



DIGITAL MIXING SYSTEM

# RIVAGE

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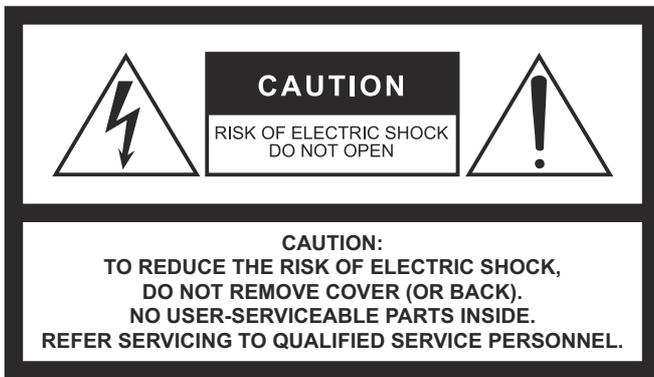
PM

DSP ENGINE

# DSP-RX-EX

# DSP-RX

Owner's Manual



The above warning is located on the top/rear of the unit.



L'avertissement ci-dessus est situé sur le dessus/l'arrière de l'unité.

## Explanation of Graphical Symbols Explication des symboles



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.  
L'éclair avec une flèche à l'intérieur d'un triangle équilatéral est destiné à attirer l'attention de l'utilisateur sur la présence d'une « tension dangereuse » non isolée à l'intérieur de l'appareil, pouvant être suffisamment élevée pour constituer un risque d'électrocution.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.  
Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à attirer l'attention de l'utilisateur sur la présence d'instructions importantes sur l'emploi ou la maintenance (réparation) de l'appareil dans la documentation fournie.

## IMPORTANT SAFETY INSTRUCTIONS

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use this apparatus near water.
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/accessories specified by the manufacturer.
- 12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



### WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

(UL60065\_03)

## PRÉCAUTIONS CONCERNANT LA SÉCURITÉ

- 1 Lire ces instructions.
- 2 Conserver ces instructions.
- 3 Tenir compte de tous les avertissements.
- 4 Suivre toutes les instructions.
- 5 Ne pas utiliser ce produit à proximité d'eau.
- 6 Nettoyer uniquement avec un chiffon propre et sec.
- 7 Ne pas bloquer les orifices de ventilation. Installer l'appareil conformément aux instructions du fabricant.
- 8 Ne pas installer l'appareil à proximité d'une source de chaleur comme un radiateur, une bouche de chaleur, un poêle ou tout autre appareil (y compris un amplificateur) produisant de la chaleur.
- 9 Ne pas modifier le système de sécurité de la fiche polarisée ou de la fiche de terre. Une fiche polarisée dispose de deux broches dont une est plus large que l'autre. Une fiche de terre dispose de deux broches et d'une troisième pour le raccordement à la terre. Cette broche plus large ou cette troisième broche est destinée à assurer la sécurité de l'utilisateur. Si la fiche équipant l'appareil n'est pas compatible avec les prises de courant disponibles, faire remplacer les prises par un électricien.
- 10 Acheminer les cordons d'alimentation de sorte qu'ils ne soient pas piétinés ni coincés, en faisant tout spécialement attention aux fiches, prises de courant et au point de sortie de l'appareil.
- 11 Utiliser exclusivement les fixations et accessoires spécifiés par le fabricant.
- 12 Utiliser exclusivement le chariot, le stand, le trépied, le support ou la table recommandés par le fabricant ou vendus avec cet appareil. Si l'appareil est posé sur un chariot, déplacer le chariot avec précaution pour éviter tout risque de chute et de blessure.
- 13 Débrancher l'appareil en cas d'orage ou lorsqu'il doit rester hors service pendant une période prolongée.
- 14 Confier toute réparation à un personnel qualifié. Faire réparer l'appareil s'il a subi tout dommage, par exemple si la fiche ou le cordon d'alimentation est endommagé, si du liquide a coulé ou des objets sont tombés à l'intérieur de l'appareil, si l'appareil a été exposé à la pluie ou à de l'humidité, si l'appareil ne fonctionne pas normalement ou est tombé.



### AVERTISSEMENT

POUR RÉDUIRE LES RISQUES D'INCENDIE OU DE DÉCHARGE ÉLECTRIQUE, N'EXPOSEZ PAS CET APPAREIL À LA PLUIE OU À L'HUMIDITÉ.

(UL60065\_03)

# FCC INFORMATION (U.S.A.)

## 1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

## 2. IMPORTANT:

When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

## 3. NOTE:

This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does

not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA90620

The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

\* This applies only to products distributed by Yamaha Corporation of America.

(class B)

## COMPLIANCE INFORMATION STATEMENT (Supplier's declaration of conformity procedure)

Responsible Party : Yamaha Corporation of America  
Address : 6600 Orangethorpe Ave., Buena Park, Calif. 90620  
Telephone : 714-522-9011  
Type of Equipment : Signal Processor/ Signal Processor Accessory  
Model Name : DSP-RX-EX, DSP-RX/ DEK-DSP-RX

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- 1) this device may not cause harmful interference, and
- 2) this device must accept any interference received including interference that may cause undesired operation.

\* This applies only to products distributed by Yamaha Corporation of America.

(FCC SDoC)

## CAN ICES-3 (B)/NMB-3(B)

(can\_b\_02)

This product contains a battery that contains perchlorate material.  
Perchlorate Material—special handling may apply,  
See [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate).

\* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA.

(Perchlorate)

# PRECAUTIONS

## PLEASE READ CAREFULLY BEFORE PROCEEDING

Please keep this manual in a safe place for future reference.

This product is a DSP engine that serves as the core signal processing and control system for the RIVAGE PM system. Do not use this product for any purpose other than the one intended.

Individuals who are not familiar with the proper way to handle this type of product, or individuals who cannot handle this type of product in accordance with the instructions in this manual, should be supervised by responsible persons to ensure safety.

Precautions described here are intended to help you use the DSP-RX(-EX) or DEK-DSP-RX safely and properly, and to help prevent injury to you or other persons, or damage to property.



## WARNING

**Always follow the basic precautions listed below to avoid the possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:**

### If you notice any abnormality

- If any of the following problems occur, immediately turn off the power switch and disconnect the electric plug from the outlet.
  - The power cord or plug becomes frayed or damaged.
  - Unusual smells or smoke are emitted.
  - Some object, or water has been dropped into the product.
  - There is a sudden loss of sound during use of the product.
  - Cracks or other visible damage appear on the product.
 Then have the product inspected or repaired by qualified Yamaha service personnel.

### Power supply/Power cord

- Do not place the power cord near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cord, place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.
- Only use the voltage specified as correct for the product. The required voltage is printed on the name plate of the product.
- Use only the supplied power cord/plug.
  - If you intend to use the product in an area other than in the one you purchased, the included power cord may not be compatible. Please check with your Yamaha dealer.
- Check the electric plug periodically and remove any dirt or dust which may have accumulated on it.
- Make sure to fully insert the electric plug to prevent electric shocks or fire.

- This product receives power from multi sources. When setting up the product, make sure that the AC outlet you are using is easily accessible. If some trouble or malfunction occurs, immediately turn off the power switches and disconnect the all plugs from the outlet. Even when the power switches are turned off, as long as the power cord is not unplugged from the wall AC outlet, the product will not be disconnected from the power source.



