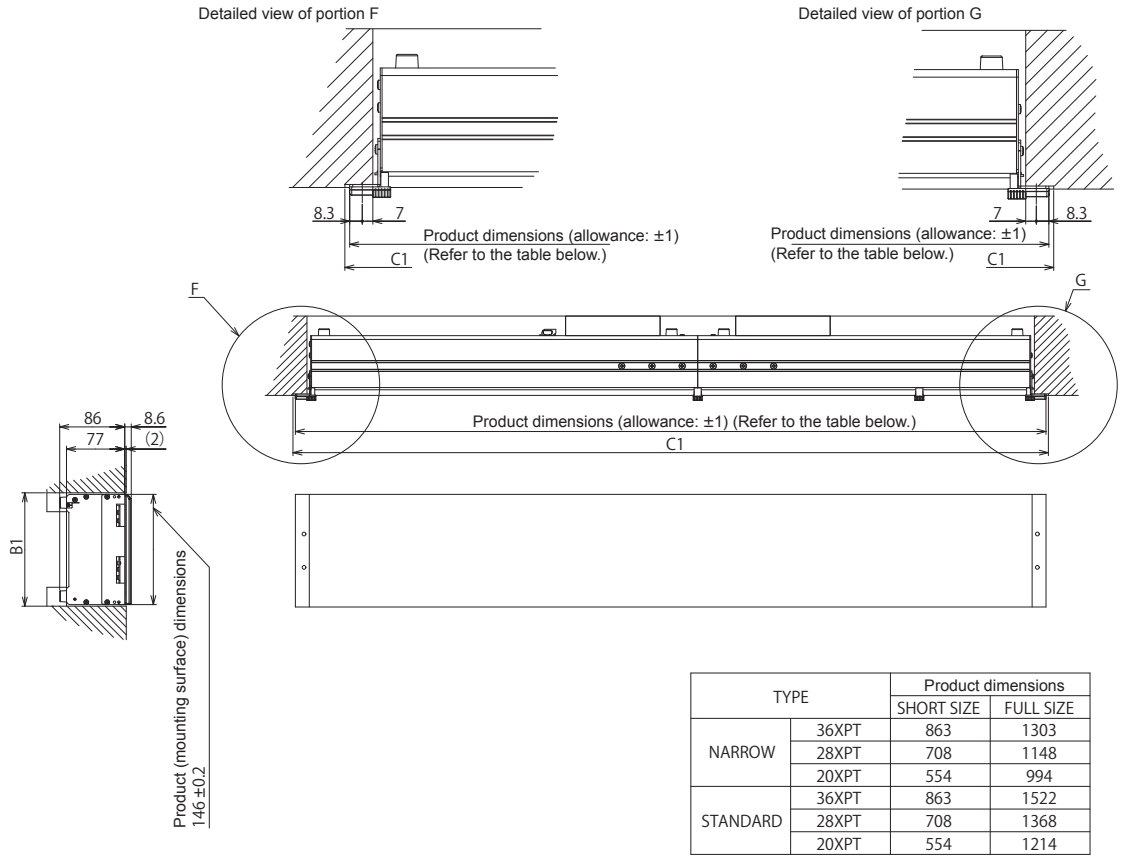
Main panel



TYPE		L1	L2	Product dimensions
NARROW	36XPT	785.1	1174	1303
	28XPT	630.7	1019	1148
	20XPT	476.3	864.6	994
STANDARD	36XPT	785.1	1393	1522
	28XPT	630.7	1239	1368
	20XPT	476.3	1085	1214

Unit: mm

AUX panel

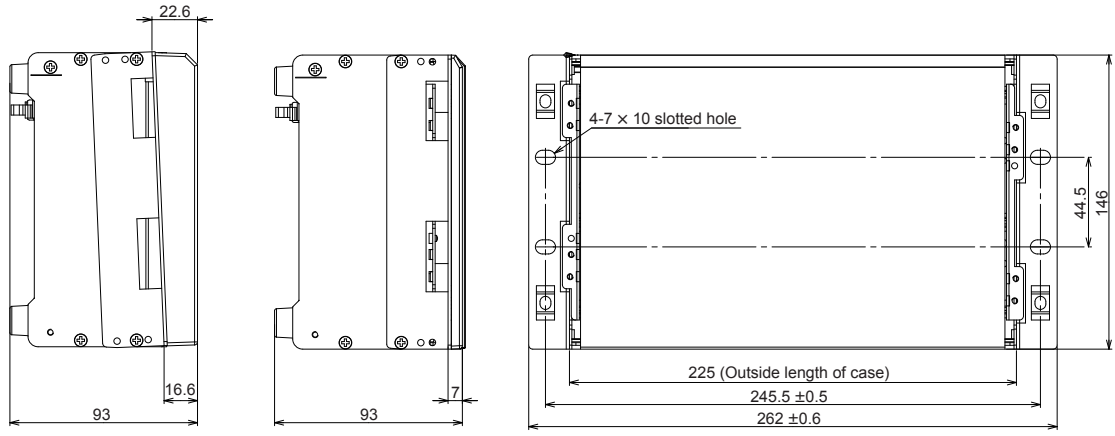


TYPE		Product dimensions	
		SHORT SIZE	FULL SIZE
NARROW	36XPT	863	1303
	28XPT	708	1148
	20XPT	554	994
STANDARD	36XPT	863	1522
	28XPT	708	1368
	20XPT	554	1214

Unit: mm

∗ SHORT SIZE: A panel consisting of only MKS-X7017/X7018/X7019
∗ FULL SIZE: A panel consisting of a combination of MKS-X7017/X7018/X7019 and the following model MKS-X7020/X7024/X7026/X7031TB/X7033/X7035, etc.

Extension adaptor (MKS-X7075)



(When side cap is used) (When supplied panel cover is used)

Unit: mm

1-4. Installing the Main Panel

Note

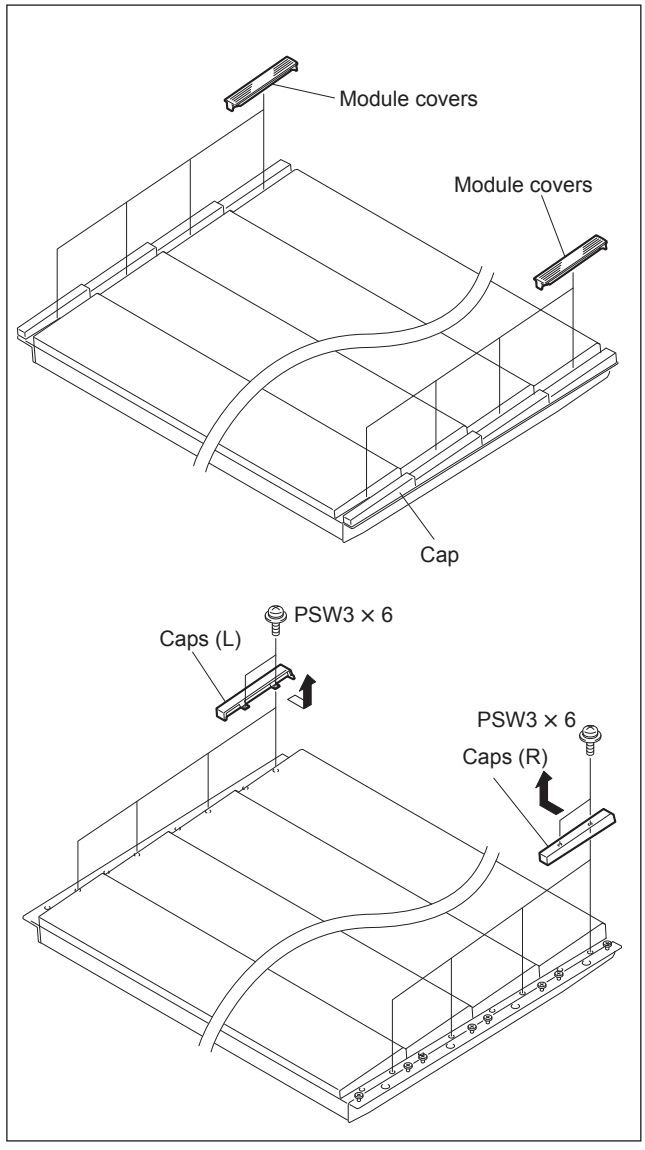
At least three persons are required to install the main panel to the adjustment console.
Perform the following procedure to install the main panel.

Prepare the following screws and washers.

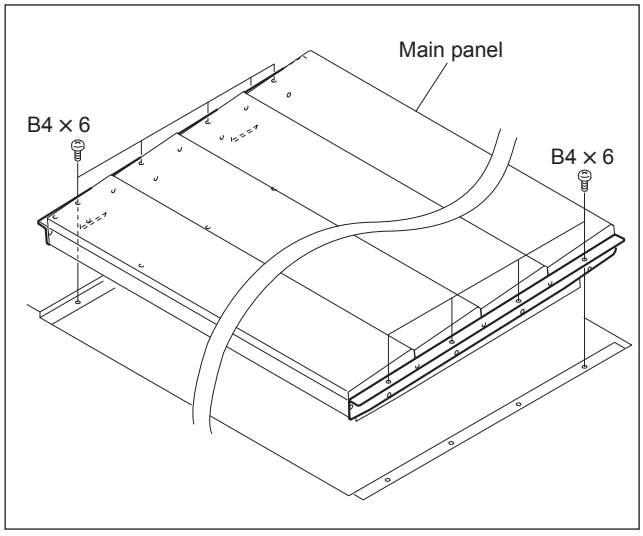
For 4-row type (4ME or 3ME AUX BUS integrated type)
Screw (B4 × 6): 8 pcs
For 3-row type (3ME AUX BUS separate type or 2ME AUX BUS integrated type)
Screw (B4 × 6): 6 pcs
For dual-row type (2ME AUX BUS separate type or 1ME AUX BUS integrated type)
Screw (B4 × 6): 4 pcs
For single-row type (1ME AUX BUS separate type or 1ME)

- Screw (B5 × 8): 4 pcs
- M5 washer (Sony part number: 7-688-005-11): 4 pcs

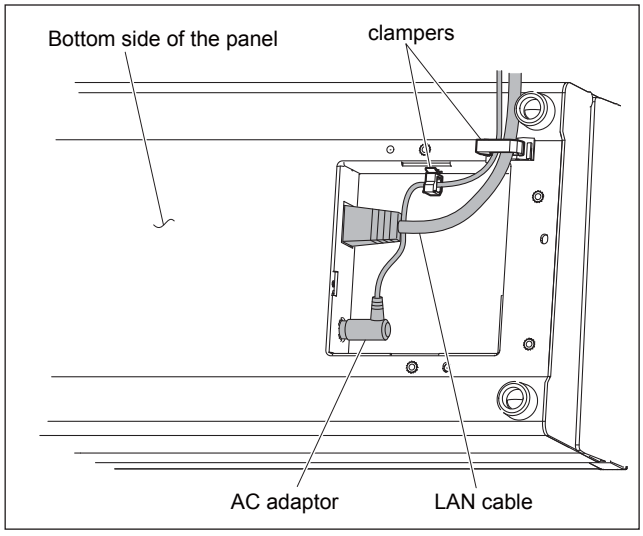
1. Remove the right and left module covers.
2. Remove the screws and detach the caps (L) and caps (R) in the direction of arrows.



3. Lift the main panel with two or more persons, and then place it on the adjustment console while supporting the main panel with another person.
4. Secure the main panel to the adjustment console with screws. (This figure shows 4-row type.)



5. Install the right module cover, left module cover, cap (L), and cap (R) by reversing steps 1 and 2.
6. Connect the AC adaptor and LAN cable, and clamp them with two clampers, after installing the main panel.



1-5. Installing the AUX panel

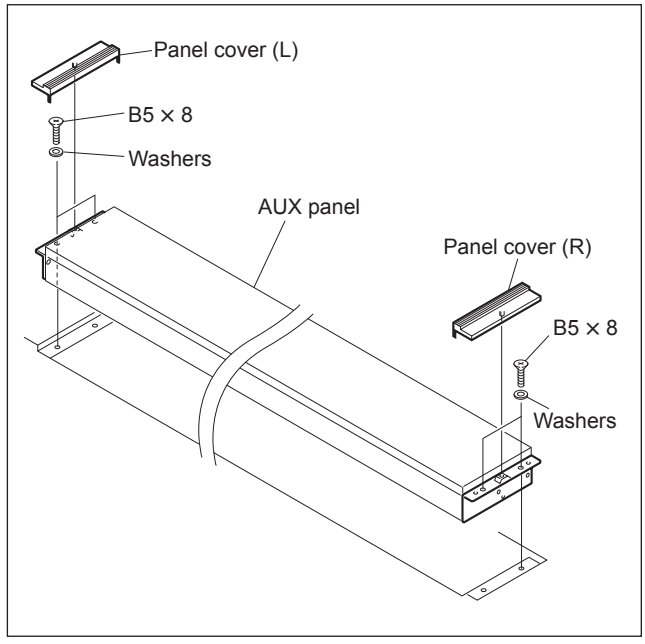
Note

At least two persons are required to install the AUX panel to the adjustment console.
Perform the following procedure to install the AUX panel.

Prepare the following screws and washers.

- Screw (B5 × 8): 4 screws
- M5 washer (Sony part number: 7-688-005-11): 4 washers

1. Detach the panel cover (L) and the panel cover (R) of the AUX panel.
2. Lift the AUX panel with two or more persons, and then place it on the adjustment console.
3. Secure the AUX panel to the adjustment console with screws and washers.
4. Attach the panel cover (L) and the panel cover (R).



5. Connect the AC adaptor and LAN cable, and clamp them with two clampers, after installing the AUX panel. (Refer to step 6 of Section 1-4)

1-6. Installing the Extension Adaptor

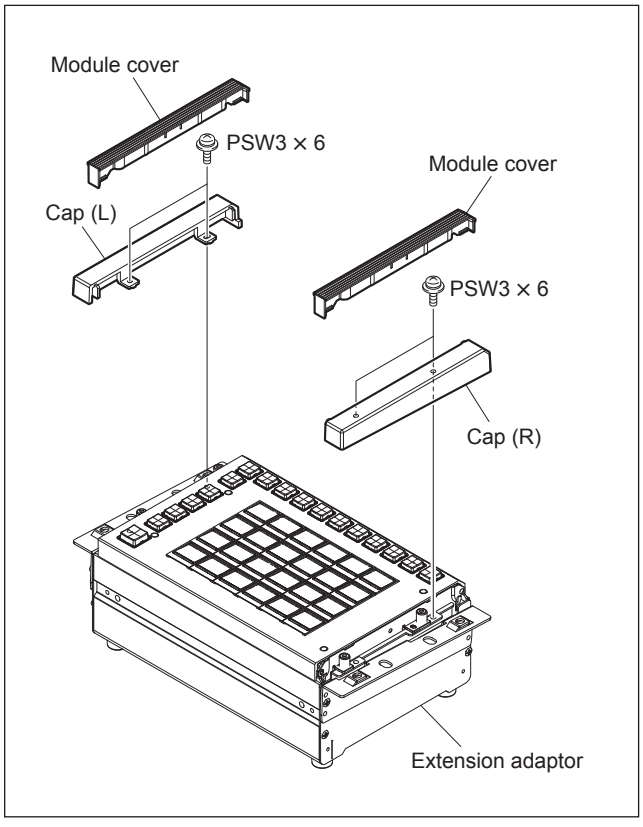
Tip

The panel is tilted when the extension adaptor (MKS-X7075) is shipped as in the case of main panel.
To install the panel on a level with the adjustment console, change the tab rack tool installation position.

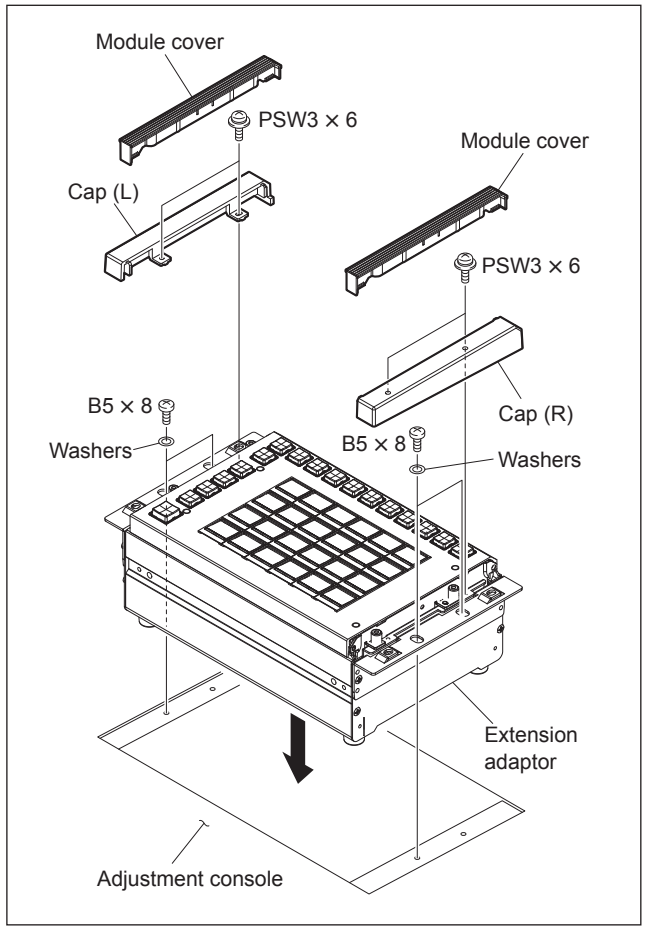
Prepare the following screws and washers.

- Screw (B5 × 8): 4 pcs
- M5 washer (Sony part number: 7-688-005-11): 4 pcs

1. Remove the right and left module covers.
2. Remove the four screws (PSW3 × 6) to detach the cap (L) and cap (R).



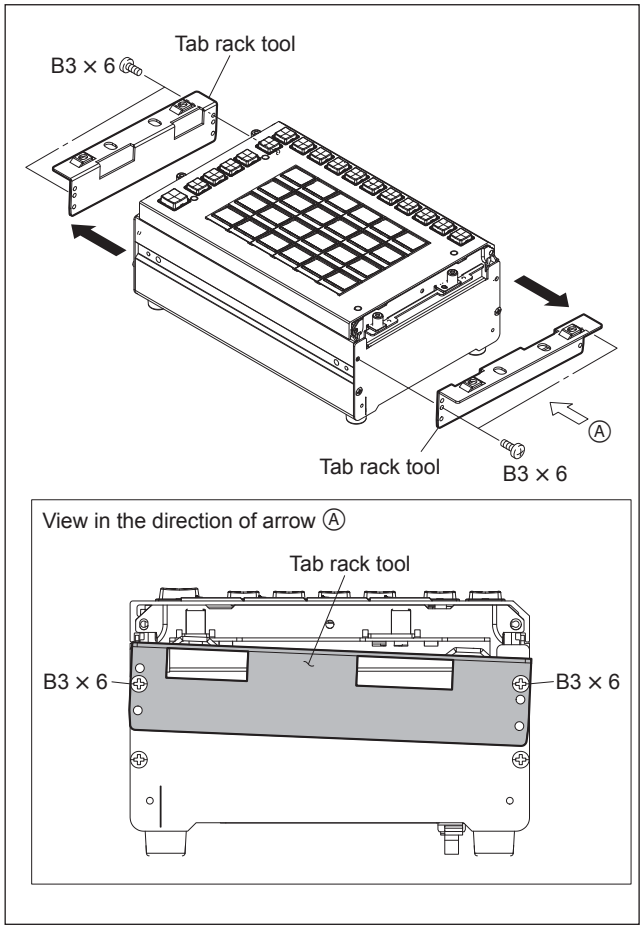
3. Place the extension adaptor on the adjustment console.
4. Secure the extension adaptor to the adjustment console with screws and washers.
5. Install the cap (L) and cap (R) with four screws.
6. Attach the module covers.



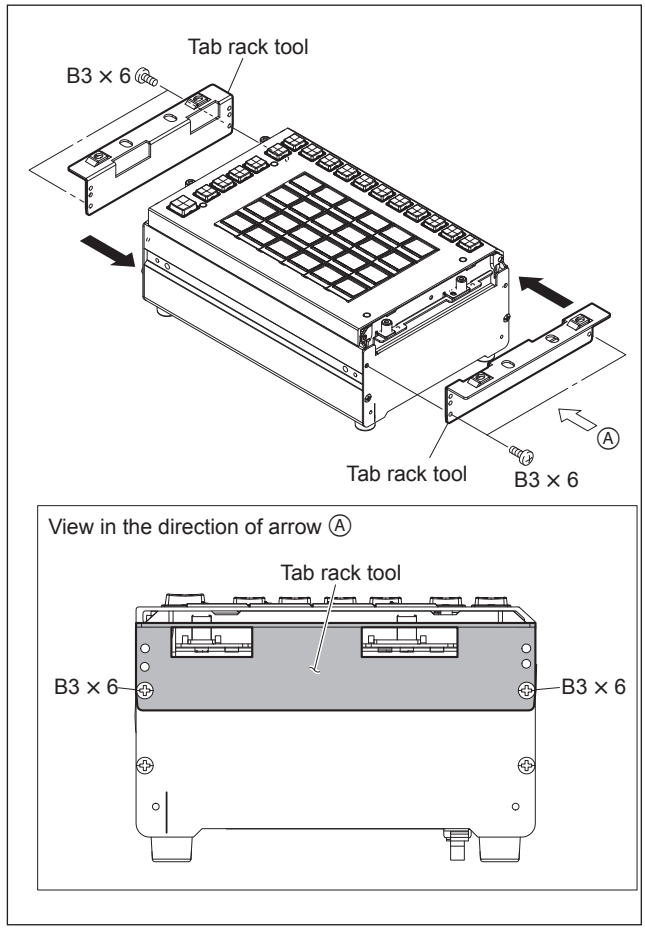
7. Connect the AC adaptor and LAN cable, and clamp them with two clampers, after installing the extension adaptor.

