



L2 SWITCH

# SWP2

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SWP2-10MMF  
SWP2-10SMF

Owner's Manual  
Bedienungsanleitung  
Mode d'emploi  
Manual de instrucciones  
Manual do Proprietário  
Manuale di istruzioni  
Руководство пользователя  
取扱説明書

EN  
DE  
FR  
ES  
PT  
IT  
RU  
JA

English

Deutsch

Français

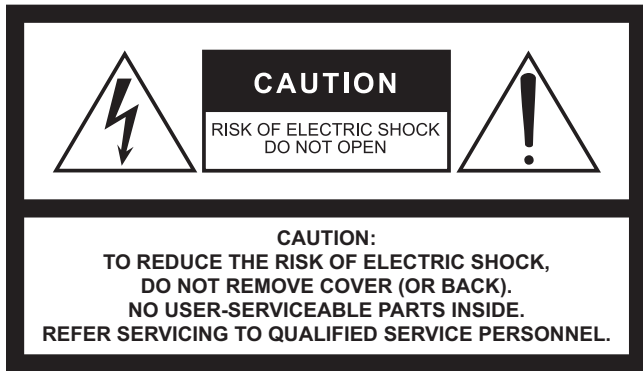
Español

Português

Italiano

Русский

日本語



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



L'avertissement ci-dessus est situé sur le dessus 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.

## 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.

## 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 "A" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product, in a commercial environment, will not result in harmful interference with other electronic devices. However, operation of this product in a residential area is likely to cause interference in some form. In this case you, the user, bear the responsibility of correcting this condition.

This product 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 opera-

tion 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 product "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either the product generating the interference 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 that is 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.

(class A)

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

Responsible Party: Yamaha Corporation of America  
Address: 6600 Orangethorpe Ave. Buena Park CA 90620  
Telephone: 714-522-9011  
Type of Equipment: L2 Switch  
Model Name: SWP2-10MMF, SWP2-10SMF

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.

# PRECAUTIONS

## PLEASE READ CAREFULLY BEFORE PROCEEDING

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

This product is designed for audio network. Do not use for any purposes other than the one intended. Those who are unfamiliar with handling or those who can not handle according to this manual such as children, should be supervised by responsible persons to ensure safety.



### **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.
  - 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 disconnect the all plugs from the outlet.



- 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.
- If you plan to connect a powered device that complies with the IEEE802.3 standards, use a CAT5e or higher-grade cable. Failure to observe this precaution could result in a fire or malfunction.

#### **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**

- 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.
- Do not block the vents. This product has ventilation holes at the sides 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.

- When installing the product:
  - Do not cover it with any cloth.
  - Do not install it on a carpet or rug.
  - Make sure the top surface faces up; do not install on its sides or upside down.
  - Do not use the product in a confined, poorly-ventilated location.

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 9. Inadequate ventilation can result in overheating, possibly causing damage to the product(s), malfunction, or even fire.
- 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.

## Maintenance

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

## Handling caution

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- 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.
- This product uses class 1 lasers.  
Do not look into the tip of an optical fiber or into an optical connector. Doing so may damage your eyes.

## Backup battery

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- 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, 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 use the product in the vicinity of a TV, radio, mobile phone, 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 (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.
- Condensation can occur in the product due to rapid, drastic changes in ambient temperature—when the product is moved from one location to another, or air conditioning is turned on or off, for example. Using the product while condensation is present can cause damage. 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.
- Do not place vinyl, plastic or rubber objects on the product, since this might discolor 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.
- Drain all static electricity from your clothing and body before handling the device. Static electricity can damage the device. Touch an exposed metal part of the host device or other grounded object beforehand.
- Do not install the product in a location where magnetic fields are strong. Otherwise, it might cause the product to malfunction.
- Do not connect any noise generating devices on the same power line as the product. Failure to observe this precaution could result in a malfunction or damage to the product.
- Do not locate any connected LAN cables close to the power cord. Otherwise, high voltage might be induced, resulting in malfunction.
- A 1000BASE-T connection will require an Enhanced Category 5 (CAT5e) or better LAN cable.