- Remove the electric plug from the outlet when the product is not to be used for extended periods of time.
- Do not touch the product or the electric plug during an electrical storm.
- Be sure to connect to an appropriate outlet with a protective grounding connection. Improper grounding can result in electrical shock, fire, or damage.

### Do not open

- This product contains no user-serviceable parts. Do not attempt to disassemble the internal parts or modify them in any way.

### Water warning/Fire warning

- Do not expose the product to rain, use it near water or in damp or wet conditions, or place on it any containers (such as vases, bottles or glasses) containing liquids which might spill into any openings.
- Never insert or remove an electric plug with wet hands.
- Do not place any burning items or open flames near the product, since they may cause a fire.

### Hearing loss

- Before turning the power of all devices on or off, make sure that all volume levels are set to the minimum. Failing to do so may result in hearing loss, electric shock, or device damage.
- When turning on the AC power in your audio system, always turn on the power amplifier LAST, to avoid hearing loss and speaker damage. When turning the power off, the power amplifier should be turned off FIRST for the same reason.

## **CAUTION**

Always follow the basic precautions listed below to avoid the possibility of physical injury to you or others. These precautions include, but are not limited to, the following:

### **Power supply/Power cord**

- When removing the electric plug from the product or an outlet, always hold the plug itself and not the cord. Pulling by the cord can damage it.

### **Location and connection**

- Do not place the product in an unstable position or a location with excessive vibration, where it might accidentally fall over and cause injury.
- Keep this product out of reach of children. This product is not suitable for use in locations where children are likely to be present.
- Do not block the vents. This product has ventilation holes at the front/rear to prevent the internal temperature from becoming too high. In particular, do not place the product on its side or upside down. Inadequate ventilation can result in overheating, possibly causing damage to the product(s), or even fire.
- If the product is mounted in an EIA standard rack, carefully read the section "Precautions for Rack Mounting" on page 8. Inadequate ventilation can result in overheating, possibly causing damage to the product(s), malfunction, or even fire. If this product is to be used in a small space other than an EIA-standard rack, make sure that there is adequate space around the product: 10 cm at the sides.
- Do not place the product in a location where it may come into contact with corrosive gases or salt air. Doing so may result in malfunction.
- Before moving the product, remove all connected cables.
- When transporting or moving the product, always use two or more people. Attempting to lift the product by yourself may damage your back, result in other injury, or cause damage to the product itself.

### **Maintenance**

- Remove the power plug from the AC outlet when cleaning the product.

### **Handling caution**

- Do not insert your fingers or hands in any gaps or openings on the product (vents, panel, etc.).
- Do not rest your weight on the product or place heavy objects on it.

### **Backup battery**

- Do not replace the backup battery by yourself. Doing so may cause an explosion and/or damage to the product(s). When the backup battery needs to be replaced, "Low Battery" or "No Battery" will appear on the display. In this case, contact your Yamaha dealer and have qualified Yamaha service personnel replace the backup battery.

## **NOTICE**

To avoid the possibility of malfunction/damage to the product, damage to data, or damage to other property, follow the notices below.

### **Handling and maintenance**

- Do not connect this product to public Wi-Fi and/or Internet directly. Only connect this product to the Internet through a router with strong password-protections. Consult your router manufacturer for information on security best practices.
- Do not use the product in the vicinity of a TV, radio, or other electric products. Otherwise, the product, TV, or radio may generate noise.
- Do not expose the product to excessive dust or vibration, or extreme cold or heat, in order to prevent the possibility of panel disfiguration, unstable operation, or damage to the internal components.
- Do not install in locations where temperature changes are severe. Otherwise, condensation may form on the inside or the surface of the product, causing it to break.
- If there is reason to believe that condensation might have occurred, leave the product for several hours without turning on the power until the condensation has completely dried out, in order to prevent possible damage.
- Do not place vinyl, plastic or rubber objects on the product, since this might cause alteration or discoloration of the panel.
- When cleaning the product, use a dry and soft cloth. Do not use paint thinners, solvents, cleaning fluids, or chemical-impregnated wiping cloths, since this might cause alteration or discoloration.

#### **■ DEK-DSP-RX**

- Drain all static electricity from your clothing and body before handling this product. Static electricity can damage this product. Touch an exposed metal part of the host device or other grounded object beforehand.
- Do not touch exposed connectors and metal parts to minimize the possibility of inferior connections.
- Do not drop this product or subject it to physical shock as this can result in breakage and/or malfunction.

### **Saving data**

- If a "Low Battery" or "No Battery" message appears, keep the power turned on and immediately transfer any data you want to save to a computer or other external storage product, to avoid data loss or damage.

# Information

## About functions/data bundled with the product

- Even when the power switches are in standby status (power lamps are off), electricity is still flowing to the product at the minimum level. When you are not using the product for a long time, make sure you unplug the power cord from the wall AC outlet.
- XLR-type connectors are wired as follows (IEC60268 standard): pin 1: ground, pin 2: hot (+), and pin 3: cold (-).

## About this manual

- The illustrations and screens as shown in this manual are for instructional purposes only.
- SDHC Logo and SD Logo are trademarks of SD-3C, LLC.



- The company names and product names in this manual are the trademarks or registered trademarks of their respective companies.
- Software may be revised and updated without prior notice.

## About disposal

- This product contains recyclable components. When disposing of this product, please contact the appropriate local authorities.

Yamaha cannot be held responsible for damage caused by improper use or modifications to the product, or data that is lost or destroyed.

The model number, serial number, power requirements, etc., may be found on or near the name plate, which is at the top of the unit. You should note this serial number in the space provided below and retain this manual as a permanent record of your purchase to aid identification in the event of theft.

**Model No.**

---

**Serial No.**

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(top\_en\_01)

## Information for users on collection and disposal of old equipment:



This symbol on the products, packaging, and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling of old products, please take them to applicable collection points, in accordance with your national legislation.

By disposing of these products correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

For more information about collection and recycling of old products, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

### For business users in the European Union:

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

### Information on Disposal in other Countries outside the European Union:

This symbol is only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

(weee\_eu\_en\_02)

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# Introduction

Thank you for choosing the Yamaha DSP-RX(-EX) DSP engine unit.

In order to take full advantage of the DSP-RX(-EX)'s superior functionality and enjoy years of trouble-free use, please read this manual before you begin using the product. After you have read the manual, keep it in a safe place together with the warranty for future reference.

\* Unless otherwise noted, the illustration in this manual are of the DSP-RX-EX. The DSP-RX does not feature the EX logo badge on the front panel.

## Information

This product uses open source software. For information about the license, refer to \*\*\* (product name)\_OSSLicense\_e.pdf, which is included in the downloaded file.

## Accessories

- AC power cord × 2  
(Multiple AC power cords which have different kinds of plug shapes may be included depending on the region.)
- Euroblock plug
- Owner's Manual (this document)

## Optional Items

- Mini-YGDAI card
- HY card
- DEK-DSP-RX (DSP Expansion Kit) (See page 16.)

## Firmware Updates

You can update the unit firmware to improve the operation, add functions, and correct possible malfunctions.

Details on updating the firmware are available on the following Yamaha Pro Audio global website:

<http://www.yamahaproaudio.com/>

For information on updating the firmware, please refer to the firmware update guide available on the website.