To make the panel horizontal

1. Remove the right and left module covers, cap (L), and cap (R). (Refer to steps 1 and 2 in this section.)
2. Remove the four screws to detach the tab rack tool.



3. Set the tab rack tool at the position shown in the figure, and then install it with four screws.

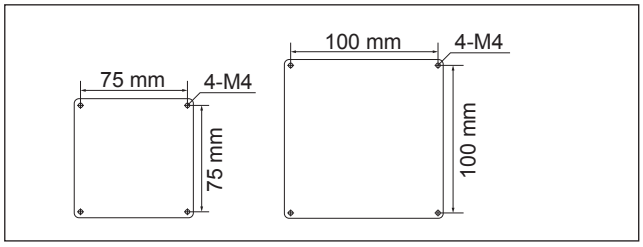


4. Install the extension adaptor. (Refer to steps 3 to 6 in this section.)
5. Connect the AC adaptor and LAN cable, and clamp them with two clampers, after installing the extension adaptor. (Refer to step 6 of Section 1-4)

1-7. Installing the Menu Panel

The menu panel (MKS-X7011) can be installed to the monitor arm (mounting dimensions below) conforming to the VESA standard by using the adaptor supplied with ICP-X7000.

Dimensional drawing of the adaptor mounting part (conforming to the VESA standard)



The following parts supplied with ICP-X7000 are required to install the menu panel.

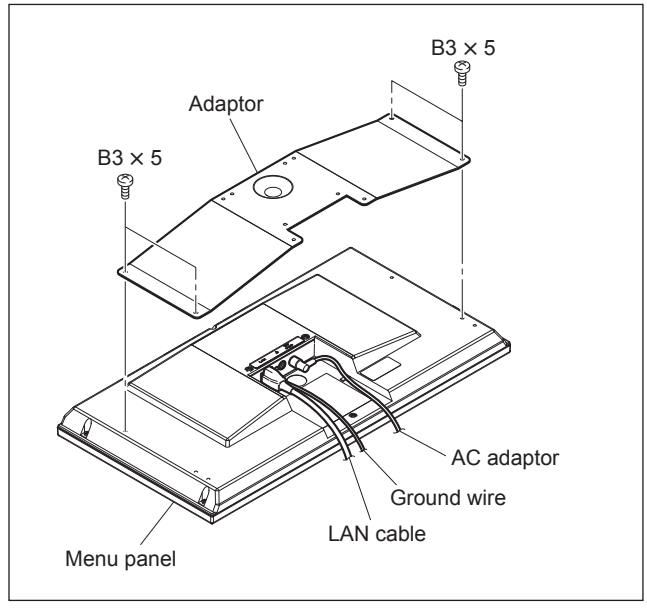
Note

Use the following specified accessories to install the menu panel.

- Adaptor
- Screw B3 × 5 (4 pcs)
- Screw B4 × 8 (4 pcs)
- AC adaptor (as needed)

Installation procedure

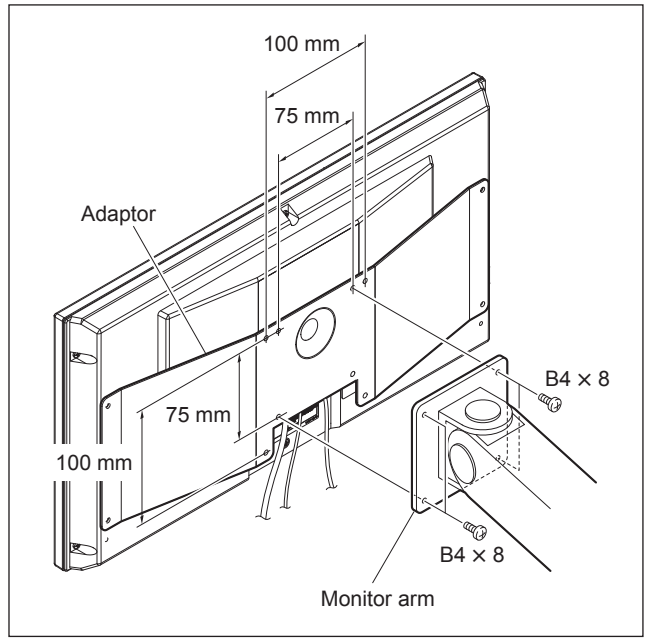
1. Connect the AC adaptor supplied with the menu panel, the LAN cable (commercially available), and the ground cable (commercially available).
2. Install the adaptor to the menu panel with the supplied four screws (B3 × 5).



3. Install the monitor arm (commercially available) to the adaptor with the supplied four screws (B4 × 8).

   Note

   Install the monitor arm according to the operation manual of the monitor arm.



1-8. Rack Mounting

The MKS-X2700/X7700 installs in a 19-inch standard rack. To mount the MKS-X2700/X7700 in a rack, use the specified rack mount kit and follow the procedure described below.

Specified rack mount kit: RMM-10

Note

If a rack mount kit other than the specified one is used, the unit may not correctly install in a 19-inch standard rack.

Parts of the RMM-10

- Rack tools 2 pcs
- Right rack mount adaptor 1 pc
- Left rack mount adaptor 1 pc
- Rack tool attaching screws 6 pcs
  (B4 × 6: 7-682-560-09)
- Adaptor attaching screws 6 pcs
  (B4 × 10: 7-682-562-09)

1. Precautions for rack mounting

WARNING

- To prevent the rack from falling or moving, fix the rack on a flat and steady floor using bolts or other fixings. If the rack falls due to the weight of the equipment, it may cause death or injury.
- Be sure to use the specified rack mount kit. If not, injury may result and the equipment may fall due to insufficient strength.
- After rack mounting, be sure to tighten the screws on the rack angle and fix the unit in the rack.

CAUTION

When mounting the unit in the rack, note the following:

- Be sure to carry out this work with two or more persons.
- Be sure to mount in the rack with two persons or more.
- Mount in the rack in a stable position.

Note

If several units are mounted in a rack, it is recommended that a ventilation fan is installed to prevent temperature rise inside the rack.

2. Rack mounting procedure

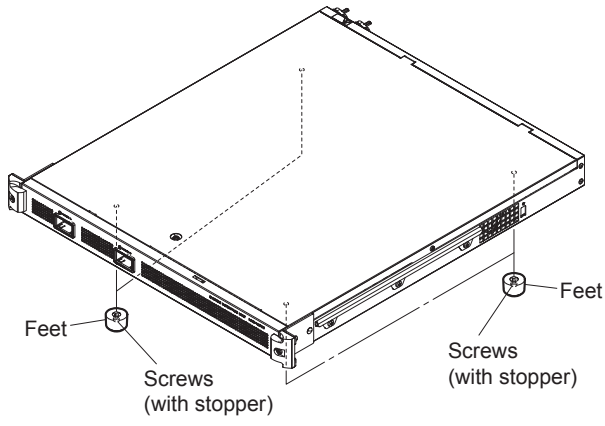
The following describes the rack mounting procedure using the rack mount kit RMM-10.

Note

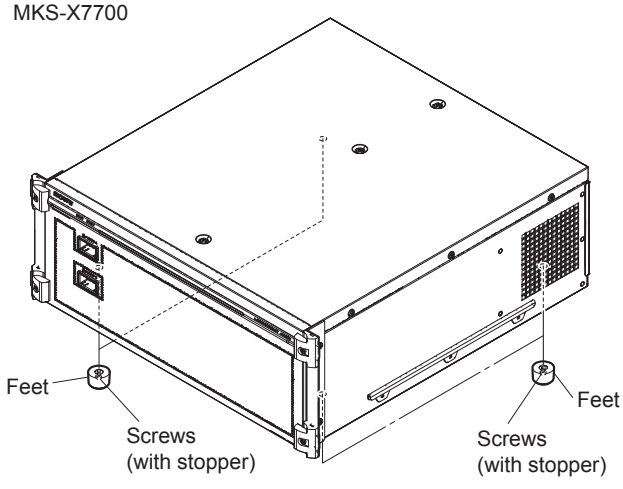
Tighten screws to the following torque.
Tightening torque
MKS-X2700: 0.8 N•m {8.13 kgf•cm}
MKS-X7700: 120×10^{-2} N•m {12.2 kgf•cm}

1. Sufficiently loosen the four screws (with stopper) to detach the four feet.

MKS-X2700



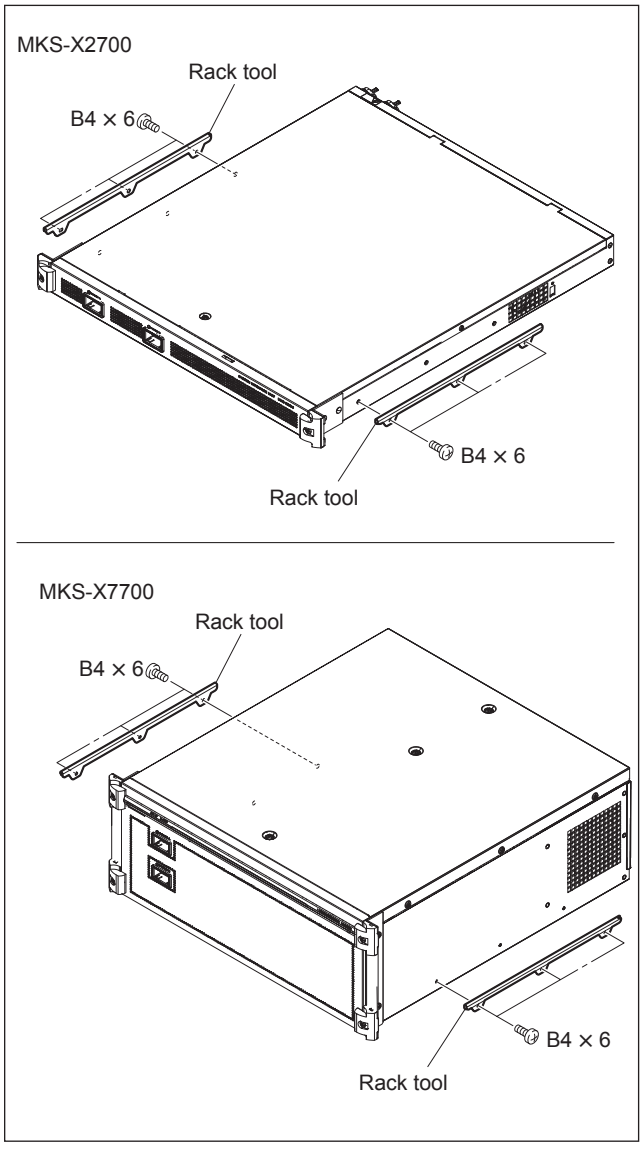
MKS-X7700



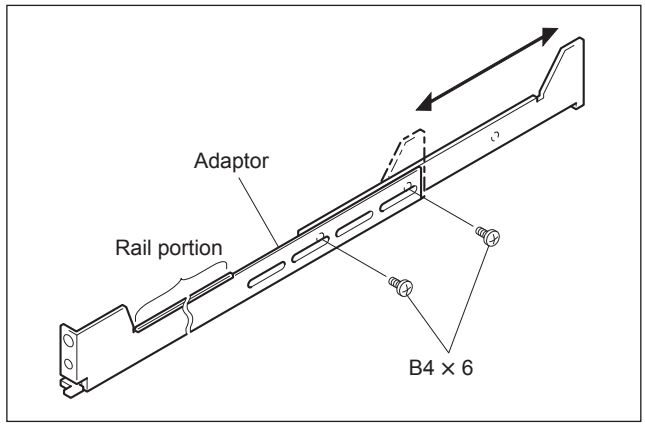
2. Attach the rack tools to the side panels of the unit with the specified six screws.

Note

Use B4 × 6 screws.



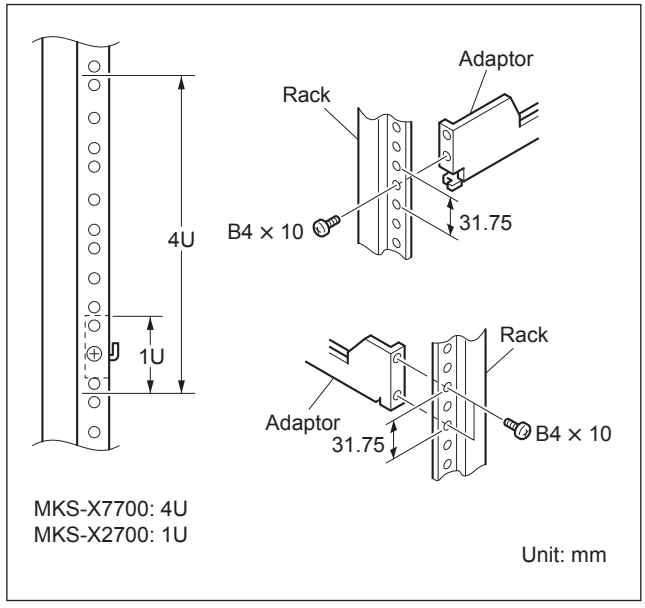
3. Loosen the screws on the rear of the right and left adaptors and adjust the length of the adaptor according to the depth of the rack.
(The illustration below shows the left adaptor.)



Tip

Maximum depth of adaptor: 750 mm
Minimum depth of adaptor: 595 mm

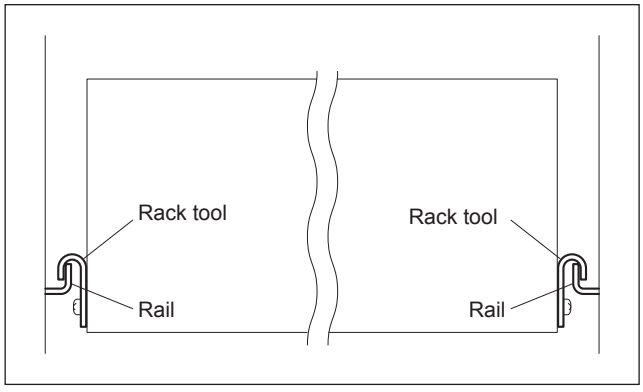
4. Attach the right and left adaptors to the rack completely using the specified six screws.
(The illustration below shows the left adaptor.)



5. Tighten the screws (B4 × 6: two screws each on the right and left) for adjusting the length of the adaptor completely (the screws that were loosened in step 3).
6. Align the groove of the rack tool at the side of the equipment with the rail, and slide the equipment to the rear.

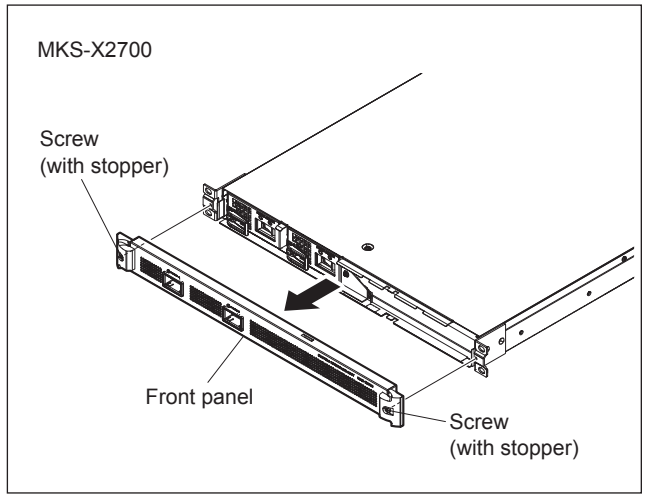
Tip

The rack tools are hooked on the rails as shown below.



MKS-X2700

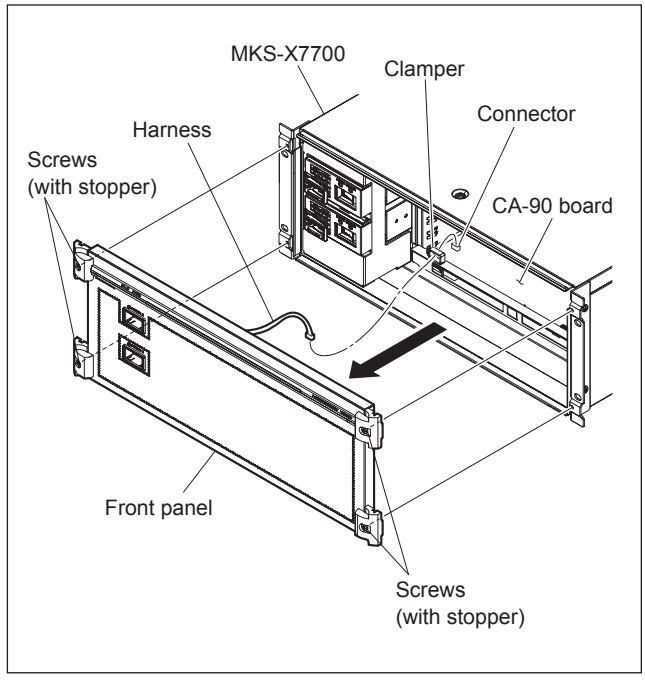
7. Loosen the two screws (with stopper) to detach the front panel.



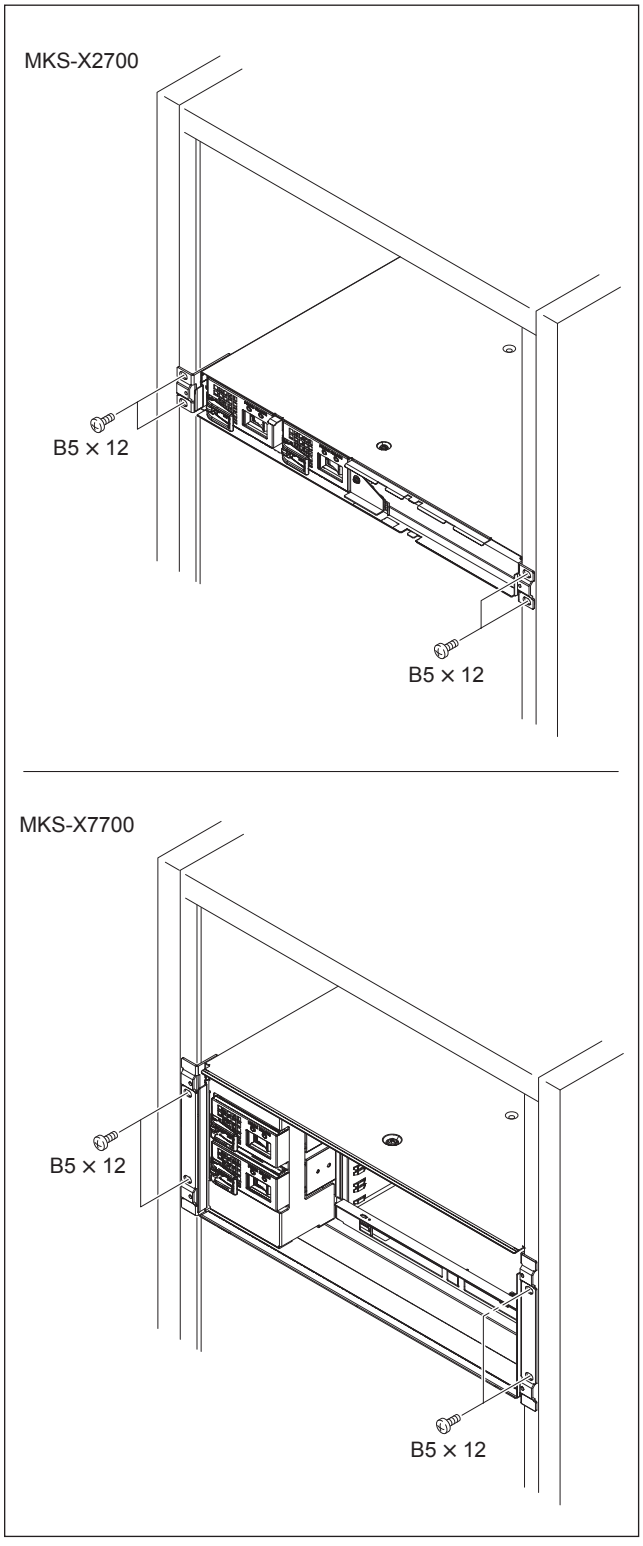
MKS-X7700

7. Perform the following procedure to detach the front panel.

(1) Loosen the four screws (with stopper) and draw the front panel.
(2) Open the clamper.
(3) Disconnect the harness from the connector on the CA-90 board, and then detach the front panel.



8. Fix the rack angle in the rack using the specified screws.



9. Attach the front panel to the equipment.

1-9. Matching Connectors and Cables

Use the following connectors, cables or equivalents when connecting cables to the unit.