### Saving data

- This unit has a built-in backup battery that maintains time information for the data. When the backup battery runs down, the time information will be initialized, causing incorrect time information to be recorded in the log. If this occurs, contact your dealer or a Yamaha customer service center to have the backup battery replaced. The life span of the backup battery is approximately 10 years, but this may vary depending on the conditions of use. Set the clock after replacing the battery.

Data maintained by the backup battery:

- Time information.

# Information

## About copyrights

- Copying of the software or reproduction of this manual in whole or in part by any means is expressly forbidden without the written consent of the manufacturer.

## About functions/data bundled with the product

- This is a class A product. Operation of this product in a residential environment could cause radio interference.
- This product is a class 1 laser product. It is compliant with IEC/EN 60825-1, IEC/EN 60825-2, FDA 21 CFR 1002.10, and 1040.10.  
IEC 60825-1:2014
- Factory: Axcen Photonics Corporation  
6F., No.119, Baozhong Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

## About this manual

- The illustrations 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.
- 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.

## Open Source Software Used in this Product

- Please refer to Yamaha Pro Audio website for the details of licensing article.  
<http://www.yamahaproaudio.com/>

### 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)

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.**

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**Serial No.**

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(top\_en\_01)

# SOFTWARE LICENCE AGREEMENT

This agreement is an agreement between you, the customer, and Yamaha Corporation (hereafter referred to as "Yamaha") defining the conditions under which Yamaha provides firmware for this Yamaha network product (hereafter referred to as the Product) and related programs, printed material, and electronic files (hereafter referred to as the Software).

The Software may be used only for the purpose of operating it on the Product or on a personal computer or similar device. This agreement applies to the Software provided by Yamaha to the customer and to copies of the Software created by the customer in compliance with section 1 subsection (1) of this agreement.

## 1. Permission to use

- (1) The customer may install and use the Software on a Product or a personal computer or similar device owned by the customer.
- (2) With the exceptions that are explicitly defined by this agreement, the customer shall not permit the reuse of, sell, distribute, rent, lease, lend, or transfer the Software, nor upload it to any website or server where it could be accessed by specified or unspecified numbers of people, nor duplicate, translate, adapt it, or rewrite it into any other program language. The customer shall not correct, revise, reverse-assemble, reverse-compile, or perform any reverse engineering of the Software, and may not cause any third party to perform such actions.
- (3) The customer shall not modify, erase, or delete the Yamaha copyright indications that are included in the Software.
- (4) With the exceptions that are explicitly defined by this agreement, Yamaha does not grant or permit the customer any of Yamaha's intellectual property rights.

## 2. Property rights

The Software is protected by copyright law and by other laws, and is the property of Yamaha. The customer hereby agrees that no property rights or intellectual property rights related to the Software are granted by Yamaha to the customer by this agreement nor any other means.

## 3. Export restrictions

The customer shall abide by all applicable export regulations and rules of the relevant countries, and shall not export or re-export the Software, neither in part nor in whole, in violation of any applicable rules and regulations.

## 4. Support and updates

Yamaha, its subsidiaries, their sales representatives and dealers, and any other party handling or distributing the Software do not accept any responsibility for maintaining the Software nor for supporting the customer's use of the Software. Nor do the aforementioned parties have any responsibility to update the Software, to fix bugs, or to provide support.

## 5. Limitation of responsibility

- (1) The software is licensed for use "in its current state (as-is)." Yamaha, its subsidiaries, their sales representatives and dealers, and any other party handling or distributing the Software make no warranty, neither explicit nor implicit, regarding the merchantability or suitability of the Software for any particular purpose.
- (2) Yamaha, its subsidiaries, their sales representatives and dealers, and any other party handling or distributing the

Software shall bear no responsibility for any damages (including but not limited to lost profit and any other consequential or incidental damages) that may arise from the use of or inability to use the Software. This shall be the case even if Yamaha, its subsidiaries, their sales representatives and dealers, or any other party handling or distributing the Software had been informed of the possibility of such damages.