## Precautions for Rack Mounting

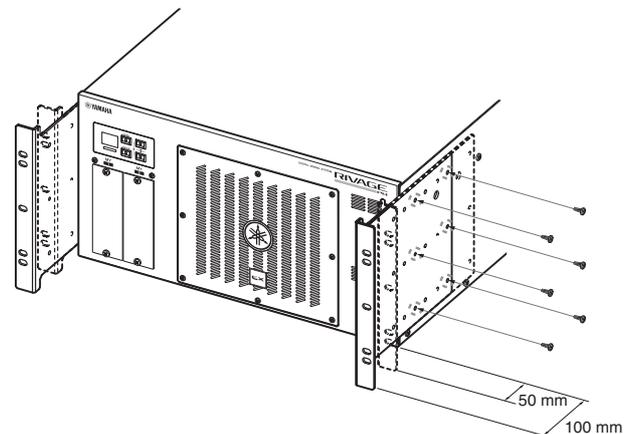
This unit is rated for operation at ambient temperatures ranging from 0 to 40 degrees Celsius. If you mount this unit along with other DSP unit(s) or other device(s) in an EIA standard equipment rack, temperatures inside the rack may rise, possibly resulting in impaired performance.

When rack mounting the unit, always observe the following requirements to avoid heat buildup:

- When mounting the unit in a rack with devices such as power amplifiers that generate a significant amount of heat, leave 1U space or more between the DSP unit and other equipment. Also, either leave the open spaces uncovered or install appropriate ventilating panels to minimize the possibility of heat buildup.
- To ensure sufficient airflow, leave the rear of the rack open and position it at least 10 centimeters from walls or other surfaces. If the rear of the rack cannot be left open, install a commercially-available fan or similar ventilating option to secure sufficient airflow. If you have installed a fan kit, there may be cases in which closing the rear of the rack will produce a greater cooling effect. Refer to the rack and/or fan unit manual for details.

## Recessed Installation

If you want to recess the front panel surface of the unit from the front edge of the rack, you can adjust the position of the rack mount brackets to recess the unit by 50 mm or 100 mm, as shown in the illustration below.

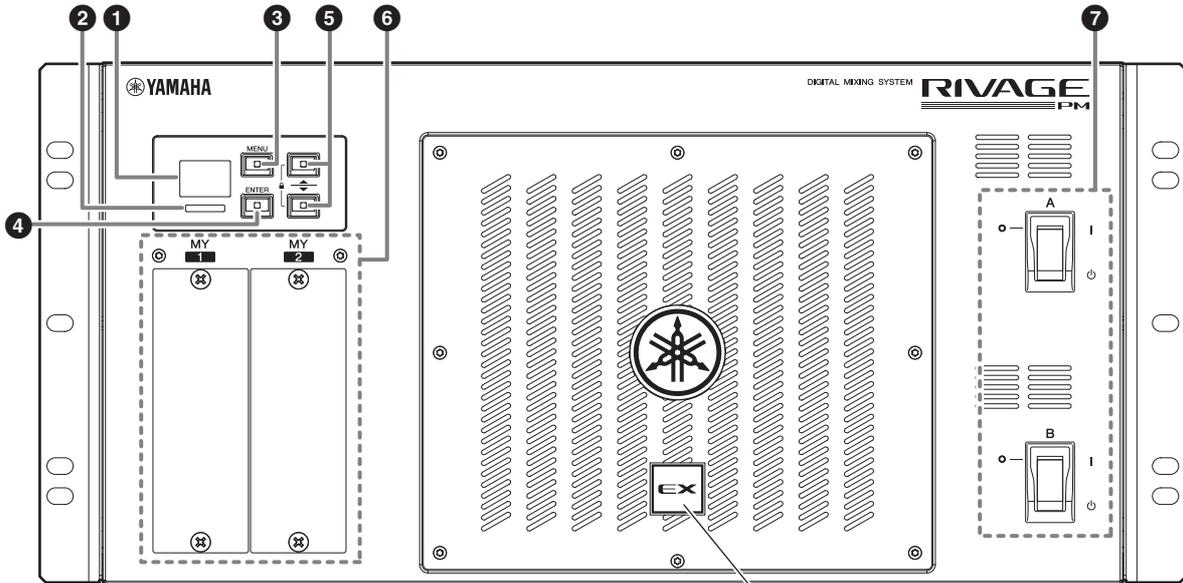


### NOTE

When you install the brackets, use the same screws that you just removed.

# Part Names & Functions

## Front Panel



\* This EX logo badge is attached on the DSP-RX-EX. The DSP-RX does not feature this badge.

### 1 LCD

Indicates the setting parameters for the unit.

### 2 Color Indicator

Indicates the status of the unit.

Green	Normal
Yellow (lit steadily)	Indicates a minor issue, but you can continue using the unit.
Red (flashing)	A critical error has occurred.

### 3 [MENU] key

The following setting parameters are indicated on the LCD:

Unit ID	Specifies the Unit ID for the unit. You must set a unique ID for each device connected to the same I/O network so that they will be identified correctly. For more information on setting the Unit ID, refer to "Setting the Unit ID" in the RIVAGE PM series Operation Manual.
Fan Spd	Specifies the speed of the cooling fans on the unit. This setting does not affect the speed of the cooling fans on the power supply units.
Brightns	Adjusts the brightness of the LCD.
Contrast	Sets the contrast of the LCD screen.
FaultOut	Specifies the conditions under which an alert for abnormality is transmitted from the FAULT OUTPUT connector. <b>Red:</b> An alert is transmitted if an error occurs that causes the color indicator to flash red. <b>Y&amp;R:</b> An alert is transmitted if an error occurs that causes the color indicator to light up yellow steadily or flash red.

UnitMode	Toggles between Default mode and Theatre mode.
F/W Ver.	Indicates the current firmware version number of the unit.
Mirr Chk	Verifies whether DSP mirroring is operating properly. This function is available only while two DSP engines are in the mirroring status.
Initialz	Initializes the unit.

### 4 [ENTER] key

Confirms the setting parameter or the value.

### 5 [▲]/[▼] keys

Enable you to select a setting parameter or value.

### 6 MY card slots

Enable you to install optional Mini-YGDAI cards.

### 7 [I]/[O] (Power switches A/B)

Toggle between power on (I) and off (O). When the power unit is turned on, the indicator lights up.