Model name	Panel indication	Connector name	Matching connector and cable
			Name
MKS-X2700	REMOTE 1 to 6 SERIAL TALLY1, 2	D-sub 9pin, Female	D-sub 9-pin, Male
			Connector 9-pin, Male
			Junction Shell 9-pin
	TALLY/GPI OUT 1-18 TALLY/GPI OUT 19-36 TALLY/GPI IN 1-34	D-sub 37pin, Female	D-sub 37-pin, Male
			Connector 37-pin, Male
			Junction Shell 37-pin
	S-BUS REF IN	BNC, 75 Ω	Belden 1694 coaxial cable
	MVS UTIL	RJ-45 modular jack*1	CAT5e or equivalent*2
MKS-X7700	REMOTE1 to 4 SERIAL TALLY1, 2	D-sub 9pin, Female	D-sub 9-pin, Male
			Connector 9-pin, Male
			Junction Shell 9-pin
	TALLY/GPI IN 1-34 TALLY/GPI IN 35-68	D-sub 37pin, Female	D-sub 37-pin, Male
			Connector 37-pin, Male
			Junction Shell 37-pin
	S-BUS REF IN	BNC, 75 Ω	Belden 1694 coaxial cable
	MVS UTIL	RJ-45 modular jack*1	CAT5e or equivalent*2
MKS-X7701	TALLY/GPI OUT 1-18 TALLY/GPI OUT 19-36 TALLY/GPI OUT 37-54	D-sub 37pin, Female	D-sub 37-pin, Male
			Connector 37-pin, Male
			Junction Shell 37-pin
MKS-X7702	REMOTE1 to 6	D-sub 9pin, Female	D-sub 9-pin, Male
			Connector 9-pin, Male
			Junction Shell 9-pin
MKS-X7011	LAN*3	RJ-45 modular jack*1	CAT5e or equivalent*2
	DEVICE*4	USB Type A receptacle	
ICP-X7000	LAN*3	RJ-45 modular jack*1	CAT5e or equivalent*2
MKS-X7075			

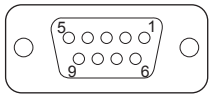
∗1: Conforms to IEEE 802.3 Ethernet 1000BASE-TX standard.
∗2: Shield type is recommended.
∗3: Compliance with PoE + (IEEE802.3at)
∗4: Compliance with USB2.0

1-10. Input/Output Signals of Connectors

Input and output signals of the connectors on the rear panel are as follows.

1-10-1. MKS-X2700

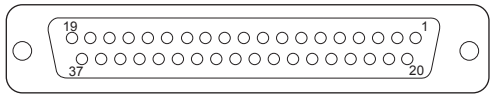
REMOTE 1 to 6
RS-422A (D-sub 9-pin, Female)
<CONTROLLER>to External Device
SERIAL TALLY1, 2
RS-422A (D-sub 9-pin, Female)
<CONTROLLER>to Tally Interface Unit



– External View –

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX–	Received data (–)
3	TX+	Transmitted data (+)
4	GND	Common ground
5	–	No Connection
6	GND	Common ground
7	RX+	Received data (+)
8	TX–	Transmitted data (–)
9	FG	Frame ground

TALLY/GPI OUT 1-18, TALLY/GPI OUT 19-36
(D-sub 37pin, Female)
Relay contacts 30 V 0.1 A



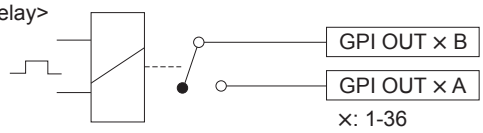
– External View –

Pin No.	Signal Name		Function
	TALLY/GPI OUT 1-18	TALLY/GPI OUT 19-36	
1	OUT_1A	OUT_19A	General-purpose relay output(A)*1
2	OUT_2A	OUT_20A	
3	OUT_3A	OUT_21A	
4	OUT_4A	OUT_22A	
5	OUT_5A	OUT_23A	
6	OUT_6A	OUT_24A	
7	OUT_7A	OUT_25A	
8	OUT_8A	OUT_26A	
9	OUT_9A	OUT_27A	
10	OUT_10A	OUT_28A	
11	OUT_11A	OUT_29A	
12	OUT_12A	OUT_30A	
13	OUT_13A	OUT_31A	
14	OUT_14A	OUT_32A	
15	OUT_15A	OUT_33A	
16	OUT_16A	OUT_34A	
17	OUT_17A	OUT_35A	
18	OUT_18A	OUT_36A	
19	GND	GND	GND
20	OUT_1B	OUT_19B	General-purpose relay output(B)*1
21	OUT_2B	OUT_20B	
22	OUT_3B	OUT_21B	
23	OUT_4B	OUT_22B	
24	OUT_5B	OUT_23B	
25	OUT_6B	OUT_24B	
26	OUT_7B	OUT_25B	
27	OUT_8B	OUT_26B	
28	OUT_9B	OUT_27B	
29	OUT_10B	OUT_28B	
30	OUT_11B	OUT_29B	
31	OUT_12B	OUT_30B	
32	OUT_13B	OUT_31B	
33	OUT_14B	OUT_32B	
34	OUT_15B	OUT_33B	
35	OUT_16B	OUT_34B	
36	OUT_17B	OUT_35B	
37	OUT_18B	OUT_36B	

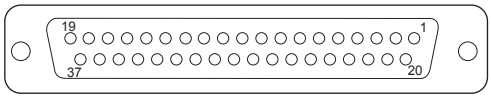
Note

A and B of the same number constitute a pair of relay contacts.

(*1) <Relay>



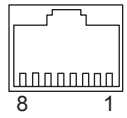
TALLY/GPI IN 1-34
(D-sub 37pin, Female)



– External View –

Pin No.	Signal Name	Function
1	GPI IN1	General-purpose input
2	GPI IN3	
3	GPI IN5	
4	GPI IN7	
5	GPI IN9	
6	GPI IN11	
7	GPI IN13	
8	GPI IN15	
9	GPI IN17	
10	GPI IN19	
11	GPI IN21	
12	GPI IN23	
13	GPI IN25	
14	GPI IN27	
15	GPI IN29	
16	GPI IN31	
17	GPI IN33	
18	GND	GND
19	GND	
20	GPI IN2	General-purpose input
21	GPI IN4	
22	GPI IN6	
23	GPI IN8	
24	GPI IN10	
25	GPI IN12	
26	GPI IN14	
27	GPI IN16	
28	GPI IN18	
29	GPI IN20	
30	GPI IN22	
31	GPI IN24	
32	GPI IN26	
33	GPI IN28	
34	GPI IN30	
35	GPI IN32	
36	GPI IN34	
37	GND	GND

MVS
UTIL
1000BASE-T
RJ-45 (8pin)

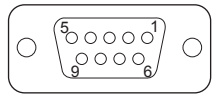


– External View –

Pin No.	Signal Name	Function
1	TRX1+	Transmitted/Received data (+)
2	TRX1–	Transmitted/Received data (–)
3	TRX2+	Transmitted/Received data (+)
4	TRX3+	Transmitted/Received data (+)
5	TRX3–	Transmitted/Received data (–)
6	TRX2–	Transmitted/Received data (–)
7	TRX4+	Transmitted/Received data (+)
8	TRX4–	Transmitted/Received data (–)

1-10-2. MKS-X7700

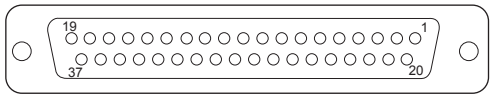
REMOTE 1 to 4
RS-422A (D-sub 9-pin, Female)
<CONTROLLER>to External Device
SERIAL TALLY1, 2
RS-422A (D-sub 9-pin, Female)
<CONTROLLER>to Tally Interface Unit



– External View –

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX–	Received data (–)
3	TX+	Transmitted data (+)
4	GND	Common ground
5	–	No Connection
6	GND	Common ground
7	RX+	Received data (+)
8	TX–	Transmitted data (–)
9	FG	Frame ground

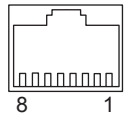
TALLY/GPI IN 1-34
TALLY/GPI IN 35-68
D-sub 37pin, Female



– External View –

Pin No.	Signal Name		Function
	TALLY/GPI IN 1-34	TALLY/GPI IN 35-68	
1	GPI IN1	GPI IN35	General-purpose input
2	GPI IN3	GPI IN37	
3	GPI IN5	GPI IN39	
4	GPI IN7	GPI IN41	
5	GPI IN9	GPI IN43	
6	GPI IN11	GPI IN45	
7	GPI IN13	GPI IN47	
8	GPI IN15	GPI IN49	
9	GPI IN17	GPI IN51	
10	GPI IN19	GPI IN53	
11	GPI IN21	GPI IN55	
12	GPI IN23	GPI IN57	
13	GPI IN25	GPI IN59	
14	GPI IN27	GPI IN61	
15	GPI IN29	GPI IN63	
16	GPI IN31	GPI IN65	
17	GPI IN33	GPI IN67	
18	GND	GND	GND
19	GND	GND	
20	GPI IN2	GPI IN36	General-purpose input
21	GPI IN4	GPI IN38	
22	GPI IN6	GPI IN40	
23	GPI IN8	GPI IN42	
24	GPI IN10	GPI IN44	
25	GPI IN12	GPI IN46	
26	GPI IN14	GPI IN48	
27	GPI IN16	GPI IN50	
28	GPI IN18	GPI IN52	
29	GPI IN20	GPI IN54	
30	GPI IN22	GPI IN56	
31	GPI IN24	GPI IN58	
32	GPI IN26	GPI IN60	
33	GPI IN28	GPI IN62	
34	GPI IN30	GPI IN64	
35	GPI IN32	GPI IN66	
36	GPI IN34	GPI IN68	
37	GND	GND	GND

MVS
UTIL
1000BASE-T
RJ-45 (8pin)

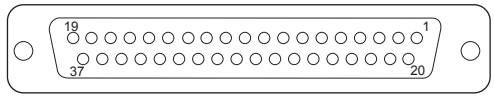


– External View –

Pin No.	Signal Name	Function
1	TRX1+	Transmitted/Received data (+)
2	TRX1–	Transmitted/Received data (–)
3	TRX2+	Transmitted/Received data (+)
4	TRX3+	Transmitted/Received data (+)
5	TRX3–	Transmitted/Received data (–)
6	TRX2–	Transmitted/Received data (–)
7	TRX4+	Transmitted/Received data (+)
8	TRX4–	Transmitted/Received data (–)

1-10-3. MKS-X7701

TALLY/GPI OUT 1-18, TALLY/GPI OUT 19-36
TALLY/GPI OUT 37-54
D-sub 37pin, Female, relay contacts 30 V 0.1 A



– External View –

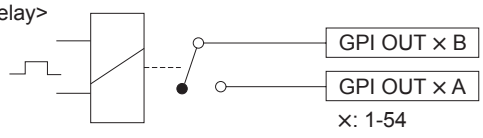
Pin No.	Signal Name			Function
	TALLY/ GPI OUT 1-18	TALLY/ GPI OUT 19-36	TALLY/ GPI OUT 37-54	
1	OUT_1A	OUT_19A	OUT_37A	General-purpose relay output(A)※1
2	OUT_2A	OUT_20A	OUT_38A	
3	OUT_3A	OUT_21A	OUT_39A	
4	OUT_4A	OUT_22A	OUT_40A	
5	OUT_5A	OUT_23A	OUT_41A	
6	OUT_6A	OUT_24A	OUT_42A	
7	OUT_7A	OUT_25A	OUT_43A	
8	OUT_8A	OUT_26A	OUT_44A	
9	OUT_9A	OUT_27A	OUT_45A	
10	OUT_10A	OUT_28A	OUT_46A	
11	OUT_11A	OUT_29A	OUT_47A	
12	OUT_12A	OUT_30A	OUT_48A	
13	OUT_13A	OUT_31A	OUT_49A	
14	OUT_14A	OUT_32A	OUT_50A	

Pin No.	Signal Name			Function
	TALLY/ GPI OUT 1-18	TALLY/ GPI OUT 19-36	TALLY/ GPI OUT 37-54	
15	OUT_15A	OUT_33A	OUT_51A	General-purpose relay output(A)*1
16	OUT_16A	OUT_34A	OUT_52A	
17	OUT_17A	OUT_35A	OUT_53A	
18	OUT_18A	OUT_36A	OUT_54A	
19	GND	GND	GND	GND
20	OUT_1B	OUT_19B	OUT_37B	General-purpose relay output(B)*1
21	OUT_2B	OUT_20B	OUT_38B	
22	OUT_3B	OUT_21B	OUT_39B	
23	OUT_4B	OUT_22B	OUT_40B	
24	OUT_5B	OUT_23B	OUT_41B	
25	OUT_6B	OUT_24B	OUT_42B	
26	OUT_7B	OUT_25B	OUT_43B	
27	OUT_8B	OUT_26B	OUT_44B	
28	OUT_9B	OUT_27B	OUT_45B	
29	OUT_10B	OUT_28B	OUT_46B	
30	OUT_11B	OUT_29B	OUT_47B	
31	OUT_12B	OUT_30B	OUT_48B	
32	OUT_13B	OUT_31B	OUT_49B	
33	OUT_14B	OUT_32B	OUT_50B	
34	OUT_15B	OUT_33B	OUT_51B	
35	OUT_16B	OUT_34B	OUT_52B	
36	OUT_17B	OUT_35B	OUT_53B	
37	OUT_18B	OUT_36B	OUT_54B	

Note

A and B of the same number constitute a pair of relay contacts.

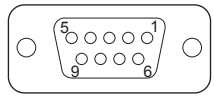
(*1) <Relay>



1-10-4. MKS-X7702

REMOTE1 to 6

D-sub 9pin, Female



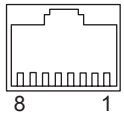
– External View –

Pin No.	Signal Name	Function
1	FG	Frame ground
2	RX–	Received data (–)
3	TX+	Transmitted data (+)
4	GND	Common ground
5	–	No Connection
6	GND	Common ground
7	RX+	Received data (+)
8	TX–	Transmitted data (–)
9	FG	Frame ground

1-10-5. MKS-X7011

LAN

1000BASE-T, PoE+, RJ-45 (8pin)

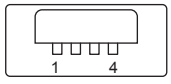


– External View –

Pin No.	Signal Name	Function
1	TRX1+	Transmitted/Received data (+)
2	TRX1–	Transmitted/Received data (–)
3	TRX2+	Transmitted/Received data (+)
4	TRX3+	Transmitted/Received data (+)
5	TRX3–	Transmitted/Received data (–)
6	TRX2–	Transmitted/Received data (–)
7	TRX4+	Transmitted/Received data (+)
8	TRX4–	Transmitted/Received data (–)

DEVICE

USB (Type A)



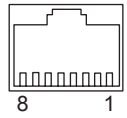
– External View –

Pin No.	Signal Name	Function
1	+5 V	USB Vcc
2	D–	USB DATA–
3	D+	USB DATA+
4	GND	Ground

1-10-6. ICP-X7000, MKS-X7075

LAN

1000BASE-T, PoE+, RJ-45 (8pin)



– External View –

Pin No.	Signal Name	Function
1	TRX1+	Transmitted/Received data (+)
2	TRX1–	Transmitted/Received data (–)
3	TRX2+	Transmitted/Received data (+)
4	TRX3+	Transmitted/Received data (+)
5	TRX3–	Transmitted/Received data (–)
6	TRX2–	Transmitted/Received data (–)
7	TRX4+	Transmitted/Received data (+)
8	TRX4–	Transmitted/Received data (–)

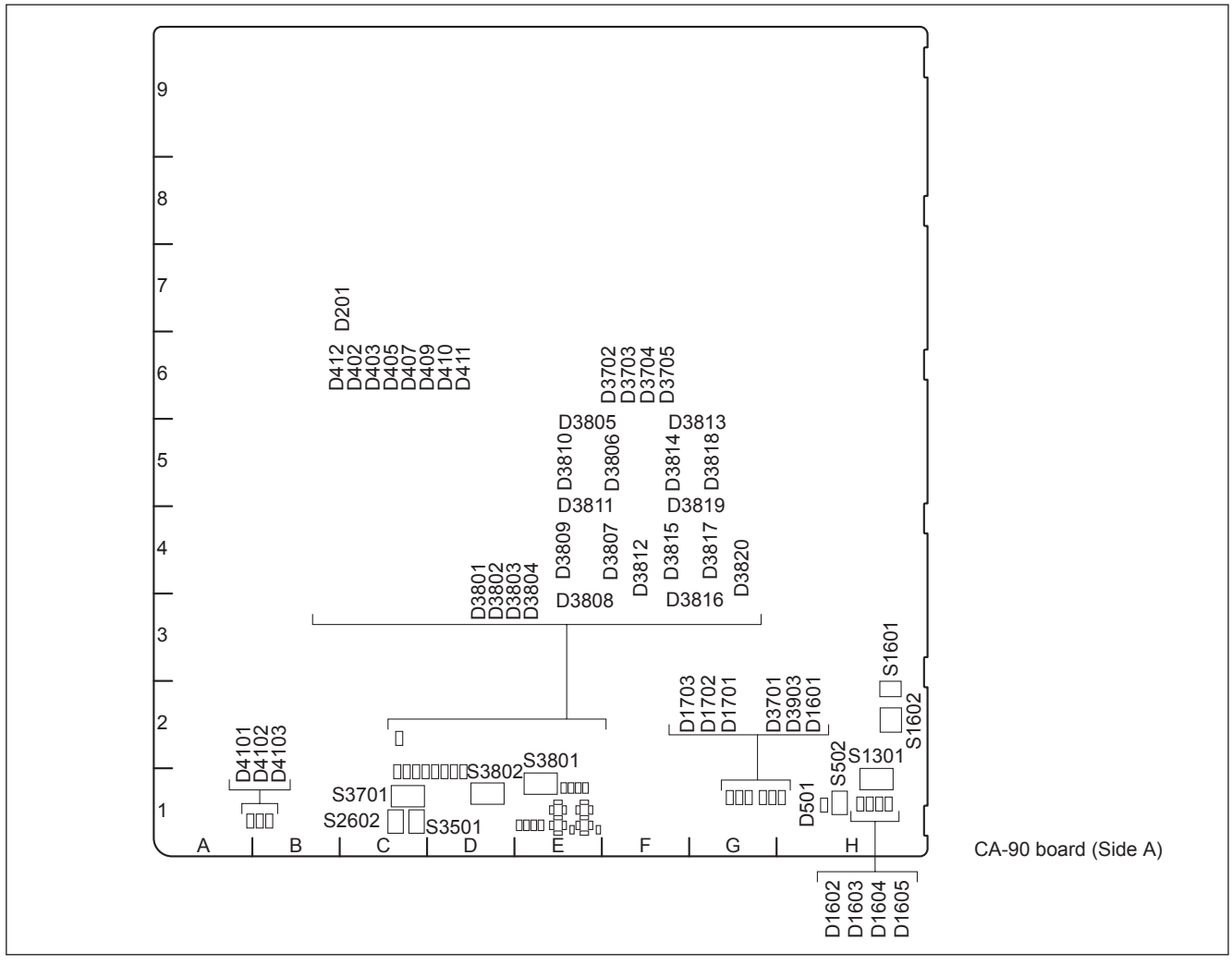
1-11. Description of On-board Switches and LEDs

Note

The number shown in the parentheses ( ) indicated the address on the circuit board.

1-11-1. MKS-X2700/MKS-X7700

CA-90 board



<LED>

D201 (C-2): 12 V

+12 V power supply status indication.
Lit when the +12 V power is supplied.
If this LED does not light, the fuse may have blown.

D402 (C-2): 1.0 V-1

+1.0 V-1 power supply status indication.
Lit when the +1.0 V power is supplied.

D403 (C-2): 1.0 V-2

+1.0 V-2 power supply status indication.
Lit when the +1.0 V power is supplied.

D405 (C-2): 1.2 V

+1.2 V power supply status indication.
Lit when the +1.2 V power is supplied.

D407 (D-2): 1.5 V

+1.5 V power supply status indication.
Lit when the +1.5 V power is supplied.

D409 (D-2): 2.5 V

+2.5 V power supply status indication.
Lit when the +2.5 V power is supplied.

D410 (D-2): 3.3 V
+3.3V power supply status indication.
Lit when the +3.3 V power is supplied.

D411 (D-2): 5.0 V
+5.0 V power supply status indication.
Lit when the +5.0 V power is supplied.

D412 (C-2): VTT
VTT power supply status indication.
Lit when the VTT power is supplied.

D501 (H-1): SWER_RST
This LED lights in the following when:
- Switch S502 is pressed
- A software reset request is received
- IC3 is not working correctly

D1602 to D1605 (H-1): SWR CADEC LED0, 1, 2, 3
Used only for design.

D3702 to D3705 (E-1): SCU CADEC LED0, 1, 2, 3
Used only for design.

D3801 to D3804 (E-1): SCU_DBG LED1, 2, 3, 4
Used only for design.

D3805 to D3820 (E-1): SCU STATUS
SIU CPU status indication.

D4101, D4102, D4103 (A-1, B-1): SCU NIOS
CPU of NIOS8SB FPGA (IC5) status indication.

D1601 (H-1): CADEC1 DONE
This LED goes out when configuration of the CADEC1 FPGA (IC1) is completed.

D1701 (G-1): NO LOCK
REF IN status indication.
This LED lights when the setting for the format of signals that are input to the REF IN connector differs from the SIU format setting.

D1702 (G-1): NO ALIGN
This LED indicates the alignment status of the internal REF signal generated from REF IN.
This LED is lit when the alignment is deviated.

D1703 (G-1): NO REF
REF IN status indication.
This LED is unlit while the REF signal is input to the REF IN connector, and is lit while the REF signal is not recognized.

D3701 (G-1): CADEC2 DONE
This LED goes out when configuration of the CADEC2 FPGA (IC4) is completed.

