YAMAHA

I/O RACK
RMio64-D

Owner's Manual

Bedienungsanleitung

Mode d'emploi

Manual de instrucciones

Manual do Proprietário

Manuale di istruzioni

Руководство пользователя

取扱説明書
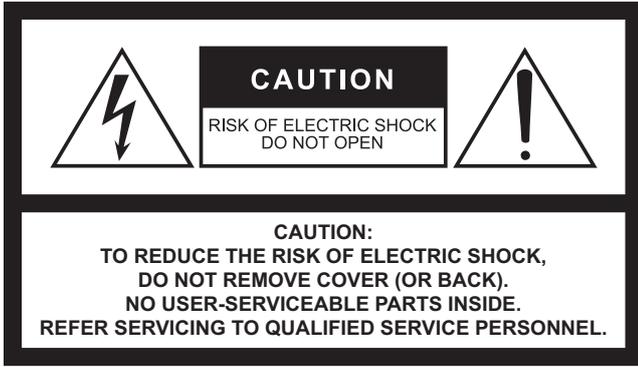
AUDIO INTERFACE

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 CONCER-NANT 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
(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 : Audio Interface
Model Name : RMio64-D

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.

See user manual instructions if interference to radio reception is suspected.

* This applies only to products distributed by   (FCC DoC)
YAMAHA CORPORATION OF AMERICA.

이 기기는 가정용 (B 급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며 , 모든 지역에서 사용할 수 있습니다 .

(class b korea)

IMPORTANT NOTICE FOR THE UNITED KINGDOM
Connecting the Plug and Cord

WARNING: THIS APPARATUS MUST BE EARTHED IMPORTANT. The wires in this mains lead are coloured in accordance with the following code:

     GREEN-AND-YELLOW :   EARTH
     BLUE   :   NEUTRAL
     BROWN   :   LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured GREEN-and-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or colored GREEN or GREEN-and-YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

(3 wires)

In Finland: Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.

In Norway: Apparatet må tilkoples jordet stikkontakt.

In Sweden: Apparaten skall anslutas till jordat uttag.

(class I hokuo)

Contents

Included Accessories

- Owner's Manual
- AC power cord (European model includes two different cords.)

PRECAUTIONS

PLEASE READ CAREFULLY BEFORE PROCEEDING

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

⚠ *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:

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 device. The required voltage is printed on the name plate of the device.

- Use only the supplied power cord/plug.
  If you intend to use the device 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.

- Be sure to connect to an appropriate outlet with a protective grounding connection. Improper grounding can result in electrical shock, damage to the device(s), or even fire.

Do not open

- This device contains no user-serviceable parts. Do not open the device or attempt to disassemble the internal parts or modify them in any way. If it should appear to be malfunctioning, discontinue use immediately and have it inspected by qualified Yamaha service personnel.

Water warning

- Do not expose the device 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. If any liquid such as water seeps into the device, turn off the power immediately and unplug the power cord from the AC outlet. Then have the device inspected by qualified Yamaha service personnel.

- Never insert or remove an electric plug with wet hands.

Fire warning

- Do not put burning items, such as candles, on the unit. A burning item may fall over and cause a fire.

If you notice any abnormality

- When one of the following problems occur, immediately turn off the power switch and disconnect the electric plug from the outlet. Then have the device inspected by Yamaha service personnel.
  - The power cord or plug becomes frayed or damaged.
  - It emits unusual smells or smoke.
  - Some object has been dropped into the device.
  - There is a sudden loss of sound during use of the device.

- If this device should be dropped or damaged, immediately turn off the power switch, disconnect the electric plug from the outlet, and have the device inspected by qualified Yamaha service personnel.

⚠ *CAUTION*

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

Power supply/power cord

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

- Remove the electric plug from the outlet when the device is not to be used for extended periods of time, or during electrical storms.

Location

- Do not place the device in an unstable position where it might accidentally fall over.

- Do not block the vents. This device has ventilation holes at the front/rear to prevent the internal temperature from becoming too high. In particular, do not place the device on its side or upside down. Inadequate ventilation can result in overheating, possibly causing damage to the device(s), or even fire.

- Do not place the device in a location where it may come into contact with corrosive gases or salt air. Doing so may result in malfunction.

- Before moving the device, remove all connected cables.

- When setting up the device, make sure that the AC outlet you are using is easily accessible. If some trouble or malfunction occurs, immediately turn off the power switch and disconnect the plug from the outlet. Even when the power switch is turned 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 to unplug the power cord from the wall AC outlet.

- If the device is mounted in an EIA standard rack, carefully read the section "Precautions for Rack Mounting" on page 7. Inadequate ventilation can result in overheating, possibly causing damage to the device(s), malfunction, or even fire.

Connections

- Before connecting the device to other devices, turn off the power for all devices. Before turning the power on or off for all devices, set all volume levels to minimum.

Maintenance

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

Handling caution

- Avoid inserting or dropping foreign objects (paper, plastic, metal, etc.) into any gaps or openings on the device (vents, etc.) If this happens, turn off the power immediately and unplug the power cord from the AC outlet. Then have the device inspected by qualified Yamaha service personnel.
- Do not rest your weight on the device or place heavy objects on it, and avoid use excessive force on the buttons, switches or connectors.

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

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 use the device in the vicinity of a TV, radio, stereo equipment, mobile phone, or other electric devices. Otherwise, the device, TV, or radio may generate noise.
- Do not expose the device to excessive dust or vibration, or extreme cold or heat (such as in direct sunlight, near a heater, or in a car during the day), in order to prevent the possibility of panel disfiguration, unstable operation, or damage to the internal components.
- Do not place vinyl, plastic or rubber objects on the device, since this might discolor the panel.
- When cleaning the device, use a dry and soft cloth. Do not use paint thinners, solvents, cleaning fluids, or chemical-impregnated wiping cloths.
- Condensation can occur in the device due to rapid, drastic changes in ambient temperature — when the device is moved from one location to another, or air conditioning is turned on or off, for example. Using the device while condensation is present can cause damage. If there is reason to believe that condensation might have occurred, leave the device for several hours without turning on the power until the condensation has completely dried out.
- Always turn the power off when the device is not in use.

Information

About functions/data bundled with the product

- This product uses Dante Brooklyn II.
  Refer to the Audinate website (English) for details on the open source licenses for the particular software.
  https://www.audinate.com/software-licensing

About copyrights

- Copying of the commercially available musical data including but not limited to MIDI data and/or audio data is strictly prohibited except for your personal use.

About this manual

- The illustrations and screens as shown in this manual are for instructional purposes only.
- Windows is a registered trademark of Microsoft® Corporation in the United States and other countries.
- The company names and product names in this manual are the trademarks or registered trademarks of their respective companies.

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 and the Directives 2002/96/EC.

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_01)

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.

(rear_en_01)

European Models

Inrush Current based on EN 55103-1:2009
2.0 A (on initial switch-on)
2.0 A (after a supply interruption of 5s)
Conforms to Environments: E1, E2, E3 and E4

Introduction

Thank you for choosing the Yamaha RMio64-D audio interface.

To take full advantage of the superior functions and performance offered by the RMio64-D, and to enjoy years of trouble-free use, be sure to read this owner's manual carefully before operation.

Features

The RMio64-D is a digital interface that lets you transfer up to 64 digital inputs and 64 digital outputs between a Dante network and a MADI-compatible device. By connecting both Dante and MADI, this product can be used for wide variety of applications such as broadcasting, live recording, and post production. In addition, full control of this unit's settings has been achieved through tight integration with Yamaha's Dante compatible devices.

- Supports redundancy for both Dante and MADI, and provides a high level of reliability.
- Sampling rate converter (SRC) in MADI inputs and outputs.
- Signals can be looped back from MADI optical to coaxial, or from coaxial to optical (MADI split).
- Enhanced linkage functionality with Steinberg Nuendo, such as direct monitoring and high-precision clock sync with Nuendo SyncStation.

Precautions for Rack Mounting

This unit is rated for operation at ambient temperatures ranging from 0 to 40 degrees Celsius. When mounting the unit with other RMio unit(s) or other device(s) in an EIA standard equipment rack, internal temperatures can exceed the specified upper limit, resulting in impaired performance or failure. 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 more than 1U of space between the RMio 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 you've 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.