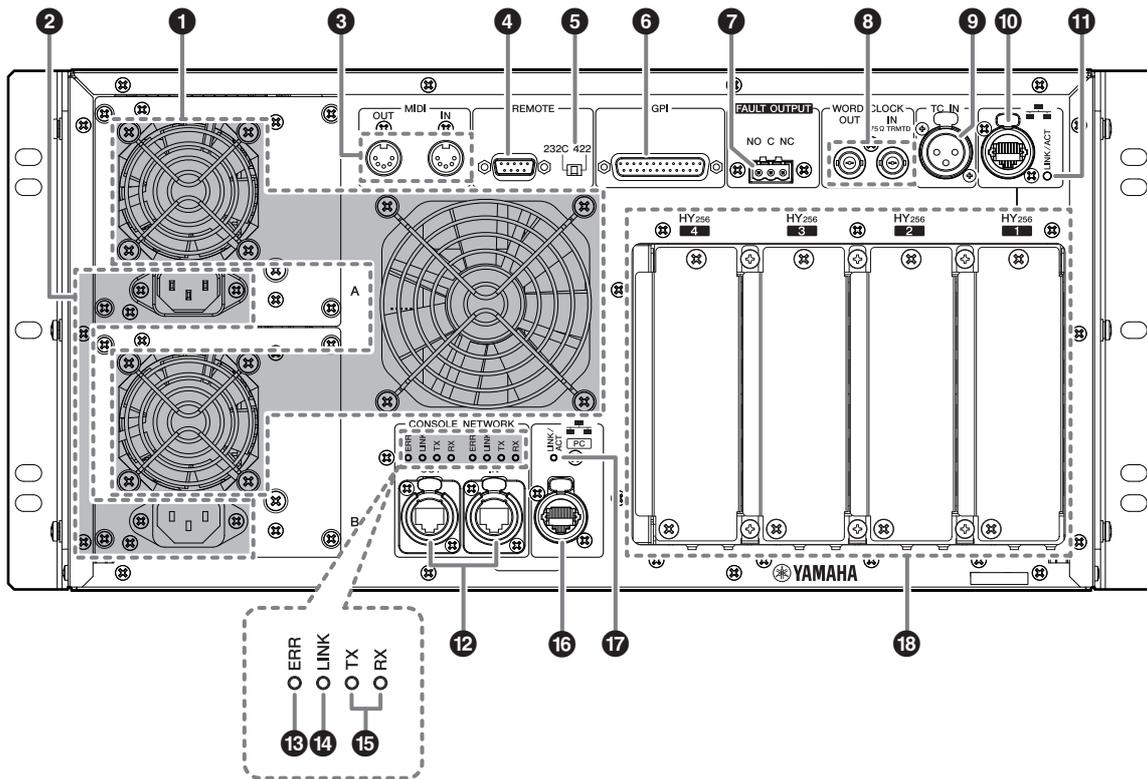
#### NOTICE

- Rapidly turning the unit on and off in succession can cause it to malfunction. After turning the unit off, wait for at least 6 seconds before turning it on again.
- Even when the power switches are turned off, a small amount of current is flowing through the unit. If you plan not to use the unit for a long period of time, remove the power cord from the AC outlet.

#### NOTE

To maintain power supply redundancy, turn both power switches A and B ON or OFF together. If only one power switch is ON, the LCD will display an error message and the color indicator will light up yellow.

# Rear Panel



## 1 Vent

This unit is equipped with cooling fans. These vents let warm air out from the unit. Please make sure that you do not block the vents with any object.

## 2 AC IN connectors

Use these sockets to connect the supplied power cords. First connect the AC power cords to this unit, and then insert the power cord plugs into AC outlets. Insert the cable plug all the way until it locks in securely. The supplied AC power cords feature a V-lock mechanism via a latch, which prevents the power cords from disconnecting accidentally.

### NOTE

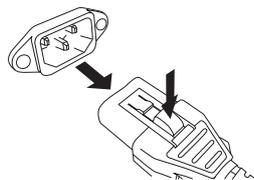
If you connect the power cords to both power supply units A and B, both of them will supply power during normal operation. If one of the power supply units fails, the other power supply unit will continue to supply power.



### Caution

Be sure to turn off the power to the unit before connecting or disconnecting the power cord.

To disconnect the power cord, remove it while pressing the latch on the plug.



## 3 MIDI OUT/IN jacks

These jacks are used to transmit/receive MIDI messages to/from external MIDI devices.

## 4 REMOTE connector

This D-sub 9-pin male connector transmits and receives signals to enable you to control the unit from external devices. (This feature will be supported by a future update.)

## 5 Serial communication switch

Enables you to toggle between RS-232C and RS-422 as signal standards for the REMOTE connector.

## 6 GPI connector

This is a D-sub 25-pin female connector that allows communication (8-in, 8-out) with a GPI-equipped external device.

## 7 FAULT OUTPUT connectors

This Euroblock connector is used to abnormal status information to the outside of the unit. Connect a lamp or buzzer here. The NC and C terminals will short-circuit if the unit is operating normally. The NO and C terminals will short-circuit if an abnormality is detected.

### NOTE

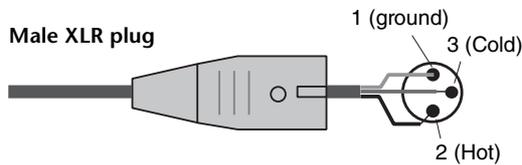
The NO and C terminals will also short-circuit if you intentionally turn off the power to the unit, just as they will if a problem with power occurs.

### 8 WORD CLOCK OUT/IN connectors

These are BNC connectors used to transmit/receive word clock signals to/from an external device. The WORD CLOCK IN connector is internally terminated by a 75 ohm resistor.

### 9 TC IN jack

This balanced XLR-3-31-type female jack accepts time code signals from the connected external device.



### 10 NETWORK connector

This RJ-45 connector enables you to connect an external device via an Ethernet cable (CAT5 or higher).

#### NOTE

- Use an STP (Shielded Twisted Pair) cable to prevent electromagnetic interference. Make sure that the metal parts of the plugs are electrically connected to the STP cable's shield by conductive tape or comparable means.
- The use of Ethernet cables with Neutrik etherCON CAT5 compatible RJ-45 plugs is recommended. Standard RJ45 plugs can also be used.
- Cable length can span up to 100 meters between devices. Maximum practical distance may vary depending on the cable used.

### 11 LINK/ACT indicator

This indicator lights up or flashes green, depending on the connection status.

When the indicator lights up, the link has been established. When the indicator flashes, data is being transmitted.

### 12 CONSOLE NETWORK OUT/IN connectors

These RJ-45 connectors allow this unit to be connected to a control surface via Ethernet cables (CAT5e or higher recommended).

#### NOTE

- Use an STP (Shielded Twisted Pair) cable to prevent electromagnetic interference. Make sure that the metal parts of the plugs are electrically connected to the STP cable's shield by conductive tape or comparable means.
- The use of Ethernet cables with Neutrik etherCON CAT5e compatible RJ-45 plugs is recommended. Standard RJ45 plugs can also be used.
- Cable length can span up to 100 meters between devices. Maximum practical distance may vary depending on the cable used.

### 13 ERR indicator

This indicator flashes or lights up red if an error occurs.

If the indicator does not turn off, please contact your Yamaha dealer.

### 14 LINK indicator

This indicator flashes or lights up green, depending on the network status.

<b>Green (flashing)</b>	The unit is preparing to connect to the console network. If it continues flashing for a long time, the system is not functioning properly. If the problem persists after taking any of the following actions, please contact your Yamaha dealer. <ul style="list-style-type: none"><li>• Turn the power to the RIVAGE PM system off and then on.</li><li>• Make sure that the cables are connected properly.</li><li>• Make sure that the cables are securely inserted (locked in).</li><li>• Change to a different cable.</li></ul>
<b>Green (lit steadily)</b>	The unit is connected to the console network properly.

### 15 TX/RX indicators

The appropriate indicator flashes green when data is transmitted from (TX) or received at (RX) the CONSOLE NETWORK OUT/IN connectors.

### 16 NETWORK PC connector

This RJ-45 connector allows the unit to be connected to a computer via an Ethernet cable (CAT5 or higher recommended).

This is used mainly for controlling mix parameters or editing scene memory and libraries from the dedicated "RIVAGE PM Editor" application program.