- (3) Yamaha, its subsidiaries, their sales representatives and dealers, and any other party handling or distributing the Software shall bear no responsibility for any dispute between the customer and a third party that may arise from or related to the use of the Software.

## 6. Term of validity

- (1) This agreement shall continue in force until it is terminated by the following sub-sections (2) or (3).
- (2) The customer may terminate this agreement by deleting all instances of the Software that are installed on the Product or on a personal computer or similar device.
- (3) This agreement shall immediately terminate if the customer violates any of the terms of this agreement.
- (4) Upon the termination of this agreement due to sub-section (3) above, the customer shall immediately delete all instances of the Software that are installed on the Product or on a personal computer or similar device.
- (5) Regardless of any clauses of this agreement, the provisions of sections 2 through 6 of this agreement shall continue in force even after the termination of this agreement.

## 7. Separability

Even if any clause of this agreement should become invalid, the remainder of the agreement shall remain in force.

## 8. U.S. GOVERNMENT RESTRICTED RIGHTS NOTICE:

The Software is a "commercial item," as that term is defined at 48 C.F.R. 2.101 (Oct 1995), consisting of "commercial computer software" and "commercial computer software documentation," as such terms are used in 48 C.F.R. 12.212 (Sept 1995). Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.72024 (June 1995), all U.S. Government End Users shall acquire the Software with only those rights set forth herein.

## 9. General articles

The customer agrees that this agreement is the complete and only declaration of agreement between the customer and Yamaha regarding all matters prescribed by this agreement, and that it takes precedence over all proposals, prior agreements, or any other communication between the customer and Yamaha, whether oral or written. No change to this agreement shall have any force unless it is signed by a representative who is duly authorized by Yamaha.

## 10. Jurisdiction

This agreement shall be under the jurisdiction of the laws of Japan, and shall be interpreted according to those laws.

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# Introduction

Thank you for choosing the Yamaha SWP2-10MMF, or SWP2-10SMF L2 switch.

To take full advantage of the superior functions and performance offered by the SWP2, and to enjoy years of trouble-free use, be sure to read this owner's manual carefully before operation.

This owner's manual is intended to be read by audio networking personnel.

## Included items

- **SWP2 Owner's Manual (this book)**
- **Power cord (three-pin plug)**

## Option item

- **PA-700 (AC adaptor)**

\* This can be connected to the rear panel [EXT DC INPUT] jack and used as a backup for the internal power supply.

## 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 SWP2 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 SWP2 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.

# Features

- **Recommended settings for Dante are provided**

Recommended settings (such as QoS, EEE, and IGMP Snooping) for stable operation of the Dante network can be specified with only DIP switch. The 10GBASE-SR/LR ports support 10 gigabit, allowing operation without fear of insufficient bandwidth even on a Dante network that is set to a sampling frequency of 96 kHz.

- **VLAN presets provided**

Three types of preset VLAN settings are provided, allowing a more stable network to be constructed by dividing audio signals and control signals with a single SWP2 unit. The user can also customize the settings.

- **Visualize the network status**

The "Yamaha Audio Network Monitor" Windows application allows you to monitor the status of the network and the Dante devices. The unit's indicators also show which VLAN is connected to which port.

- **Hardware that supports safety and peace of mind**

All models can be rack-mounted. In consideration of temporary setups or other environments in which cables are liable to be pulled out, etherCON and opticalCON are provided as standard. In addition to an AC IN jack with V-lock, an XLR-4-32 type EXT DC INPUT jack is also provided. Redundant power can be provided by using a PA-700 or other external power supply (+24V).

## Related software

If you are using VLAN, connect the computer to the VLAN 1 port.

- **Yamaha Audio Network Monitor (Windows application)**

This is used to monitor the entire network, including SWP2 data as well as all Dante devices on the Dante network.

Download this application from the following website.  
<http://www.yamahaproaudio.com/>

- **Web GUI**

Use this to view or edit the settings of SWP2 units on the network from a web browser.