Firmware Updates

This product enables you to update the unit firmware to improve operations, add functions, and correct possible malfunctions. The following two types of firmware are available for the unit:

- Unit's firmware
- Dante module firmware

You must update each type of firmware separately. Details on updating the firmware are available on the following website:
http://www.yamahaproaudio.com/

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

NOTE
It is necessary to update multiple devices depending on the version of each device in the Dante network. For details, refer to the firmware compatibility available on the website.
http://www.yamahaproaudio.com/

Conventions in this Manual

Screen Shots

The example screen shots shown in this manual are from the Windows version, while those for Steinberg Nuendo are from Nuendo 6.5. Therefore, the actual displays might appear different if you are using a different version of Nuendo. For details, see the Owner's Manual (PDF) from the "Help" menu in Nuendo.

Controls and Functions

Front Panel
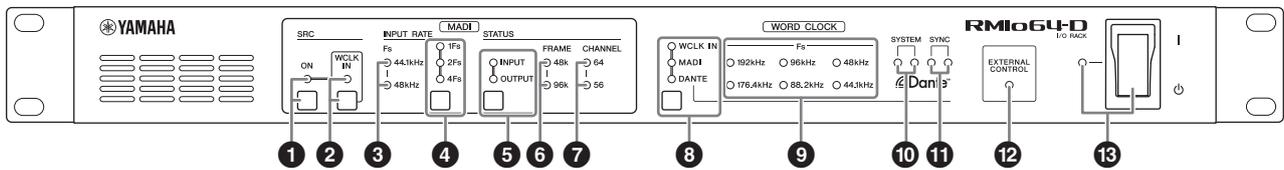
❶ MADI [SRC ON] indicator
MADI [SRC ON] key

Turns the MADI SRC (Sampling Rate Converter) on (indicator lights) and off.

❷ MADI [SRC WCLK IN] indicator
MADI [SRC WCLK IN] key

Selects whether the word clock that is input to the MADI [WCLK IN FOR SRC] connector on the rear panel is used or not as the reference MADI SRC clock. (Indicator lights when used.)

If no valid word clock input is detected, this indicator flashes.

❸ MADI [INPUT RATE Fs 44.1kHz] indicator
MADI [INPUT RATE Fs 48kHz] indicator

These indicators turn on accordingly when the device automatically detects the MADI input signal as 44.1 kHz or 48 kHz. If no valid MADI input signal is detected, both indicators remain off.

❹ MADI [INPUT RATE 1Fs] indicator
MADI [INPUT RATE 2Fs] indicator
MADI [INPUT RATE 4Fs] indicator
MADI [INPUT RATE] 1Fs/2Fs/4Fs key

Selects 1Fs (1x), 2Fs (2x), or 4Fs (4x) in combination with the MADI input rate. For example, for a MADI input rate of 192 kHz (4x 48 kHz), confirm that the MADI [INPUT RATE Fs 48kHz] indicator is on, and then select [4Fs].

NOTE
If you select [2Fs], the unit automatically detects the MADI input signal frame format (48 kHz/96 kHz).

❺ MADI [STATUS INPUT] indicator
MADI [STATUS OUTPUT] indicator
MADI [STATUS] INPUT/OUTPUT key

Selects whether to display the MADI input signal or MADI output signal information (frame format/ number of channels).

NOTE
You can use this key to lock the panel to prevent operation of the keys (page 14).

❻ MADI [STATUS FRAME 48k] indicator
MADI [STATUS FRAME 96k] indicator

Displays the frame format of the MADI input signal or output signal. For 44.1 kHz and 48 kHz, the [STATUS FRAME 48k] indicator is lit. For 88.2 kHz and 96 kHz, the [STATUS FRAME 96k] indicator is lit. If no valid MADI input signal is detected, both indicators remain off.

NOTE
If no valid MADI input signal is detected, the MADI output signal is set to 48 kHz/64 channels.

❼ MADI [STATUS CHANNEL 64] indicator
MADI [STATUS CHANNEL 56] indicator

Displays the number of channels (64 or 56) for the MADI input signal or output signal. If no valid MADI input signal is detected, both indicators remain off.

NOTE
If no valid MADI input signal is detected, the MADI output signal is set to 48 kHz/64 channels.

❽ WORD CLOCK [WCLK IN] indicator
WORD CLOCK [MADI] indicator
WORD CLOCK [DANTE] indicator
WORD CLOCK WCLK IN/MADI/DANTE key

Selects the word clock source.

WCLK IN	Uses the word clock signal that is input from the [WORD CLOCK IN] connector on the rear panel. This indicator flashes if no valid word clock input is detected.
MADI	Uses the word clock of the MADI input signal. This indicator flashes if no valid word clock input is detected.
DANTE	Uses the word clock from the Dante network.

9 WORD CLOCK [Fs] indicator

Displays the word clock frequency that the unit is using. This indicator flashes if no word clock is synced.

10 Dante [SYSTEM] indicator

Displays the operating status of the unit.

Green (indicator lights)	The unit is working properly.
Green (indicator flashes)	The firmware updating is in progress.
Red (indicator lights)	The memory on the unit does not work properly.
Red (indicator flashes)	An error has occurred in the Dante module.

11 Dante [SYNC] indicator

Displays the sync status between the Dante network and this unit.

Green (indicator lights)	The device is working as the slave on the Dante network.
Green (indicator flashes)	The device is working as the master on the Dante network.

Orange (indicator lights)	Synchronization with the Dante network is in progress.
Orange (indicator flashes)	The device is not synchronized with the Dante network.

12 [EXTERNAL CONTROL] indicator

This indicator turns on when a parameter which can be operated only from an external remote control is effective.

For details about parameters that can be operated by remote control, see "Remote Control" (page 16).

13 Power indicator
[I]/[⏻] (Power Switch)

Turns power of the unit to on [I] or off [⏻].
The indicator turns on when AC power is on.

⚠ CAUTION
Even when the power switch is turned off, a small amount of current is flowing through the unit. When you are not using the product for a long time, make sure to unplug the power cord from the AC outlet.

NOTE
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.

Rear Panel
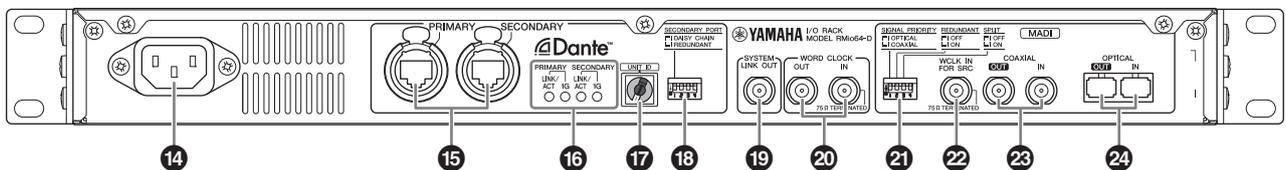
14 AC IN connector

Connect the supplied AC power cord here. First connect the AC power cord to the RMio unit, then insert the power cord plug into an AC power outlet. The supplied AC power cord features a V-lock mechanism via a latch, which prevents the power cord from coming off accidentally.
Insert the cable plug all the way until it locks in securely.

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

Press the latch button on the plug to disconnect the power cord.
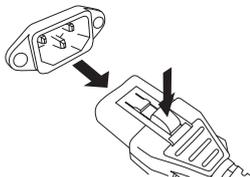
15 Dante [PRIMARY] connector
Dante [SECONDARY] connector

These are etherCON (RJ-45) connectors for connecting to the Dante network.

NOTE
- Use 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 shield by conductive tape or comparable means.
- Connect only Dante-compatible devices or GbE-compatible devices (including a computer).
- Cables of up to 100 meters (theoretical value) can be used.

⑯ Dante [PRIMARY LINK/ACT] indicator
Dante [PRIMARY 1G] indicator
Dante [SECONDARY LINK/ACT] indicator
Dante [SECONDARY 1G] indicator

Displays the transmission status with the Dante network.

| LINK/ACT | These indicators flash rapidly if the Ethernet cables are connected properly. |
| 1G | These indicators are lit when the Dante network is functioning as Giga-bit Ethernet. |

⑰ Dante [UNIT ID] rotary switch

Sets the ID for this unit. The setting range of the UNIT ID is 16 hexadecimal numbers from 0 to F. If there are multiple Dante-compatible devices from Yamaha that require an ID setting connected to the same network, set a different ID for each device. Make sure to change the settings of the rotary switch while the power to the unit is turned off; otherwise, the ID setting will not be effective.

⑱ Dante DIP switches

Used to change unit settings. Make sure to change the settings of the DIP switches while the power to the unit is turned off; otherwise, the ID setting will not be effective. For details, see "Connecting Dante-compatible Devices" (page 11) and "Restoring Factory Settings" (page 18).

