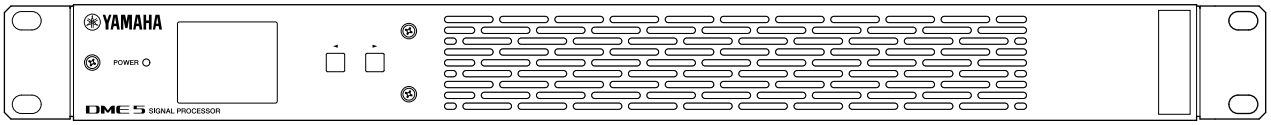
DME5 DME3

Reference Manual



SIGNAL PROCESSOR

EN

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1. Introduction

Thank you for purchasing the DME5 or DME3. This device is a signal processor equipped with a variety of audio processing functions and is suitable for use in various applications. This Reference Manual explains everything you need to know about setup and operation. In order to take full advantage of the various functions of this device, consult this Reference Manual whenever necessary.

1.1. About the Symbols

The symbols on this device and in this manual have the following meanings.

Symbol	Meaning
Caution	This indicates a risk of injury.
Notice	This indicates a risk of product failure, damage or malfunction as well as data loss.
NOTE	This indicates content regarding operation and use. Read this for your information.

1.2. About this Manual

- The illustrations and screens in this manual are for instructional purposes only.
- Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
- "QR Code" is a registered trademark of DENSO WAVE INCORPORATED.
- USB Type-C™ is a trademark of USB Implementers Forum.
- The company names and product names in this document are the trademarks and registered trademarks of their respective companies.
- The software may be updated without notice for improvement purposes.
- This document is based on the latest specifications at the time of publication. The latest version can be downloaded from the Yamaha website.

1.3. Features

- **Signal processor that can provide the audio processing required for installed sound systems**.
  The DME5/DME3 (hereinafter referred to as “DME”) is a freely configurable processor that offers sophisticated functionality and outstanding audio quality while providing the audio processing capabilities required by sound systems used in a wide variety of applications. In addition to basic matrix mixing, equalizing, delay, compression, and gate functionality, the DME also includes many components that support a variety of applications, such as Automixer, Speech Privacy, and Room Combiner. The DME5 features 64 × 64 channels of Dante inputs and outputs. The DME3 features 16 × 16 channels of Dante inputs and outputs.
- **Support for “ProVisionaire Design” application software, which enables you to design a complete soundsystem**
  “ProVisionaire Design” Windows app enables you to program various DME audio processing functions. It also allows you to design a complete integrated sound system, including inputs/outputs and amplifiers.
- **Support for external controls**
  The DME supports the “ProVisionaire Control PLUS” app for Windows, which offers you the freedom to design control panels to accommodate specific equipment. In addition, the control-only Windows/iOS app “ProVisionaire Kiosk” can be used as an on-site operation app by loading panel designs created with “ProVisionaire Control PLUS.”

1.4. Package contents

Package contents	DME5	DME3
Signal processor	1	
Owner’s Manual	1	
Power cord	1	
16-pin Euroblock connectors	2	1
3-pin Euroblock connectors	16	
Cable ties	18	
Cable hook	1	

1.5. Available Documentation

- **DME5 DME3 Owner’s Manual (included with this device)**
  Describes the setup procedure from connecting the power supply to setting up the system.
- **DME5 DME3 Reference Manual (this document)**
  Explains everything necessary for configuring settings and operating the system.
- **ProVisionaire Design User Guide**
  Describes how to operate the "ProVisionaire Design" software used to control this device from a computer.
- **ProVisionaire Design Component Guide**
  Provides detailed descriptions of each component included in this device.

1.6. Related Software

The DME has the following related software.

The following software can be downloaded from the Yamaha Pro Audio website.
https://www.yamahaproaudio.com/

- **ProVisionaire series**

Software	Overview
ProVisionaire Design	This Windows application software integrates settings for devices such as signal processors, power amplifiers, and audio interfaces. This software allows you to create and control DME configurations and perform various settings.
ProVisionaire Control PLUS	This Windows application software allows you to design remote controllers that run on Windows PCs and iPads.
ProVisionaire Kiosk	This Windows or iPad/iPhone application software is dedicated to controlling devices by loading controller files created in ProVisionaire Control PLUS.