#### NOTE

- Use an STP (Shielded Twisted Pair) cable to prevent electromagnetic interference. Make sure that the metal parts of the plugs are electrically connected to the STP cable's shield by conductive tape or comparable means.
- The use of Ethernet cables with Neutrik etherCON CAT5 compatible RJ-45 plugs is recommended. Standard RJ45 plugs can also be used.
- Cable length can span up to 100 meters between devices. Maximum practical distance may vary depending on the cable used.

### 17 LINK/ACT indicator

This indicator lights up or flashes green, depending on the connection status.

When the indicator lights up, the link has been established. When the indicator flashes, data is being transmitted.

### 18 HY card slots

Enable you to install optional HY cards and connect to an I/O rack, such as RPi0622, to expand I/O ports. HY card slot 1/2 can be used for a TWINLANe network card. HY card slot 3 is used for a general-purpose I/O card. HY card slot 4 is used for a general purpose I/O card, as well as for virtual sound check (VSC).

This unit supports the following HY cards.

- Slot 1-2: HY256-TL, HY256-TL-SMF
- Slot 1-4: HY144-D, HY144-D-SRC, HY128-MD

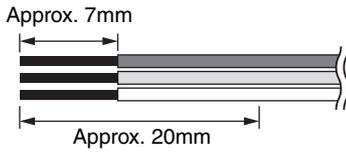
For the latest information, refer to the Yamaha Pro Audio global website.

<http://www.yamahaproaudio.com/>

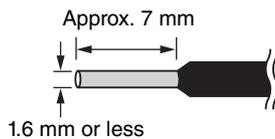
# Euroblock Plug Connection

You must use the supplied Euroblock plug to connect to the FAULT OUTPUT connector.

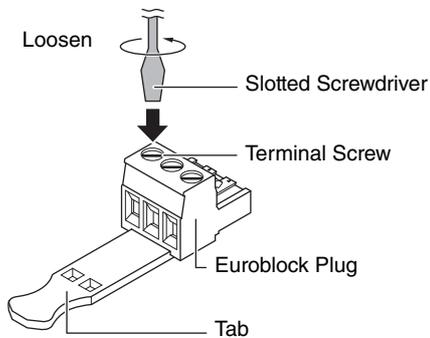
## Preparation (Cable preparation)



- Use strand wires for the Euroblock plug. First, strip the strand wire insulation as shown below. After the strand wires are connected to the Euroblock plug, the wires may break due to metal fatigue caused by the weight of the cable or vibration. For a rack mount, use wire binding bar if possible, to bind the wires together and secure them.
- If you plan to connect or disconnect the plug often, for example in mobile installations, we recommend that you use a rod terminal jack with insulating sleeves. Be sure to use a rod terminal jack that features a conducting part with an outer diameter of 1.6 mm or less, and a length of approx. 7 mm (such as AI 0,5 - 6 WH by Phoenix Contact).



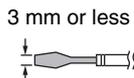
## 1. Loosen the terminal screws.



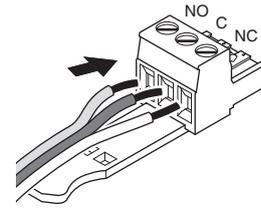
\* The following explanation uses a Euroblock plug that features a tab as an example.

### NOTE

Use a slotted screwdriver of 3 mm or less.



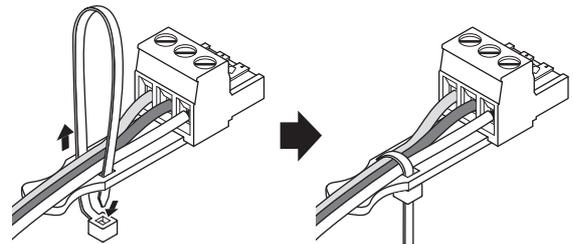
## 2. Insert the cables.



## 3. Securely tighten the terminal screws.

Pull the cables (not too strongly) to confirm that they are securely connected.

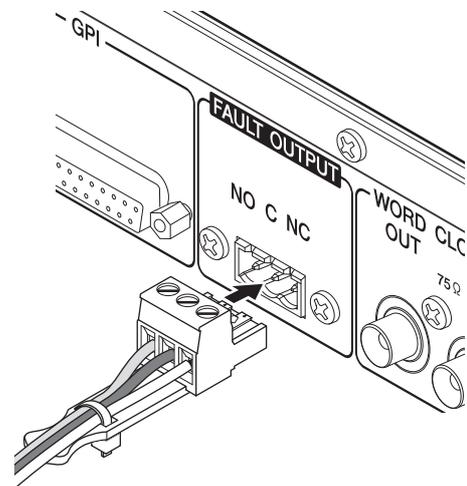
## 4. Affix the cables to the tab using the supplied cable binder.



### NOTE

After affixing the cables, you can cut off the unnecessary part if you prefer.

## 5. Insert the Euroblock plug into the FAULT OUTPUT connector on the rear panel on the unit.



# Installing and Removing Optional Cards

## Installing a Mini-YGDAI Card

Before you install the card, you must check the Yamaha Pro Audio global website to see whether the DSP-RX(-EX) supports that card, and to verify the number of other Yamaha cards or third-party cards that can be used in conjunction with this card.

<http://www.yamahaproaudio.com/>

1. Make sure that both power indicators are off.

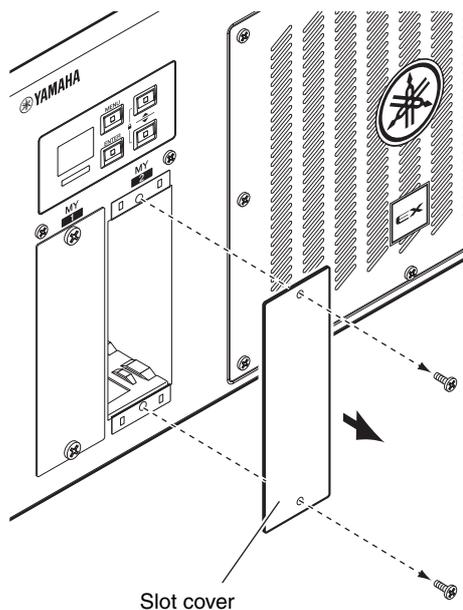


### Caution

Installing or removing a card while the power is on may lead to component failure or electric shock.

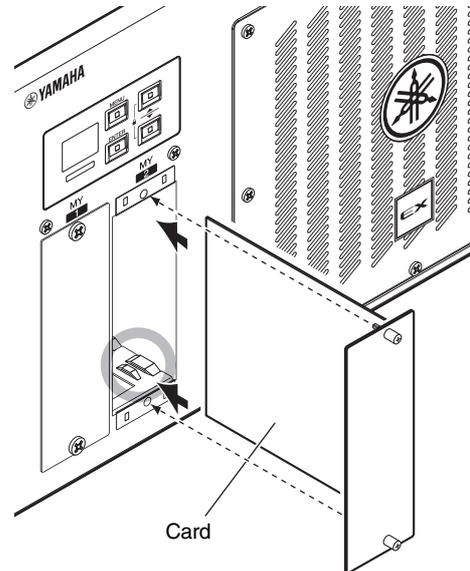
2. Remove the bottom screw and then the upper screw (that fasten the slot cover) to remove the slot cover.

Keep the cover and fixing screws in a safe place for future use.