Access the Web GUI from the Yamaha Audio Network Monitor.

To use the Web GUI, connect a computer to the VLAN 1 port.

When accessing the Web GUI, the "Windows Security" dialog box may appear. With the factory settings, the administrative password is set as follows.

<b>User name</b>	(blank)
<b>Password</b>	(blank)

# Documentation

In addition to this manual, the following documentation for the SWP2 is available.

- **Yamaha Audio Network Monitor User's Guide (PDF)**

This explains installation, settings, and usage of the "Yamaha Audio Network Monitor" Windows application.

- **Command References (PDF)**

This explains the commands used when making settings from the command line of a computer.

- **Technical Data (HTML)**

This explains details of the SWP2's functions.

These documents can be downloaded from the links in the product page of the following website.

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

# Terms

- **VLAN**

This stands for Virtual Local Area Network. A virtual network is constructed separately from the physical connections. When there are multiple networks of differing types, setting up a VLAN allows a logically separate network to be constructed that shares the same physical switches.

A VLAN can be either a "Port-based VLAN" which constructs groups using a physical connection for each port, or a "Tag VLAN" which differentiates VLAN groups by assigning a tag to each Ethernet frame. In the case of a port-based VLAN, each VLAN requires a connection to communicate with another switch. Using a tag VLAN allows multiple VLANs to be combined into a single trunk connection (cable) that connects switches, ensure that the total amount of data does not exceed 1 Gbps for the LAN ports or 10 Gbps for the 10GBASE-SR/LR ports. The VLAN preset A and B of the SWP2 use tag VLAN.

- **Link aggregation**

Link aggregation is a function that bundles multiple LAN/SFP+ ports that connect network devices, and treats them as a single logical interface in order to expand the communication bandwidth. A group that is bundled using link aggregation is called a link aggregation group (LAG).

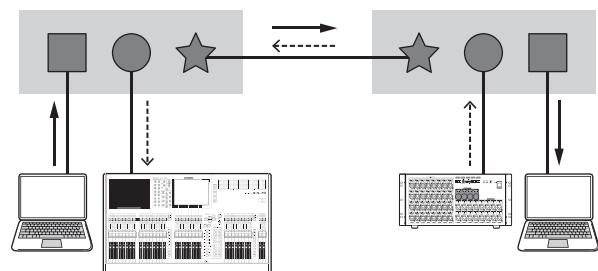
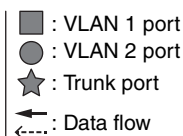
Link aggregation is a technology that is useful when multiple communications are occurring. The communications can be distributed between the aggregated connections by using a load balancing function. Since load balancing distributes the load according to IP address, we recommend that you fix the IP addresses of each device in order to stabilize load balancing.

Even if a problem occurs on one of the LAN/SFP+ ports that are bundled by link aggregation, so that this port is unable to communicate, communication will continue via the remaining ports.

- **Trunk**

This function adds tags to multiple VLANs so that they can be transmitted and received via a single connection. When one SWP2 transmits VLAN 1 data via the trunk connection, the SWP2 unit that receives this will transmit the data only to the port that corresponds to its own VLAN 1.

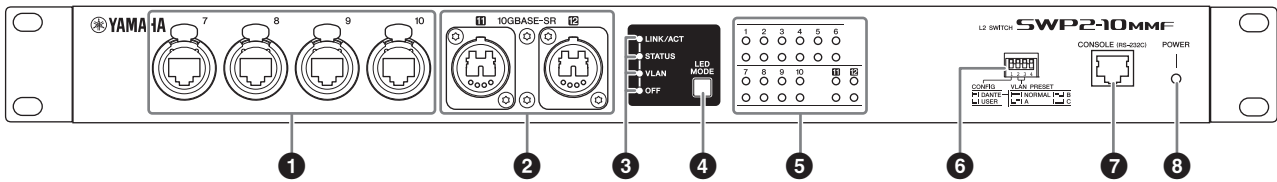
Communication speed for a metal trunk connection on the SWP2's VLAN preset B is 1 Gbps per cable. If there is only one cable, and the total bandwidth passing through the trunk connection exceeds 1 Gbps, packets will be delayed or dropped. Some of the SWP2's VLAN presets enable link aggregation of the trunk connection. If the bandwidth will exceed 1 Gbps for a LAN port or 10 Gbps for a 10GBASE-SR/LR port, or if you want to provide redundancy to guard against cable breakage, you should use two trunk cables.