D3903 (G-1): NIOS DONE
This LED goes out when configuration of the NIOS8SB FPGA (IC5) is completed.

<Switch>

S502 (H-1): RESET switch
This switch is used to reset the SIU to reboot it.

S1301 (H-1): GROUP ID, UNIT ID Switch
This switch is used to set GROUP ID and UNIT ID connected to the MVS LAN.
Bits 1 to 4 are used to set GROUP ID and bits 5 to 8 are used to set UNIT ID.
Bits 1 and 5 were set to ON and other bits were set to OFF in the factory default setting.

S1601 (H-2): GPI SW1 Switch
This switch is used to select the TTL level of TALLY/GPI INPUT signals (IN33, IN34, IN67, and IN68) or +12 V.

S1602 (H-2): GPI SW2 Switch
Reserved for future functional extension.
This switch is used to select the TTL level of TALLY/GPI INPUT signals (IN101, IN102, IN135, IN136,IN169 and IN170) or +12 V.

S3701 (C-1): SCU CADEC SW Switch
Used only for design.

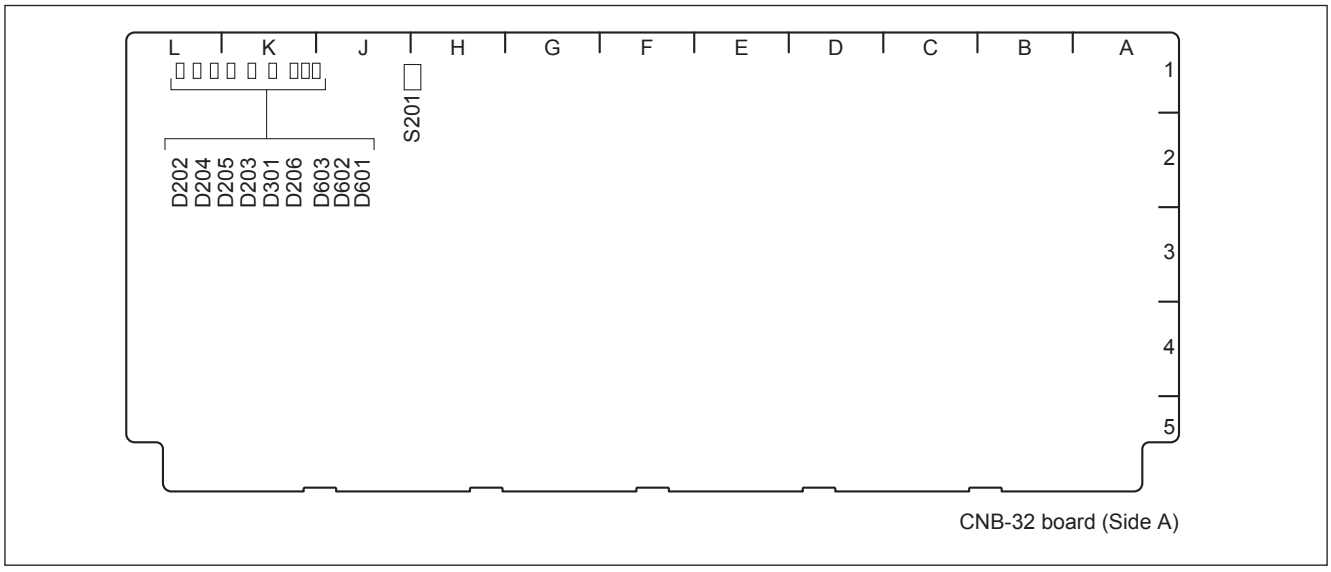
S3801 (E-1): STATION ID Switch
This switch is used to set STATION ID connected to the SBUS.
This switch is used to connect an external routing switcher to the SBUS connector.
Bit 2 was set to ON and other bits were set to OFF in the factory default setting.

S3802 (D-1): SCU DBG SW Switch
Used only for design.

S2602 (C-1): NIOS8SB_RESET Switch
Reset switch for the NIOS8SB(IC5).

S3501 (C-1): SCU MON Switch
The SIU CPU runs in the monitor mode when switch S502 is pressed while this switch is being pressed or when power is turned on.

CNB-32 board (MKS-X7702)/CNB-32A board (MKS-X7700)



∗: Only CNB-32 board.

<LED>

D203 (K-1): +12 V
+12 V power supply status indication.
Lit green when the +12 V power is supplied.

D205 (L-1): +3.3 V
+3.3 V power supply status indication.
Lit green when the +3.3 V power is supplied.

D204* (L-1): +2.5 V
+2.5 V power supply status indication.
Lit green when the +2.5 V power is supplied.

D202* (L-1): +1.2 V
+1.2 V power supply status indication.
Lit green when the +1.2 V power is supplied.

D301* (K-1): CFG ERR (IC1: EP3C25F324C8N FPGA)
This LED indicates a configuration error of IC1 (EP-3C25F324C8N FPGA).
While this LED is lit red, IC1 may not be working correctly.

D206* (K-1): RST_LED (IC1: EP3C25F324C8N FPGA)
This LED indicates the IC1 (EP3C25F324C8N FPGA) reset state.
While this LED is lit green, IC1 is in the reset state.

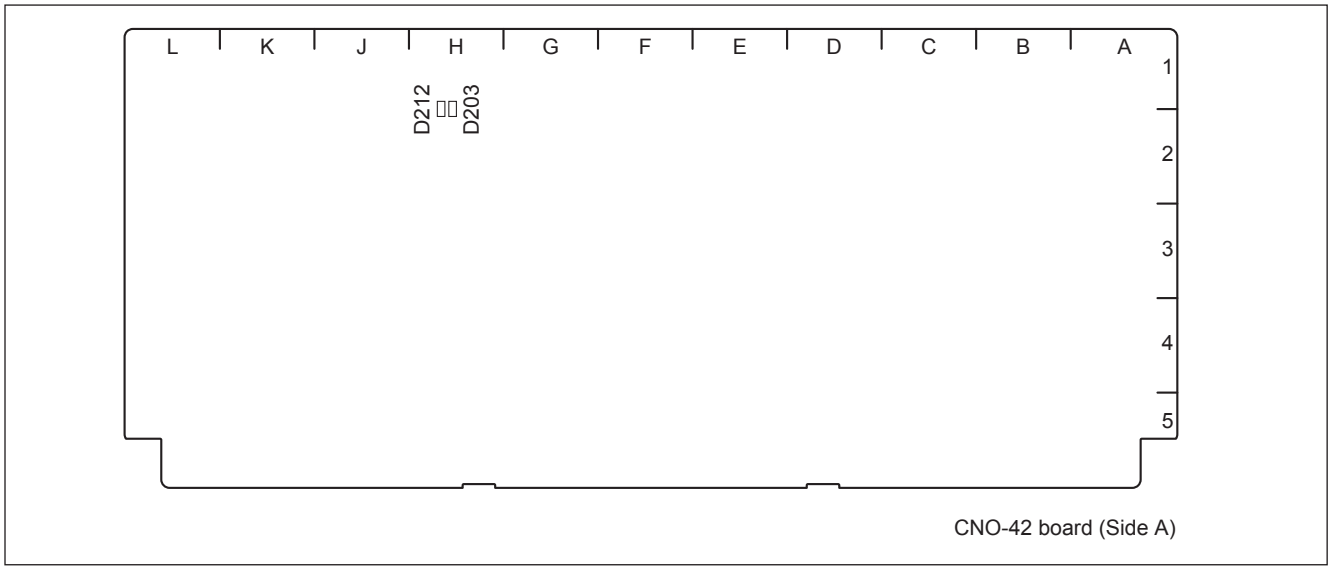
This LED lights green when:
- Switch S201* (RST_SW) is pressed
- A reset request is made from the CA-90 board

D601*, D602*, D603* (K-1): STATUS0, 1, 2
The status indication of the built-in CPU of IC1 (EP-3C25F324C8N FPGA).
All of these LEDs are lit green while IC1 is working correctly.

<Switch>

S201* (H-1): RST_SW
This switch is used to reset the IC1 (EP3C25F324C8N FPGA).
Pressing this switch initializes IC1.

CNO-42 board (MKS-X7701)



<LED>

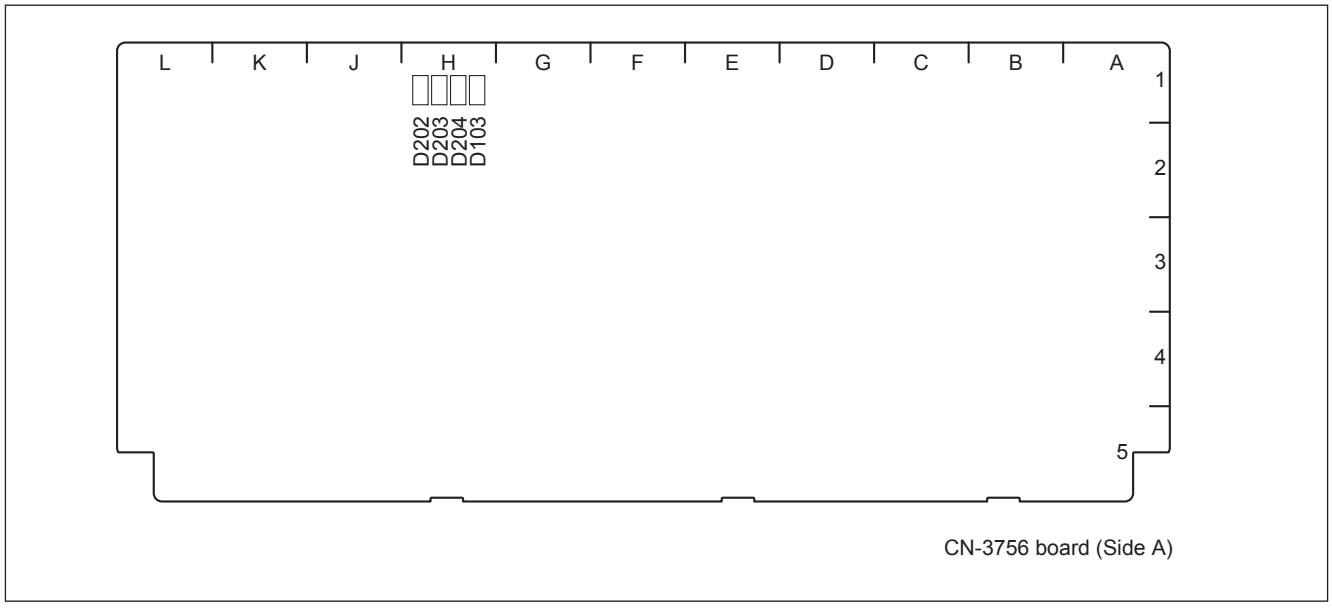
D203 (H-2): 12 V

+12 V power supply status indication.
Lit when the +12 V power is supplied.
If this LED does not light, the fuse may have blown.

D212 (H-2): 3.3 V

+3.3 V power supply status indication.
Lit when the +3.3 V power is supplied.

CN-3756 board



<LED>

D103 (H-1): 12 V

+12 V power supply status indication.
Lit when the +12 V power is supplied.
If this LED does not light, the fuse may have blown.

D202 (H-1): 5 V-A

+5 V -A power supply status indication.
Lit when the +5 V -A power is supplied.

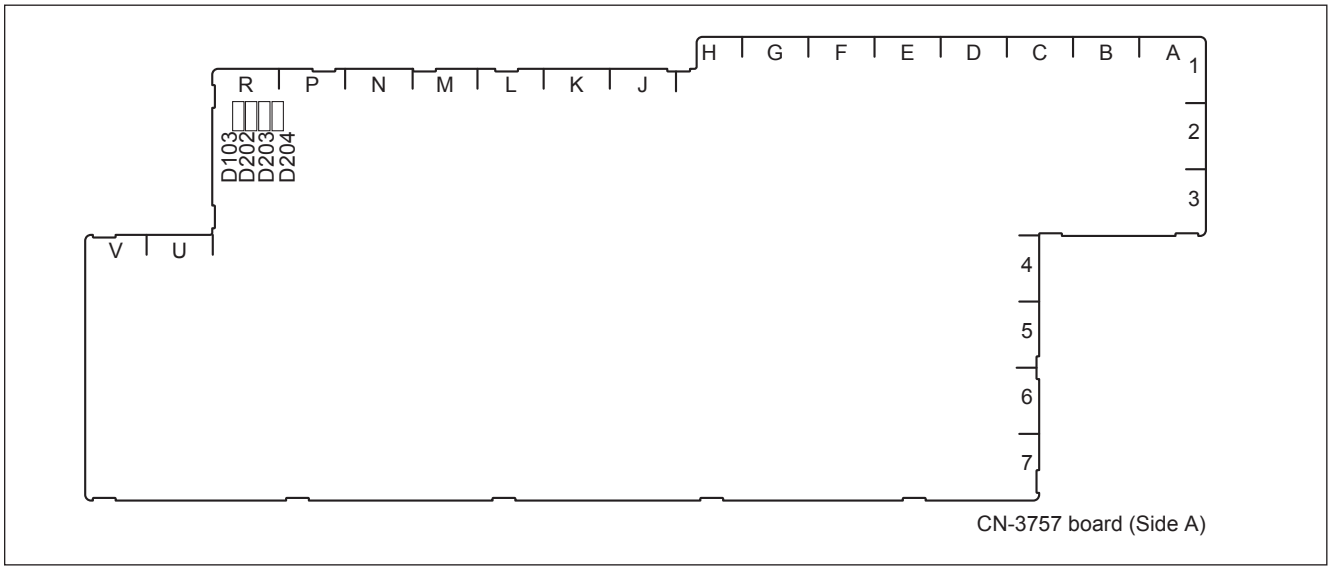
D203 (H-1): 5 V-SBUS

+5.0 V-SBUS power supply status indication.
Lit when the +5.0 V-SBUS power is supplied.

D204 (H-1): 3.3 V

+3.3V power supply status indication.
Lit when the +3.3 V power is supplied.

CN-3757 board



<LED>

D103 (R-2): 12 V

+12 V power supply status indication.
Lit when the +12 V power is supplied.
If this LED does not light, the fuse may have blown.

D202 (R-2): 5 V-A

+5 V-A power supply status indication.
Lit when the +5 V-A power is supplied.

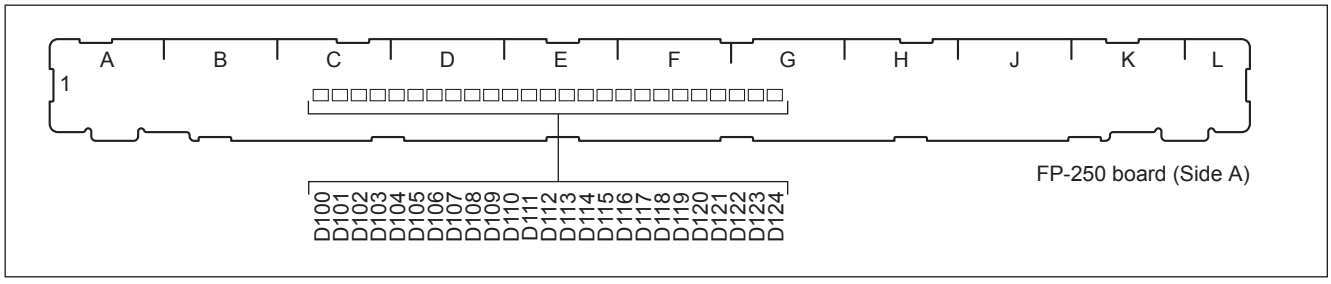
D203 (R-2): 5 V-SBUS

+5.0 V-SBUS power supply status indication.
Lit when the +5.0 V-SBUS power is supplied.

D204 (R-2): 3.3 V

+3.3V power supply status indication.
Lit when the +3.3 V power is supplied.

FP-250 board

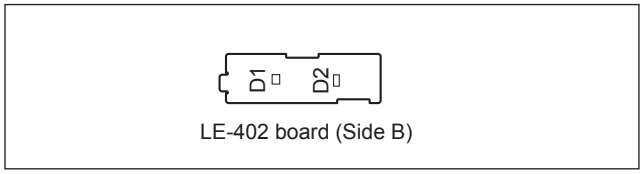


<LED>

D100 (C-1): POWER
D101 (C-1): POWER
D102 (C-1): POWER
D103 (C-1): POWER
D104 (D-1): POWER
D105 (D-1): POWER
D106 (D-1): POWER
D107 (D-1): POWER
D108 (D-1): POWER
D109 (D-1): POWER
D110 (E-1): POWER
D111 (E-1): POWER
D112 (E-1): POWER
D113 (E-1): POWER
D114 (E-1): POWER
D115 (E-1): POWER
D116 (F-1): POWER
D117 (F-1): POWER
D118 (F-1): POWER
D119 (F-1): POWER
D120 (F-1): POWER
D121 (F-1): POWER
D122 (G-1): POWER
D123 (G-1): POWER
D124 (G-1): POWER

Power supply status indication.
This LED is lit when +5 V is supplied from CA-90 board correctly.

LE-402 board



LE-402 board (Side B)

<LED>

D1: POWER

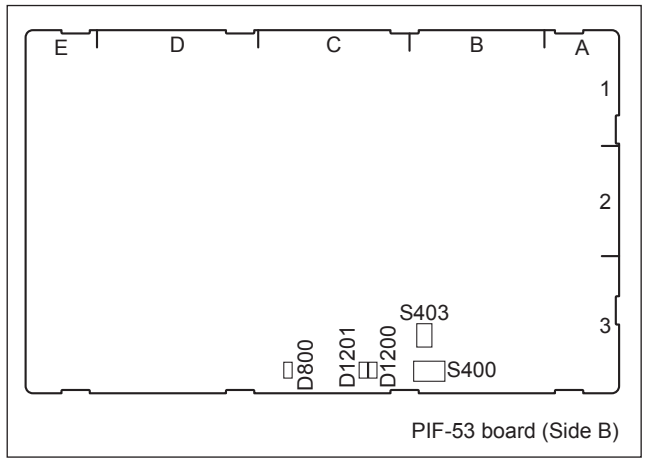
Power supply unit status indication.
This LED is lit green while +12 V is normally output and the fans in the power supply unit are normally rotating.
This LED lights red when +12 V becomes abnormal or any fan in the power supply unit malfunctions.

D2: BEACON

Not used.

1-11-2. ICP-X7000/MKS-X7075

PIF-53 board



PIF-53 board (Side B)

<LED>

D800 (C-3): FPGA Config

This LED lights when configuration of the FPGA is completed, and it flashes when CPU is boot.

D1200 (C-3): LINL

This LED lights when the Ethernet links.

D1201 (C-3): ACT

This LED is flashed while the Ethernet is in communication.

<Switch>

S400 (B-3): MODE setting

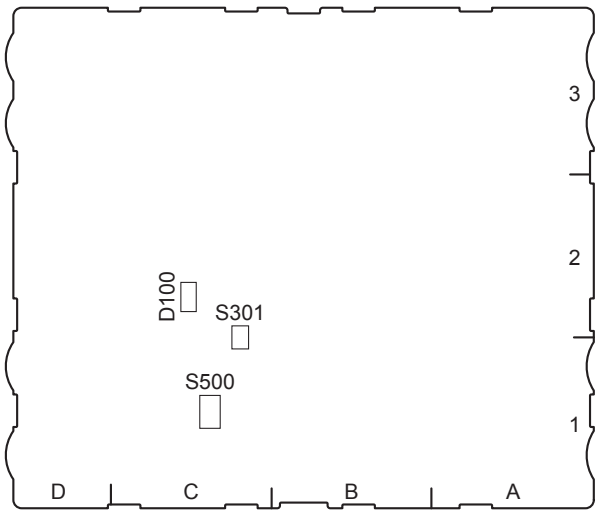
Function		Factory default setting
S400-1 (Bit1)	Boot Device	OFF
	ON: SD Card	
	OFF: Nor Flash	
S400-2 (Bit2)	Reserved	OFF
S400-3 (Bit3)	Reserved	OFF
S400-4 (Bit4)	Reserved	OFF
S400-5 (Bit5)	Boot Mode	OFF
	ON: NBL	
	OFF: CE-Linux	
S400-6 (Bit6)	Boot Mode for CE-Linux	OFF
	ON: Recovery	
	OFF: Normal	
S400-7 (Bit7)	Reserved	OFF
S400-8 (Bit8)	Reserved	OFF

S403 (B-3): Reset

This switch is used to reset PIF-53/MPU-163 board hardware.