3. Align both edges of the card with the guide rails inside the slot, and then insert the card into the slot.

Push the card all the way into the slot so that the connector at the end of the card is correctly inserted into the connector inside the slot.



4. Fasten the card using the screws attached to the card.

If the card is not fastened securely, component failure or malfunction may occur.

## Removing the Mini-YGDAI Card

1. Make sure that both power indicators are off.



### Caution

Installing or removing a card while the power is on may lead to component failure or electric shock.

2. Completely loosen the screws that hold the card in place.
3. Pull the card toward you while holding the screws on the card.
4. Replace the stored slot cover and affix it with the screws.

# Installing an HY Card

1. Make sure that both power indicators are off.

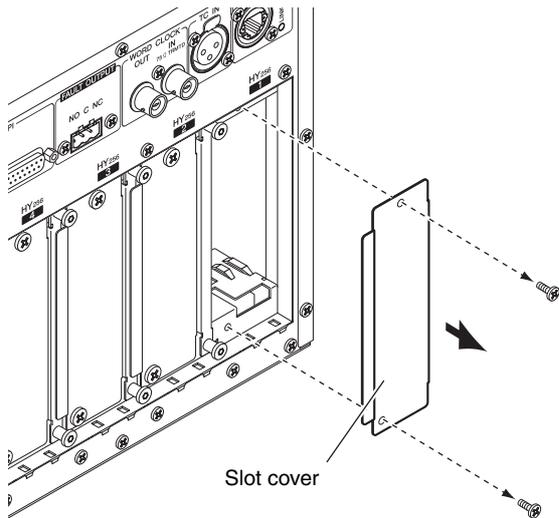


### Caution

Installing or removing a card while the power is on may lead to component failure or electric shock.

2. Remove the screws that fasten the slot cover to remove the slot cover.

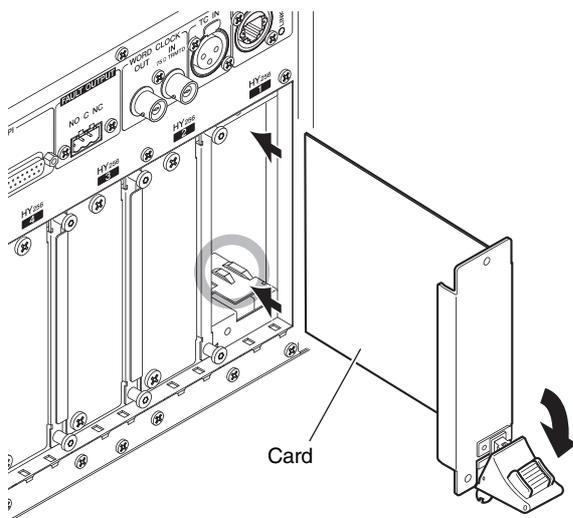
Keep the cover and fixing screws in a safe place for future use.



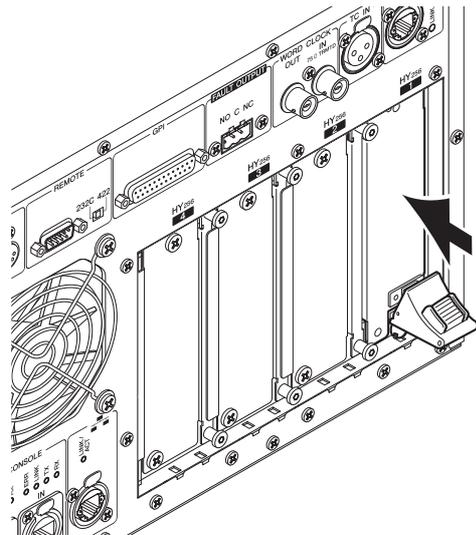
3. Align both edges of the HY card with the guide rails inside the slot, and then insert the card into the slot with the card installation lever pressed down.

### NOTE

For information on which cards support each slot, refer to "Part Names and Functions" on page 11.



Push the card all the way into the slot so that the connector at the end of the card is correctly inserted into the connector inside the slot.

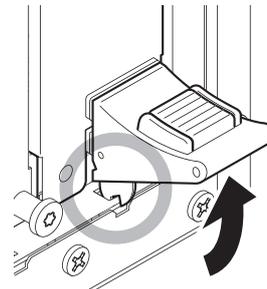


4. Pull up the card installation lever to lock in the card.

Make sure that the lever claw is securely locked under the bottom part of the slot.

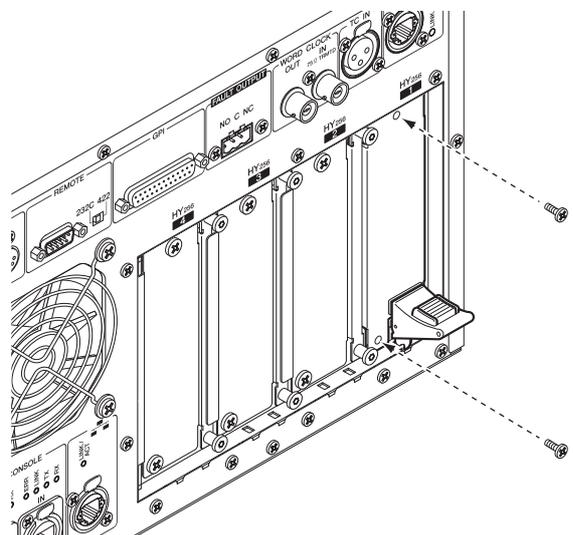
### NOTE

If the lever claw does not lock in, pull up the card slightly, then push it in.



5. Affix the card using the screws that were previously used to affix the slot cover.

If the card is not fastened securely, component failure or malfunction may occur.



## Removing the HY Card

1. Make sure that both power indicators are off.



### Caution

Installing or removing a card while the power is on may lead to component failure or electric shock.

2. Completely loosen the screws that hold the card in place.
3. Unlock the card by pressing the red button on the card installation lever.
4. Press down the card installation lever to pull out the card.
5. Replace the stored slot cover and affix it with the screws.

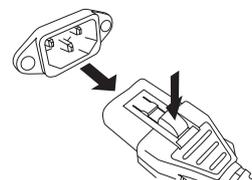
## Power Supply

### Connecting the AC Power Cord

1. Turn off both power switches A and B on the unit.
2. Connect one of the supplied power cords to AC IN connector (A), and the other to AC IN connector (B).
3. Connect the other end of each power cord to an AC outlet.

#### NOTE

- To disconnect the power cords, remove the cables in the order of steps 1→3→2 in the procedure described above.
- To disconnect the power cord, remove it while pressing the latch on the plug.



### Warning

Use only the supplied AC power cords. Using other cables may lead to overheating or electric shock.



### Caution

Be sure to turn off the power to the unit before connecting or disconnecting the power cord.

#### NOTICE

Even when the power switches are turned off, a small amount of current is flowing through the unit. If you plan not to use the unit for a long period of time, be sure to remove the power cords from the AC outlets.

### Turning the Power On and Off

When you turn on the power to the unit, be sure to turn on the power to the power amplifier last to avoid speaker damage. Before you turn off the power to the unit, first turn off the power to the power amplifier.

#### NOTE

To maintain power supply redundancy, turn both power switches A and B ON or OFF together. If only one power switch is ON, the LCD will display an error message and the color indicator will light up yellow.

