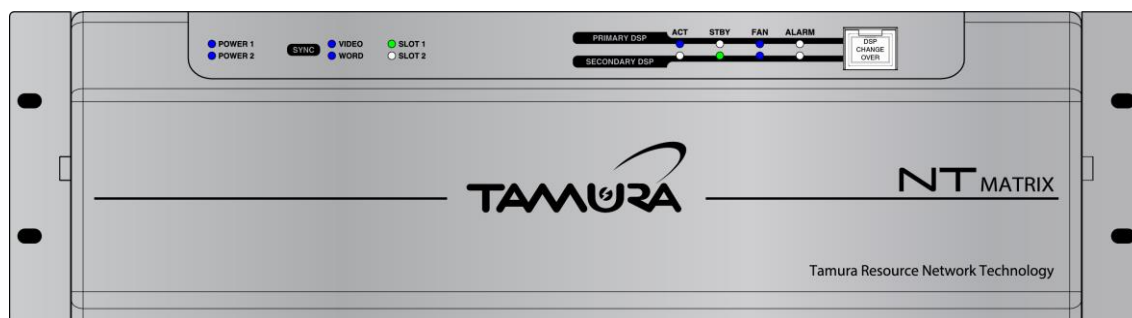


NT MATRIX

Instruction Manual(EN)



Second Edition

This Instruction Manual describes important precautions to prevent any accident and procedures to handle this product.

Read this Instruction Manual carefully to use this product safely.



After reading, keep this in a safe place where users can refer to as needed.




2D-53-0003250A

TAMURA CORPORATION











Safety Precautions

This section describes the "prohibitions" and "precautions" important for you to use NT110 safely. Before use, be sure to read this manual so that you can use the system correctly.

| | |
|--|---|
|  Warning | <p>This sign gives a message assuming possible human death or severe injury if the system is mishandled ignoring the message given with this sign.</p> |
|  Caution | <p>This sign gives a message assuming possible human injury or property damage if the system is mishandled ignoring the message given with this sign.</p> |

| | |
|--|--|
|  | <p>The Δ symbol shows a message (including a warning) that must be paid attention to. The specific precaution is shown by picture or text near or in the Δ. The message given in the left-hand picture calls attention to "electrical shock."</p> |
|  | <p>\ominus symbol shows a prohibition (prohibited action). The specific precaution is shown by picture or text near or in the \ominus. The message given in the left-hand picture prohibits "disassembly."</p> |
|  | <p>\bullet symbol shows a mandatory message (action that must be taken without exception). The specific precaution is shown by picture or text near or in the \bullet. The message given in the left-hand picture instructs the user to "remove the power plug from the receptacle."</p> |

Warning

| | |
|--|---|
|  <p>Continuing to use the system with unlikely abnormalities such as smoke and abnormal smell and sound may cause fire and electric shock. After turning off the power of the system's main unit immediately, be sure to remove the power cable plug from the receptacle. After confirming that no more smoke is coming out, contact our sales office for a repair request. Do not attempt to repair the system by yourself, as it is dangerous for the user.</p> |  <p>Fully insert the power cable plug into the power receptacle. Otherwise, it may cause fire or electric shock.</p> |
|  <p>Should water or foreign materials enter the system, after turning off the power of the system's main unit immediately, remove the power cable plug from the receptacle, and then contact our sales office. Continuing to use the system with foreign materials inside may cause fire or electric shock.</p> |  <p>Do not place heavy objects on the power cable. Also make sure that the power cable is not caught under the system. Otherwise, the cable may be damaged and cause fire or electric shock.</p> |
|  <p>If cables are damaged such as when the power cable is broken to disconnection and cores are exposed, contact our sales office for a repair. Otherwise, it may cause fire or electric shock.</p> |  <p>Do not place flower vases, cups, containers with water, or small metal items on the system. If water spills or enters the inside, fire or electric shock may be caused</p> |
|  <p>Do not use the system in a place where liquid may splash on the system's main unit directly. Otherwise, it may cause fire or electric shock.</p> |  <p>Do not damage, process, bend forcefully, twist, pull, or heat the power cable. Otherwise, the cable may be damaged and cause fire or electric shock.</p> |
|  <p>Use the system only within the voltage range specified in the Instruction Manual. Otherwise, it may cause fire or electric shock.</p> |  <p>Never disassemble, repair, or modify the main unit. Also, never remove the cover. Otherwise, it may cause fire or electric shock.</p> |

Caution



When disconnecting the power cable, do not pull the cable. Instead, be sure to hold the power plug to disconnect it. Otherwise, the cable may be damaged and fire or electric shock may be caused.



Before caring for the system, remove the power plug from the receptacle for the sake of safety. Otherwise, it may cause electric shock.



Before moving the system, turn off the power switch, and be sure to remove the power plug from the receptacle, and then remove the connection cords of the external devices. Otherwise, cords may be damaged and fire or electric shock may be caused.



Do not place the power cable near heat generating devices. This may melt the covering of cable and may cause fire or electric shock.



Do not connect/disconnect the power plug with wet hands. Otherwise, it may cause electric shock.



Install the system on a flat surface with good ventilation. Otherwise, the internal temperature may rise to cause system malfunctions.



Do not use, expose, or store batteries in high-temperature locations such as direct sunlight or in the car in the hot sun. There is a risk of leakage, overheating, explosion, or fire of the battery. Also, please do not throw in fire or heat.



There is a danger of explosion if you replace the battery by mistake. Please exchange with the same or equivalent type.



Before turning on the power, turn the volume to minimum. Otherwise, you will hear a loud sound suddenly, which may cause impairments such as a hearing loss.



Do not connect/disconnect the power plug with the power switch on. This may cause system malfunctions.



Do not connect/disconnect the module unit and the card unit with the power switch on. This may cause system malfunctions.



Do not put the module unit and the card unit in places where it is susceptible to static electricity (such as on a carpet). This may cause system malfunctions.



If the panel surface becomes dirty, wipe it off using a soft cloth immersed in a small amount of neutral detergent. Never use gasoline, alcohol, cleanser, or freon.



The module unit and the card unit were adjusted when installed. Please know that if changes are made by the customer after delivery such as replacing parts or adjusting the internal trimmer, maintaining of the performance afterward cannot be guaranteed.



Do not use in places where corrosive gas is generated. There is a possible cause of the malfunction or failure.



For protection from electric shock, please plug the power cable plug into an outlet with a protective earth terminal correctly connected to earth. Using it without connecting a protective earth may cause electric shock.



Place it in a location that is easily accessible to the power plug. If you feel abnormal, immediately turn off the power and unplug the power plug from the outlet. Also, even when the power is turned off, a small current flows. Always unplug the power plug from the outlet when not using this product for a long time. When installing this equipment in system, please construct a system that can be shut off with a breaker or the like.

Disposing of this Equipment

When disposing this equipment, contact an authorized industrial waste disposal operator to handle the disposal since this equipment needs to be disposed as an industrial waste.

Since the consumable parts including fans tend to lose their effectiveness with frequency and time of use, replacement is needed according to consumption. We recommend carrying out a periodical maintenance. For repair or maintenance, consult with our sales representatives or service department shown on the end of this manual. TAMURA owes no responsibility or liability for any failure due to improper use or alteration.

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About the latest version of instruction manual

Specifications and appearance etc. described in this manual are subject to change without notice for improvement.

Please download the latest version instruction manual from the website of TAMURA Corporation.

TAMURA Corporation website

<http://www.tamura-ss.co.jp>

Precautions on Installation of NT MATRIX

Install NT MATRIX with special care to ventilation according to the following precautions:

- 1) Do not block ventilation holes and fans.
- 2) When you embed NT MATRIX in a table or desk, use a structure in consideration of air flow.
- 3) When you stack NT MATRIX mounted on a rack, prevent thermal influence from equipment installed below it.