KY-724 board (MKS-X7018/MKS-X7019)

<LED>



KY-724 board (Side A)

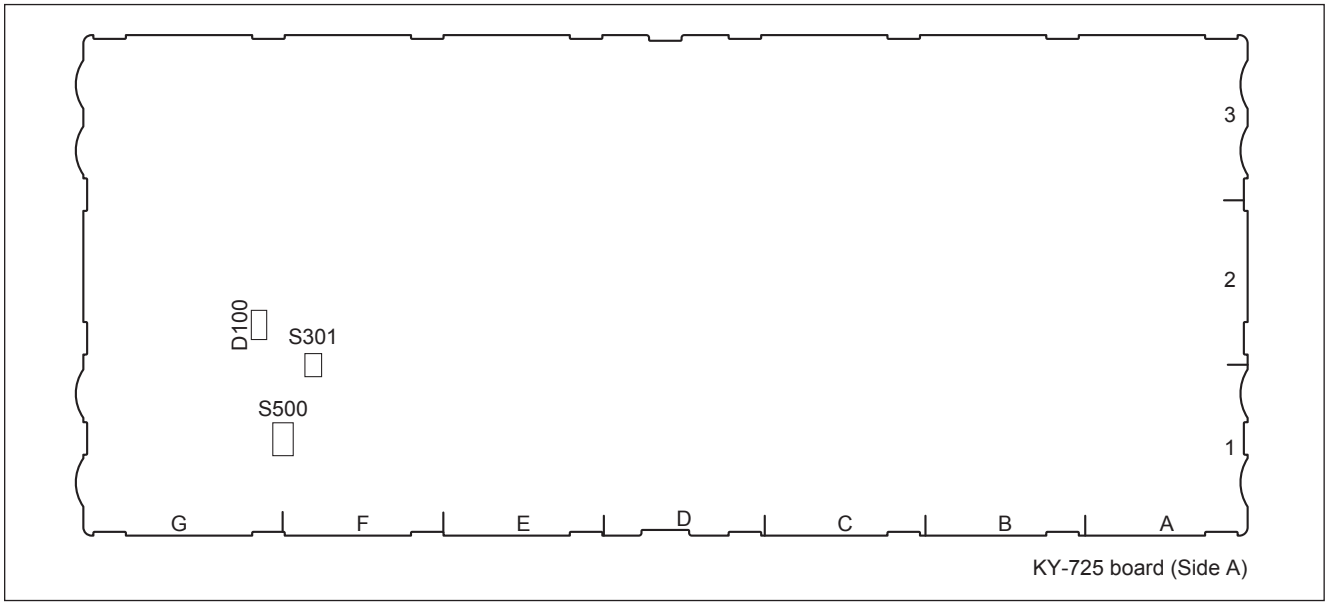
D100 (C-2): +12 V
+12 V power supply status indication.
Lit when the +12 V power is supplied correctly.

<Switch>

S500 (C-1): RECONF
Pressing this switch initializes KY-724 board.

S301 (C-1): SETTING2
This switch is used for manufacturing at the factory.
Do not change the setting of this switch.

KY-725 board (MKS-X7017/MKS-X7019)



<LED>

D100 (G-2): +12 V

+12 V power supply status indication.
Lit when the +12 V power is supplied correctly.

<Switch>

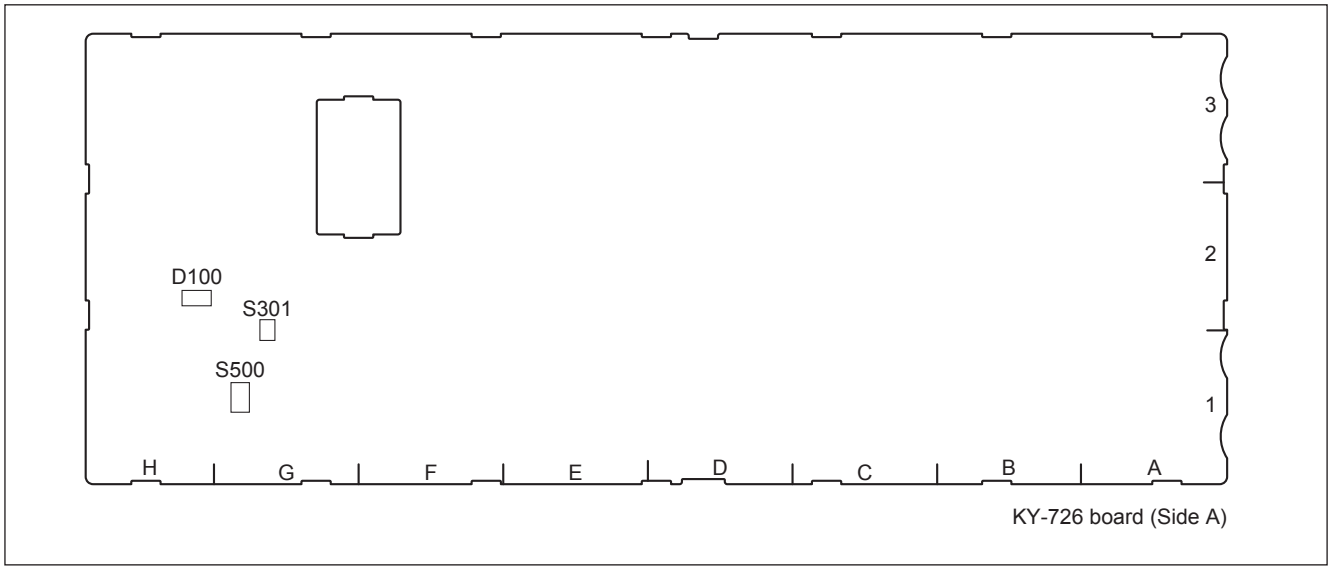
S500 (F-1): RECONF

Pressing this switch initializes KY-725 board.

S301 (F-1): SETTING2

This switch is used for manufacturing at the factory.
Do not change the setting of this switch.

KY-726 board (MKS-X7017/MKS-X7018/MKS-X7019)



<LED>

D100 (H-2): +12 V

+12 V power supply status indication.
Lit when the +12 V power is supplied correctly.

<Switch>

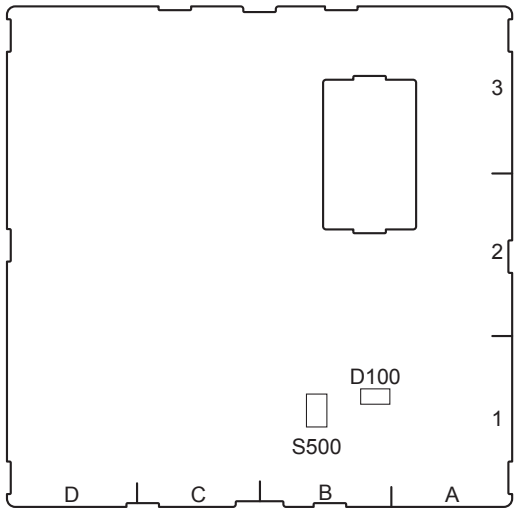
S500 (G-1): RECONF

Pressing this switch initializes KY-726 board.

S301 (G-2): SETTING2

This switch is used for manufacturing at the factory.
Do not change the setting of this switch.

KY-727 board (MKS-X7024)



KY-727 board (Side A)

<LED>

D100 (B-1): +12 V

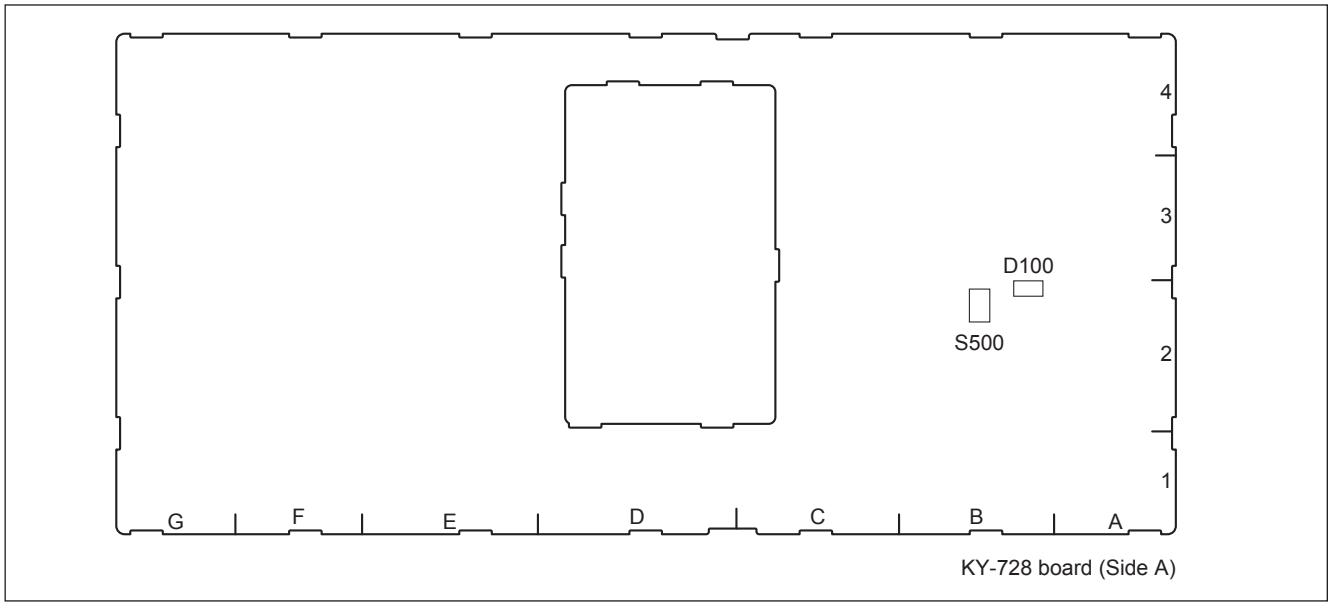
+12 V power supply status indication.
Lit when the +12 V power is supplied correctly.

<Switch>

S500 (B-1): RECONF

Pressing this switch initializes KY-727 board.

KY-728 board (MKS-X7020)



<LED>

D100 (B-2): +12 V

+12 V power supply status indication.

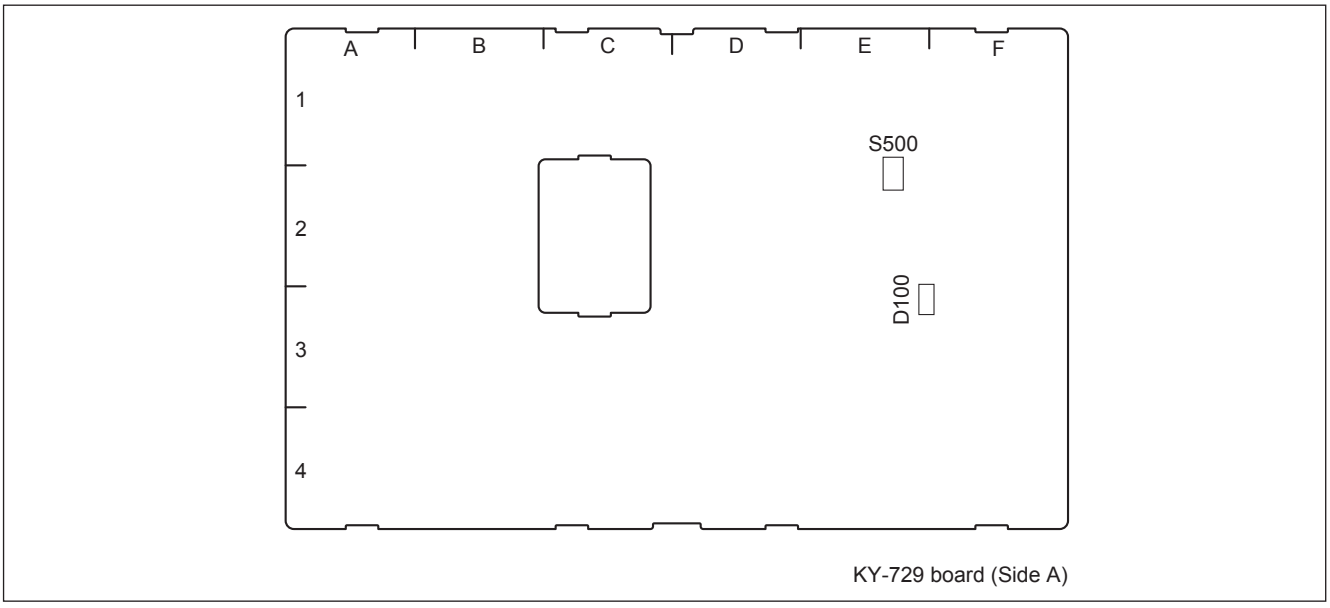
Lit when the +12 V power is supplied correctly.

<Switch>

S500 (B-2): RECONF

Pressing this switch initializes KY-728 board.

KY-729 board (MKS-X7033)



KY-729 board (Side A)

<LED>

D100 (E-3): +12 V

+12 V power supply status indication.

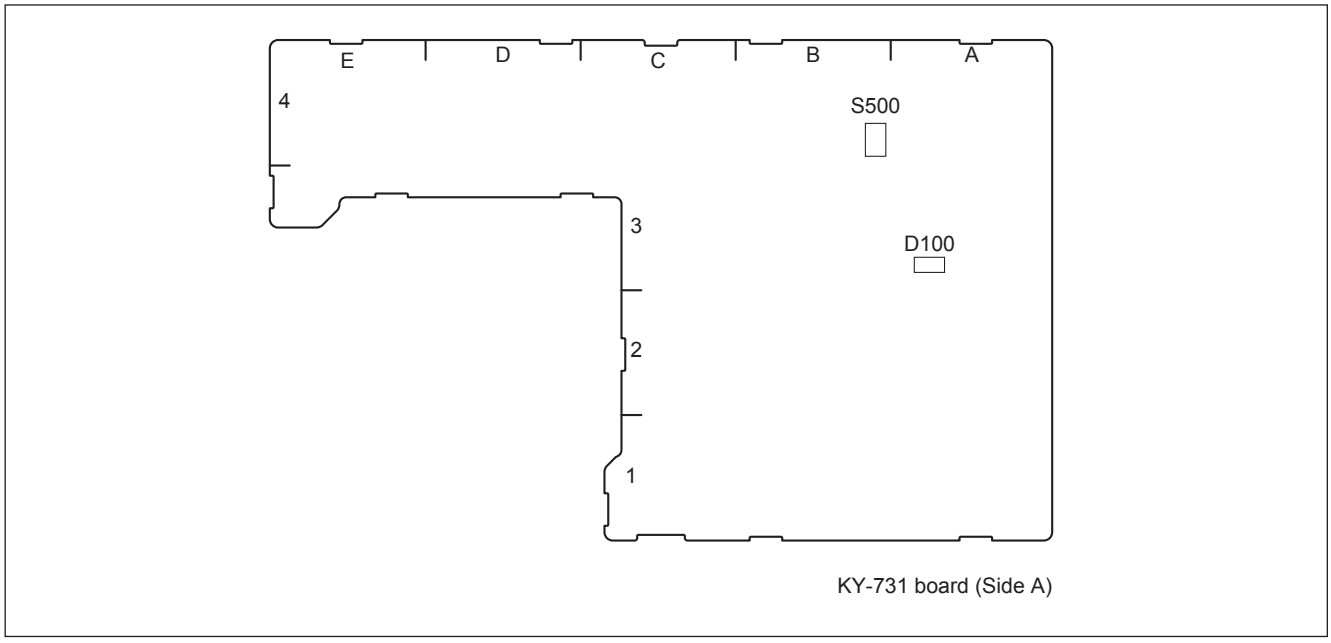
Lit when the +12 V power is supplied correctly.

<Switch>

S500 (E-2): RECONF

Pressing this switch initializes KY-729 board.

KY-731 board (MKS-X7031TB)



<LED>

D100 (A-3): +12V

+12 V power supply status indication.

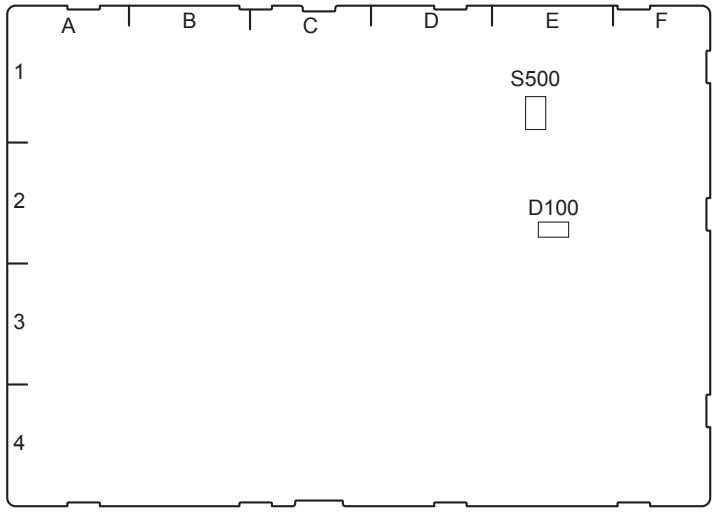
Lit when the +12 V power is supplied correctly.

<Switch>

S500 (B-4): RECONF

Pressing this switch initializes KY-731 board.

KY-732 board (MKS-X7035)



KY-732 board (Side A)

<LED>

D100(E-2): +12 V

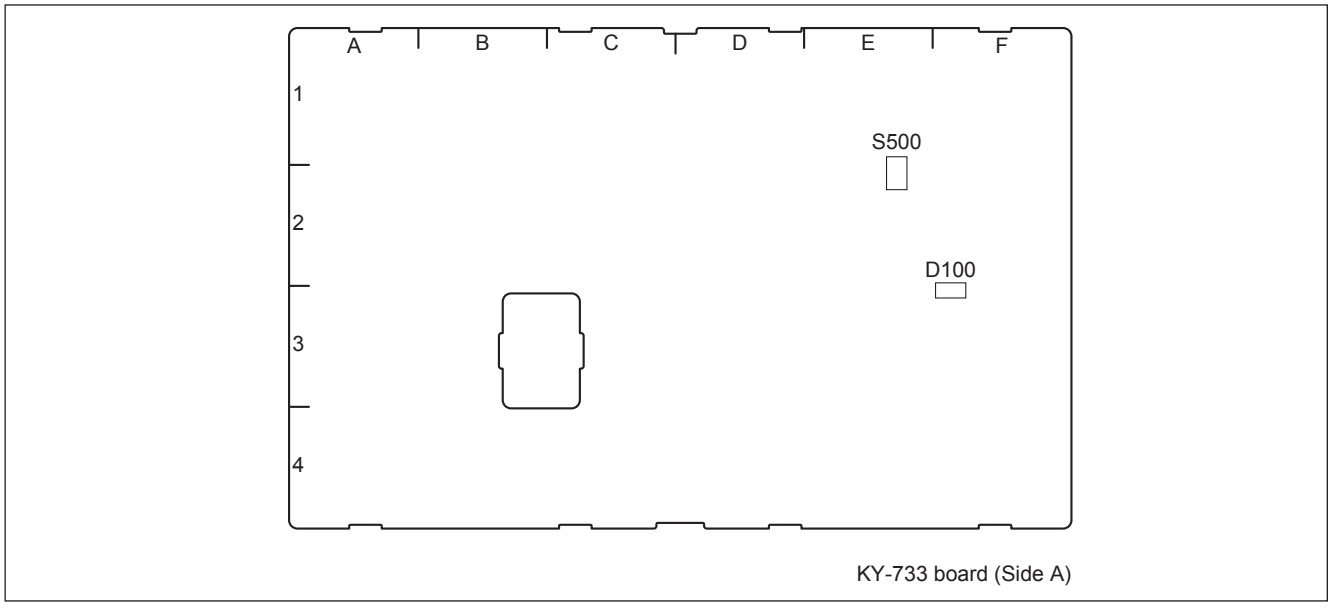
+12 V power supply status indication.
Lit when the +12 V power is supplied correctly.

<Switch>

S500 (E-1): RECONF

Pressing this switch initializes KY-732 board.

KY-733 board (MKS-X7026)



KY-733 board (Side A)

<LED>

D100 (F-3): +12 V

+12 V power supply status indication.
Lit when the +12 V power is supplied correctly.

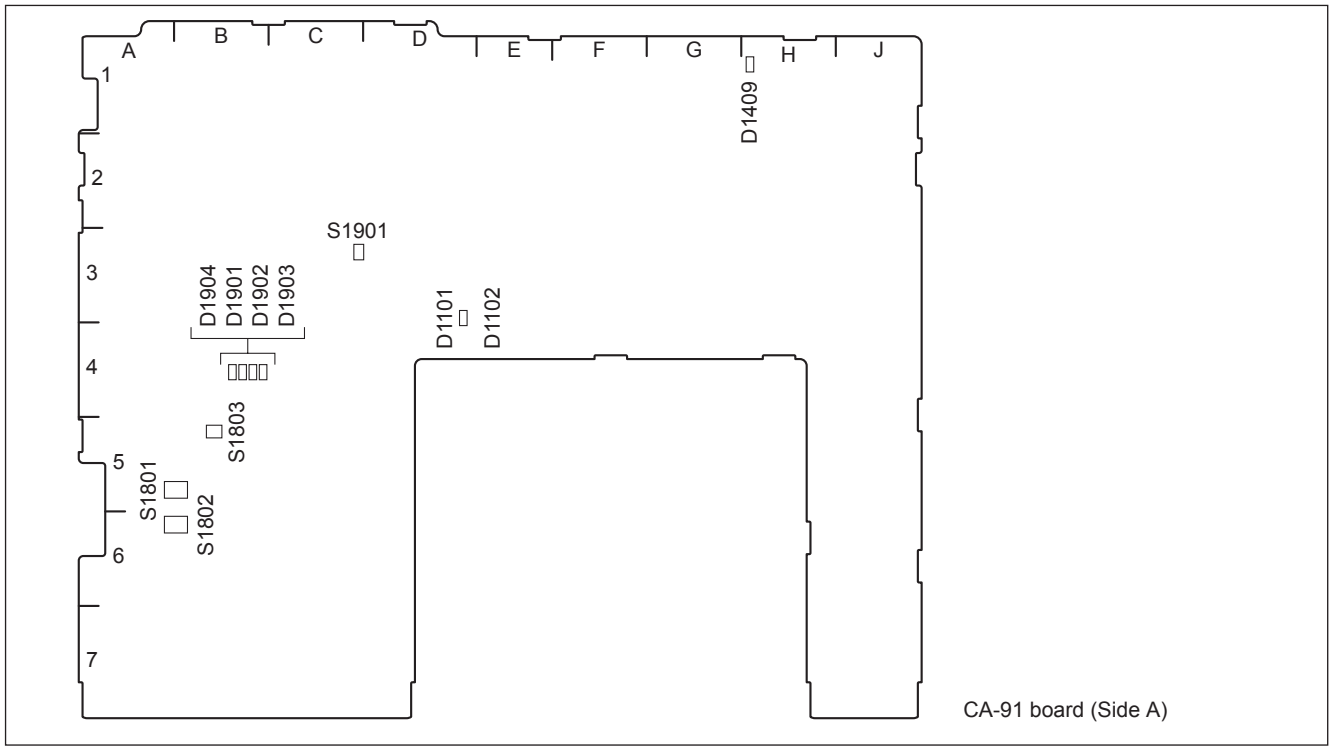
<Switch>

S500 (E-2): RECONF

Pressing this switch initializes KY-733 board.