## About DEK-DSP-RX

You can upgrade DSP-RX to DSP-RX-EX by having an optional DEK-DSP-RX (a DSP expansion kit) installed and following a few related processes.

	DSP-RX		DSP-RX-EX
Input channel	120	➔	288
Bus	72	➔	108
Plug-in	384	➔	512

Please consult your Yamaha dealer for more information on the installation and related processes. There are no parts that you can install by yourself.

## Troubleshooting

Please visit the Yamaha Pro Audio global website for an FAQ list (Frequently Asked Questions).

<http://www.yamahaproaudio.com/>

### Power does not turn on.

- Make sure that the power switches are turned ON.
- Make sure that the AC power cords are connected.
- ➔ If the power still does not turn on, contact your Yamaha dealer.

### The unit is not receiving an audio input signal.

- If you are using an optional card, make sure that it is installed properly.
- Make sure that the cables are connected properly.

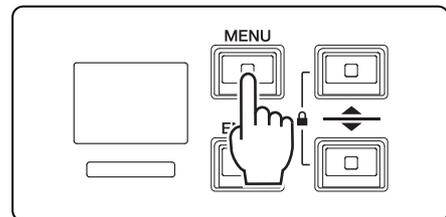
## Restoring the Factory Programmed Settings

Follow the steps below to initialize the internal memory of the unit (excluding the Unit ID) to the factory programmed settings.

### NOTE

For more information on setting the Unit ID, refer to "Setting the Unit ID" in the RIVAGE PM series Operation Manual.

1. While the unit's power is on, press the [MENU] key on the front panel.



2. Use the [▲]/[▼] keys to select "Initialz."
3. Press the [ENTER] key.

**Press&Hold  
[ENTER] to  
initialize**

4. Press and hold the [ENTER] key for two seconds or longer.

The internal memory is initialized and the unit automatically restarts. After the unit restarts, the initialization process is complete.

To cancel the initialization process, press the [MENU], [▲] or [▼] key, instead of pressing the [ENTER] key.

## On-screen Messages

An error message for caution or attention will be displayed on the front panel LCD, and will be indicated via the color indicator.

Additional messages might be added due to functional improvements. For the latest error message list, refer to the RIVAGE PM series Operation Manual posted on the Yamaha Pro Audio global website.

<http://www.yamahaproaudio.com>

### Error messages indicating caution

Repair might be required. Contact your Yamaha dealer.

LCD Message	Color Indicator Status	Description
*[ERR M0#] H/W ERROR MY SLOT#	Red (flashing)	A card inserted in the MY card slot is not accessible. A number sign (#) indicates the slot number in relation with the corresponding error.
*[ERR H0#] H/W ERROR HY SLOT#	Red (flashing)	A card inserted in the HY card slot is not accessible. A number sign (#) indicates the slot number in relation with the corresponding error.
*[ERR T11] TWINLANE T V B OP IP	Red (flashing)	The optical transceiver module on the HY256-TL is faulty. T: Temperature, V: Voltage, B: Bias current, OP: Output Power, IP: Input Power This error may be resolved by the possible solution described below for [ERR T12].
*[ERR X0#] H/W ERROR	Red (flashing)	One of the internal parts is faulty. A number sign (#) indicates the internal part that has caused the corresponding error.
*[ERR X1#] H/W ERROR BOARD#		
*[ERR X16] MEMORY ERROR		
*[ERR F01] COOLING FAN ERROR	Red (flashing)	The cooling fans are faulty.

Names marked with an asterisk (\*) are Unit IDs.

## Error messages indicating a need for attention

LCD Message	Color Indicator Status	Description	Possible solution
*[ERR T0#] TWINLANE WRONG LOOP	Red (flashing)	Fiber optic cable is not connected properly. A number sign (#) indicates the error description. 1: Signal is looped back to the unit itself (IN-OUT). 2: Input connectors are connected to each other (IN-IN). 3: Output connectors are connected to each other (OUT-OUT).	Check the cable connection.
*[ERR T07] TWINLANE OPEN LOOP	Yellow (lit steadily)	Fiber optic cable is not connected properly. The TWINLANE network loop is not closed.	Check the cable connection.
*[ERR T12] TWINLANE T V B O P IP	Yellow (lit steadily)	An error has occurred with the optical transceiver module on the HY256-TL. T: Temperature, V: Voltage, B: Bias current, OP: Output Power, IP: Input Power	<ul style="list-style-type: none"> <li>Make sure that the cable is securely inserted.</li> <li>Use a commercially-available cleaning tool for fiber optics to clean both ends of the cable and the connectors on the card.</li> <li>Change to a different cable.</li> </ul> If the solutions above do not resolve the issue, have the unit checked by an authorized technician, although the problem will not affect operation of the unit. Please contact your Yamaha dealer.
*[ERR T0#] CONSOLE NETWK WRONG LOOP	Red (flashing)	Ethernet cable is not connected properly. A number sign (#) indicates the error description. 4: Signal is looped back to the unit itself (IN-OUT). 5: Input connectors are connected to each other (IN-IN). 6: Output connectors are connected to each other (OUT-OUT).	Check the cable connection.
*[ERR T08] CONSOLE NETWK OPEN LOOP	Yellow (lit steadily)	Ethernet cable is not connected properly. The Console network loop is not closed.	Check the cable connection.
*[ERR W01] BNC UNLOCK	Red (flashing)	The unit is unable to lock to the word clock that is being input from the WORD CLOCK IN connector (if the WORD CLOCK IN has been selected as the clock source).	Check the external device that is supplying the word clock.
*[ERR W02] DATA CORRUPT TRY RE-SYNC	Red (flashing)	Mix data inside the unit has been corrupted. The loading of a file or data syncing might have been interrupted due to power outage.	Try data syncing again by transmitting data from the control surface.
*[ERR P01] POWER A OFF	Yellow (lit steadily)	Power is not supplied from power supply unit A.	Make sure that the power switch on power supply unit A is turned on, and that the power cord is connected to the unit and power supply unit A.
*[ERR P02] POWER B OFF	Yellow (lit steadily)	Power is not supplied from power supply unit B.	Make sure that the power switch on power supply unit B is turned on, and that the power cord is connected to the unit and power supply unit B.
*[ERR C11] LOW BATT	Yellow (lit steadily)	The backup battery voltage is down to 2.8V or lower.	Please contact your Yamaha dealer immediately and have qualified Yamaha service personnel replace the backup battery.
*[ERR C12] NO BATT	Yellow (lit steadily)	The backup battery voltage is down to 2.45V or lower.	Please contact your Yamaha dealer immediately and have qualified Yamaha service personnel replace the backup battery.

Names marked with an asterisk (\*) are Unit IDs.

### NOTE

If multiple issues occur at the same time, press the [▲] or [▼] key to view the corresponding error messages.

# Specifications

## General Specifications

### Sampling frequency

		Conditions	Min.	Typ.	Max.	Unit
External clock	Frequency range	Fs= 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz	-1000	—	+1000	ppm
	Jitter of PLL <sup>*1</sup>	WORD CLOCK IN Fs= 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz	—	—	10	ns
Internal clock	Frequency	Word clock : int 44.1 kHz Word clock : int 48 kHz Word clock : int 88.2 kHz Word clock : int 96 kHz	—	44.1 48 88.2 96	—	kHz
	Accuracy	Word clock : int 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz	-50	—	+50	ppm
	Jitter <sup>*2</sup>	Word clock : int 44.1 kHz Word clock : int 48 kHz Word clock : int 88.2 kHz Word clock : int 96 kHz	—	—	4.5 4.1 2.3 2.1	ns

\*1. Input clock jitter must be 1 ns or less.