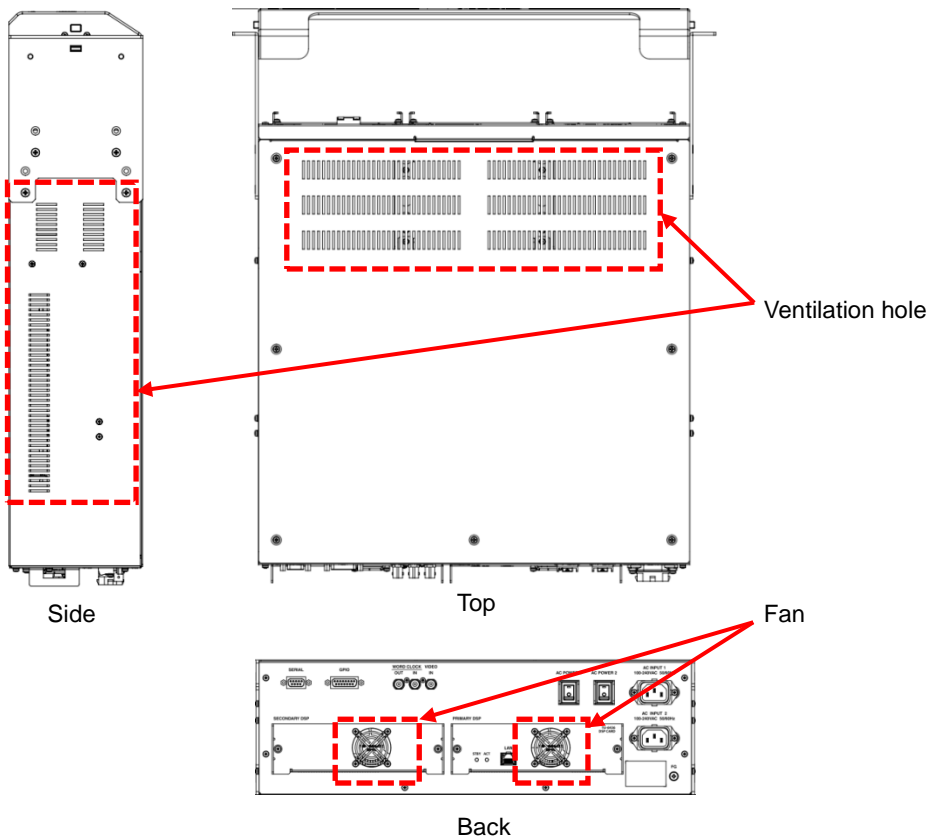


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1. Overview

NT MATRIX is a system interface with a built-in DSP processor that performs audio signal routing matrix, mix and various signal processing.

It corresponds to various uses by combining audio input / output card and control card.

It also supports redundancy of power supply input and redundancy of audio signal processing section (option), making it ideal for relaying, live broadcasting, program recording, television and radio studios that require high reliability.

2. Features

◆ Function

- (1) 160ch x 160ch Audio Matrix Router
- (2) Configurable DSP audio signal processing
- (3) 6 card slots (2 of which correspond to 64 ch audio input / output)
- (4) Analog, digital audio I / O card and GPIO, VCA control card option is available
- (5) Logic setting of button ON / OFF information of GPIO and touch panel can be done by using LOGIC function
- (6) User interface can be freely created using GUI application
- (7) EIAJ 19-inch rack mount size

◆ Original technologies

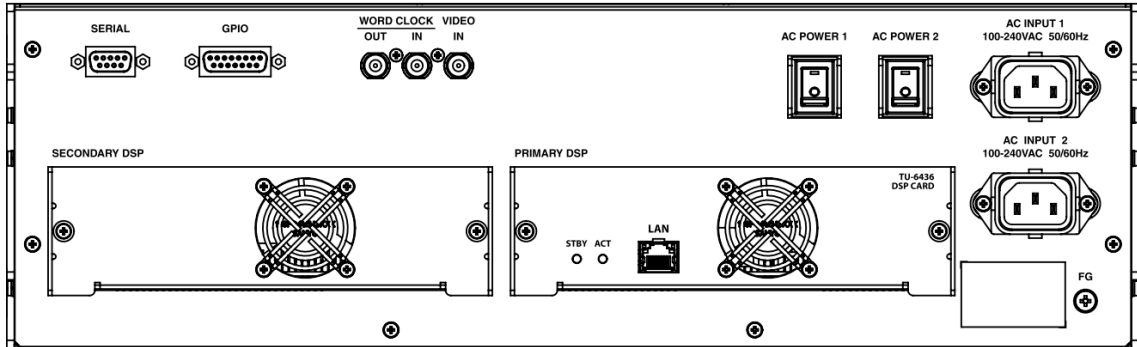
- (1) Built-in audio signal processing with a high dynamic range based on 32-bit floating point operations. Mixing can be performed without being conscious of the internal level diagram.
- (2) Redundant configuration of audio signal processing and controllers are available

◆ Operational safety

- (1) Power supply in a redundant configuration, allowing for Two AC inputs
- (2) Applications that require high reliability are supported with a redundant configuration of audio signal processing and controller-mounted DSP CARDS (optional).
- (3) The system uses no advanced OS but is composed based on firmware, realizing high stability and quick startup.

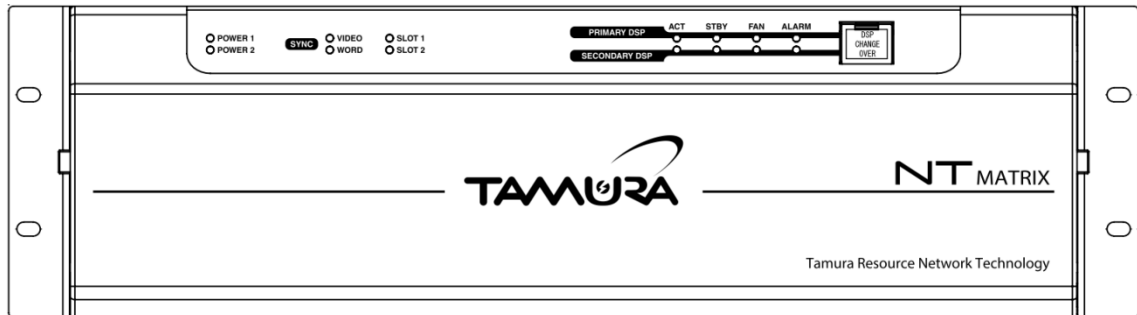
3. External View

3-1 Rear Panel

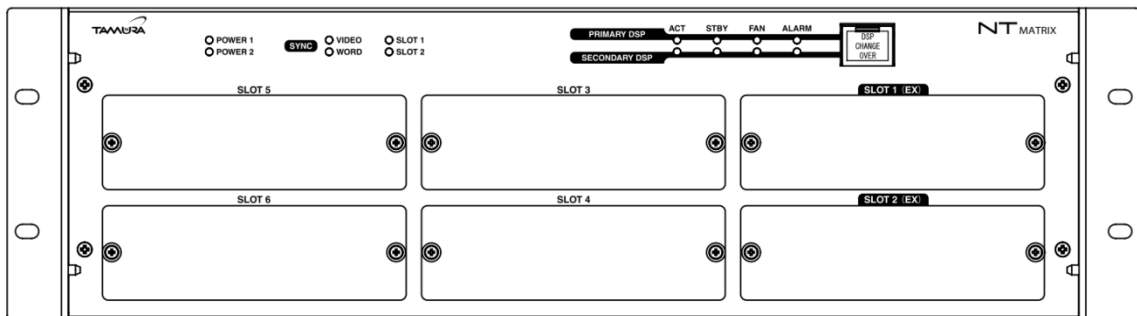


3-2 Front Panel

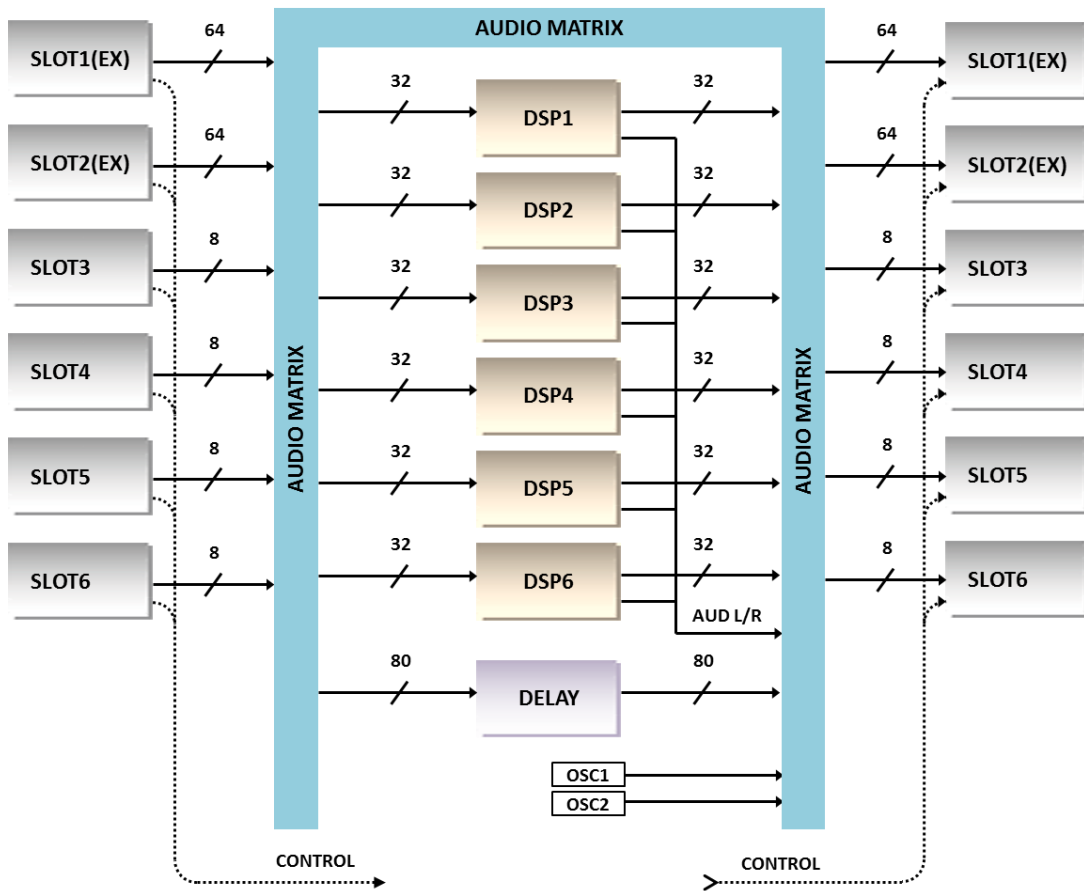
With front cover attached



With the front cover removed



4. Audio Block Diagram



5. Product composition

| Product code | Model | Name | Quantity | Remarks |
|---------------|----------|------------------------|----------|------------------------------------|
| M-21200552-00 | TS-10070 | NT MATRIX | 1 | NT MATRIX main unit |
| | | Front Cover | 1 | One pre-installed on the main unit |
| M-21300291-00 | TU-6436 | DSP CARD | 1 | One pre-installed on the main unit |
| | | AC CORD 2m (JP) | 2 | Accessories |
| | | Instruction Manual(JP) | 1 | Accessories |

* The table above shows the products that come standard with the main unit and does not include any options.