⑲ [SYSTEM LINK OUT] connector

This BNC connector is used to connect to the AES 2 IN connector on the Steinberg Nuendo SyncStation. This connection provides a highly precise clock sync between this unit and Nuendo.
When not connecting with Nuendo SyncStation, two of the channels for the Dante input signals are output as AES/EBU signals. Connecting the AES/EBU-compatible devices to this connector allows Dante signals to be converted to AES/EBU signals and can be output. In the default settings, Dante channels 1 and 2 are used for output. You can use a remote control to change the output channels. For details, see "Remote Control" (page 16).

⑳ [WORD CLOCK OUT] connector
[WORD CLOCK IN] connector

These are BNC connectors used to transmit and receive word clock signals.

㉑ MADI DIP switches

Used to change unit settings. Make sure to change the settings of the DIP switches while the power to the unit is turned off; otherwise, the ID setting will not be effective. For details, see "Connecting MADI-compatible Devices" (page 12) and "MADI Split" (page 14).

㉒ MADI [WCLK IN FOR SRC] connector

This is a BNC connector that can be used to directly input word clock signals for MADI SRC.

㉓ MADI [COAXIAL OUT] connector
MADI [COAXIAL IN] connector

These are BNC connectors used to connect with MADI-compatible devices.

NOTE
Coaxial cables of up to 100 meters (theoretical value) can be used.

㉔ MADI [OPTICAL OUT] connector
**MADI [OPTICAL IN] connector**

These are SC connectors used to connect with MADI-compatible devices.

NOTE
• Use a multimode optical cable with 50-micron core/125-micron cladding diameters, or 62.5-micron core/125-micron cladding diameters.
• Optical cables of up to 2,000 meters (theoretical value) can be used.
• Use SC duplex connectors.
• Attach the supplied rubber cap to the connector to prevent dust from collecting when the cable is not connected.

Connection

This section describes the following connections.

Connecting Dante-compatible Devices (page 11)

Connecting MADI-compatible Devices (page 12)

Connecting AC Power (page 13)

Dante Audio Routing (page 14)

Selecting MADI Input Rate (page 14)
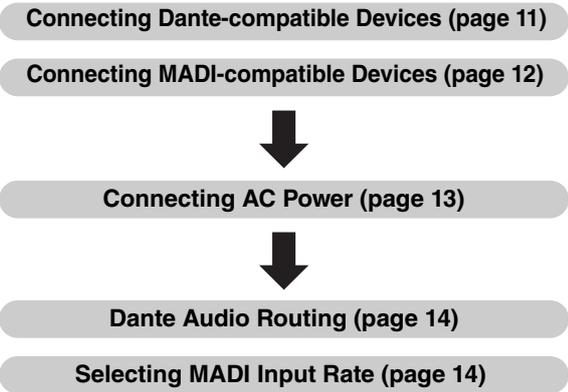
About Dante

Dante is a network audio protocol developed by Audinate. It is designed to deliver multi-channel audio signals at various sampling and bit rates, as well as device control signals over a Giga-bit Ethernet (GbE) network.

Visit the Audinate website for more details on Dante:
http://www.audinate.com/

More information on Dante is also posted on the Yamaha Pro Audio website:
http://www.yamahaproaudio.com/

Notes Regarding the Use of Network Switches

Do not use the EEE functionality (*) of network switches on a Dante network.
Although mutual power consumption settings between switches that support the EEE functionality are adjusted automatically, there are some switches for which such mutual settings are not adjusted correctly.
This may cause EEE to be enabled in Dante networks when it is not appropriate, resulting in poor synchronization performance and occasional dropouts. Therefore we strongly recommend the following.

- If you use managed switches, please disable the EEE functionality. Do not use switches that prevent EEE functionality from being disabled.

- When using unmanaged switches, do not use switches that support EEE functionality. EEE functionality cannot be disabled for such switches.

* EEE (Energy Efficient Ethernet) is a technology that reduces switch power consumption during periods of low network traffic. It is also referred to as Green Ethernet and IEEE802.3az.

Connecting Dante-compatible Devices

You can connect the RMio64-D to a Dante network in the following ways.

Daisy Chain Network

A daisy chain network is a wiring scheme in which multiple devices are connected together in sequence. This connection method is suitable for a simple system with a small number of devices.
However, if a large number of devices are connected, you will also need to manually increase the latency value significantly. Also, if a connection is broken in a daisy chain network, the signal flow is interrupted at that point and no signal will be transferred beyond that point.

■ Settings

- Turn off Dante DIP switch 1 (UP).

- If there are multiple Dante-compatible devices from Yamaha that require an ID setting connected to the same network, set a different ID for each device. Make sure to change the settings of the rotary switch while the power to the unit is turned off; otherwise, the ID setting will not be effective.

CL5

Rio3224-D (ID#1)
PRIMARY
SECONDARY

RMio64-D (ID#2)
PRIMARY
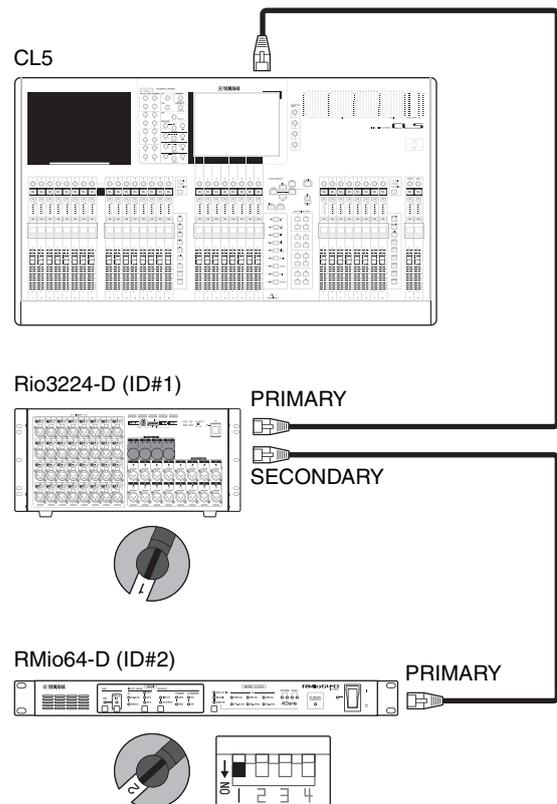
Star Network

In a star network, each device is connected to a central GbE-compatible network switch. This connection enables you to configure a wide-band, large-scale network.

■ Settings

- Turn on Dante DIP switch 1 (DOWN).

- If there are multiple Dante-compatible devices from Yamaha that require an ID setting connected to the same network, set a different ID for each device. Make sure to change the settings of the rotary switch while the power to the unit is turned off; otherwise, the ID setting will not be effective.

NOTE

- We recommend a network switch that features various functions for controlling and monitoring the network (such as QoS).

- Do not use the EEE functionality of network switches.
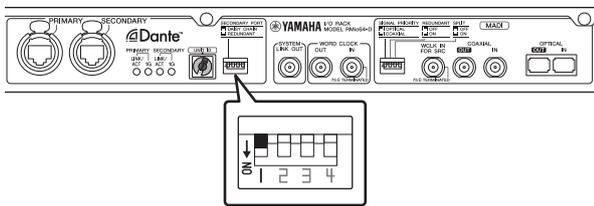
Star Network (Redundant Network)

You can set up a star network redundant so that there is no audio loss even if interference occurs on the network. A redundant network consists of two circuits, a primary circuit and a secondary circuit. Normally, the network operates on the primary circuit. However, if the primary connection is broken, the secondary circuit will automatically take over communications.

■ Settings

- Turn on Dante DIP switch 1 (DOWN).

- If there are multiple Dante-compatible devices from Yamaha that require an ID setting connected to the same network, set a different ID for each device. Make sure to change the settings of the rotary switch while the power to the unit is turned off; otherwise, the ID setting will not be effective.

NOTE

- We recommend a network switch that features various functions for controlling and monitoring the network (such as QoS).

- Do not use the EEE functionality of network switches.

- The Dante [SYNC] indicator flashes as follows when communication error occurs on the Dante Redundant Network.