1.7. Updating the Firmware

The firmware can be updated to improve operability, add functionality, and fix bugs.

If a firmware update is available, relevant information will be posted on the following website.
https://www.yamahaproaudio.com/

Please refer to the **"ProVisionaire Design User Guide"** for the update procedure and the settings.

NOTE

- In some cases, an update may be required to provide compatibility with other devices, depending on the version numbers of devices incorporated in the Dante network. For more information, refer to the firmware compatibility chart provided on the Yamaha website indicated above.

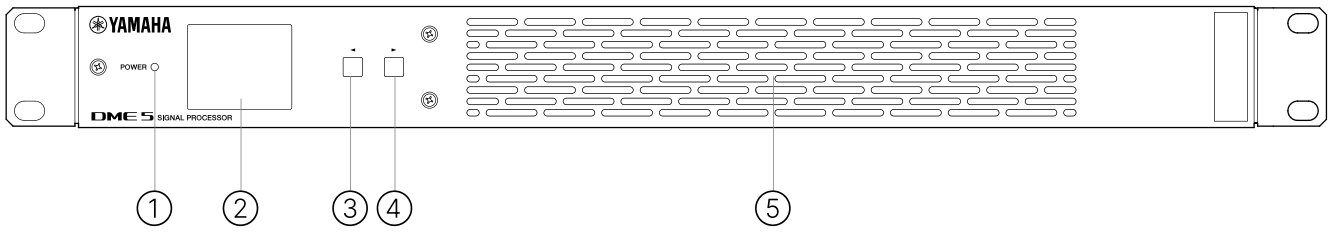
1.8. Precautions for Rack Mounting

The range of guaranteed operating room temperatures for this product is 0 to 40 °C. If the temperature inside the rack becomes elevated, it could negatively affect performance of this product. Be sure to secure adequate ventilation and mount the product in a manner that prevents heat from building up inside the product.

- Position the rack (in which this product is mounted) at least 10 cm away from any wall or ceiling, and leave the back side open. If the back side of the rack cannot be left open, use a commercially available fan kit or other forced air ventilation system.
  * If a fan kit is installed, note that enclosing the back side of the rack can improve heat dissipation in some cases. For more information, refer to the rack and fan kit owner's manual.
- This product is designed to intake air via the front and discharge it from the rear. Do not install this product along with other devices that intake air from the rear and exhaust it via the front.
- If this product is mounted together with a power amplifier or other devices that tend to generate heat (excluding the XMS series units), leave at least one unit of space between this product and the other devices. To ensure adequate ventilation, install a vented panel in those spaces, or leave the space open.
- If you are mounting this product along with XMS series power amplifiers in a standard EIA rack, you can mount and operate multiple units without leaving space between units.

2. Part Names and Functions

2.1. Front Panel



① POWER indicator
This indicator shows whether the AC IN (power supply input) connector is connected to power. It illuminates green when the power is ON.

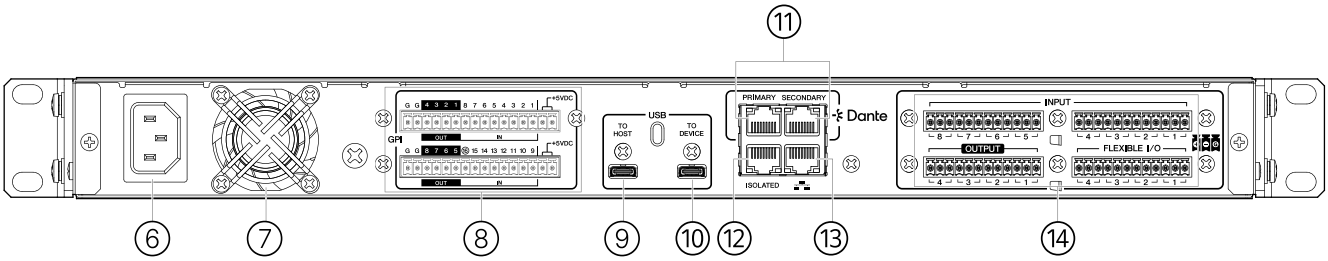
② Display
This display shows the IP address, version number, and other information. For more information, refer to "Display".

③ [◄]PREV button
Use this button to turn the page to the left on the display.

④ [►]NEXT button
Use this button to turn the page to the right on the display.