1-11-3. MKS-X7011

CA-91 board (A side)



<LED>

D1101 (D-4): LINK
This LED is lit when the Ethernet links.

D1102 (D-4): ACT
This LED is flashed while the Ethernet is in communication.

D1409 (H-1): 5 V
AUX power supply status indication.
Lit when the +5 V-AUX is supplied correctly.

D1901 (B-4): DOMAIN1
This LED is lit while the CA-91 board startup level 1 is normal.

D1902 (B-4): DOMAIN2
This LED is lit while the CA-91 board startup level 2 is normal.

D1903 (B-4): DOMAIN3
This LED is lit while the CA-91 board startup level 3 is normal.

D1904 (B-4): DOMAIN4
This LED is lit while the CA-91 board startup level 4 is normal.

∗ All of LEDs D1901 to 1904 are lit during normal operation.

<Switch>

S1801 (A-5): SETTING1
This switch is used to set the configuration when CA-91 board is boot.

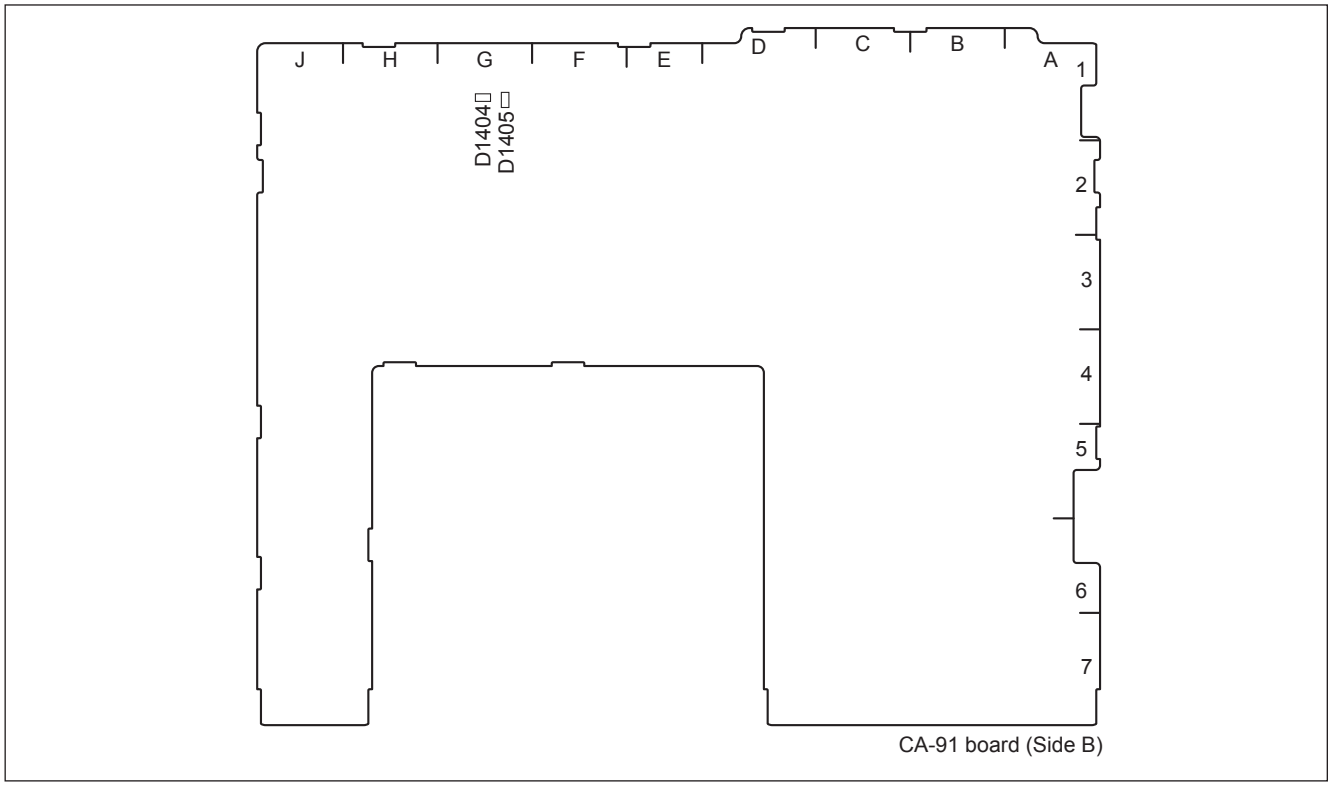
Function			Factory setting
S1801-1 (Bit1), -2 (Bit2): Boot Device setting			OFF (-1, -2) both
S1801-1	S1801-2		
OFF	OFF	SPI ROM boot	
ON	OFF	SD Card boot	
OFF	ON	Reserved	
ON	ON	Reserved	
S1801-3 (Bit3): Used for design			OFF (Do not change this setting.)
S1801-4 (Bit4): Used for design			OFF (Do not change this setting.)

S1802 (A-6): SETTING2
This switch is used for manufacturing at the factory.
Factory setting: All OFF
Do not change this factory setting.

S1803 (B-5): RECONF
This switch is used to forcibly reboot the CA-91 board.

S1901 (C-3): RESET
This switch is used to reset CA-91 board hardware.

CA-91 board (B side)



<LED>

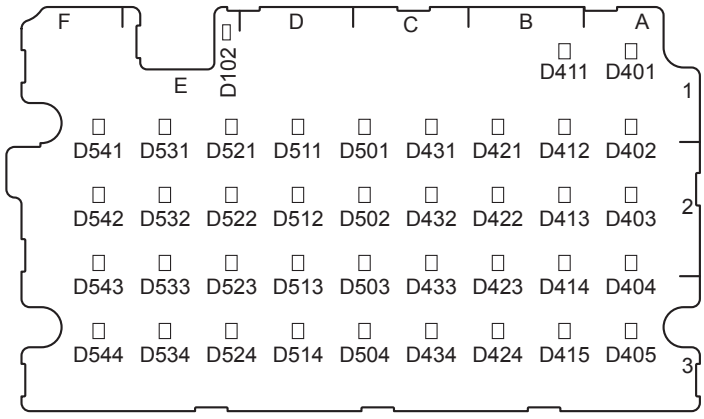
D1404 (G-1): 3.3V PLD

+3.3 V power supply status indication.
Lit when the +3.3 V power is supplied correctly.

D1405 (G-1): 1.2V PLD

+1.2 V power supply status indication.
Lit when the +1.2 V power is supplied correctly.

KY-723 board



KY-723 board (Side A)

<LED>

D102 (E-1): 5 V

+5 V power supply status indication.
Lit when the +5 V power is supplied correctly.

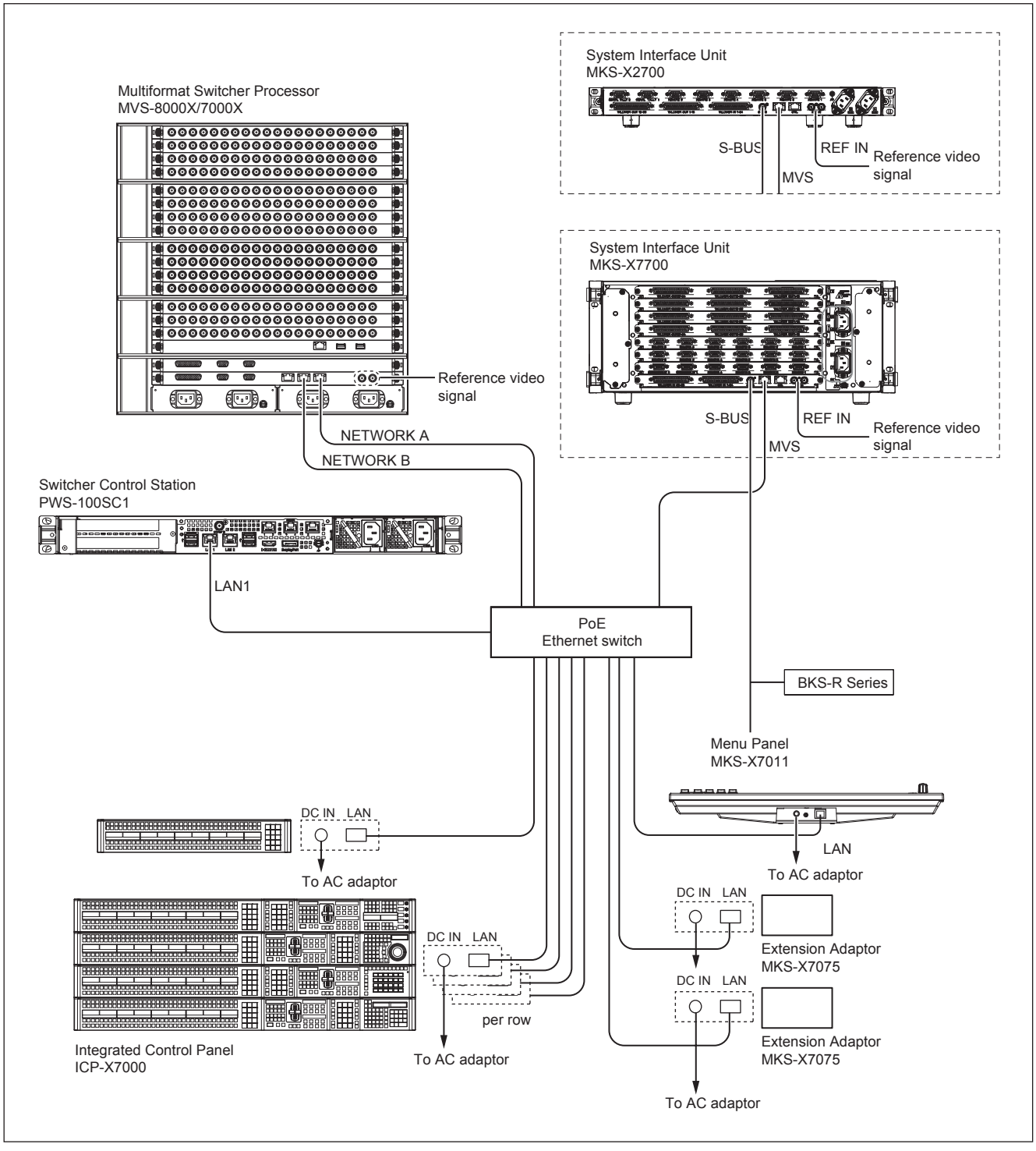
D401 (A-1) to D405 (A-3)
D411 (B-1) to D415 (B-3)
D421 (B-1) to D424 (B-3)
D431 (C-1) to D434 (C-3)
D501 (C-1) to D504 (C-3)
D511 (D-1) to D514 (D-3)
D521 (E-1) to D524 (E-3)
D531 (E-1) to D534 (E-3)
D541 (F-1) to D544 (F-3)

These LEDs are used for illuminating buttons. Lighting and going-out of these LEDs vary depending on operation at that time.

1-12. System Connection

Configure the system connection referring to the connection example as shown below.

Connection example

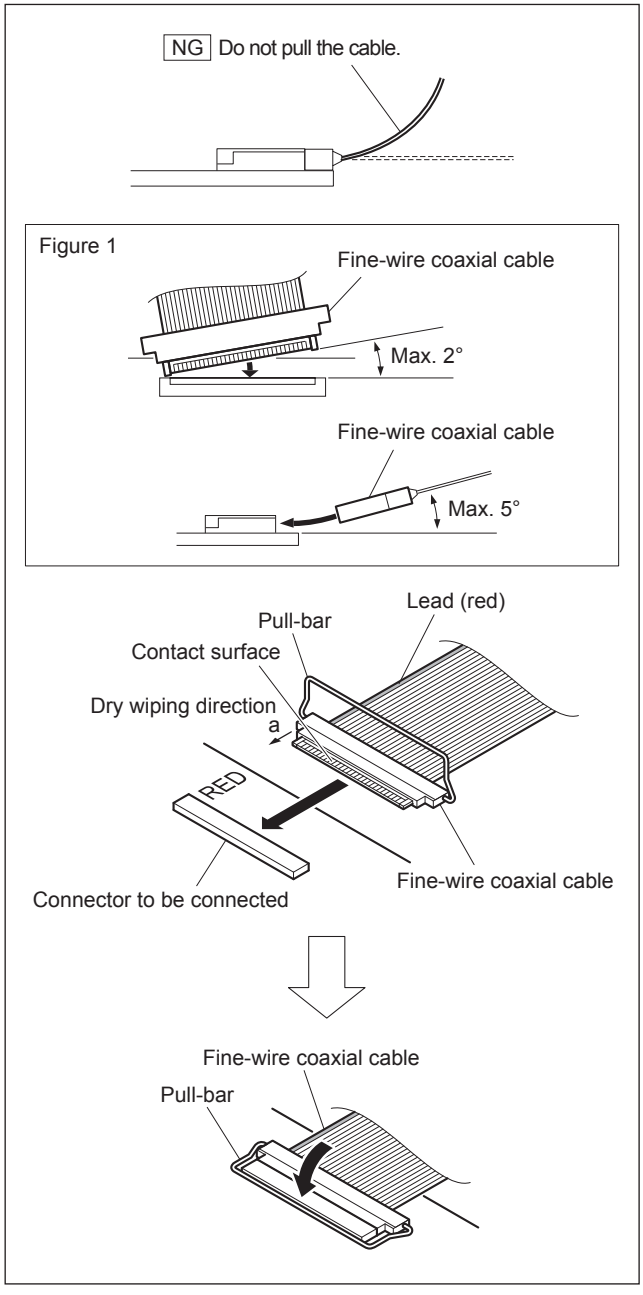


Section 2
Installation of Options

2-1. Installation of Operation Modules

2-1-1. Connecting/Disconnecting Fine-Wire Coaxial Cable

Connection

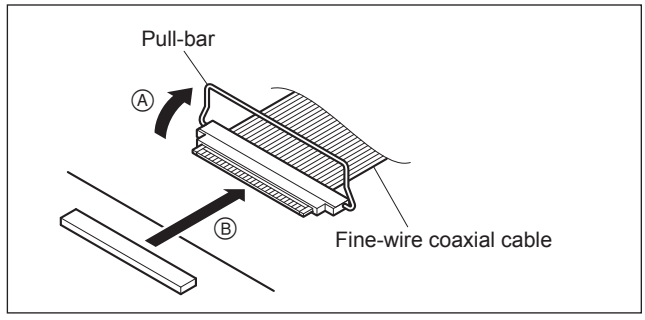


1. Wipe the contact surface with a dry wiping cloth in the direction of arrow (a).
2. Align the printed "RED" on the board with the red lead of the fine-wire coaxial cable.
3. Insert the cable connector straight to meet the insertion angle specified in Figure 1.

   Note

   Be careful so that the guide of the cable connector is not caught by the edge of the connector on the board.
4. Turn the pull-bar in the direction of arrow and lock it.

Disconnection



1. Raise the pull-bar in the direction of arrow Ⓐ to unlock it, and then disconnect the fine-wire coaxial cable in the direction of arrow Ⓑ.

2-1-2. Installing Modules

CAUTION

Be sure to turn off the power switch before installing operation modules.

Installing operation module to the main panel

Target modules

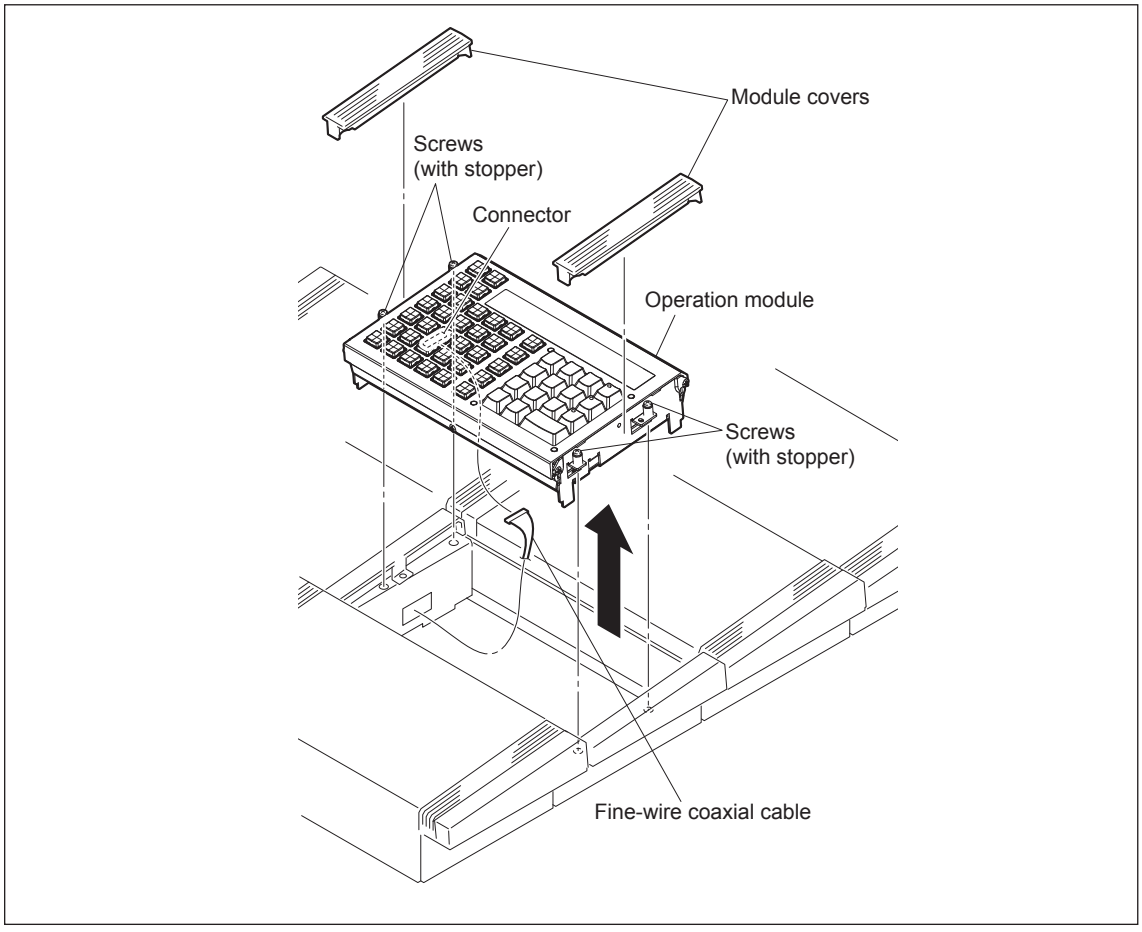
- MKS-X7017 36 XPT Module
- MKS-X7018 28 XPT Module
- MKS-X7019 20 XPT Module
- MKS-X7020 Standard Transition Module
- MKS-X7024 FlexiPad Module
- MKS-X7026 10-Key Pad Module
- MKS-X7031TB Track Ball Module
- MKS-X7033 Utility/Shotbox Module
- MKS-X7035 Key Control Module
- MKS-X7040 Blank Panel (1/3)
- MKS-X7041 Blank Panel (1/2)

Installation

Tip

- Each operation module is connected to the PIF-53 board with a fine-wire coaxial cable for each row. In case a blank panel is attached to the installation location, remove all the operation modules to the left of the installation location.
- The following describes the procedure for replacing the right-end operation module as an example. The same replacing procedure applies to other operation modules.