* Since the attached AC CORD is exclusively for Japan, it can not be used outside of Japan.

If you plan to use this machine outside of Japan, prepare AC CORD of your country separately.

6. Rating and Performance

6-1 General Rating

| | | |
|--|--------------------------|----------|
| Supply voltage (AC)..... | 100 to 240 V | 50/60 Hz |
| Power Consumption | 70 W | |
| External dimensions (with front cover) excluding protrusions..... | 482(W)×132.6(H)×553.5(D) | mm |
| External dimensions (without front cover) excluding protrusions..... | 482(W)×132.6(H)×530(D) | mm |
| Weight (with front cover, without options) | 11.5 kg | |
| Operating temperature range | -10°C | to +40°C |
| Operating humidity range | 20% | to 80% |
| Operating condition..... | Continuous | |

6-2 Input/Output Rating

| | |
|--|--|
| Transmission frequency range..... | 20 to 20,000 Hz |
| Sampling frequency | 48 kHz |
| Number of signals processed | 192 ch |
| Audio reference input/output level(Digital)..... | -18 dBFS/-20 dBFS |
| Synchronization signal input | |
| VIDEO INPUT..... | VIDEO (NTSC/PAL) |
| WORD CLOCK INPUT | WORD (TTL/1 Vpp) |
| Synchronization signal output | |
| WORD CLOCK OUTPUT | WORD (TTL) |
| Audio input | |
| SLOT1(EX) | Monaural 64 ch |
| SLOT2(EX) | Monaural 64 ch |
| SLOT3 | Monaural 8 ch |
| SLOT4 | Monaural 8 ch |
| SLOT5 | Monaural 8 ch |
| SLOT6 | Monaural 8 ch |
| Audio output | |
| SLOT1(EX) | Monaural 64 ch |
| SLOT2(EX) | Monaural 64 ch |
| SLOT3 | Monaural 8 ch |
| SLOT4 | Monaural 8 ch |
| SLOT5 | Monaural 8 ch |
| SLOT6 | Monaural 8 ch |
| DSP CARD SLOT (Primary SLOT equipped as standard)..... | 2SLOT |
| Control input/output | |
| LAN PORT (DSP CARD)..... | 1 port (LAN) |
| SERIAL PORT | 1 port (RS422) |
| GPIO | 4ch electrically isolated opto-coupler inputs / 3ch open-collector outputs |

6-3 Audio Performance

- * Performance assumes when I / O card is mounted on IO CARD SLOT.
 - * Performance assumes normal service condition unless otherwise specified
- <Normal service condition>

The normal service condition means that the specified power supply is used, where each component is correctly connected as per the system diagram, and then adjusted according to the specified level diagram. However, filters and equalizers are off.

Amplification allowance

(For the rated value at 1 kHz)

Analog input/output (Microphone-system)..... Within ± 2.0 dB

Analog input/output (Line-system)..... Within ± 1.0 dB

Digital input/output Within ± 0.3 dB

Amplification frequency characteristic

(Assumes 1 kHz as the reference at $F_s=48$ kHz and within transmission frequency range.)

Analog input/output (+4dBu IN) Within ± 0.6 dB (20 to 20 kHz)

Digital input/output..... Within ± 0.1 dB (20 to 20 kHz)

THD+N

(using 22 Hz HPF and 22 kHz LPF/ $F_s = 48$ kHz, 40 kHz LPF/ $F_s = 96$ kHz within transmission frequency range.)

Reference level input

Analog input/output (Microphone-system)..... Within 0.2%

Analog input/output (Line-system)..... Within 0.03%

Digital input/output Within 0.03%

When inputting a level equivalent to reference input level + head room -1 dB

Analog input/output (Microphone-system)..... Within 0.4%

Analog input/output (Line-system)..... Within 0.2%

Digital input/output Within 0.1%

SN ratio

(Using 22 Hz HPF and 22 kHz LPF)

Analog input/output (Microphone-system, -64 dBu input) 57 dB or more

Analog input/output (Line-system, +4 dBu input) 80 dB or more

Digital input - analog output (full scale reference) 105 dB or more

* The noise level of the analog input/output is measured using the input at 150 Ω termination.

Fader attenuation..... 100 dB or more

(Channel Fader attenuation characteristic for the maximum output level at 8 kHz)

LR phase difference (within transmission frequency range) Within $\pm 2^\circ$

Maximum input level

Analog..... +23 dBu (Distortion rate within 0.3%)

Digital..... 0 dB FS (Distortion rate within 0.1%)

6-4 Audio Control Parameters

INPUT LEVEL

HA GAIN +10 to -64 dBu (1 dB Step)
TRIM -24 to +24 dB (0.2 dB Step)

Filter/Equalizer

TYPE..... HPF(12dB/oct)/LPF(12dB/oct)/Notch/Peak/H Shelv/L Shelv
Frequency 20 to 22.4 kHz (245 Point)
Gain -18 to +18 dB (0.2 dB Step)
Q 0.4 to 6.4 (241 Point)

Dynamics

COMP/LIMITTER

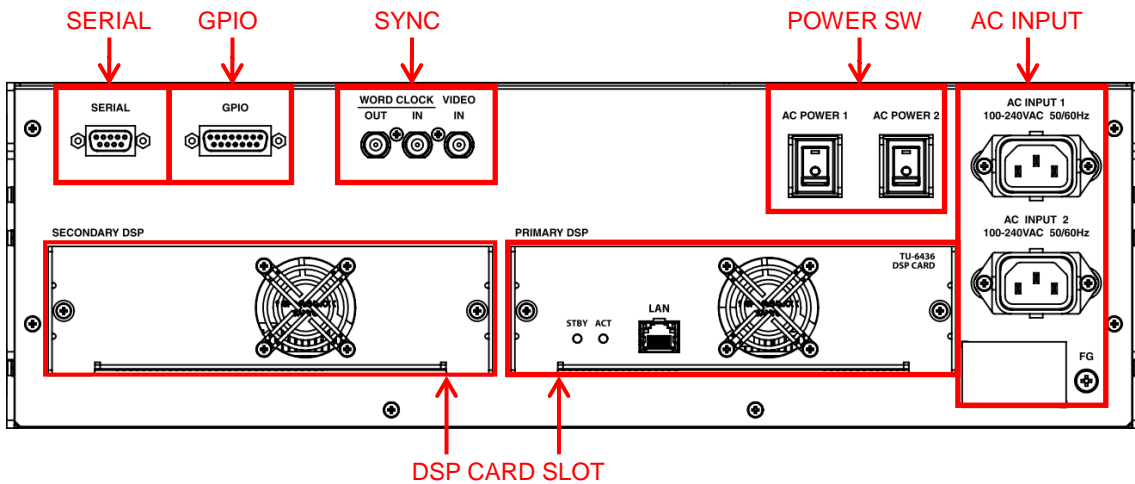
THRESHOLD -50 to 0 dB FS (0.25 dB Step)
RATIO 1.0 to ∞ (253 Point)
ATTACK TIME 0.1 mS to 70 mS (125 Point)
RELEASE TIME 10 mS to 2.6 S (133 Point)

DELAY

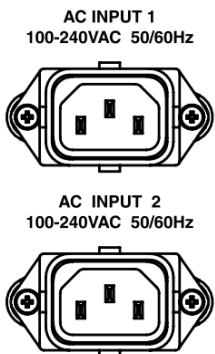
DELAY1..... 0~100.00ms (1/48ms Step)
DELAY2..... 0~100.00ms (1/48ms Step)
DELAY3..... 0~100.00ms (1/48ms Step)
DELAY4..... 0~100.00ms (1/48ms Step)

7. Exterior Features

7-1 Rear Panel



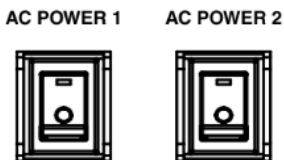
7-1-1 AC INPUT



AC INPUT1, AC INPUT2
Connect this terminal to AC power supply. Connect it to AC power supply with the attached AC cable.