\*2. Measured at the WORD CLOCK OUT connector.

### Power requirements

	Conditions	Min.	Typ.	Max.	Unit
Power consumption	100-240 V 50/60 Hz	—	—	190	W
Heating value	100-240 V 50/60 Hz	—	—	164	kcal/h

### Power length and temperature range

	Conditions	Min.	Typ.	Max.	Unit
Power cord length		—	250	—	cm
Temperature range	Operating temperature range	0	—	40	°C
	Storage temperature range	-20	—	60	°C

## Control I/O characteristics

Terminal		Format	Level	Connector	Balanced / Unbalanced
MIDI	IN	MIDI	–	DIN 5pin	–
	OUT	MIDI	–	DIN 5pin	–
TC IN	SMPTE	SMPTE	0.3 Vpp (Min.) / 10.0 Vpp (Max.), 10 kΩ	XLR-3-31 type <sup>*1</sup>	Balanced
WORD CLOCK	IN	–	TTL/75 Ω terminated	BNC	–
	OUT	–	TTL/75 Ω	BNC	–
GPI		–	–	D-sub (25-pin, female) <sup>*2</sup>	–
REMOTE		–	RS422 / 232C <sup>*3</sup>	D-sub (9-pin, male)	–
FAULT OUTPUT	NO	–	< DC 30 V, < 1 A	Euroblock Connector 3P	–
	C <sup>*4</sup>	–	–		–
	NC	–	< DC 30 V, < 1 A		–
CONSOLE NETWORK IN/OUT		–	1000BASE-T	etherCON CAT5e <sup>*5 *7</sup>	–
NETWORK		IEEE802.3	10BASE-T/100BASE-TX	etherCON CAT5 <sup>*6 *7</sup>	–
NETWORK [PC]		IEEE802.3	10BASE-T/100BASE-TX	etherCON CAT5 <sup>*6 *7</sup>	–

\*1. 1= GND, 2= HOT, 3= COLD

\*2. Inputs

CH 1-7: TTL logic (input voltage: 0-5 V)

CH 8: Optocoupler (input voltage: 0-24 V / Low level ≤1 V, High level: ≥5 V)

Outputs

CH 1-7: Open-drain (Max. external supply voltage= 12 V, Max. sink current per pin= 75 mA)

CH 8: Relay Contact (Max. 1 A/30 V DC)

Power Supply Pins (5 V ±5%, Max. total output current= 600 mA)

\*3. Toggled by the switch.

\*4. The C terminal normally short-circuits with the NC terminal, but it short-circuits with the NO terminal in the event that a fault is detected.

\*5. CAT5e or higher cables are recommended for connection.

\*6. CAT5 or higher cables are recommended for connection.

\*7. STP cables are recommended for connection.

## Dimensions (WxHxD), weight

480 mm × 220 mm × 491 mm

DSP-RX-EX: 20 kg, DSP-RX: 19 kg

## Accessories

Owner's Manual, AC power cord × 2, Euroblock plug (three-pin)

## Optional items

Mini-YGDAI card, HY card, DEK-DSP-RX (DSP Expansion Kit)

## EIA rack mount size

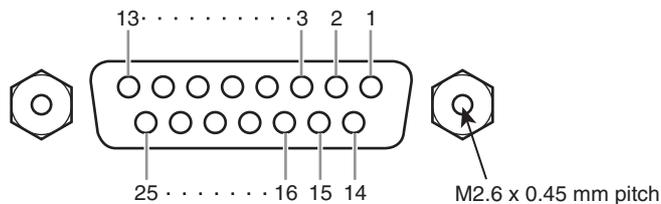
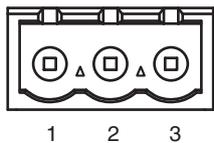
5 U

## NC value

15 (Fan Spd: LOW) / 20 (Fan Spd: HIGH)

Measuring position: 100 cm away from the unit's front panel

# Pin Assignment Table



## FAULT OUTPUT

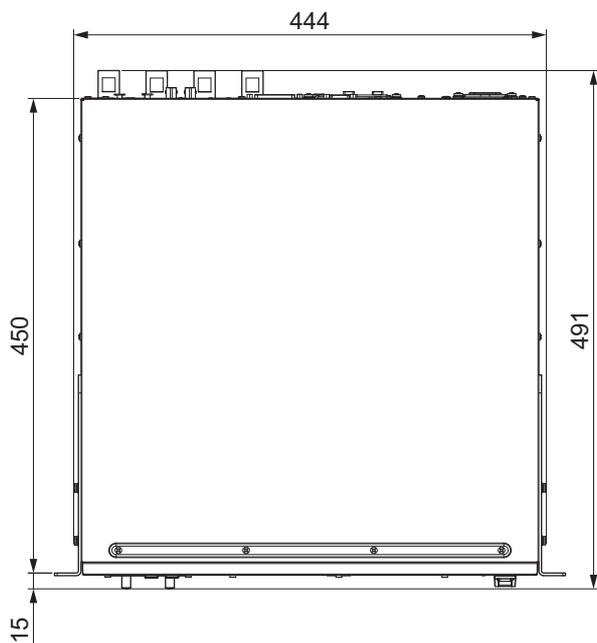
Pin No.	Signal
1	NO (Normally Open)
2	C (Common)
3	NC (Normally Closed)

Relay Contact

## GPI

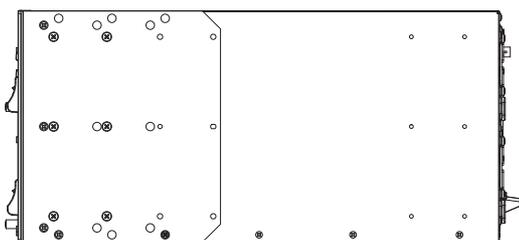
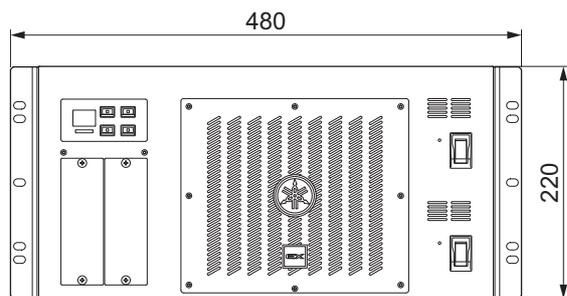
Pin No.	Signal	Pin No.	Signal
1	GPO1	14	GPO2
2	GPO3	15	GPO4
3	GPO5	16	GPO6
4	GPO7	17	RLY_NC
5	RLY_C	18	RLY_NO
6	GND	19	GND
7	GND	20	OPTO-
8	OPTO+	21	+5V
9	+5V	22	GPI1
10	GPI2	23	GPI3
11	GPI4	24	GPI5
12	GPI6	25	GPI7
13	N.C.		

## Dimensions



Approximate Munsell value of exterior color: N5

Unit: mm



\* The contents of this manual apply to the latest specifications as of the publishing date. To obtain the latest manual, access the Yamaha website then download the manual file.

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