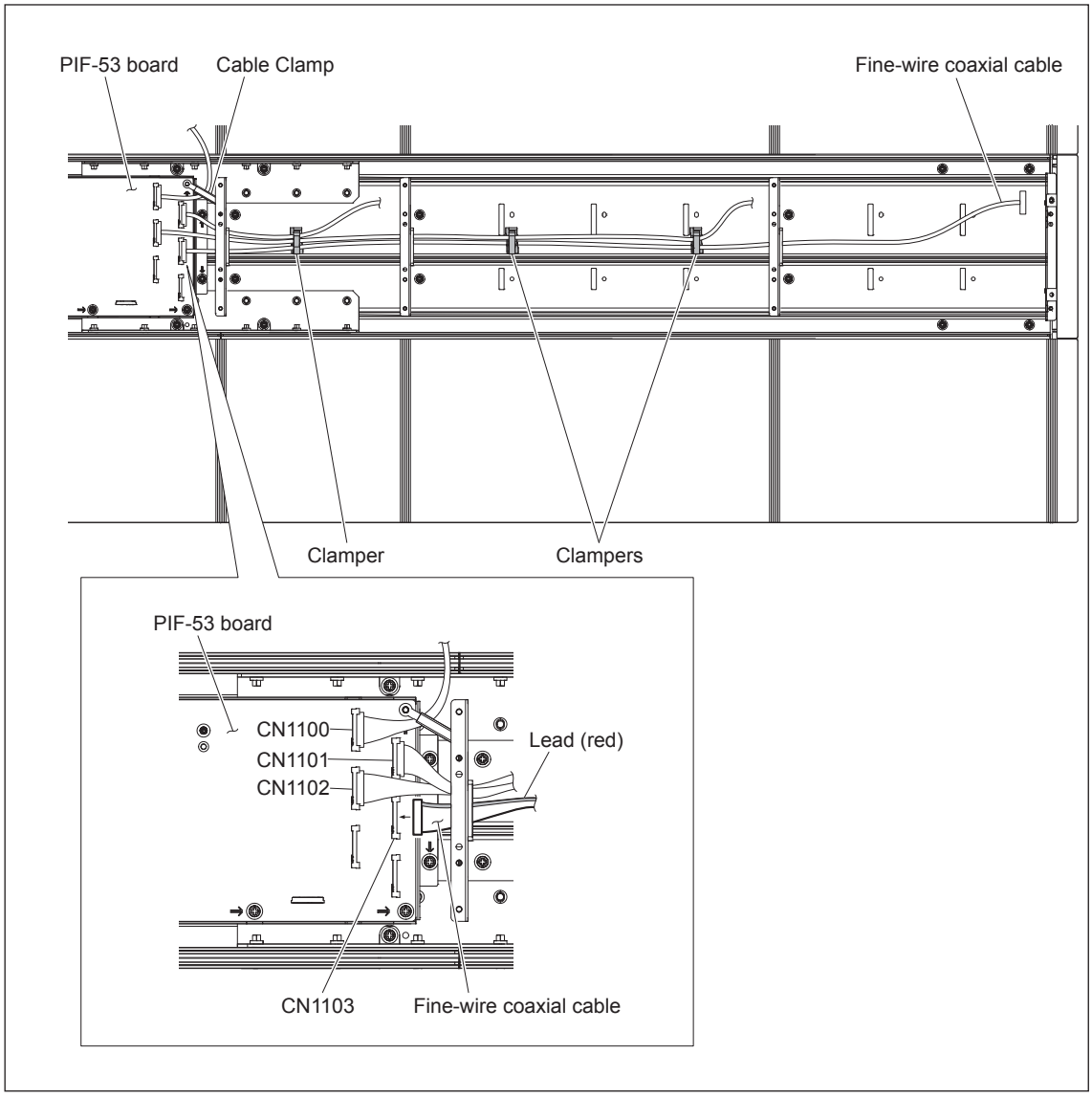
1. Remove all module covers on both sides of the operation module or the blank panel.
2. Loosen four screws (with stopper) securing the operation module or the blank panel.
3. Hold and remove the two front screws on both sides of the operation module or the blank panel. (When installing the MKS-X7031TB, refer to “Installing the trackball” described later.)
4. Disconnect the fine-wire coaxial cable from the operation module to be replaced, and then remove the operation module.



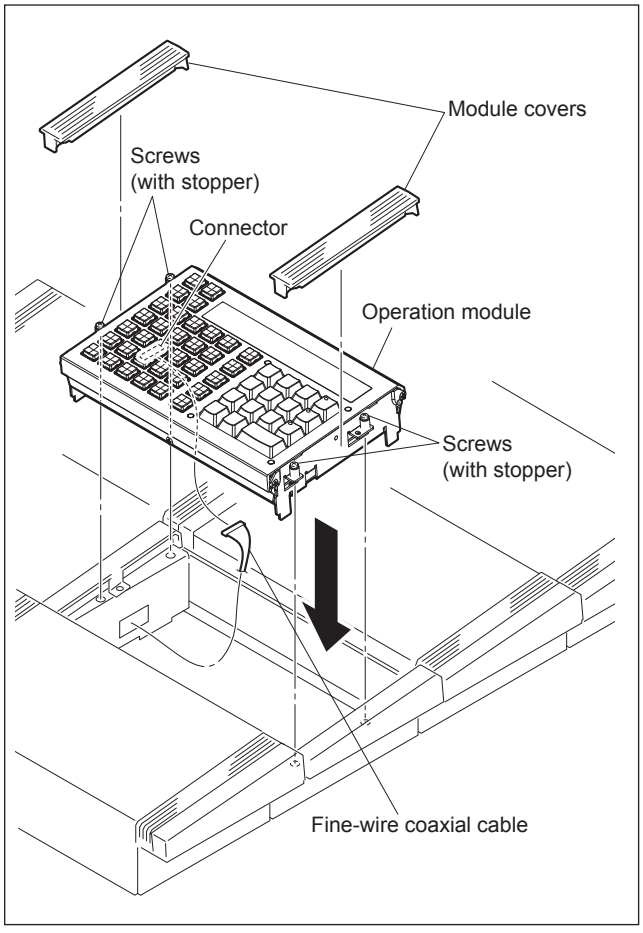
5. When a blank panel is removed and an operation module is installed, lay a fine-wire coaxial cable between the installation location and the PIF-53 board, connect the cable to the connector (CN1103), and then clamp it with clampers.

Tip

- Clamper positions vary depending on the operation module installation location.
- There is no indication “RED” near the connector on the PIF-53 board. Connect the fine-wire coaxial cable with the red lead upward.
- Connectors to which a fine-wire coaxial cable is to be connected vary depending on the operation module installation location.
  PIF-53 board
  CN1100: MKS-X7017/MKS-X7018/MKS-X7019
  CN1101: Second module from the left end
  CN1102: Third module from the left end
  CN1103: Fourth module from the left end
- When a blank panel is installed, connect the modules on the right side of the blank panel without providing a space.



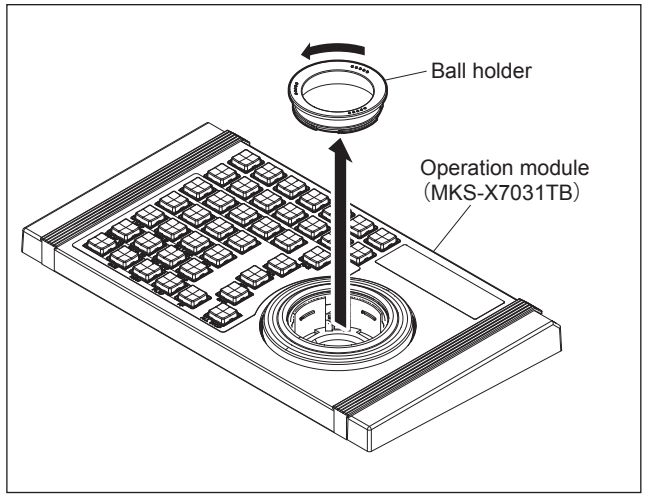
6. Connect the fine-wire coaxial cable to the connector on the operation module to be installed newly.
7. Fit the operation module to be installed in the location from which the operation module was removed in step 4, and tighten four screws (with stopper) on both sides to secure the operation module.
8. Reinstall the operation module or the blank panel removed in steps 1 to 3.



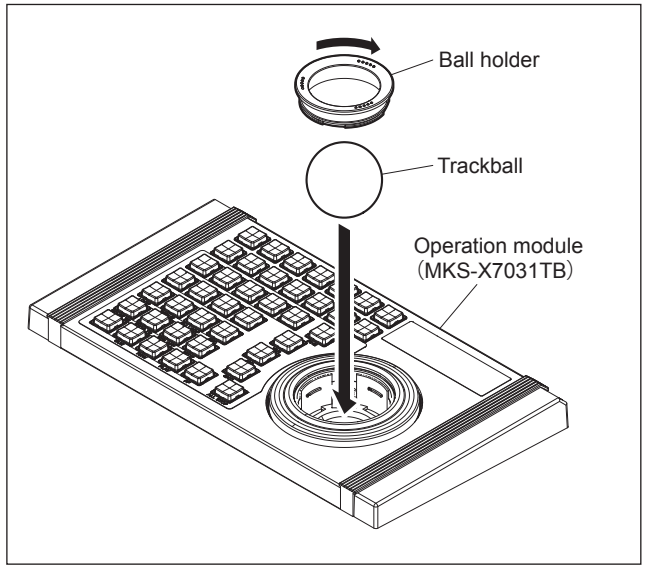
Installing the trackball

For MKS-X7031TB, the trackball must be installed after the operation module is installed in step 1 to 8 in “Installing operation module to the main panel” above.
Perform the following procedure to install the trackball.

9. Turn the ball holder counterclockwise (↺) to unlock it.
10. Detach the ball holder.



11. Install the trackball and the ball holder.
12. Turn the ball holder clockwise (↻) until it locks.



Installing operation module to the AUX panel

Tip

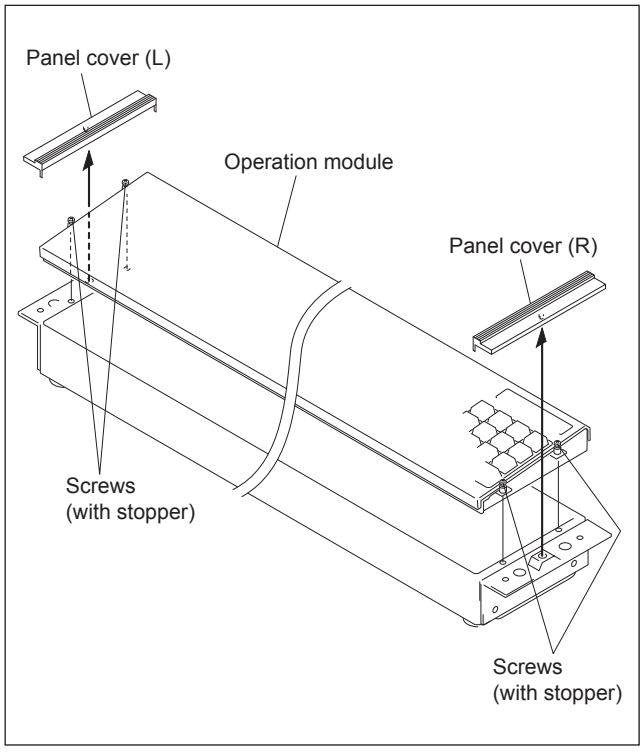
When two or more operation modules are installed to the AUX panel, perform the same work as shown in "Installing operation module to the main panel" to install and remove adjacent operation modules.

Target modules

Refer to the target modules shown in "Installing operation module to the main panel."

Installation

1. Detach the panel cover (L) and the panel cover (R) on both sides of the operation module to be removed. (Insert fingers into the hook areas on both sides and lift the panel covers.)
2. Remove the operation module. (Refer to "Installing operation module to the main panel.")
3. Install the operation module. (Refer to "Installing operation module to the main panel.")
4. Attach the panel cover (L) and the panel cover (R).



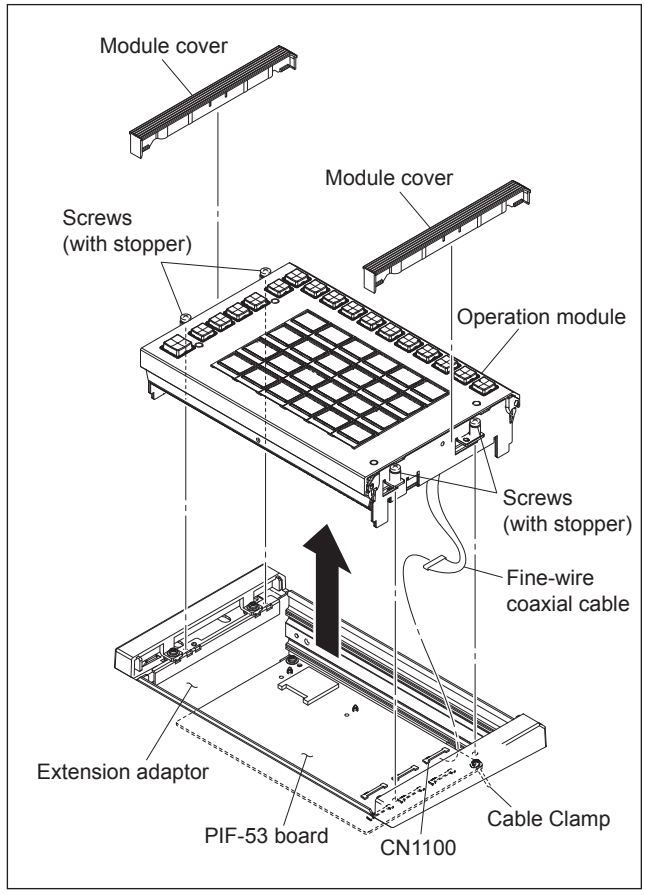
Installing operation module to the extension adaptor (MKS-X7075)

Target modules

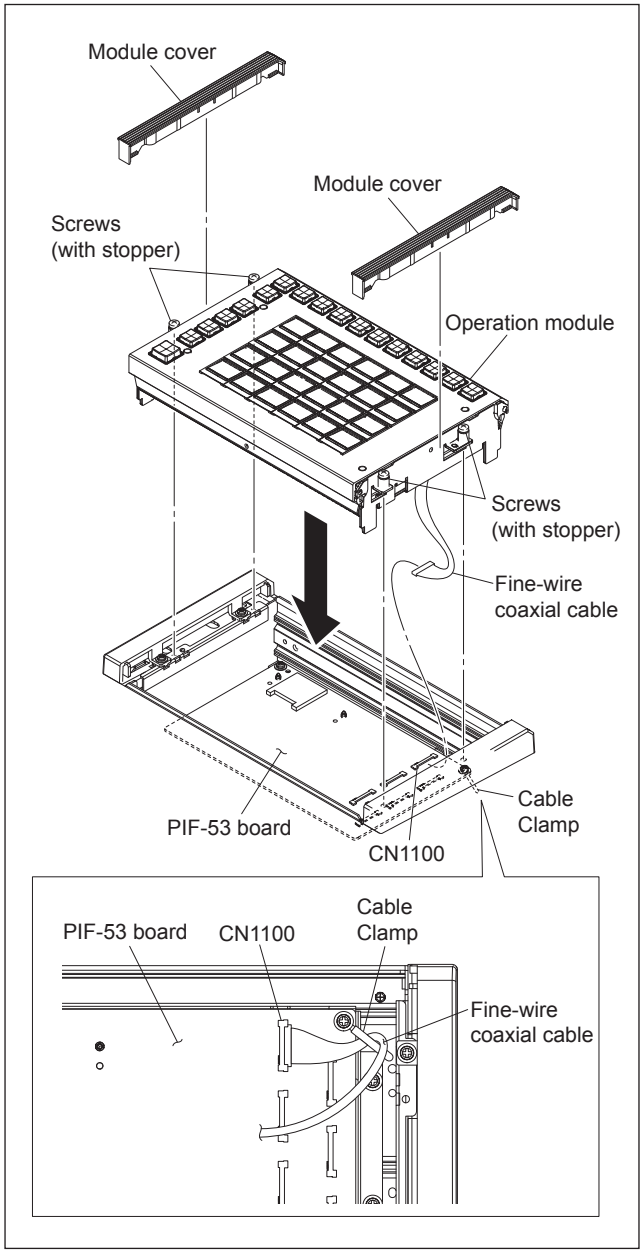
- MKS-X7026 10-Key Pad Module
- MKS-X7031TB Track Ball Module
- MKS-X7033 Utility/Shotbox Module
- MKS-X7035 Key Control Module

Installation

1. Remove the module covers on both sides of the operation module to be removed.
2. Loosen the four screws (with stopper) securing the operation module.
3. Hold and remove the two front screws on both sides of the operation module.
4. Disconnect the fine-wire coaxial cable from the connector (CN1100) on the PIF-53 board, and remove the operation module.



5. Connect the fine-wire coaxial cable to the connector (CN1100) on the PIF-53 board, and clamp the cable with a cable clamp.
6. Connect the fine-wire coaxial cable to the operation module.
7. Fit the operation module and tighten the four screws (with stopper) on both sides to secure the operation module.
8. Attach the module covers. (When installing the MKS-X7031TB, refer to "Installing the trackball" later.)

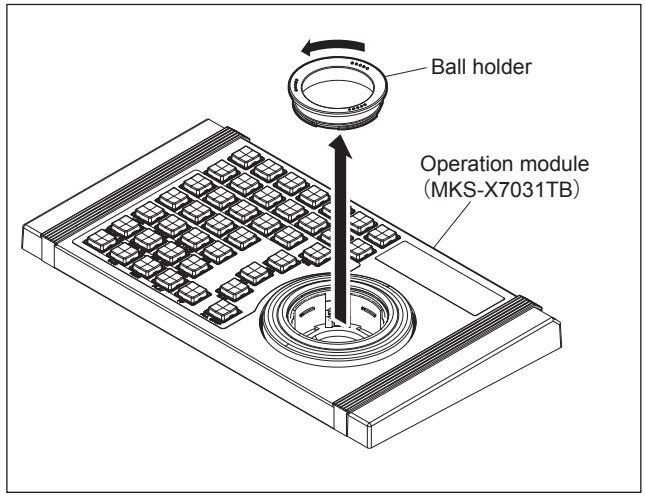


Installing the trackball

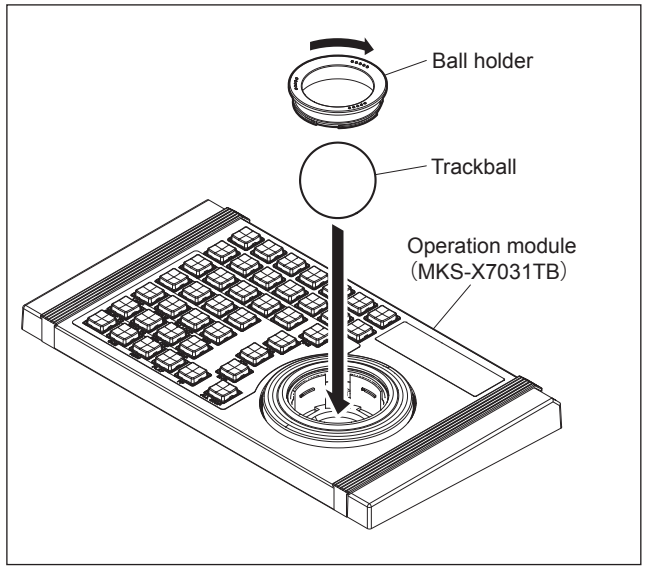
For MKS-X7031TB, the trackball must be installed after the operation module is installed in step 1 to 9 in "Installing operation module to the extension adaptor (MKS-X7075)" above.

Perform the following procedure to install the trackball.

9. Turn the ball holder counterclockwise (↺) to unlock it.
10. Detach the ball holder.



11. Install the trackball and the ball holder.
12. Turn the ball holder clockwise (↻) until it locks.



2-2. Installing the Connector Board (MKS-X7700)

The following options are available for the MKS-X7700.

Optional board list

Option name	Board name
MKS-X7701 Tally/GPI Output Board	CN0-42 board
MKS-X7702 Serial Interface Board	CNB-32 board

Note

Be sure to turn off the POWER switch before starting installation work.
If installation work is started with the POWER switch left on, it may cause electrical shock or damage to printed circuit boards.

Tip

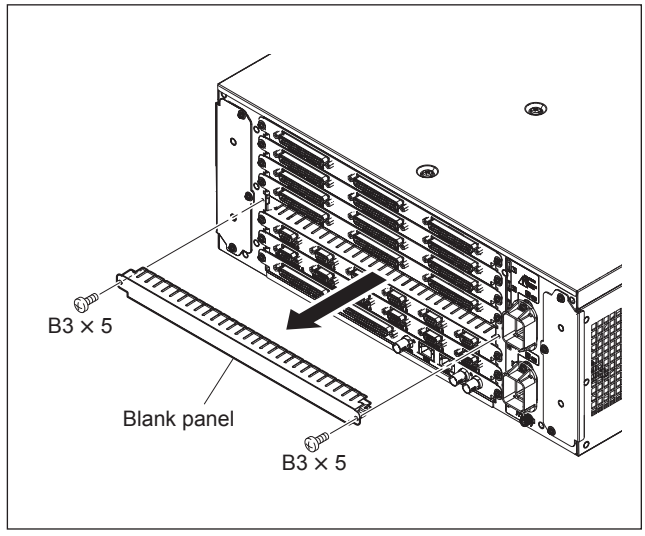
SLOT1 to SLOT6 of the unit are optional slots, and SLOT7 and SLOT8 are standard slots.

Installation procedure

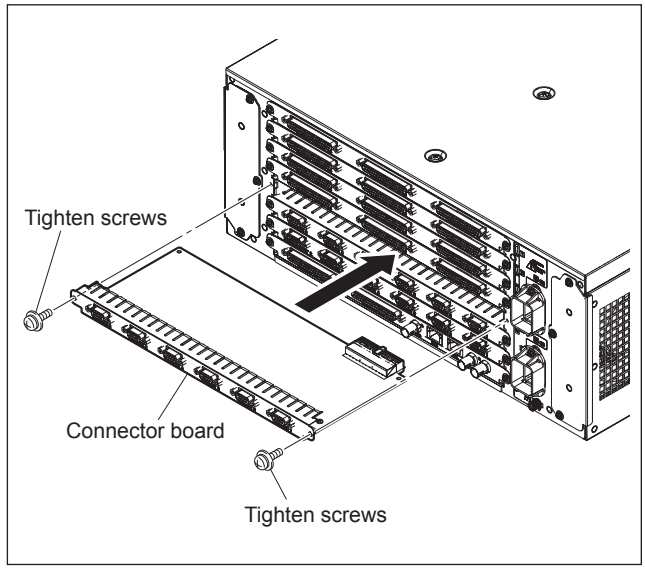
1. Remove the screw of the slot in which the connector board is to be installed or the two screws, and then remove the blank panel or the connector board.