FG
FG Terminal
Please use this terminal when connecting to ground for broadcasting.

7-1-2 POWER SW

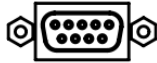


AC POWER1, AC POWER2
POWER ON/OFF switch of AC power supply

* NT MATRIX stores all the settings in internal nonvolatile memory. When the NT MATRIX power is turned on, the settings just before the last power-off are restored.

7-1-3 SERIAL

SERIAL



Connect when serial communication with external equipment. (Option function)

Connector Pin List

Connector : DB9S(f) , Locking screw M2.6

| | | | |
|-------|-------------|-------|-------------|
| Pin#1 | GND | Pin#6 | N.C. |
| Pin#2 | N.C. | Pin#7 | N.C. |
| Pin#3 | N.C. | Pin#8 | RS422 Tx(+) |
| Pin#4 | RS422 Rx(+) | Pin#9 | RS422 Tx(-) |
| Pin#5 | RX422 Rx(-) | - | - |

7-1-4 GPIO

GPIO



Inputs and outputs general-purpose control signals.

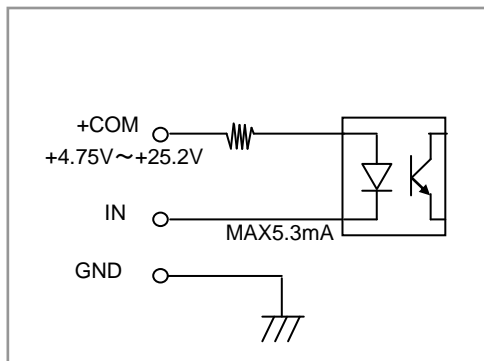
Connector Pin List

Connector : DB15S(f) , Locking screw M2.6

| | | | |
|-------|-----------------|--------|----------------|
| Pin#1 | +5V (max 200mA) | Pin#9 | GND |
| Pin#2 | GND | Pin#10 | GPIO OUT 1 COM |
| Pin#3 | GPIO OUT 1 | Pin#11 | GPIO OUT 2 COM |
| Pin#4 | GPIO OUT 2 | Pin#12 | GPIO OUT 3 COM |
| Pin#5 | GPIO OUT 3 | Pin#13 | GPIO IN 1 |
| Pin#6 | GPIO IN 2 | Pin#14 | GPIO IN 3 |
| Pin#7 | GPIO IN 4 | Pin#15 | GPIO IN +COM |
| Pin#8 | GND | - | - |

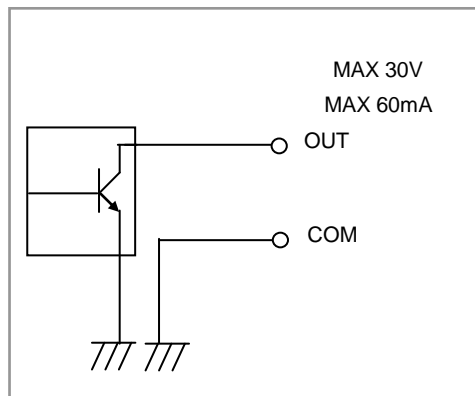
GPIO INPUT

Use the + COM terminal of GPIO INPUT within the voltage range shown below.
The current shown in the figure below flows through the IN terminal.

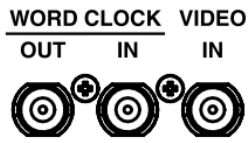


GPIO OUTPUT

Use GPIO OUTPUT within the voltage and current range shown below.



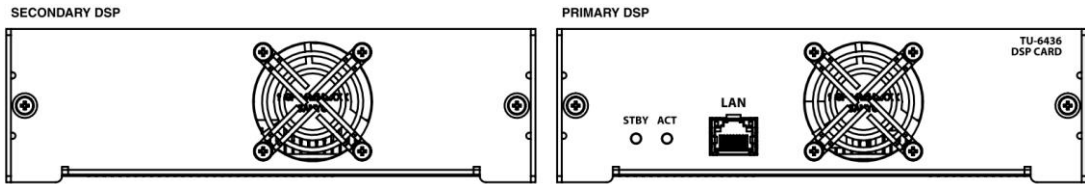
7-1-5 SYNC



External synchronization signal input and internal synchronization signal (WORD CLOCK) output.

Select synchronization signals on the setting application.

7-1-6 DSP CARD SLOT



There are two slots for DSP CARDS. By default, one DSP CARD is preinstalled in the PRIMARY DSP slot.

To use redundant configuration of DSP CARDS, mount an additional DSP CARD (optional) in the SECONDARY DSP slot.

7-1-7 Connection of DSP CARDS with NT MATRIX Manager and CUSTOM UI

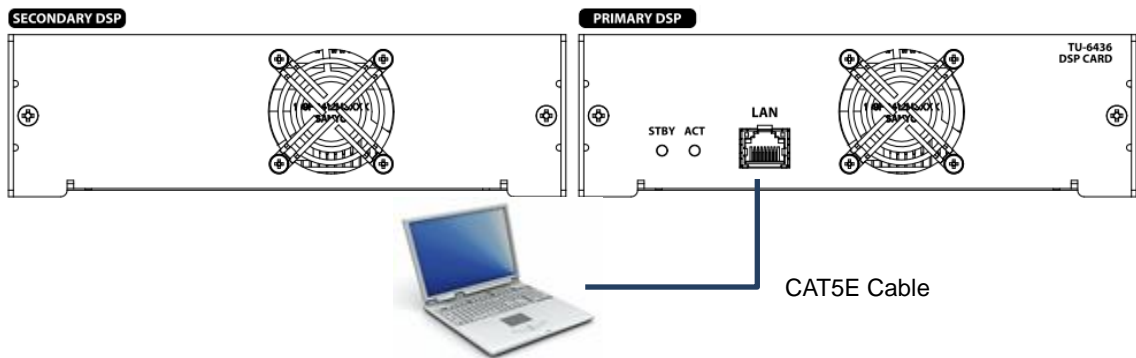
To use the NT MATRIX Manager application or CUSTOM UI application, connect DSP CARD(s) to a computer on which the NT MATRIX Manager application or CUSTOM UI application is installed, using a LAN cable of CAT5E or higher.

If Primary DSP is ACT (running), connect with Primary DSP with LAN cable.

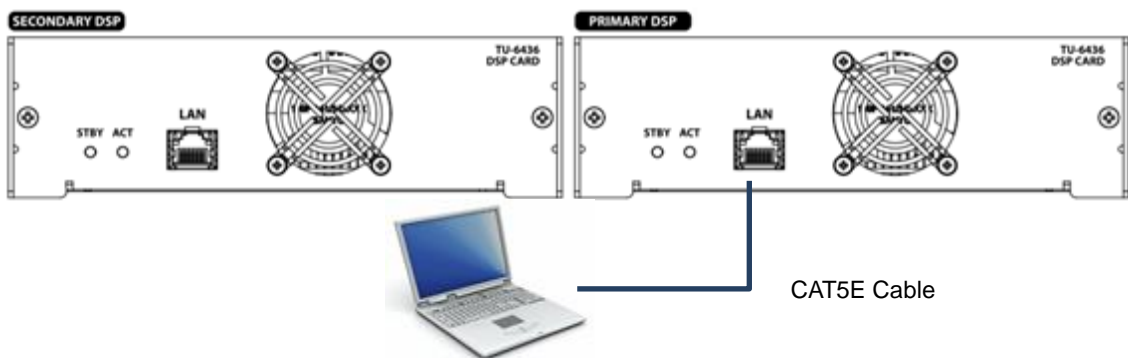
If the Secondary DSP is ACT (running), connect with the secondary DSP with a LAN cable.

Note: If the DSP CARD is composed of two boards and the DSP CARD of the ACT switches from Primary to Secondary, it is necessary to change the connection of the LAN cable.