⑤ Intake vent
Air is taken in through this vent. Be sure not to block the intake vent with any objects.

2.2. Rear Panel



⑥ AC IN (power supply input) connector
Connect the provided power cord. Connect the power cord here, then insert the power plug into an AC outlet.

⑦ Exhaust vent
The DME is equipped with a cooling fan. Air is exhausted through this vent. Be sure not to block the exhaust vent with any objects.

⑧ [GPI] connectors
These are Euroblock connectors for GPI (General Purpose Interface), which input and output control signals. With GPI inputs and outputs, the DME can be remotely controlled from custom-made controllers or external devices.
The DME5 has 15 analog/digital input terminals, 1 digital input terminal, and 8 output terminals, while the DME3 has 7 analog/digital input terminals, 1 digital input terminal, and 4 output terminals.

The DME5's [IN] connectors 1 to 15 and the DME3's [IN] connectors 1 to 7 detect voltages between 0 and 5 V. The DME5 [IN] connector 16 and the DME3 [IN] connector 8 support +24 V input, detecting voltages between 2.5 and 24 V as High and voltages below 2.5 V as Low. The [OUT] connectors are open collector outputs that switch between open and ground. The output voltage of the +5 VDC terminal is 5 V.

Use the included Euroblock connectors to connect to the GPI connectors. For connection instructions, refer to "Connecting a Euroblock plug." For the detailed specifications and connection method, refer to "Connecting to a [GPI] port."

Use ProVisionaire Design to set up GPI. Refer to the "ProVisionaire Design User Guide" for setup instructions.

Caution

- Do not input voltages exceeding 5 V to the DME5's [IN] connectors 1 to 15 or the DME3's [IN] connectors 1 to 7. Otherwise, failure of this device may occur.

⑨ [USB TO HOST] connector
This is a USB Type-C (USB 2.0) connector. By connecting it to a computer, you can use this product as an audio interface or for audio input and output during web conferences. The DME supports only USB audio sampling frequencies of 48 kHz.

NOTE

- The sampling rate converter of the DME allows USB audio input and output for computer audio even if the sampling rates do not match.

Notice

- Before connecting the USB cable again after disconnecting it, wait at least six seconds.

⑩ [USB TO DEVICE] connector

This is a USB Type-C (USB 2.0) connector. Use this connector to connect a USB Type-C (USB 2.0) drive.
You can also play MP3/WAV files stored on a USB drive. For details, refer to "Precautions When Using the USB TO DEVICE connector" in the Appendix.

Notice

- Do not remove the USB flash drive or switch off the device while data is being accessed. Doing so may damage the storage media or corrupt the data on the device and media.

⑪ Dante [PRIMARY]/[SECONDARY] connectors

These connectors are used to connect to the Dante audio network. By setting the mode, you can also create a daisy chain of connected Dante devices, or superimpose control signals. For details on network specifications, refer to "Network."

⑫ [ISOLATED] connector

This connector is used to communicate with external networks (support will be provided in a future update).

⑬ NETWORK connector

This connector is for control communications with external devices. It enables communication with a computer or other external controllers (AMX, Crestron, etc.). For details on network specifications, refer to "Network."

⑭ [INPUT]/[OUTPUT] connectors

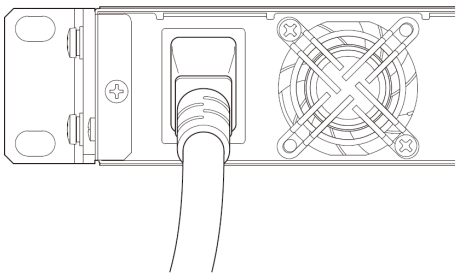
Both DME5 and DME3 feature 8-IN, 4-OUT, and 4-FLEXIBLE I/ O connectors. The FLEXIBLE I/O can conveniently be switched between INPUT and OUTPUT. They are set to INPUT when shipped from the factory. Use ProVisionaire Design to set up. Each [INPUT] and [FLEXIBLE I/O] connector features a built-in head amplifier and can also supply +48 V phantom power. Use ProVisionaire Design to switch the FLEXIBLE I/O between input and output, or turn phantom power on or off. Refer to the **"ProVisionaire Design Component Guide".** for setting instructions.
Use the included Euroblock connectors for connections.