Error on a primary network	Error on a secondary network
SYNC Light or flash (green) — Flashes once (orange)	SYNC Light or flash (green) — Flashes twice (orange)

Primary Dante
Secondary Dante
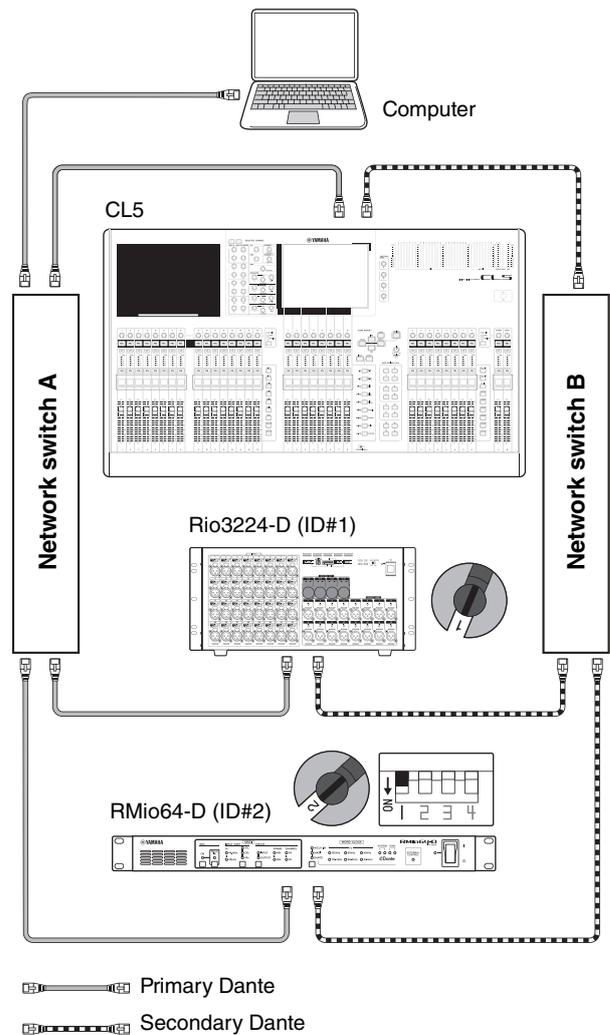
Connecting MADI-compatible Devices

You can connect the RMio64-D to MADI-compatible devices using either 75Ω coaxial (BNC) or optical (SC) cables.

Using 75Ω Coaxial Cables

NOTE

Coaxial cables of up to 100 meters (theoretical value) can be used.

RMio64-D

COAXIAL OUT — COAXIAL IN
COAXIAL IN — COAXIAL OUT

MADI-compatible device
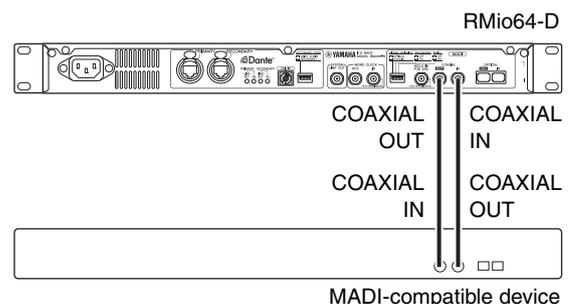
Using Optical Cables

NOTE

Optical cables of up to 2,000 meters (theoretical value) can be used.

RMio64-D

OPTICAL OUT   OPTICAL IN

OPTICAL IN   OPTICAL OUT

MADI-compatible device
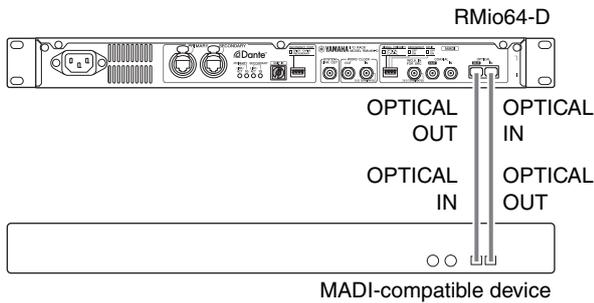
Redundant Connection (Input only)

You can set up a redundant connection using both 75Ω coaxial cables and optical cables, so that there is no input signal loss even if interference occurs in the connection.

In addition, the input signal from the Dante network is output from both the MADI [COAXIAL OUT] and MADI [OPTICAL OUT] connectors, regardless of the MADI redundancy settings.

■ Settings

- To set up a redundant connection, turn on MADI DIP switch 2 (DOWN).

- To give priority to the coaxial cables, turn on MADI DIP switch 1 (DOWN).

- To give priority to the optical cables, turn off MADI DIP switch 1 (UP).

NOTE

Make sure to change the settings of the DIP switches while the power to the unit is turned off; otherwise, the ID setting will not be effective.

RMio64-D

Coaxial cable priority   Optical cable priority

MADI-compatible device
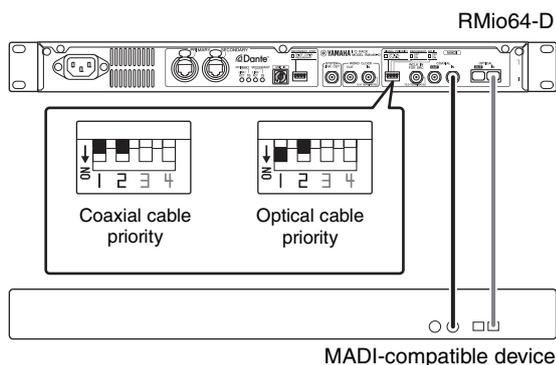
When using the word clock input from the MADI [WCLK IN FOR SRC] connector as the MADI SRC reference clock, the redundant function is unavailable.

Connecting AC Power

1. **Turn the unit off.**

2. **Connect the plug on the AC power cord to the AC IN connector on the rear panel of the unit.**

3. **Connect the other side of the plug on the AC power cord to a power supply socket.**

NOTE

- When removing the AC power cord, perform these steps in reverse.

- Press the latch button on the plug to disconnect the power cord.

⚠ *WARNING*

- **The RMio64-D has been designed assuming it a proper ground connection is used. To prevent electrical shock and damage to devices, use the included AC power cord to create a secure ground connection. If you do not know how to make a proper ground connection, contact a Yamaha service center listed at the end of this manual.**

- **Be sure to use only the included power cord with this unit. Use of a different power cord could result in abnormal heat and electrical shock.**

⚠ *CAUTION*

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

- **Even when the power switch is turned off, a small amount of current is flowing through the unit. When you are not using the product for a long time, make sure to unplug the power cord from the power supply outlet.**

Power on and off

When turning on the AC power in your audio system, always turn on the power amplifier LAST, to avoid speaker damage. When turning the power off, the power amplifier should be turned off FIRST for the same reason.

Dante Network Settings and Audio Routing

With the Dante network, you can route the audio input and output of multiple Dante devices in any way you like. This requires you to set which channel signals are sent to which inputs. The routing for connecting MADI with the Dante network is fixed on the RMio64-D. Therefore, any changes in routing are made in the Dante network. Use Dante Controller to configure the audio routing of the Dante network.
You can download Dante Controller from the following website:
http://www.yamahaproaudio.com/

Refer to the Dante Controller owner's manual (available from the same website) for details about Dante Controller.

Selecting MADI Input Rate

Use the MADI [INPUT RATE] 1Fs/2Fs/4Fs keys on the front panel to select the MADI input rate.
For example, for a MADI input rate of 192 kHz (4x 48 kHz), confirm that the MADI [INPUT RATE Fs 48kHz] indicator is on, and then select [4Fs]. If no valid MADI input signal is detected, both indicators remain off.

Panel Lock

You can lock the panel to prevent unintended changes and operations. While the lock is engaged, all controllers on the front panel are inoperable. To engage the lock, press and hold the MADI [STATUS] INPUT/OUTPUT key for at least 3 seconds. All front panel indicators (except the power indicator) flash, indicating all controllers are locked. To disengage the lock, press and hold the MADI [STATUS] INPUT/OUTPUT key for at least 3 seconds.
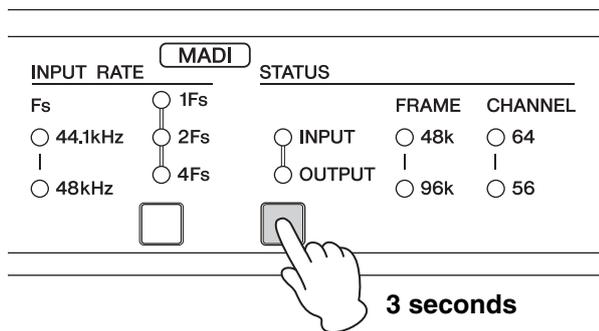
NOTE
Even if the front panel is locked, you can use remote control to make changes to the settings.
For the latest information about remote control compatible devices, refer to the Yamaha Pro Audio website:
http://www.yamahaproaudio.com/

Signal Flow

Dante to MADI

The Dante input signal is output from the MADI [COAXIAL OUT] connector and the [OPTICAL OUT] connector.
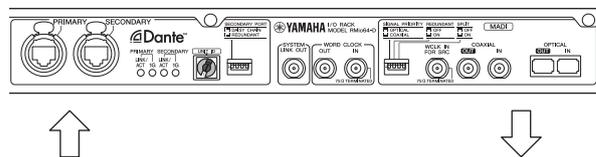
MADI to Dante

The MADI input signal is output from the Dante [PRIMARY] and [SECONDARY] connectors.
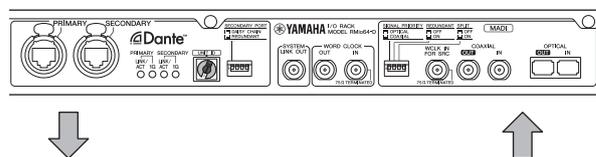
MADI Split

A signal that is input via coaxial or optical connector can be looped back via the other connector. When doing so, the signal also goes to the Dante network.