# Controls and Functions

## Front panel

The explanation here is based on the SWP2-10MMF.



### 1 LAN ports

These are etherCON (RJ-45) ports for connecting Ethernet cables (CAT5e or better is recommended). A cable with an RJ-45 connector can also be connected.

All ports support 1000BASE-T, 100BASE-TX, and 10BASE-T.

### 2 10GBASE-SR ports (SWP2-10MMF)/ 10GBASE-LR ports (SWP2-10SMF)

This is an opticalCON DUO port for connecting an optical fiber cable. LC Duplex connectors can also be connected.

If you use a cable with an LC Duplex connector, fasten the dust cap attached to the cable connector to prevent dust from adhering when the cable is not in use.

#### NOTE

- Use an opticalCON DUO optical fiber cable made by Neutrik Corporation. Since optical fiber cables are vulnerable to being bent or pulled, you can reduce the occurrence of problems by using a cable that has a strong sheath and is equipped with a locking mechanism.
- The SWP2-10MMF can use GI-type multi-mode fiber cables that have a core diameter of approximately 50  $\mu\text{m}$  and cladding diameter of approximately 125  $\mu\text{m}$ . The maximum length between devices is 300 m.
- The SWP2-10SMF can use SM-type single-mode fiber cables with a core diameter of approximately 9  $\mu\text{m}$  and a cladding diameter of approximately 125  $\mu\text{m}$ . The maximum length between devices is 10 km.
- In some cases, the specifications might not be satisfied because of the optical fiber cables that are used and the conditions of installation.
- Link up is possible only for 10GBASE-SR/LR between the same standards. 10GBASE-SR/LR can not link up with 1000BASE optical standards.

### Cleaning

Correct communication might not be possible if debris and/or dust has adhered to the ends of optical fiber cables or the ports. Clean the equipment regularly by using commercially available optical fiber cleaning products.

### 3 LED mode indicators

This indicates what the status indicators are showing.

### 4 [LED MODE] button

This switches what the status indicators are showing.

### 5 Status indicators

These indicate the status of each port. The displayed content depends on the mode. For details on the display in each mode, refer to “Status indicator display.”

### 6 DIP switches

These specify startup settings for the unit. Set the DIP switches when the power is turned off. The settings are not applied if you change the setting while the power is on. The switch illustrations indicate the up/down position as follows.

Switch position	Status
	Represent a status with switch toggled up.
	Represent a status with switch toggled down.

### • Switch 1 (CONFIG)

Specifies whether the unit’s settings are optimized for a Dante network or are set by the user.

Switch position	Option	Functions
 1	DANTE	The unit starts up with settings optimized for a Dante network. This setting is read only.
 1	USER	The unit starts up with user settings. This setting can be read or written; when you change the setting, the unit starts up the next time as well with that setting.



**Caution when using this unit together with another manufacturer's switch**

Dante supports both IGMP V2 and V3, but you must set all switches in the same network to operate using the same version.

If the SWP2 starts up with DANTE settings, it operates using IGMP V3. In this case, if the network includes even one switch that is operating with IGMP V2, problems such as dropouts in the sound might occur.

• **Switch 2 and 3 (VLAN PRESET)**

Specifies the VLAN preset that is used when switch 1 is in the [DANTE] position. This setting is ignored if switch 1 is set to [USER].

If you change the settings via the web GUI or a command, the settings are applied temporarily but is not stored; the next time the unit starts up, it returns to the VLAN preset setting.