3. Making connections

3.1. Power On/Off

1. **To turn the power on, first connect the power cord to the unit and then plug it into an AC outlet.**
2. **To turn the power off, unplug the power cord from the AC outlet.**

The DME5/DME3 does not feature a power button. Turn the power on/off by plugging and unplugging the power cord.



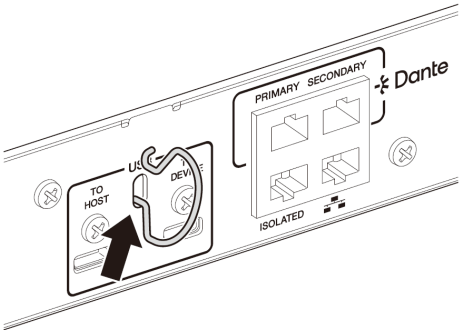
Caution

- When turning the power on, wait at least 5 seconds after turning the power off. Otherwise, a malfunction may occur.

3.2. Installing the Cable Hook

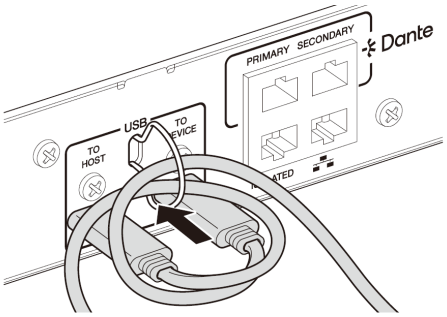
To prevent the USB cable from being accidentally disconnected, follow the steps below to install the included cable hook.

1. **Hook one end of the included cable hook onto the lower end of the security slot, located between the USB connectors on the rear panel.**



2. **Insert the other end of the hook into the upper end of the security slot.**

3. **Insert the USB cable through the hook, and then connect it to one of the USB connector.**



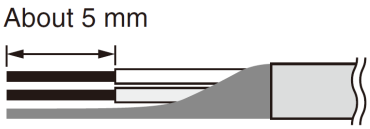
3.3. Installing Euroblock connectors

Use the included Euroblock connectors to connect to the [INPUT], [OUTPUT], or [GPI] connectors.

3.3.1. Preparation and processing cable wires

Strip the cable to be connected to the Euroblock connector as shown below and connect the lead wires. Note that the weight or vibration of wires connected to the Euroblock can cause lead wire breakage due to metal fatigue. Secure the cable to the tab on the Euroblock connector using the included cable tie.

Reference Dimensions

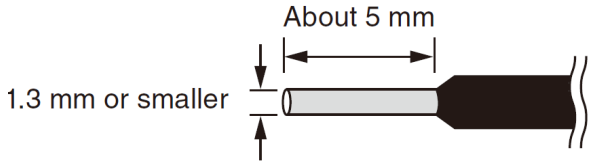


Caution

- If the Euroblock is connected using lead wires, do not plate the wires with solder.

If wires are frequently disconnected and reconnected, the use of pin terminals with an insulation sleeve is recommended. Use pin connectors like the one shown below.

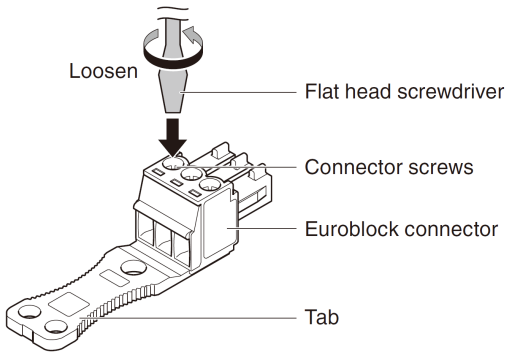
Use a model with a diameter up to 1.3 mm and length of about 5 mm (such as the Phoenix Contact model AI0, 5-6WH).



3.3.2. Attaching a Euroblock connector

In this section, a 3-pin Euroblock connector for the [INPUT]/[OUTPUT] connectors is used as an example to explain how to attach a Euroblock connector.