   Note

   Store the removed blank panel in a safe location.



2. Insert the connector board horizontally and tighten the two screws.



2-3. PWS-100SC1 Installing Information

This section describes the installing information for the PWS-100SC1.

2-3-1. Accessories

- Operation Manual (1)
- Installation Manual (this manual) (1)
- Operation Guide (1)

2-3-2. Operating Environment and Installation Space

1. Operating Environment

Note

Do not block any air vents of the cabinet and exhaust vents for fans to reduce temperature rise in the unit.
Furthermore, arrange cooling air to flow through the unit sufficiently.

Operating temperature: 5 to 35 °C
Operating humidity: 20 to 90 % (no condensation)
Storage temperature: −20 to 60 °C
Prohibited installation places:

- Places exposed to direct sunlight or intense light
- Places near a heat source
- Dusty places or places subject to constant vibration
- Places in strong magnetic field
- Places subject to much electrical noise
- Places where electrostatic noise is likely to be generated
- Places where specified installation space cannot be provided (Refer to this Section “2. Installation Space”)
- Sealed places

Maximum inclination angle:
30 degrees
Do not incline the unit from front to back at an angle of 30 degrees or more.

CAUTION

Unless you use the unit on horizontal plane, secure it so that it will not slip down.

2. Installation Space

When installing, the installation space must be secured in consideration of the ventilation and service operation.

- Do not block the ventilation slots at the left side and right side panels, and vents of the fans.
- Leave a space around the unit for ventilation.
- Leave more than 40 centimeters of space in the rear of the unit to secure the work area.

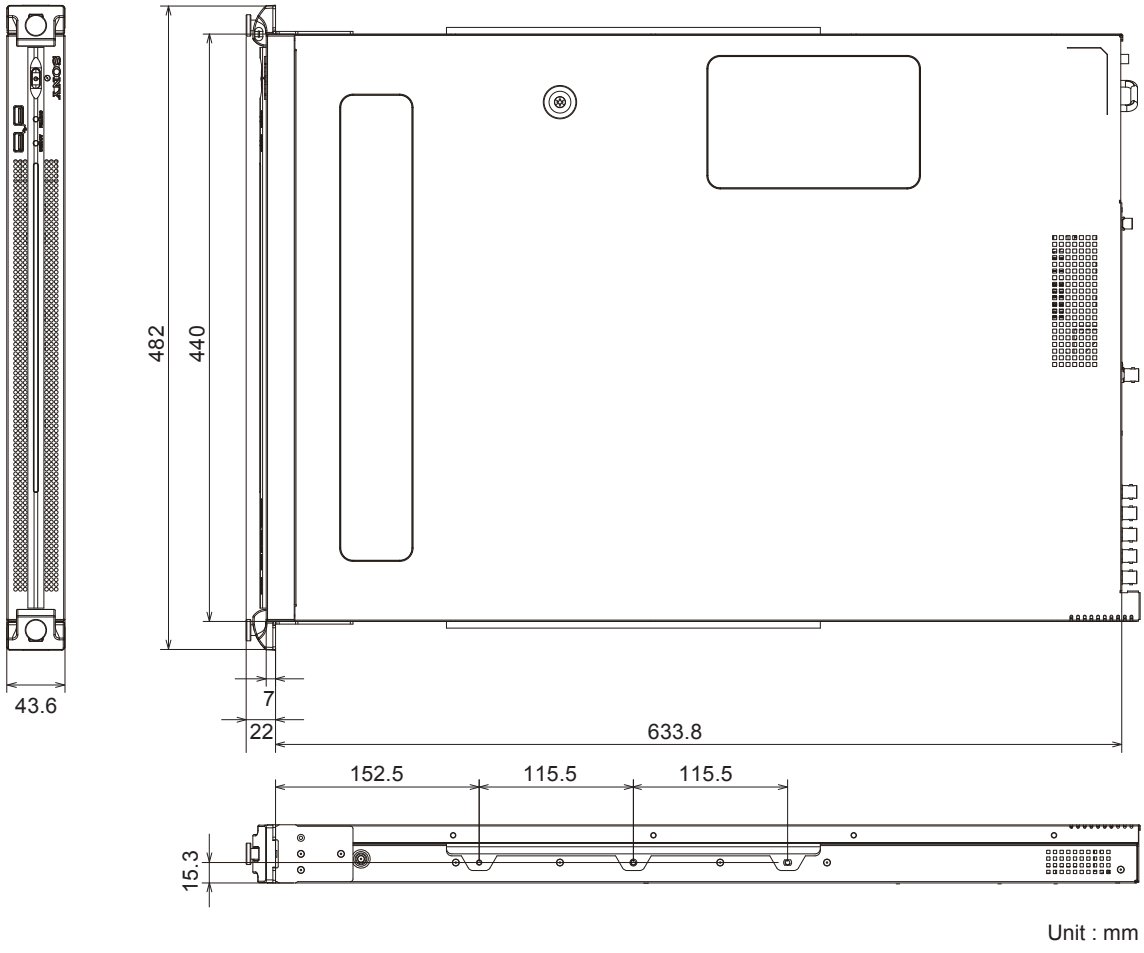
When the unit is installed on the desk or the like, leave at least 4 centimeters of space in the left and right sides. Leaving 40 centimeters or more of space above the unit is recommended for service operation.

Moreover, an air flow that is effective in cooling the unit is essential. If the ventilation is not enough, the unit may be damaged because of an increase of the internal temperature.

Note

This unit is air-cooled by the fans. The operation with the upper lid is removed affects the air cooling by the fans. Complete the work in a short time as possible when operating the unit for inspection with the upper lid removed.
In case of a work with the unit turned on for a long time, take an action, such as cooling by electric fan, to avoid rise in temperature.

Mass of this unit (not including option) : approx. 14 kg



Unit : mm

2-3-3. Power Supply

1. Power Supply Specifications

A switching regulator is used in the power supply unit of the unit.

Note

Be sure to use the unit within the following power-supply voltage range.

Power voltage:	100 to 240 VAC (nominal voltage)
Power frequency:	50 or 60 Hz
Power consumption:	235 W max. (including options)
Inrush current:	50 A at 100 VAC

Note

The AC power supply requires capacity including inrush current.
If the AC power capacity is insufficient, the circuit breaker of the AC power supply on the supply side may trip or the unit may malfunction.

2. Recommended Power Cord

This unit does not come with a power cord.
To get a power cord, please contact your local Sony Sales Office/Service Center.

WARNING

- 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.
- 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 contact your local Sony Sales Office/Service Center.

WARNING

- Never use any damaged power cord.

2-3-4. Rack Mounting

This process is not necessary if you do not mount this unit into a rack.

This section describes the procedures for mounting this unit into a 19-inch standard rack.
Be sure to mount this unit into a rack accurately following the procedure and notes mentioned below.

WARNING

- To prevent toppling over the rack, fix it on the horizontal and firm floor securely with bolts or some anchoring materials.

CAUTION

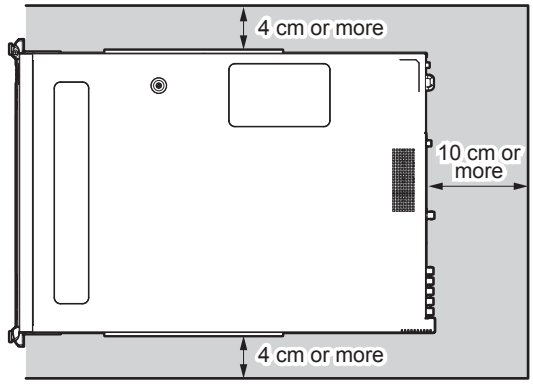
- More than two person for rack mount
  If you perform rack mount alone, you can hurt your back.
- Use the specified rack mount rail.
  The use of other rail of low strength may drop the unit and cause the risk of injury.
- Fix the rack to the floor
  When the rack turns over with the heaviness of the unit, it causes the death and the serious injury.
- After rack mounting, fix the unit to the rack securely.
  If the screws of rack angle are not fastened, the unit may slip down and dropped from the rack, and you may get injured. After rack mounting, be sure to tighten the screws.
- Entrust the installation to a specialized contractor
  When mounting the unit to the rack, confirm the enough strength, if not, the unit may be dropped and you may get injured.
  Installation to the rack, entrust to a specialized contractor.

Note

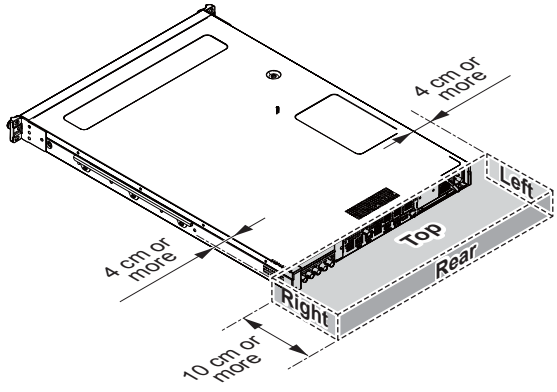
- When other equipment with built-in hard disk drive is already mounted in the same rack to which this unit is going to be mounted. Turn off the power of the equipment before mounting this unit.
- Do not install the unit to the rack without exterior parts.
- Cables connected to the connector panel must be long enough to pull out the unit from the rack.

- To suppress the internal temperature rise of the unit, reserve a space of 4 cm or more on both sides and 10 cm or more on the rear side between the rack and the unit. (Refer to Fig. 1)
  To ensure proper airflow, keep at least one of the four spaces (up, rear, right, and left) at the rear of the unit so as not to block airflow. (Refer to Fig. 2)
- Adjust the temperature inside the rack within the range of the unit's operating temperature.
  (Refer to Section 2-3-2.)

(Fig.1)



(Fig.2)



1. Specified Rack Mount Kit

Specified Rack Mount Kit

RMM-10 (Optional accessory)

The RMM-10 Rack Mount Kit is for mounting equipment in a standard EIA 19-inch rack.

Size limits on applicable equipment

- Weight is less than 50 kg
- Width is 440 mm

Applicable rack

Racks with a depth of 595 to 750 mm

Parts packed in RMM-10

Note

Using anything other than specified rack mount kit, the unit may not be mounted to the 19 inch standard rack.

- rack bracket ..... 2 pcs
- rack mount adaptor right ..... 1 pc
  [Including screw (B4 × 6: 7-682-560-09) 2 pcs]
- rack mount adaptor left ..... 1 pc
  [Including screw (B4 × 6: 7-682-560-09) 2 pcs]
- rack bracket attachment screw
  (B4 × 6: 7-682-560-09)..... 6 pcs
- adaptor attachment screw
  (B4 × 10: 7-682-560-10)..... 6 pcs

Other necessary parts

There are parts needed to complete the rack mount besides the rack mount kit RMM-10 as below.

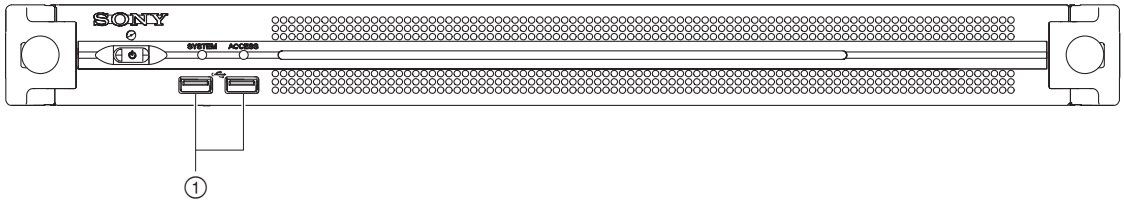
- screw for rack mount (B5 × 12: 7-682-576-04)..... 4 pcs

2. Installing the Main Unit to the Rack

Refer to the RMM-10 installation manual.

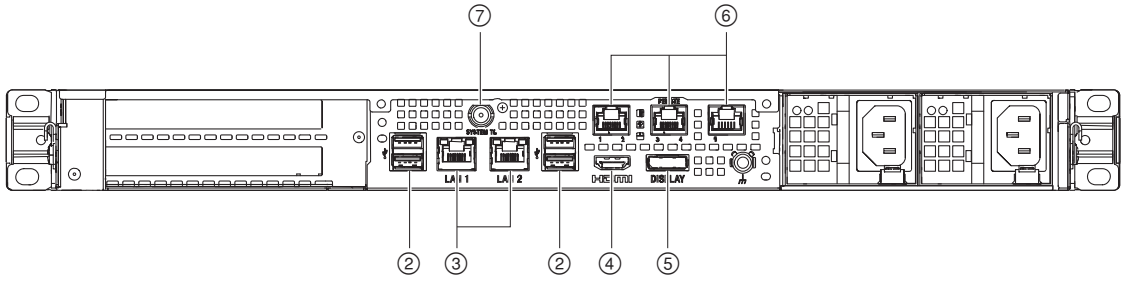
2-3-5. Connector Input/Output Signals

Front panel



No.	Name	Remarks
①	USB	Super Speed USB (USB 3.0) Type A × 2 Power delivery supported

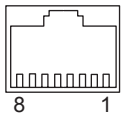
Rear panel



No.	Name	Remarks
②	USB	Super Speed USB (USB 3.0) Type A (4) Among four, right lower connector supports to the power supply. (900 mA) Others do not support to the power supply.
③	LAN1/2	RJ-45 8-pin (2) 1000BASE-T, 100BASE-TX
④	HDMI	Type A (1) HDMI Ver. 1.4a, 1920 × 1200 maximum resolution, 60 Hz
⑤	DisplayPort	DisplayPort (1) DisplayPort Ver. 1.1a, 2560 × 1600 maximum resolution, 60 Hz
⑥	Remote 1/2, 3/4, 5	RJ-45 (3) Not used
⑦	SYSTEM TC	BNC (1) Not used

LAN1, LAN2: RJ-45 modular jack

Signal specification: IEEE 802.3ab (1000BASE-T)



– External View –

Pin No.	Signal Name	Function
1	TRX1+	Transmitted/Received data (+)
2	TRX1–	Transmitted/Received data (–)
3	TRX2+	Transmitted/Received data (+)
4	TRX3+	Transmitted/Received data (+)
5	TRX3–	Transmitted/Received data (–)
6	TRX2–	Transmitted/Received data (–)
7	TRX4+	Transmitted/Received data (+)
8	TRX4–	Transmitted/Received data (–)

2-3-6. Connectors and Cables

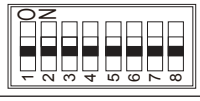
Use the following connectors (or cables) or equivalents for cable connection.

Panel Indication	Applicable Connector (Cable)	Sony Part No.	Remarks
HDMI	HDMI type A The HDMI cable, use a product made in Sony. Recommended: HIGH SPEED HDMI cable DLC-HE20XF (2 m)	–	–
DisplayPort	Use following recommended cable. Lindy Computer Connection Technology Inc. 1 m DisplayPort cable Part No. 41630 for 4K **Note** If you connect this port to a DVI monitor or an HDMI monitor, use an active DisplayPort to DVI cable or an active DisplayPort to HDMI cable respectively. The operation check is completed with the following conversion cables. • DisplayPort -> HDMI Cable: StarTech.com DP2HDS DisplayPort to HDMI Active Adapter • DisplayPort -> DVI Cable: XFX Inc MA-AP01-PD1K Active DisplayPort to DVI Adapter	–	–
USB	Use a cable for super speed USB.	–	–
LAN1/2	Network cable (commercially available)	–	–

2-3-7. Settings of Onboard Switch

Note

Be sure not to change the default settings of switches on the board.

Board	Ref. No.	Factory Setting (■: Knob position)
MB-1204	S800	
	S2201 (CFG)	

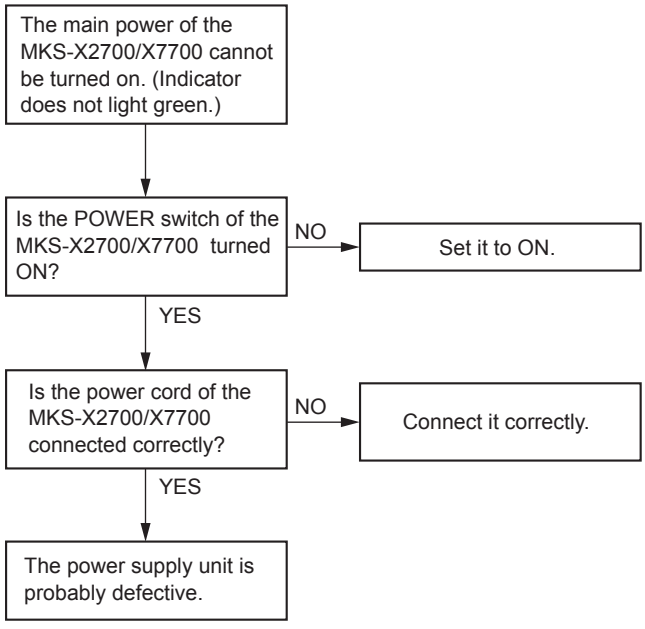
Section 3
Service Overview

3-1. Troubleshooting

3-1-1. MKS-X2700, MKS-X7700

The main power cannot be turned on. (LED indicator does not light green.)

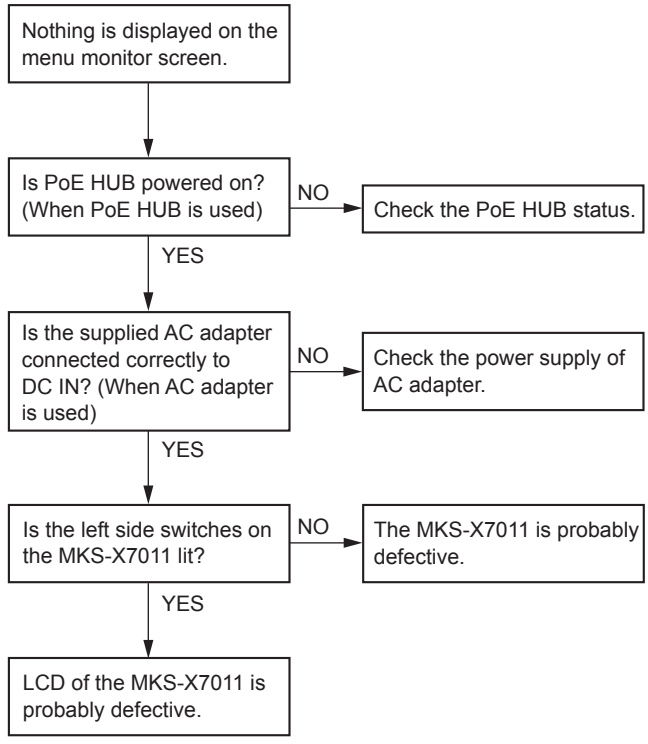
Flow 1



3-1-2. MKS-X7011

Nothing is displayed on the menu monitor screen.

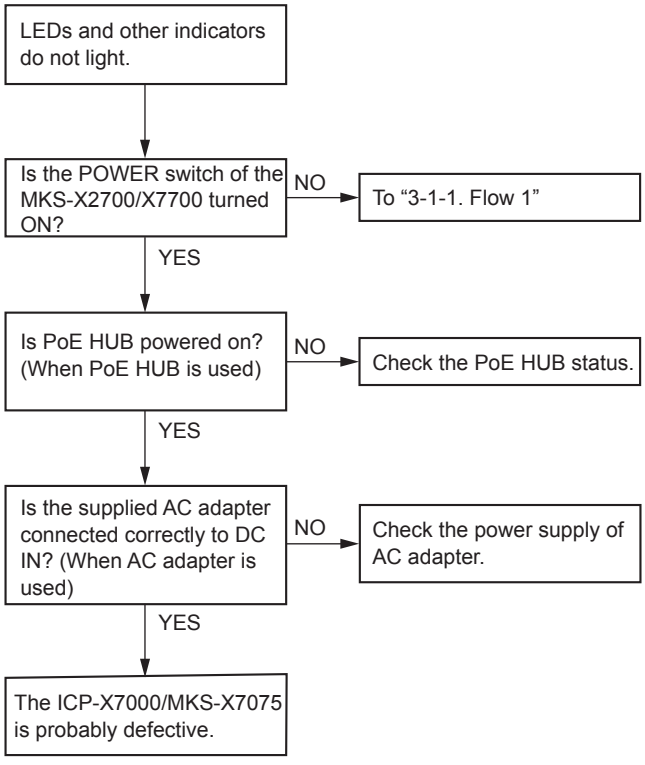
Flow 2



3-1-3. ICP-X7000, MKS-X7075

LEDs and other indicators do not light.

Flow 3



3-2. About the Data Backup Capacitor

A large capacitor is installed on the CA-90 board in order to retain the data such as the setup data, shot box, timeline, and macro in the MKS-X2700/MKS-X7700 machine. Leave the main power of the MKS-X2700/MKS-X7700 turned on for two hours or longer in order to charge this capacitor.

The data is retained for about three days when the capacitor is fully charged under normal operating temperature and humidity. However, this period may vary depending on the storage environment. Be sure to save necessary data in an external media.

ICP-X7000 (SY) J, E
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