Switch position	Option	Functions
	NORMAL	The following table shows how the VLAN and trunk are assigned to ports.
	A	
	B	
	C	

In the tables, “1,” “2,” “Tr1,” and “Tr2” respectively indicate VLAN 1, VLAN 2, trunk (LAG1), and trunk (LAG2).

For an explanation of VLAN, trunk, link aggregation, and LAG, refer to Terms on page 10. For details, you can download technical reference material (HTML).

VLAN PRESET	Rear panel ports					
	1	2	3	4	5	6
NORMAL	1	1	1	1	1	1
A (*1)	1	1	1	1	2	2
B (*1)	1	1	1	1	2	2
C (*2)	1	1	1	2	2	2

VLAN PRESET	Front panel ports					
	7	8	9	10	11	12
NORMAL	1	1	1	1	1	1
A (*1)	1	1	2	2	Tr1	Tr1
B (*1)	1	2	Tr1	Tr1	Tr2	Tr2
C (*2)	1	1	2	2	1	2

(\*1) In the VLAN presets, the IGMP Snooping function is turned on except for VLAN 2 in presets A and B, preventing multicast communication such as Dante's multicast flow from being forwarded to unnecessary routes. For this reason, in the case of A or B you should use the VLAN 1 port for audio signals such as Dante, and use the VLAN 2 port for control signals.

(\*2) If you use setting C, connect the computer that is using Yamaha Audio Network Monitor to the VLAN 1 port.

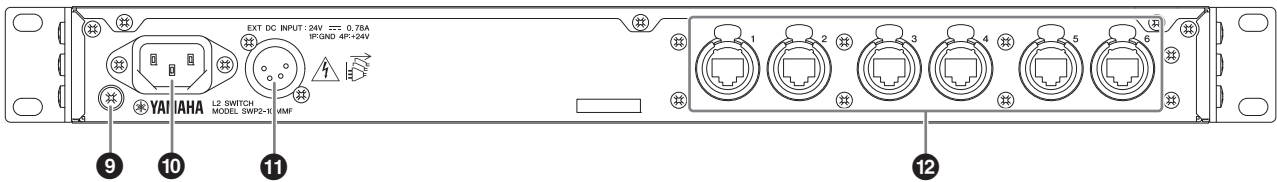
⑦ **[CONSOLE (RS-232C)] port**

This is an RJ-45 port used to specify commands. Use an RJ-45/DB-9 serial cable to connect this to the RS-232C port (COM port) of your computer. Use an RJ-45/DB-9 serial cable that is wired as described in “Specifications.”

⑧ **[POWER] indicator**

This is lit when the SWP2 is powered-on.

# Rear panel



## 9 Grounding screw

Since the included power cord has a three-pin plug, this unit will be appropriately grounded if the AC outlet is grounded. In some cases, you may be able to reduce hum noise and interference noise by connecting this screw to ground as well.

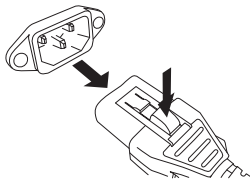
## 10 AC IN connector

Connect the included power cord here. First connect the power cord to this unit, and then connect the power supply plug to an AC outlet; the SWP2's internal power supply turns on.

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.

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



## 11 [EXT DC INPUT] connector

This is an XLR-4-32 type jack for supplying an external power supply (+24V) as a backup for the SWP2's internal power supply.

Connect a Yamaha PA-700 AC adaptor or an equivalent product recommended by Yamaha.



- **Before connecting the external power supply, you must turn off the external power supply. Failing to do so may cause electrocution or malfunctions.**
- **EXT DC INPUT connector is intended to be supplied by Power Supply certified with "Limited Power Source" or "LPS" and rated 24 Vdc.**

### NOTE

- If an external power supply is connected, the SWP2 will operate normally when its internal power supply and the external power supply are on, as well as when only one is on.
- If both power supplies are on, and one of them is interrupted during operation, the unit will continue to operate normally.

## 12 LAN ports

These are etherCON (RJ-45) ports for connecting Ethernet cables (CAT5e or better is recommended). A cable with an RJ-45 connector can also be connected.