■ Settings

- To use a MADI split, turn on MADI DIP switch 3 (DOWN).
- To loop back the input signal from the MADI [COAXIAL IN] connector to the MADI [OPTICAL OUT] connector, turn on MADI DIP switch 1 (DOWN).
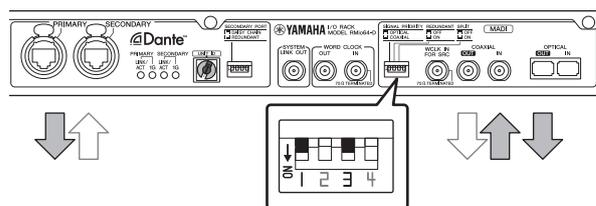
- To loop back the input signal from the MADI [OPTICAL IN] connector to the MADI [COAXIAL OUT] connector, turn off MADI DIP switch 1 (UP).
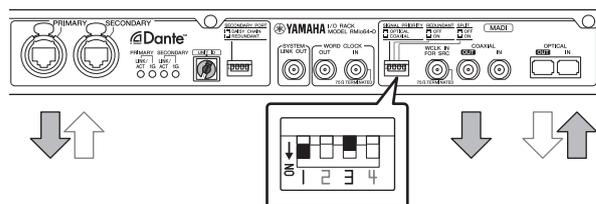
NOTE
Make sure to change the settings of the DIP switches while the power to the unit is turned off; otherwise, the ID setting will not be effective.

Word Clock

About Word Clock

- You can set the word clock source to an external clock device, the MADI input signal, or the Dante network.
- You can send the word clock from this unit to an external device via the [WORD CLOCK OUT] connector.
- You can connect the [SYSTEM LINK OUT] connector to the AES 2 IN connector on Steinberg Nuendo SyncStation for high-precision clock sync with Nuendo.

Selecting a Word Clock Source

Use the WORD CLOCK [WCLK IN]/[MADI]/[DANTE] key on the front panel to select the word clock source.
The unit's clock is synced with the selected word clock source.

WCLK IN	Uses the word clock signal that is input from the [WORD CLOCK IN] connector on the rear panel. This indicator flashes if no valid word clock input is detected.
MADI	Uses the word clock of the MADI input signal. This indicator flashes if no valid word clock input is detected.
DANTE	Uses the word clock from the Dante network.

NOTE
- If you select [WCLK IN] or [MADI], the unit is automatically specified as the "Preferred Master" and "Enable Sync To External" is set in the Dante network.
- If you select [WCLK IN] or [MADI], when the unit acts as the clock slave on the Dante network, input to the unit the same clock as the clock master. You can use Dante Controller (available from the following website) to check which device is the current clock master.
 http://www.yamahaproaudio.com/
- If the word clock signal from the selected work clock source is cut off, the unit switches to its internal clock. The internal clock operates according to the previous word clock, before it was cut off.

MADI SRC (Sampling Rate Converter)

MADI SRC allows you to connect a MADI-compatible device having a different clock than the RMio64-D unit.
- You can connect a Dante network and a MADI-compatible device that are operating under different clocks without making any changes to either clock.
- You can output MADI signals with a different word clock than the MADI input signal.

Setting Examples

NOTE
Output Clock Source in the following block diagram can be controlled only by remote control.

Using the MADI signal internal clock on the MADI side, and syncing the unit to the Dante network:
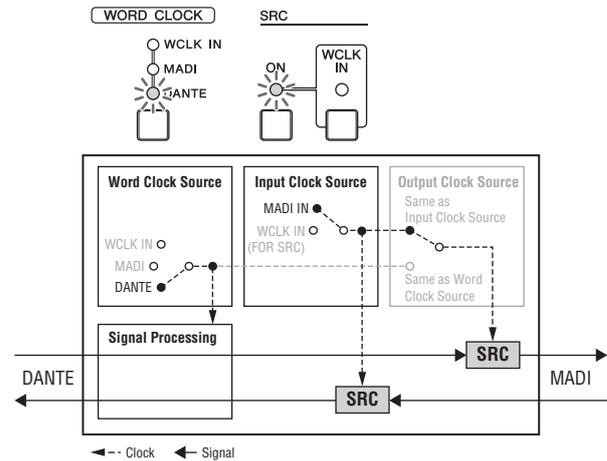
Using an external clock on the MADI-compatible devices, and syncing the unit to the Dante network:

NOTE
The same external clock supplied to MADI-compatible devices must be input to [WCLK IN FOR SRC] on the unit.
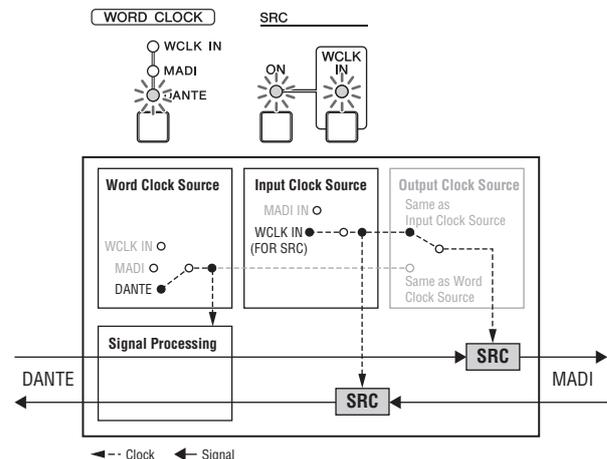
Syncing the unit to a MADI input signal

NOTE

If the unit acts as the clock slave on the Dante network, input to the unit the same MADI clock used for the device that is the clock master. You can use Dante Controller (available from the following website) to check which device is the current clock master.

http://www.yamahaproaudio.com/
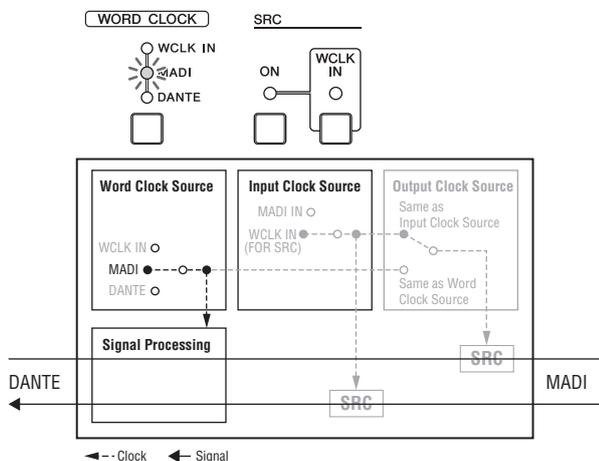
Using an external clock on MADI-compatible devices, and syncing the unit to a different external clock:

NOTE

- The same external clock supplied to MADI-compatible devices must be input to [WCLK IN FOR SRC] on the unit.

- If the unit acts as the clock slave on the Dante network, input to the unit the same external clock used for the device that is the clock master. You can use Dante Controller (available from the following website) to check which device is the current clock master.

http://www.yamahaproaudio.com/
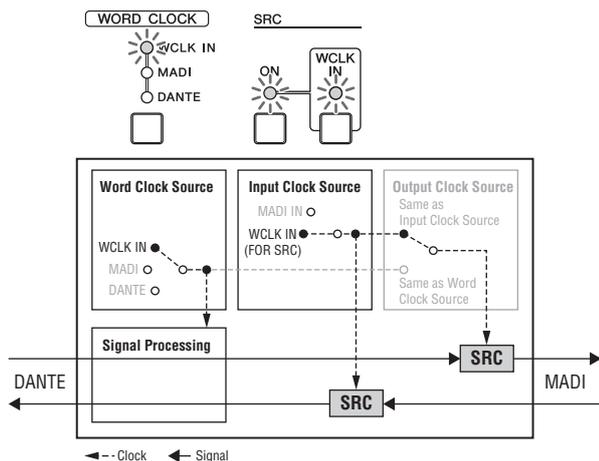
Displaying the MADI Input and Output Signals

The frame format and number of channels for the MADI input signal or output signal are displayed in the MADI [STATUS] area.