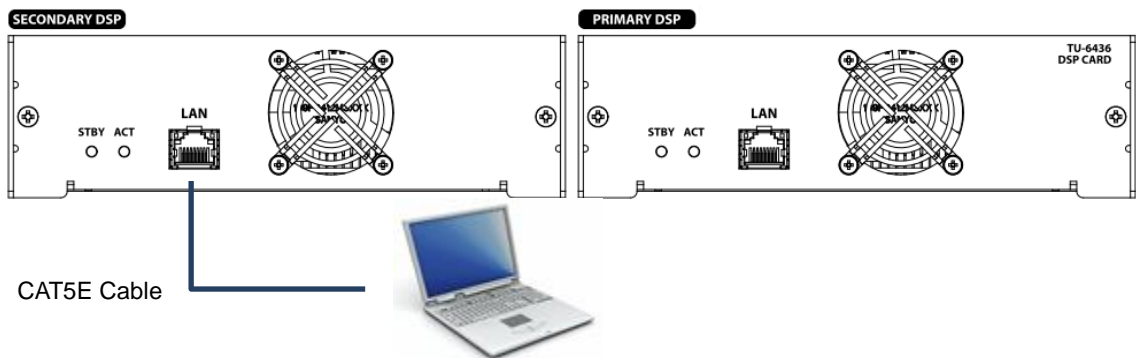
[Connection with a computer: One DSP CARD configuration]



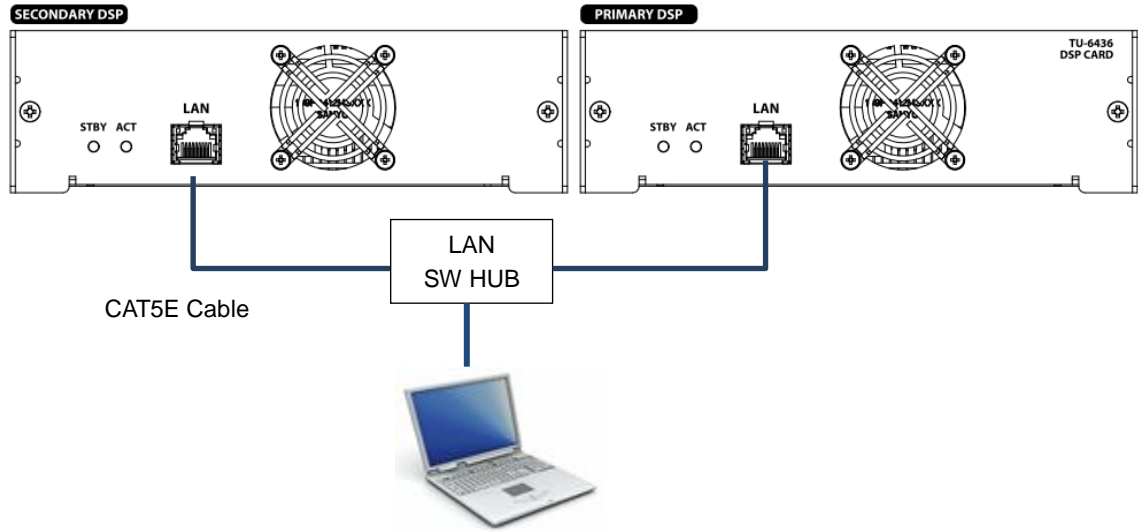
[Connection with a computer: Two DSP CARD configuration Primary DSP CARD = ACT]



[Connection with a computer: Two DSP CARD configuration Secondary DSP CARD = ACT]

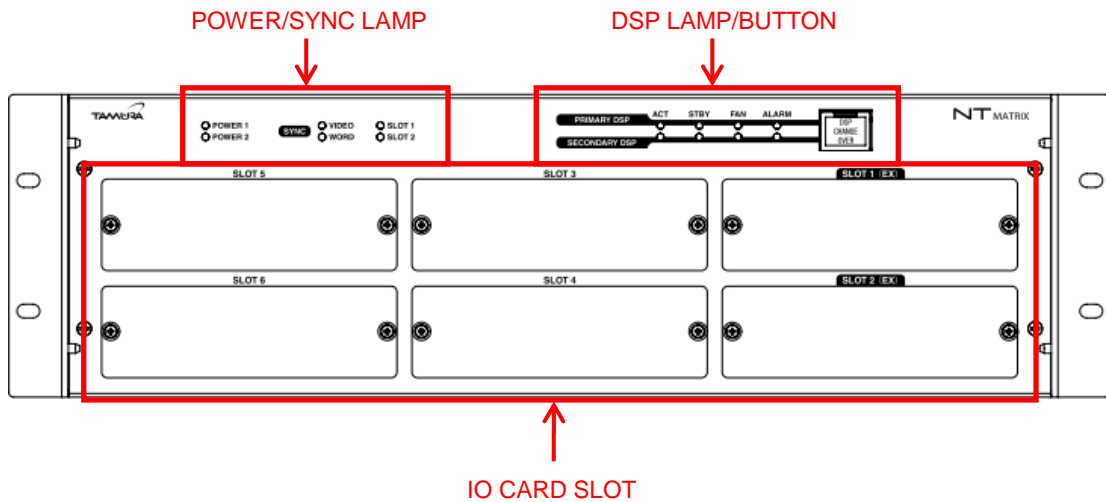


[Connection with a computer: Two DSP CARD configuration Connection via LAN SW HUB]



* LAN SW HUB: Please use a switching hub that supports over 100 Mbps.

7-2 Front Panel



7-2-1 POWER/SYNC LAMP



POWER1

Lights up when AC power is input to AC INPUT 1 and the power supply is operating normally.

POWER2

Lights up when AC power is input to AC INPUT 2 and the power supply is operating normally.

SYNC

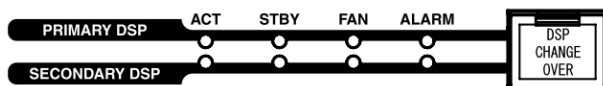
If it is synchronized with the selected signal, the lamp of the selection signal will be lit.

If it is not synchronized with the selected signal, the selection signal lamp flashes. In this case, it operates with reference to the internal oscillator.

When the internal oscillator is selected, all lamps are turned off and operate with reference to the internal oscillator.

* Select synchronization signal on the NT MATRIX Manager application screen.

7-2-2 DSP LAMP/BUTTON



ACT/STBY LAMP

PRIMARY DSP, SECONDARY DSP Displays which DSP CARD is operating.

ACT is lit DSP CARD is in operation. STBY is lit DSP CARD is in standby mode.

FAN LAMP

It lights up when the FAN of each DSP CARD is operating normally.

ALARM LAMP

It lights up when any alarm is generated on each DSP CARD.

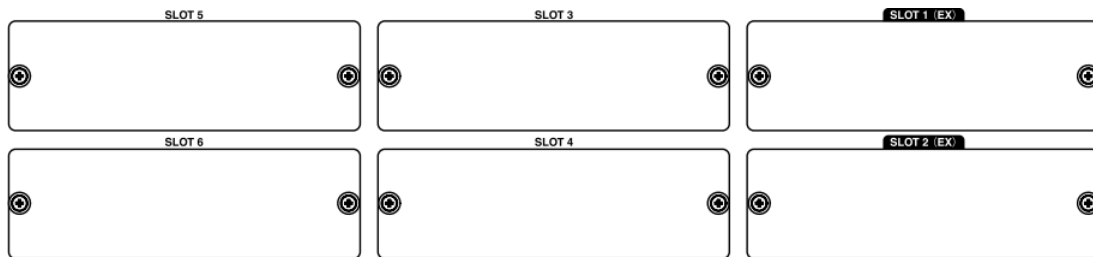
DSP CHANGE OVER

When the DSP CARD is redundant configuration, pressing this button will switch the DSP CARD mounted on SECONDARY DSP SLOT to ACTIVE (active) state.

When DSP AUTO CHANGEOVER is set to ENABLE, DSP CARD switches automatically. In this case, this button functions as a forced selection button of DSP CARD installed in SECONDARY DSP SLOT.

* Setting of DSP AUTO CHANGEOVER is done in the NT MATRIX Manager application screen.

7-2-3 IO CARD SLOT



Insert optional IO CARDS of various types to these slots. IO CARDS of different types can be inserted to the slots.

SLOT 1 (EX) and SLOT 2 (EX) correspond to 64 ch audio input and 64 ch audio output.

SLOT 3 to 6 correspond to 8ch audio input and 8ch audio output.

All SLOTS correspond to control cards such as GPIO CARD and VCA CARD.

*When IO CARD breaks down, CARD of other SLOT may not operate properly.

For this reason, do not leave CARD of malfunctioning inserted, please remove it from the NT MATRIX main unit.

9. Appendix

9-1 Adding DSP CARD

9-1-1 Precautions



If two DSP CARD configuration is used, the same-version DSP CARDS must be mounted in the Primary DSP Slot and the Secondary DSP Slot.



The involatile memory of a DSP CARD stores the data. The stored data may be lost if you perform a replacement procedure incorrectly or the DSP CARD fails. If a means for emergency recovery is required, it is recommended to perform "Backup of NT MATRIX Data." For the details of the procedure, refer to Appendix, Backing Up and Uploading NT MATRIX Data.



Dissipate the static electricity from your body sufficiently before you touch anywhere DSP CARDS.

9-1-2 Additional Procedure

* This procedure copies the data stored in the Primary DSP CARD to a new DSP CARD mounted in the Secondary DSP Slot.



Please keep the removed FAN CARD carefully. Fan card is necessary to restore the original state, such as when DSP CARD fails.

1 Turn off the NT MATRIX power.

2 Remove FAN CARD and install DSP CARD.

3 Before turning on the NT MATRIX power, make sure that the DSP Change Over button located at the upper right side of the touch panel is Off (not depressed).

Make sure that the button is not depressed and is in the Off status. The data stored in the Primary DSP CARD will be lost if the button is depressed and is in the On status.