All ports support 1000BASE-T, 100BASE-TX, and 10BASE-T.

# Status Indicator Display

The status indicators show different things depending on the LED mode setting.

## LINK/ACT setting

The status indicators show each port's link status and connection status.

Indicator	Illumination	Status
Upper	Lit green	Link is established. (LINK)
	Flashing green	Data is being transferred. (ACT)
	Unlit	Link is lost.
Lower	Lit green	Connected with 100BASE-T or 10GBASE-SR/LR.
	Lit orange	Connected with 100BASE-TX.
	Unlit	Connected with 10BASE-T.

## STATUS setting

The status indicators show the loop-related port's status.

Indicator	Illumination	Status
Upper and lower	Flashing orange	Loop was detected and communication was halted, or an abnormality in the opticalCON light reception level was detected.
	Unlit	Loop not detected. Or loop was detected, but communication is not halted.

## VLAN setting

The status indicators show the VLAN ID and trunk. If DIP switch 1 is upward ([DANTE]), VLAN 1 is shown by the upper indicator and the lower indicator unlit. VLAN 2 is shown by the upper indicator lit green and the lower indicator unlit. Trunk is shown by upper and lower indicators lit orange.

–: Unlit  
G: Lit green  
O: Lit orange

Indicators	1	VLAN ID low → high						Trunk
Upper	–	G	O	–	–	G	O	O
Lower	–	–	–	G	O	O	G	O

### NOTE

- If a number of VLANs that cannot be completely displayed above is specified, the upper and lower indicators are lit green.
- If multiple VLAN IDs are specified for the same port, the upper and lower indicators are lit orange.

## OFF setting

All status indicators are unlit.

## Initializing the SWP2

Here's how to initialize the SWP2's internal memory, restoring it to the factory settings.



### CAUTION

**Do not turn off the power to the SWP2 during initialization. Otherwise, a malfunction may occur.**

### NOTE

If initialization failed, contact Yamaha service personnel.

The SWP2 can be restored to its factory-set state in the following ways.

- Using the Web GUI to restore the factory settings
- Using the cold start command to restore the factory settings
- Entering the <I> (uppercase I) key during startup to restore the factory settings

### NOTICE

**When restoring the factory settings, note the following points.**

- All communication is halted immediately after execution.**
- When you execute this, the settings will also return to their factory-set state. If necessary, use external memory to save the settings before you proceed with initialization. For details on how to export settings to external memory, refer to the "SWP2 series technical data."**

## Using the Web GUI to restore the factory settings

The SWP2 can be restored to its factory-set state by making settings from the Web GUI.

Log in to the Web GUI from Yamaha LAN Monitor.

### 1. Choose [Management] tab – [Maintenance] – [Restart and initialize].

The "Restart or Initialize" screen appears.

### 2. In the "Initialize" section, click the [Next] button.

The "Initialize" screen appears.

### 3. Enter the administrative password, and click the [OK] button.

The "Check executed content" screen appears. Since an administrator password is not specified when the unit is shipped from the factory, leave the field empty if this is still the case.

#### 4. Verify the content, and click the [Execute] button.

The SWP2 is returned to its factory-set state. Then, the "Initialization" dialog box appears, and the SWP2 restarts.

#### 5. After this unit has finished restarting, access the Web GUI once again from Yamaha LAN Monitor.

##### NOTE

During restart, the computer on which the Web GUI is open will be unable to communicate with the unit (the status indication of the computer's network adapter will be "Network cable is not connected"), but the communication status will recover when restart is completed. After this SWP2's POWER indicator has finished flashing, verify that communication has been restored for the computer on which the Web GUI is open, and then click the [Web GUI] button in the "Device Details" view.

## Using the cold start command to restore the factory settings

You can return the unit to its factory settings by using a command line setting via the CONSOLE port, Telnet, or an SSH client.

Here we assume that you are logged in as described in "Logging in from a computer connected to the CONSOLE port".