Use the MADI [STATUS] INPUT/OUTPUT key to switch between the input signal display and the output signal display.

Remote Control

You can use the RMio64-D remote control to configure items that cannot be configured from the unit's panel, such as individual settings for MADI SRC input/output controls and setting the MADI output to a different format than the MADI input.

NOTE

For the latest information about remote control compatible devices, refer to the Yamaha Pro Audio website: http://www.yamahaproaudio.com/

Remote Controllable Parameters

Parameter	Description
SRC ON/OFF	Turns MADI SRC on or off.
SRC INPUT CLOCK SOURCE	For selecting the MADI SRC clock source: the MADI input signal or the clock input from the WCLK IN FOR SRC connector.
SRC OUTPUT CLOCK SOURCE	For selecting the MADI SRC clock output: the input signal or the unit's master clock.
INPUT RATE	Displays the frequency when the MADI input signal is automatically detected as 44.1 kHz or 48 kHz. For selecting 1Fs, 2Fs, or 4Fs in combination with the MADI input rate.
STATUS INPUT	Displays the status of the MADI input signal.
STATUS OUTPUT	Displays the status of the MADI output signal. You can also make changes to the frame format and number of channels for the MADI output signal.
BNC AES/EBU OUT	For selecting the Dante input channel output from the [SYSTEM LINK OUT] connector as the AES/EBU signal.
CLOCK	For selecting the source used as the master clock.
PANEL LOCK	Locks the panel to prevent operation of the unit's controllers. Default settings are turned off.

Control from NUAGE Workgroup Manager

When RMio64-D is operating in the NUAGE Workgroup, you can use remote control to configure the RMio64-D and use direct monitoring functions.

Direct Monitoring

When RMio64-D is operating in the NUAGE Workgroup, a "direct monitoring" function is available. Direct monitoring allows you to monitor a MADI signal output from the RMio64-D to Steinberg Nuendo as direct MADI output, in the same way as NUAGE I/O.
Direct monitoring provides latency-free monitoring of signals from audio tracks balanced with the faders in Nuendo and MADI signals routed to the OUTPUT BUS.
To turn direct monitoring on or off, use the monitoring button on tracks in Nuendo where the RMio64-D is routed as input ports.

NOTE
To use direct monitoring, you must activate [Direct Monitoring] in the Nuendo [Device Setup] menu.

RMio64-D Setup

If there are multiple AIC128-D cards on a Dante network, specify the AIC128-D unit that is used in Nuendo.

To open the RMio64-D Setup within Nuendo, click "Devices," then click "RMio64-D Setup."

❶ **Dante Interface**

Select the AIC128-D that is used in Nuendo.

❷ **Identify**

When you click here, the lamp on the selected AIC128-D flashes for a few seconds. This function is convenient for identifying the selected AIC128-D.

❸ **Reload**

When you click here, choices for the Dante interface are updated to the latest status.

Troubleshooting

The following is an abbreviated list of frequently asked questions in the past. Please check it if you run into similar problems and need help.

A mixer does not recognize the RMio64-D

- Is the Dante [Unit ID] set different ID from other Dante-compatible devices from Yamaha that connected to the same network?

- Is the network switch working properly?
  The problem may be solved by turning the network switch on again.

- Is the cable defective?
  The problem may be solved by replacing the cable.

Audio cuts out or distorts.

- Is the correct MADI input frequency selected? (page 14)

- If [MADI] or [WCLK IN] is selected as the word clock source, change it to [DANTE]. Keep in mind that if this remedies the problem, the clocks for the Dante network and the unit will not be synced. If you want to select [MADI] or [WCLK IN] as the word clock source, the unit must be set as the clock master for the Dante network. For details, refer to the Dante Controller User Guide available on the website.
  http://www.yamahaproaudio.com/

Updating

How to update the firmware?

What are the computer requirements for updating the firmware?

For information about updating the unit, refer to the firmware update guide for each product and the following website.
http://www.yamahaproaudio.com/

Cannot update

The problem may be solved by disabling any antivirus software and the firewall of the computer.

For other details, refer to the firmware update guide available on the website.
http://www.yamahaproaudio.com/

What devices should I update?

It is necessary to update multiple devices depending on the version of each device. For details, refer to the firmware compatibility available on the website.
http://www.yamahaproaudio.com/

Routing / Patching

A mixer is not receiving an input signal from the RMio64-D

- Is the patch of the Dante network set up correctly by Dante Controller?
- Is the patch setting in the mixer set to use the Dante Controller?
- Is the word clock setting in the mixer set to correspond to the Dante network?

How can the Dante input and output signals be patched?

Use Dante Controller to configure the audio routing (patching) of the Dante network. For details, refer to the Dante Controller User Guide available on the website.
http://www.yamahaproaudio.com/

Is it possible to input a signal from two RMio64-D units to one channel of the mixer?

Unlike with output, input can receive only the signal of one channel.

Is it possible to receive the input signal from RMio64-D by a separate mixer?

It can be configured using the Dante Controller. For details, refer to the Dante Controller User Guide available on the website.
http://www.yamahaproaudio.com/

Remote Control

I want to change the RMio64-D settings from the mixer

I want to know the devices that can remotely configure the RMio64-D

For details on RMio64-D remote control, refer to the following website.
http://www.yamahaproaudio.com/

Other Issues

What is the latency of the Dante network?

The latency value can be set by Dante Controller or some mixers. For details, refer to the manuals for each product.

An internal error message such as "firmware mismatch" is displayed on the device connected to the RMio64-D.

Make sure that each device has a compatible version. For details, refer to the firmware compatibility information available on the website.
http://www.yamahaproaudio.com/

Restoring Factory Settings

Perform the following steps to restore the factory settings.

1. **Turn the unit off.**

2. **Turn on Dante DIP switch 2 (DOWN), and turn the unit on.**

   All front panel indicators (except the power indicator) flash, indicating all parameters have been restored to the factory settings.
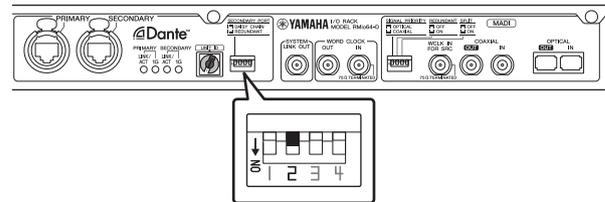
3. **Turn the unit off.**

4. **Turn off Dante DIP switch 2 (UP).**
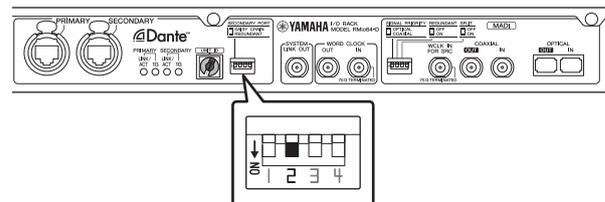
5. **Turn the unit on again.**

Index

Specifications

General Specifications

Sampling Frequency	Internal	44.1kHz 48kHz 88.2kHz 96kHz 176.4kHz 192kHz	+4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0%	±50ppm ±50ppm ±50ppm ±50ppm ±50ppm ±50ppm
	External	44.1kHz 48kHz 88.2kHz 96kHz 176.4kHz 192kHz	+4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0% +4.1667%/+0.1%/-0.1%/-4.0%	±200ppm ±200ppm ±200ppm ±200ppm ±200ppm ±200ppm
MADI Channels & Formats	fs=44.1kHz/48kHz: fs=88.2kHz/96kHz: fs=176.4kHz/192kHz:	MADI Single fs 44.1/48k frame, 56/64 channels MADI Double fs 44.1/48k frame, 28/32 channels MADI Double fs 88.2/96k frame, 28/32 channels MADI Quad fs 44.1/48k frame, 14/16 channels		
SRC	SRC Lock Range: Sample Rate Ratio Limit:	38.59kHz – 216kHz 6:1		
Dimensions (WxHxD) and Net Weight	480 x 44 x 374 mm, 4.7 kg			
Power Requirements (wattage)	25W			
Power Requirements (voltage and hertz)	US/Canada: Japan: China: Korea: Others:	120V 60Hz 100V 50/60Hz 110 – 240V 50/60Hz 220V 60Hz 110 – 240V 50/60Hz		
Temperature Range	Operating temperature range: Storage temperature range:	0 – 40 °C -20 – 60 °C		
Included Accessories	Owner's Manual, AC power cord			

*The contents of this manual apply to the latest specifications as of the printing date. Since Yamaha makes continuous improvements to the product, this manual may not apply to the specifications of your particular product. To obtain the latest manual, access the Yamaha website then download the manual file. Since specifications, equipment or separately sold accessories may not be the same in every locale, please check with your Yamaha dealer.