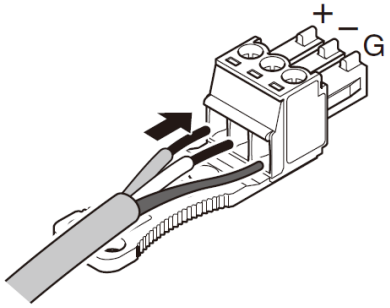
1. **Loosen the connector screws.**



NOTE

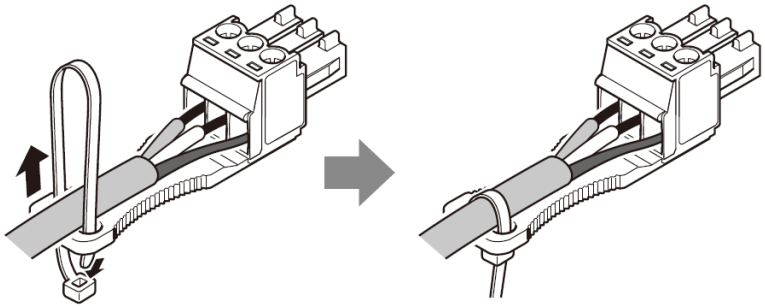
- Use a flat-head screwdriver with a blade width of 2 mm or less for the Euroblock plugs (16-pin) for the [GPI] connectors, and 3 mm or less for the Euroblock plugs (3-pin) for the [INPUT]/[OUTPUT] connectors.

2. **Insert the cable.**

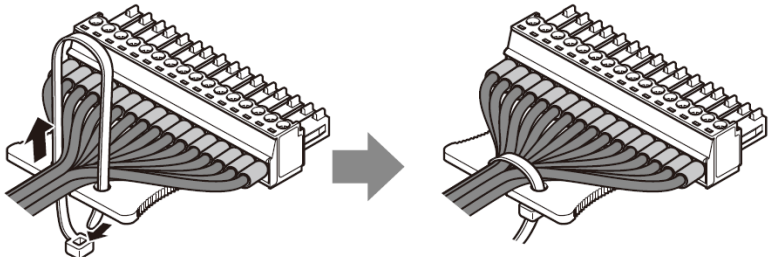


3. **Tighten the connector screws securely.**
   Pull the cable to make sure that it cannot be pulled out accidentally.
4. **Use the included cable tie to secure the cable to the tab.**

   For [INPUT]/[OUTPUT] connectors (3-pin)



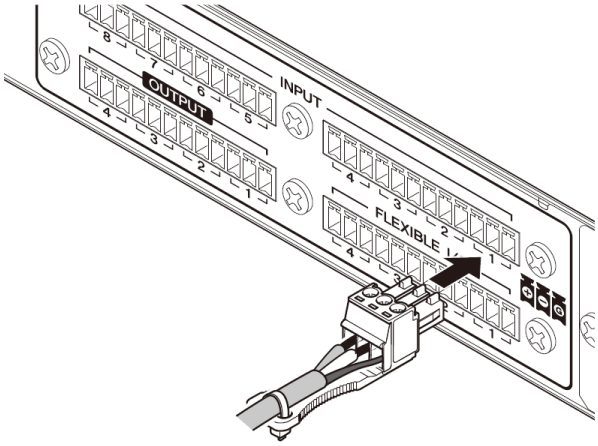
   For [GPI] connectors (16-pin)



NOTE

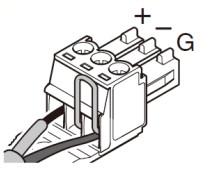
- Trim off any unnecessary sections of the cable tie.

5. **Attach the Euroblock connector to the [GPI] connector or [INPUT] or [OUTPUT] connector on the unit.**



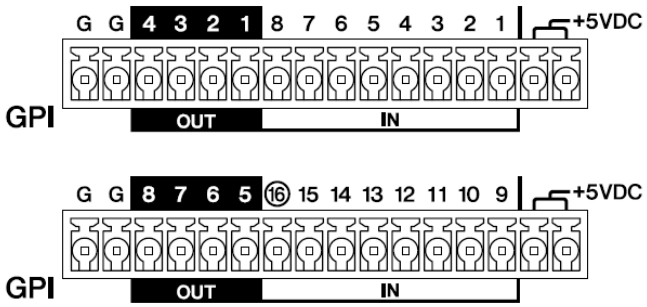
NOTE

- If connecting an unbalanced cable to the [INPUT] connector, connect the "–" and "G" of the Euroblock with a jumper wire.



3.4. Connecting to a [GPI] connector

Connect GPI (General Purpose Interface) devices to the [GPI] connectors on the rear panel. GPI is used to input and output control signals to and from external devices such as controllers.