### Preparing the computer

You will need terminal software that controls the serial (COM) port of the computer. Set the parameters of the terminal software as follows.

Parameter	Value
Data transmission speed	9600bps
Character bit length	8
Parity check	None
Number of stop bits	1
Flow control	Xon/Xoff

#### 1. Using a console cable, connect the SWP2 to the computer.

Connect the computer to the CONSOLE port of SWP2 using an RJ-45/DB-9 console cable.

#### 2. Check the power supply of SWP2.

If the SWP2 is not powered-on, turn on the power as described in "AC IN connector" (page 13). When this unit powers-on and the command line is usable, a startup message appears in the console screen of the computer.

If the power is already on, a startup message does not appear.

#### 3. Press the <Enter> key.

The system waits for a user name to be entered. If a user name has already been specified, enter the user name. When the unit is shipped from the factory, a user name has not been specified, so it need not be entered.

#### 4. Press the <Enter> key.

The system waits for a password to be entered. If a password has already been specified, enter the password.

When the unit is shipped from the factory, a password has not been specified, so it need not be entered.

#### 5. Press the <Enter> key.

If password authentication is successful, the command prompt appears, allowing you to enter commands.

#### 6. Enter enable, and press the <Enter> key.

You are now in privileged EXEC mode.

#### 7. Enter the cold start command, and press the <Enter> key.

You will be asked to enter the administrative password.

If a password has already been specified, enter the password.

When the unit is shipped from the factory, a password has not been specified, so it need not be entered.

#### 8. Press the <Enter> key.

The SWP2 returns to the factory-set state, and then restarts.

## Entering the <I> (uppercase I) key during startup to restore the factory settings

The SWP2 can be restored to its factory settings by entering an uppercase <I> when the SWP2 is starting up. This explanation uses the method of disconnecting and reconnecting the power cord. The procedure is also the same when using the reload command to restart the SWP2.

Our explanation here assumes that you have performed steps 1 of "Using the cold start command to restore to the factory settings."

#### 1. Disconnect and then reconnect the power cord of SWP2.

#### 2. During restart, enter an uppercase <I> within one second after the BootROM Ver appears on the console screen.

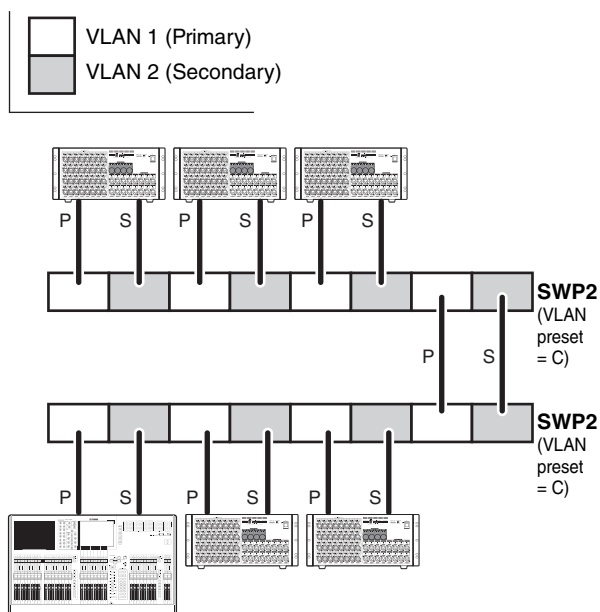
- When a screen asks you whether to execute initialization, press the <y> key to execute initialization.

Initialization is executed.

## VLAN Use Cases

### Redundant Dante connections

This case double the cables between devices as a safeguard against cable breakage. This diagram shows a setup using VLAN preset C.



### Separating control signals from audio signals

This case logically separates control signals such as Editor or StageMix from Dante's audio signals, making the network more stable. This diagram shows a setup using VLAN preset B.

If VLANs are not used, and control signals and audio signals flow across the same network, the two will compete for communication bandwidth. In order to prevent such an effect, we recommend that you use VLANs to separate the control signal and audio signal networks.