Digital I/O Characteristics

Terminal	Format	Data length	Level	Connector
Primary/Secondary	Dante	24-bit	1000Base-T	etherCON x 2

Terminal	Format	Data length	Level	Connector
MADI IN 1 – 64	AES10-2008 (MADI)	24-bit	ECL	BNC Connector
			-31 – -14dBm	SC Connector
MADI OUT 1 – 64			ECL	BNC Connector
			-20 – -14dBm	SC Connector

Control I/O Characteristics

Terminal		Level	Connector
WORD CLOCK	IN	TTL/75Ω terminated	BNC Connector
	IN for SRC	TTL/75Ω terminated	BNC Connector
	OUT	TTL/75Ω	BNC Connector
System Link Out		1.0±0.2Vp-p/75Ω*	BNC Connector

*AES-3id

Dimensions

Unit: mm
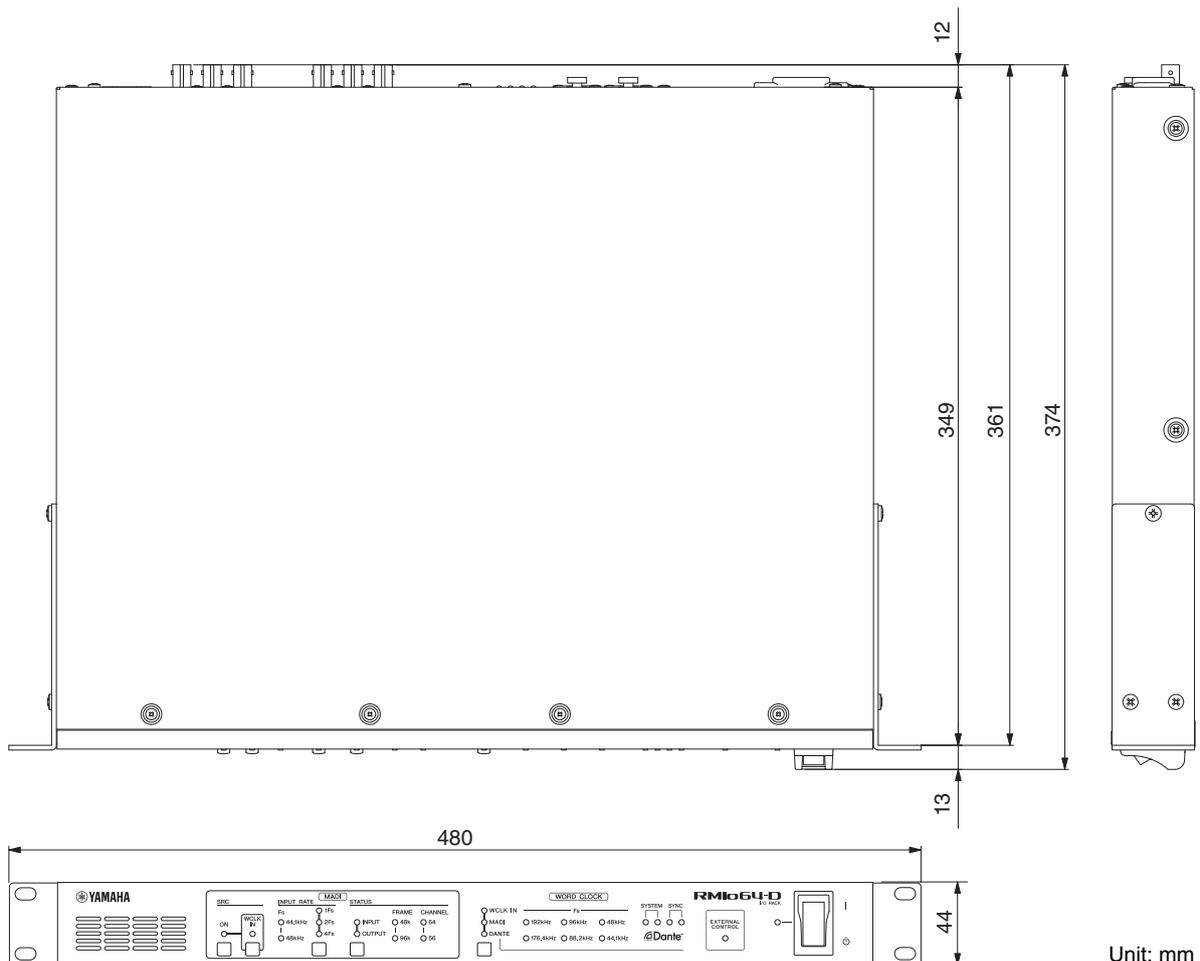
Block Diagrams

[MADI INPUT] (1-64)
(up to 64ch@44.1/48kHz, up to 32ch@88.2/96kHz, up to 16ch@176.4/192kHz)

[MADI COAXIAL]
(INPUT 1-64)

[MADI OPTICAL]
(INPUT 1-64)

[DANTE]
(INPUT 1-64)

SELECTOR

DECODE

SRC

Effective when Direct Monitoring is ON

MATRIX BUS
1 2 3 4 64
Same as above
Same as above
Same as above
Same as above

[DANTE]
(OUTPUT 1-64)

SRC

ENCODE

[MADI COAXIAL]
(OUTPUT 1-64)

[MADI OPTICAL]
(OUTPUT 1-64)
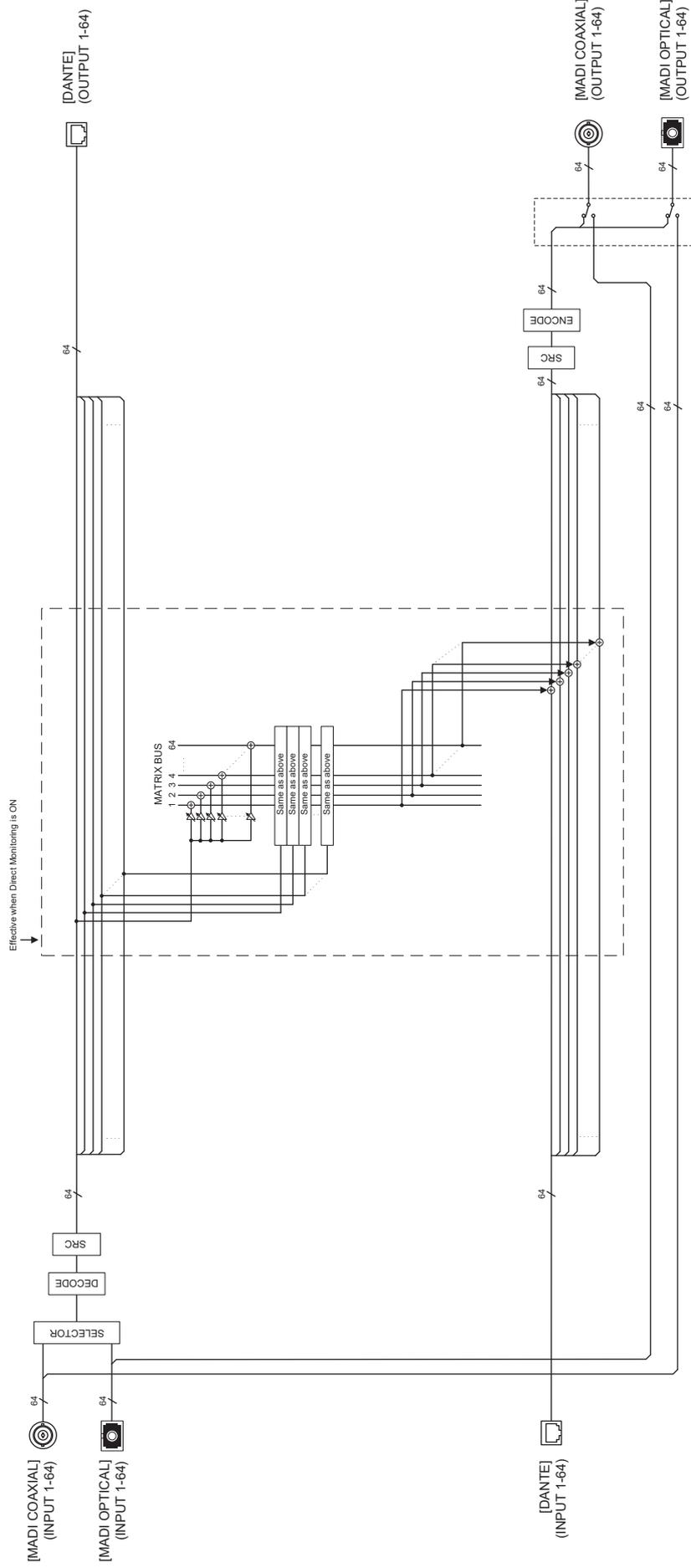
[MADI OUTPUT] (1-64)
(up to 64ch@44.1/48kHz, up to 32ch@88.2/96kHz, up to 16ch@176.4/192kHz)