4 Turn on the NT MATRIX power.

While the startup screen is displayed, data is transferred from the Primary DSP CARD to the Secondary DSP CARD.

9-1-3 Operation Check after Adding

After adding, activate the DSP CARD to check the audio input/output and operation displays.

9-2 Replacing DSP CARD

9-2-1 Precautions



If two DSP CARD configuration is used, the same-version DSP CARDS must be mounted in the Primary DSP Slot and the Secondary DSP Slot.



The involatile memory of a DSP CARD stores the data. The stored data may be lost if you perform a replacement procedure incorrectly or the DSP CARD fails. If a means for emergency recovery is required, it is recommended to perform "Backup of NT MATRIX Data." For the details of the procedure, refer to Appendix, Backing Up and Uploading NT MATRIX Data.



Dissipate the static electricity from your body sufficiently before you touch anywhere DSP CARDS.

9-2-2 One DSP CARD Configuration

- * Perform Procedures 1 and 5 if you need to transfer the data stored in a DSP CARD to a new DSP CARD.
- * It is not necessary to carry out the following procedure 1 and step 5 if you record the setting value before replacing and manually set it after replacement.

1 Perform the procedure of "Transferring Data from NT MATRIX to Computer."

For details of the procedure, refer to Appendix, Transferring Backup Data from NT MATRIX to Computer File (Backup).

2 Turn off the NT MATRIX power.

3 Remove the DSP CARD to be replaced and install a new DSP CARD.

4 Turn on the NT MATRIX power.

5 Perform the procedure of "Transferring Data from Computer File to NT MATRIX."

For details of the procedure, refer to Appendix, Transferring Backup Data from Computer File to NT MATRIX (Upload).

9-2-3 Two DSP CARD Configuration (Replacing Primary DSP CARD)

* This procedure copies the data stored in the Secondary DSP CARD to a new DSP CARD mounted in the Primary DSP Slot.



If loss of data in the DSP CARD is critical, it is recommended to perform "Backup of NT MATRIX Data" to provide a means for emergency recovery. For the details of the procedure, refer to Appendix, Backing Up and Uploading NT MATRIX Data.

1 Turn off the NT MATRIX power.

2 Remove the DSP CARD to be replaced and install a new DSP CARD.

3 Before turning on the NT MATRIX power, press the DSP Change Over button located at the front panel to turn it on.

Make sure that the button is depressed and is in the On status. The data stored in the Secondary DSP CARD will be lost if the button is not depressed and is in the Off status.

4 Turn on the NT MATRIX power.

While the startup screen is displayed, data is transferred from the Secondary DSP CARD to the Primary DSP CARD.

5 After the normal display of NT MATRIX front panel appears, press the DSP Change Over button again to turn it off.

9-2-4 Two DSP CARD Configuration (Replacing Secondary DSP CARD)

* This procedure copies the data stored in the Primary DSP CARD (Setup and Preset Program) to a new DSP CARD mounted in the Secondary DSP Slot.



If loss of data in the DSP CARD is critical, it is recommended to perform "Backup of NT MATRIX Data" to provide a means for emergency recovery. For the details of the procedure, refer to Appendix, Backing Up and Uploading NT MATRIX Data.

1 Turn off the NT MATRIX power.

2 Remove the DSP CARD to be replaced and install a new DSP CARD.

3 Before turning on the NT MATRIX power, make sure that the DSP Change Over button located at the front panel is Off (not depressed).

Make sure that the button is not depressed and is in the Off status. The data stored in the Primary DSP CARD will be lost if the button is depressed and is in the On status.

4 Turn on the NT MATRIX power.

While the startup, data is transferred from the Primary DSP CARD to the Secondary DSP CARD.

9-2-5 Operation Check after Replacement

After replacement, activate the DSP CARD to check the audio input/output and operation displays.

9-3 DSP CARD Installation Method

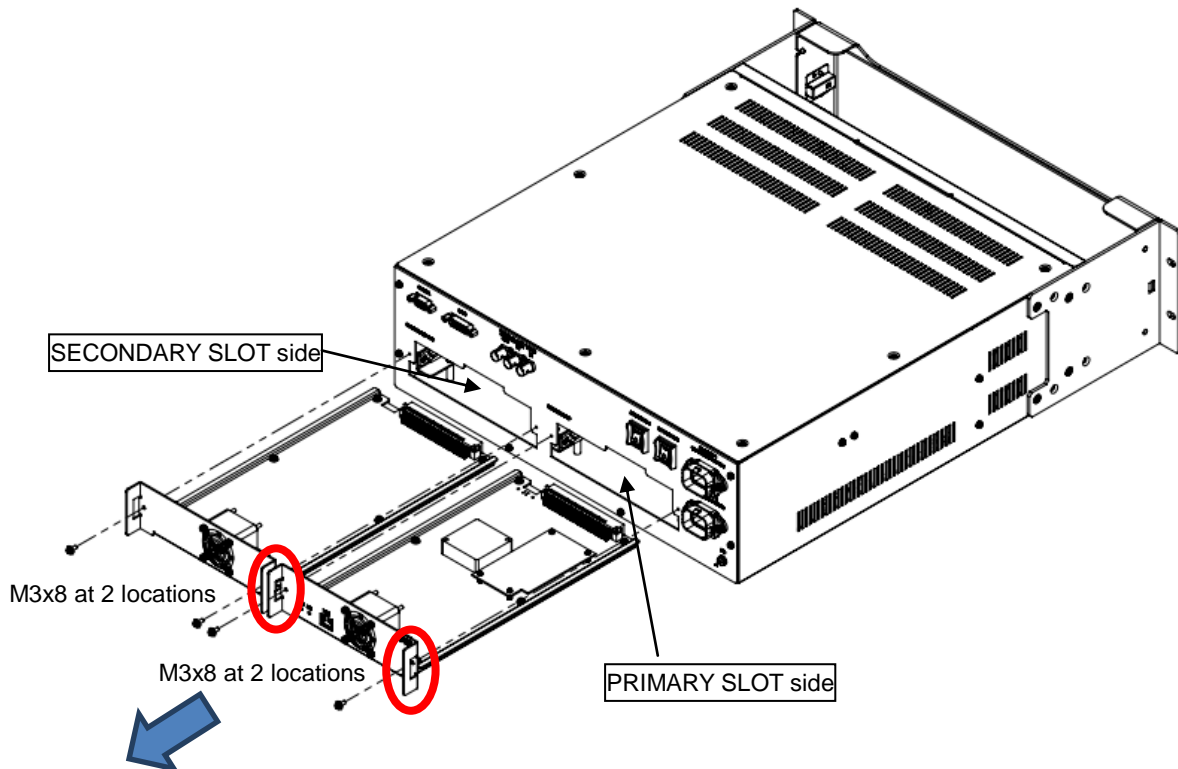
Install DSP CARD in the following procedure.

* Dissipate the static electricity from your body sufficiently before you touch anywhere CARDS.

9-3-1 Remove DSP CARD (FAN CARD)

Remove the two screws from the DSP CARD as shown in the figure below.

* In the figure, PRIMARY indicates DSP CARD and SECONDARY indicates FAN CARD.



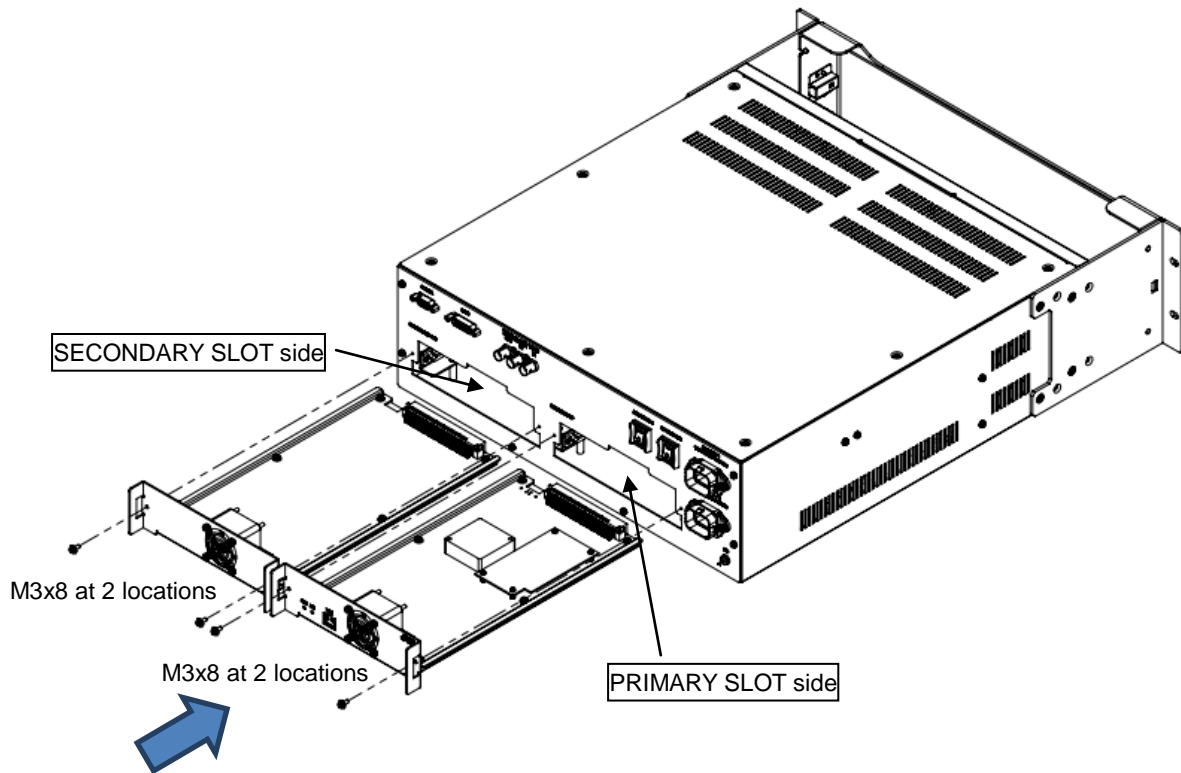
Grasp both sides (red circle in the figure below) of DSP CARD and pull it toward you, DSP CARD will come off the main unit.