Each [GPI] connector of the DME5 has 16 input connectors and 8 output connectors.
Each [GPI] connector of the DME3 has 8 input connectors and 4 output connectors.

- The output voltage of each +5VDC terminal is 5 V. The maximum current that can be drawn from the two +5VDC terminals is 100 mA in total.
  When using a switch/variable resistor and an LED/relay at the same time, connect the switch/variable resistor to one terminal and the LED/relay to the other terminal.
- The DME5's [IN] terminals 1 to 15 and the DME3's [IN] terminals 1 to 7 detect voltages between 0 and 5 V. Only the DME5 [IN] terminal 16 and the DME3 [IN] terminal 8 support +24 V input, detecting voltages between 2.5 and 24 V as High and voltages below 2.5 V as Low.
- [OUT] terminals are open collector outputs that switch between open or ground. The maximum voltage that can be applied is +12 V. The maximum current that can be applied is 75 mA per port.
  Use ProVisionaire Design to assign parameters to GPI controllers and make other settings.

NOTE

- Specifying input/output channels in ProVisionaire Design allows presets from a connected GPI external device to be recalled, parameters to be changed, and signals to be sent to GPI external devices. For the setup method, refer to the "ProVisionaire Design User Guide".

4. Panel Operation

Using the buttons on this product enables you to execute the following three functions.
For details on display screen transitions, refer to "Display".

4.1. Muting/Unmuting

You can switch MUTE on/off by holding down the [◄]PREV and [►] NEXT buttons simultaneously for two seconds.

NOTE

- You can check the mute on/off status using the icon at the top of the Home screen.

  Mute off

  Mute on

4.2. Identify

If you hold down the [►] NEXT button for two seconds, the indicator for this unit on the ProVisionaire Design screen will flash green.

4.3. Restoring factory default settings(Initialization)

1. Turn off the power.
2. While holding down the [◄] PREV and [►] NEXT buttons, turn the power on, and continue holding down the buttons for another five seconds.
3. When the confirmation screen is displayed, press the [◄] PREV button.



The unit enters initialization mode and will be initialized. The unit automatically restarts when initialization is finished.



5. Setup

5.1. Setting up the unit

You can control the DME from ProVisionaire Design.

1. **Connect the computer to be used for setup directly to the NETWORK connector on the rear panel of the unit, or connect it via a switch unit.**
2. **Plug the power cord connected to the unit into an AC outlet to turn the power on (see “Power On/Off”).**
3. **Set the IP address of the computer so that it is on the same network as the DME.**

   How to check the DME control IP address
   On the startup screen, press the [►] NEXT button once to display the currently set IP address on the display.



> **NOTE**
>
> **Default IP address**
> When a DHCP server is available: Automatically assigned
> When no DHCP server is available: Link-local address

4. **Launch ProVisionaire Design on the computer.**
   You can download ProVisionaire Design from the Yamaha Pro Audio website.
5. **Use ProVisionaire Design to configure the DME to suit your system.**
   Refer to the “Basic operation” section in the "ProVisionaire Design User Guide" for instructions on setting up ProVisionaire Design.

5.2. Changing and Checking Basic Settings

The basic settings of the DME can be changed or checked in the locations listed below.

For details on how to set up ProVisionaire Design, refer to the "ProVisionaire Design User Guide".

For details on how to set up Dante Controller, refer to the Dante Controller User Guide.

https://www.audinate.com/

The information in the table below is current as of device firmware version 3.0.0. For the latest information, refer to the above manual.

Setting items		Change/check location
Device Information	Sampling Frequency	ProVisionaire Design > Properties area
	Device date and time	ProVisionaire Design > System Menu > Clock > Non-RM Series
	MAC Address	ProVisionaire Design > System Menu > Device Information
	Serial number	ProVisionaire Design > System Menu > Device Information
	Dante Version Information	Display
	Firmware Version Information	Display
Display	Brightness	ProVisionaire Design > Properties area
	Dimmer Ratio * Brightness of the display when there is no operation on the device for a certain period of time.	ProVisionaire Design > Properties area
	Auto Dimmer Time * The time it takes to reach the brightness set by the Dimmer Ratio	ProVisionaire Design > Properties area
	Language	ProVisionaire Design > Properties area
Dante Settings	Sample Rate	Dante Controller
	Preferred Leader	Dante Controller
	Encoding	Dante Controller
	Latency	Dante Controller
	Network Mode *Switch between Redundant/Daisy Chain, Control Separated/Merged	Dante Controller