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Version 2, June 1991

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NORTH AMERICA

CANADA
Yamaha Canada Music Ltd.
135 Milner Avenue, Toronto, Ontario,
M1S 3R1, Canada
Tel: +1-416-298-1311

U.S.A.
Yamaha Corporation of America
6600 Orangethorpe Avenue, Buena Park, CA 90620,
U.S.A.
Tel: +1-714-522-9011

CENTRAL & SOUTH AMERICA

MEXICO
Yamaha de México, S.A. de C.V.
Av. Insurgentes Sur 1647 Piso 9, Col. San José
Insurgentes, Delegación Benito Juárez, México,
D.F., C.P. 03900, México
Tel: +52-55-5804-0600

BRAZIL
Yamaha Musical do Brasil Ltda.
Rua Fidêncio Ramos, 302 – Cj 52 e 54 – Torre B – Vila
Olímpia – CEP 04551-010 – São Paulo/SP, Brazil
Tel: +55-11-3704-1377

ARGENTINA
Yamaha Music Latin America, S.A.,
Sucursal Argentina
Olga Cossettini 1553, Piso 4 Norte,
Madero Este-C1107CEK,
Buenos Aires, Argentina
Tel: +54-11-4119-7000

PANAMA AND OTHER LATIN
AMERICAN COUNTRIES/
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Yamaha Music Latin America, S.A.
Edif. Torre Banco General, Piso 7, Urbanización
Marbella, Calle 47 y Aquilino de la Guardia,
Ciudad de Panamá, República de Panamá
Tel: +507-269-5311

EUROPE

THE UNITED KINGDOM/IRELAND
Yamaha Music Europe GmbH (UK)
Sherbourne Drive, Tilbrook, Milton Keynes,
MK7 8BL, U.K.
Tel: +44-1908-366700

GERMANY
Yamaha Music Europe GmbH
Siemensstrasse 22-34, 25462 Rellingen, Germany
Tel: +49-4101-303-0

SWITZERLAND/LIECHTENSTEIN
Yamaha Music Europe GmbH, Branch
Switzerland in Thalwil
Seestrasse 18a, 8800 Thalwil, Switzerland
Tel: +41-44-3878080

AUSTRIA/BULGARIA/
CZECH REPUBLIC/HUNGARY/
ROMANIA/SLOVAKIA/SLOVENIA
Yamaha Music Europe GmbH
Branch Austria
Schleiergasse 20, 1100 Wien, Austria
Tel: +43-1-60203900

POLAND
Yamaha Music Europe GmbH
Sp.z o.o. Oddział w Polsce
ul. Wielicka 52, 02-657 Warszawa, Poland
Tel: +48-22-880-08-88

MALTA
Olimpus Music Ltd.
Valletta Road, Mosta MST9010, Malta
Tel: +356-2133-2093

NETHERLANDS/BELGIUM/
LUXEMBOURG
Yamaha Music Europe Branch Benelux
Clarissenhof 5b, 4133 AB Vianen, The Netherlands
Tel: +31-347-358040

FRANCE
Yamaha Music Europe
7 rue Ambroise Croizat, Zone d'activités de Pariest,
77183 Croissy-Beaubourg, France
Tel: +33-1-6461-4000

ITALY
Yamaha Music Europe GmbH, Branch Italy
Via Tinelli N.67/69 20855 Gerno di Lesmo (MB),
Italy
Tel: +39-039-9065-1

SPAIN/PORTUGAL
Yamaha Music Europe GmbH Ibérica, Sucursal
en España
Ctra. de la Coruña km. 17,200, 28231
Las Rozas de Madrid, Spain
Tel: +34-91-639-88-88

GREECE
Philippos Nakas S.A. The Music House
19th klm. Leof. Lavriou 190 02 Peania – Attiki,
Greece
Tel: +30-210-6686168

SWEDEN/FINLAND/ICELAND
Yamaha Music Europe GmbH Germany filial
Scandinavia
JA Wettergrensgata 1, 400 43 Göteborg, Sweden
Tel: +46-31-89-34-00

DENMARK
Yamaha Music Denmark,
Fillial of Yamaha Music Europe GmbH, Tyskland
Generatorvej 8C, ST. TH. , 2860 Søborg, Denmark
Tel: +45-44-92-49-00

NORWAY
Yamaha Music Europe GmbH Germany -
Norwegian Branch
Grini Næringspark 1, 1332 Østerås, Norway
Tel: +47-6716-7800

CYPRUS
Yamaha Music Europe GmbH
Siemensstrasse 22-34, 25462 Rellingen, Germany
Tel: +49-4101-303-0

RUSSIA
Yamaha Music (Russia) LLC.
Room 37, entrance 7, bld. 7, Kievskaya street,
Moscow, 121059, Russia
Tel: +7-495-626-5005

OTHER EUROPEAN COUNTRIES
Yamaha Music Europe GmbH
Siemensstrasse 22-34, 25462 Rellingen, Germany
Tel: +49-4101-3030

AFRICA

Yamaha Music Gulf FZE
JAFZA-16, Office 512, P.O.Box 17328,
Jebel Ali FZE, Dubai, UAE
Tel: +971-4-801-1500

MIDDLE EAST

TURKEY
Yamaha Music Europe GmbH
Merkezi Almanya Türkiye İstanbul Şubesi
Mor Sumbul Sokak Varyap Meridian Business
1.Blok No:1 113-114-115
Bati Atasehir Istanbul, Turkey
Tel: +90-216-275-7960

OTHER COUNTRIES
Yamaha Music Gulf FZE
JAFZA-16, Office 512, P.O.Box 17328,
Jebel Ali FZE, Dubai, UAE
Tel: +971-4-801-1500

ASIA

THE PEOPLE'S REPUBLIC OF CHINA
Yamaha Music & Electronics (China) Co.,Ltd.
2F, Yunhedasha, 1818 Xinzha-lu, Jingan-qu,
Shanghai, China
Tel: +86-400-051-7700

INDIA
Yamaha Music India Private Limited
P-401, JMD Megapolis, Sector-48, Sohna Road,
Gurgaon-122018, Haryana, India
Tel: +91-124-485-3300

INDONESIA
PT. Yamaha Musik Indonesia (Distributor)
Yamaha Music Center Bldg. Jalan Jend. Gatot
Subroto Kav. 4, Jakarta 12930, Indonesia
Tel: +62-21-520-2577

KOREA
Yamaha Music Korea Ltd.
11F, Prudential Tower, 298, Gangnam-daero,
Gangnam-gu, Seoul, 06253, Korea
Tel: +82-2-3467-3300

MALAYSIA
Yamaha Music (Malaysia) Sdn. Bhd.
No.8, Jalan Perbandaran, Kelana Jaya, 47301
Petaling Jaya, Selangor, Malaysia
Tel: +60-3-78030900

SINGAPORE
Yamaha Music (Asia) Private Limited
Block 202 Hougang Street 21, #02-00,
Singapore 530202, Singapore
Tel: +65-6740-9200

TAIWAN
Yamaha Music & Electronics Taiwan Co.,Ltd.
2F., No.1, Yuandong Rd., Banqiao Dist.,
New Taipei City 22063, Taiwan (R.O.C.)
Tel: +886-2-7741-8888

THAILAND
Siam Music Yamaha Co., Ltd.
3, 4, 15, 16th Fl., Siam Motors Building,
891/1 Rama 1 Road, Wangmai,
Pathumwan, Bangkok 10330, Thailand
Tel: +66-2215-2622

VIETNAM
Yamaha Music Vietnam Company Limited
15th Floor, Nam A Bank Tower, 201-203 Cach
Mang Thang Tam St., Ward 4, Dist.3,
Ho Chi Minh City, Vietnam
Tel: +84-8-3818-1122

OTHER ASIAN COUNTRIES
http://asia.yamaha.com/

OCEANIA

AUSTRALIA
Yamaha Music Australia Pty. Ltd.
Level 1, 80 Market Street, South Melbourne,
VIC 3205, Australia
Tel: +61-3-9693-5111

COUNTRIES AND TRUST
TERRITORIES IN PACIFIC OCEAN
http://asia.yamaha.com/

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