9-3-2 Install DSP CARD

Insert the DSP CARD straight and tighten the two places with the screw as shown in the figure below.

* If the mounting of the screw is loose, you do not can use it in the correct state. Because the electrical signal level is not stable.

* In the figure, PRIMARY indicates DSP CARD and SECONDARY indicates FAN CARD.



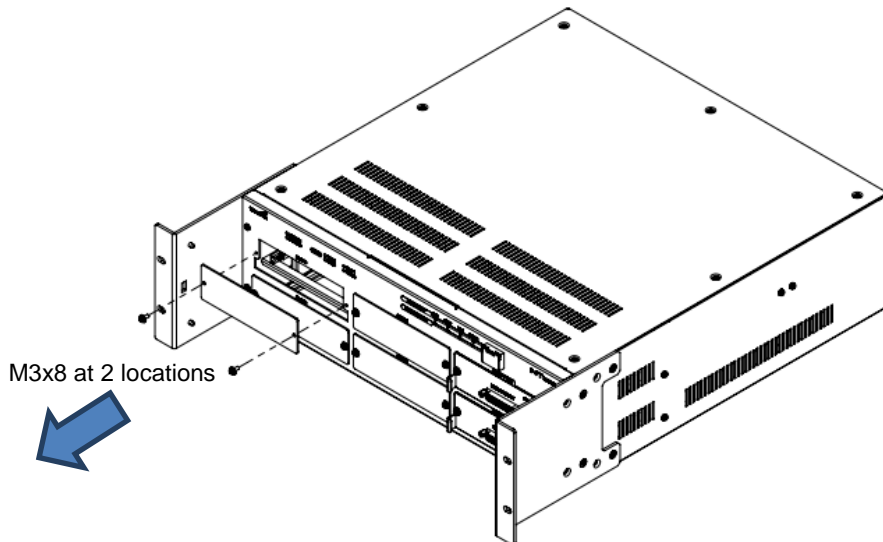
9-4 IO CARD Installation Method

Install IO CARD in the following procedure.

* Dissipate the static electricity from your body sufficiently before you touch anywhere CARDS.

9-4-1 Removing Blank Panel

Remove the two screws from the Blank Panel as shown in the figure below.

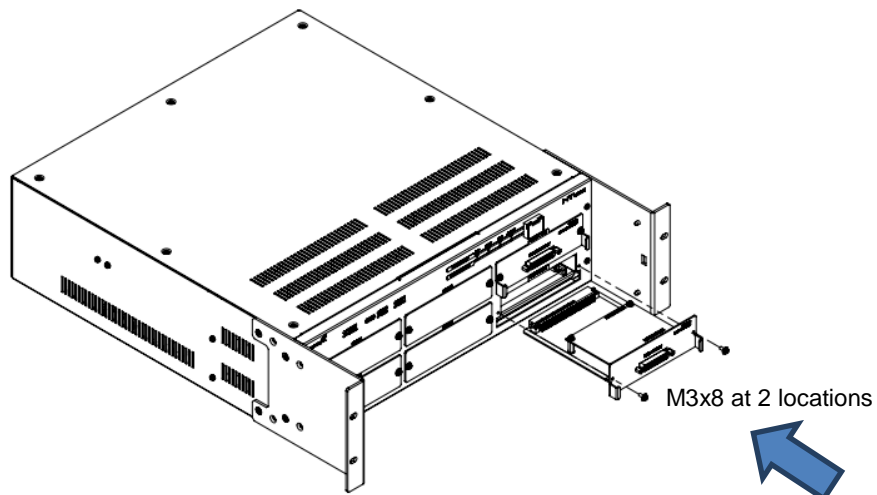


The blank panel will come off.

9-4-2 Install IO CARD

Insert the IO CARD straight and tighten the two places with the screw as shown in the figure below.

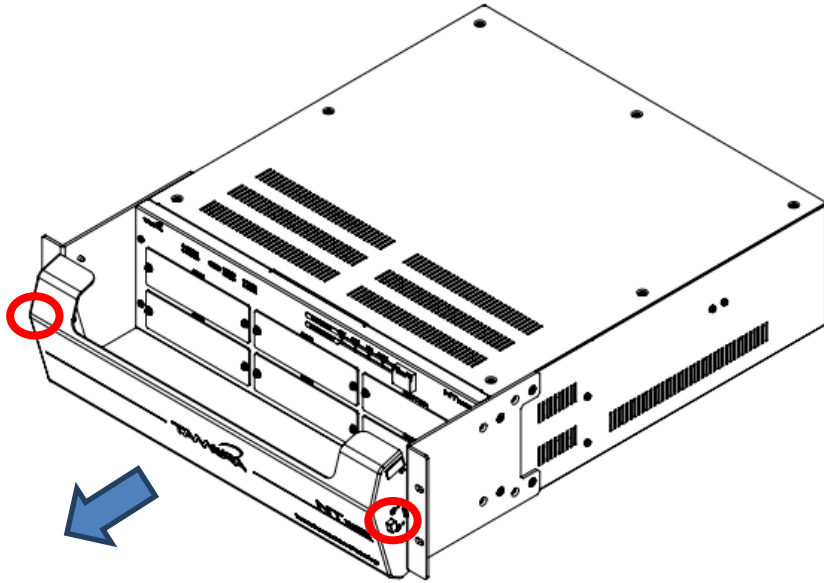
* If the mounting of the screw is loose, you do not can use it in the correct state. Because the electrical signal level is not stable.



9-5 How to attach and remove the front cover

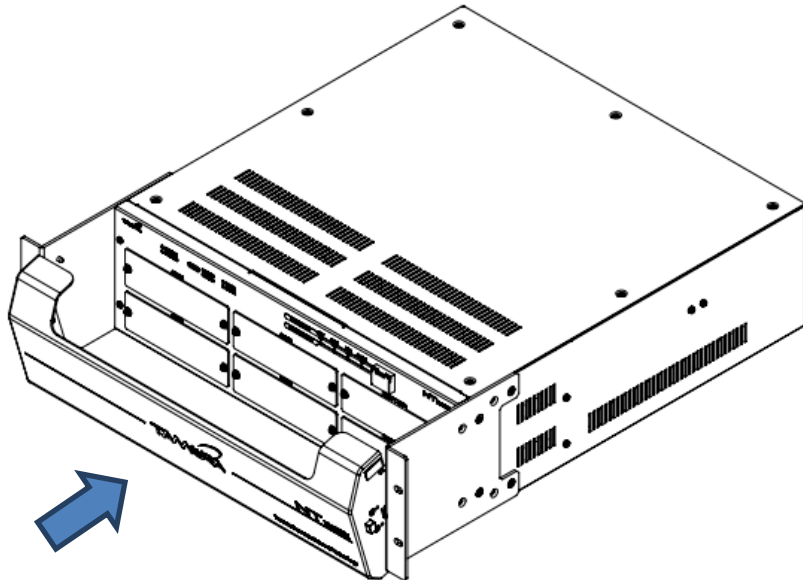
9-5-1 Remove the front cover

Push the cover forward while holding the buttons on the front cover (red circle in the figure below) and pull it out horizontally from the main unit to remove it.



9-5-2 Attach the front cover

Align the groove of the front cover with the pin on the inside of the main unit and horizontally push it. The cover is locked to the body and fixed.



9-6 Initializing Internal Data

Perform the following procedure to initialize internal data when required.

If NT MATRIX does not start up due to an internal data error, you may be able to clear the error using this procedure.

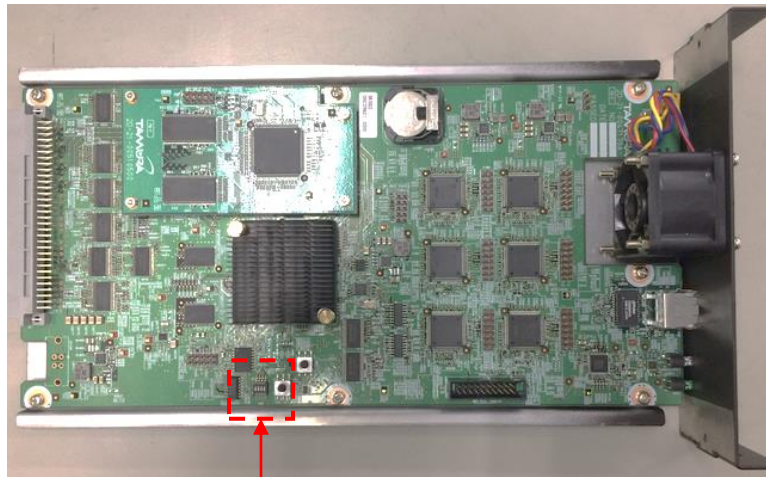
- * Data to be initialized by this procedure
 - All settings such as the matrixes, and parameters
 - Log record data

1 Turn off the NT MATRIX power.

2 Remove DSP CARD to initialize internal data.

Refer to "DSP CARD Installation Method" for detailed procedure.

3 Set "3" and "4" of DIP switch "SW4" of DSP CARD to ON.



1 , 2 , 3 , 4
OFF , OFF , ON , ON

ON : Upper

OFF : Lower

4 Attach the DSP CARD with the DIP switch set to the NT MATRIX main unit.

Refer to "DSP CARD Installation Method" for detailed procedure.

5 Turn on the NT MATRIX power.

6 Wait 30 seconds or more after turning on the power.

Initialization of internal data is completed within 30 seconds after turning on the power.

Caution. Do not turn off the power within 30 seconds after turning on the power.

7 Turn off the NT MATRIX power.**8 Remove the initialized DSP CARD.**

Refer to "DSP CARD Installation Method" for detailed procedure.

9 Restore the dip switch set in procedure 3 to its original setting.

Set "3" and "4" of DIP switch "SW4" back to OFF setting. (Set all "1" to "4" of "SW4" to OFF)

10 Attach the DSP CARD to the main unit.

Refer to "DSP CARD Installation Method" for detailed procedure.

9-7 Backing Up and Uploading NT MATRIX Data

Have ready a computer which NT MATRIX Manager has been installed.

9-7-1 Transferring Backup Data from NT MATRIX to computer File (Backup)

1 Connect the DSP CARD and the computer with a LAN cable.

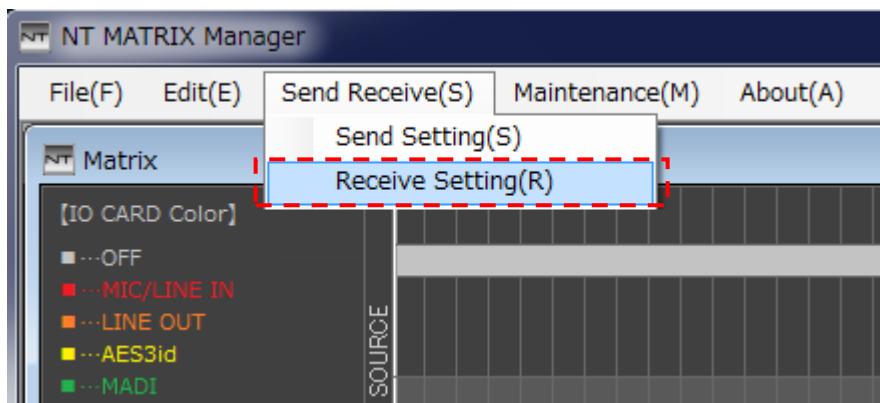
If two DSP CARDS are mounted, connect the cable to the ACT(running) DSP CARD. (If the Primary DSP CARD is Active, connect the cable to the Primary DSP CARD; If the Secondary DSP CARD is Active, connect the cable to the Secondary DSP CARD.)

2 Turn on the NT MATRIX power.

3 Start up NT MATRIX Manager that has been installed on the computer.

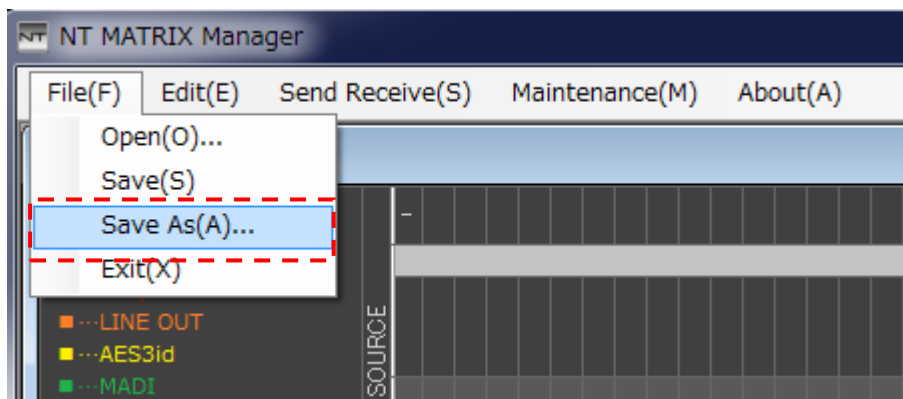
4 Select Send Receive - Receive Setting.

Receives setting data from the NT MATRIX main unit.



5 Save from File - Save As to file.

Save the received NT MATRIX setting data with a file name.



9-7-2 Transferring Backup Data from computer File to NT MATRIX (Upload)

1 Connect the DSP CARD and the computer with a LAN cable.

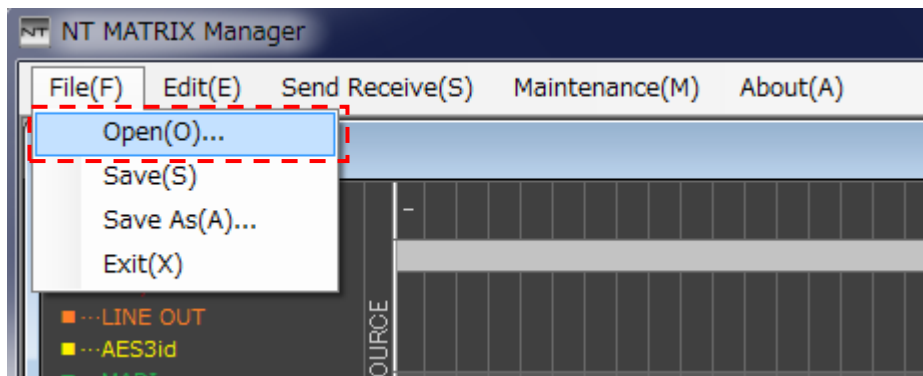
If two DSP CARDS are mounted, connect the cable to the ACT(running) DSP CARD. (If the Primary DSP CARD is Active, connect the cable to the Primary DSP CARD; If the Secondary DSP CARD is Active, connect the cable to the Secondary DSP CARD.)

2 Turn on the NT MATRIX power.

3 Start up NT MATRIX Manager that has been installed on the PC.

4 Specify and open the file backed up from File – Open.

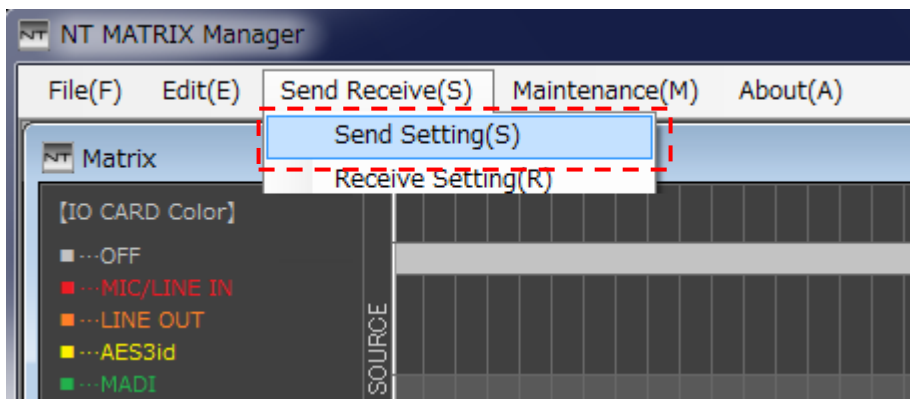
Load NT MATRIX setting data from file to NT MATRIX Manager.



5 Select Send Receive - Send Setting.

Send the setting data to the NT MATRIX main unit.

After data transmission is completed, the data of NT MATRIX main unit will be replaced with the settings of the backup file



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Customer Service

If you experience any problems with our products and require any servicing, or have any questions about TAMURA product line, please contact your TAMURA sales representative or TAMURA at the following locations.

To help speed up servicing and readjustment, please be ready to describe the problem accurately, what operations you were performing before and after it happened, or the history of usage.

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| <p style="text-align: center;">NT MATRIX System Interface Instruction Manual (EN)</p> |
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