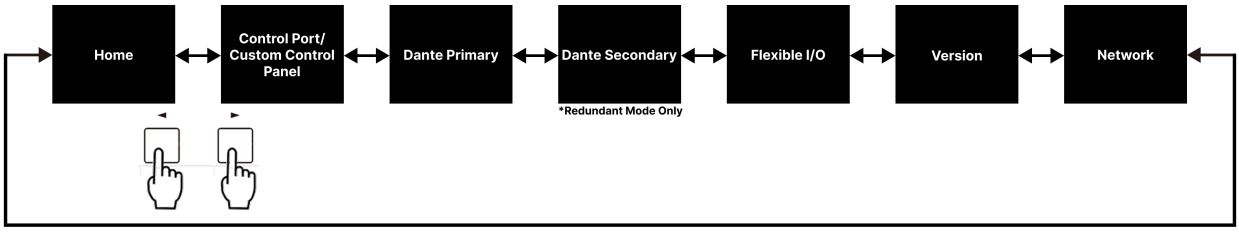
Setting items			Change/check location
Basic settings	Unit ID		ProVisionaire Design > Properties area
	IP Settings	DHCP/Static	ProVisionaire Design > System Menu > IP Settings
		IP Address	ProVisionaire Design > System Menu > IP Settings
		Subnet Mask	ProVisionaire Design > System Menu > IP Settings
		Default Gateway	ProVisionaire Design > System Menu > IP Settings
	Initialization	Global Initialization	Panel operation ProVisionaire Design > System Menu > Device Information
		Initialization of Each Setting	ProVisionaire Design > System Menu > Device Information
	Reboot		ProVisionaire Design > System Menu > Device Information

6. Display

6.1. Screen Layout

Press the NEXT button [►] on the device to move to the right screen, and press the PREV button [◄] to move to the left screen.

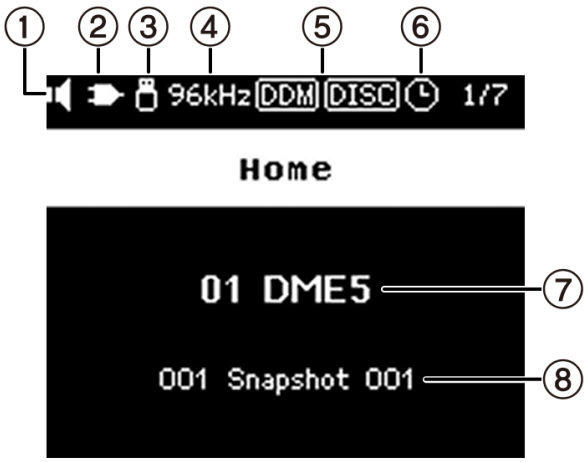
The main screen only displays the status. To change settings, use ProVisionaire Design or a similar application. For the setup method in ProVisionaire Design, refer to the ProVisionaire Design User Guide.



6.2. Screens

6.2.1. Home

When you turn the power on, the Home screen will be displayed.



① **Device Mute status indicator**

Indicates the mute on/off status.

 Mute off

 Mute on

② **Control status indicator**

Indicates the on/off status of the control function.

 On

 Off

③ **USB memory status indicator**

Indicates the status of the USB memory by displaying an icon when it is inserted into the USB TO DEVICE connector.

④ **Word clock status indicator**

When the word clock is locked, the sampling frequency (48 kHz or 96 kHz) is displayed.
If the word clock is unlocked or the configuration data has not been transferred from ProVisionaire Design, --kHz will be displayed.

⑤ **DDM (Dante Domain Manager) status indicator**

DDM Joined the DDM domain
DISC Joined the DDM domain but not connected to the DDM server

DDM Server LOCAL CONTROLLER ACCESS setting

R/W Read Write: Can be changed
R/O Read Only: Cannot be changed

⑥ **Scheduler status indicator**

An icon is displayed if the Scheduler has been set. The icon starts flashing one minute prior to the scheduled event.

⑦ **Unit ID and Device Name**

Displays the unit ID and device name. The unit ID and device name can be changed in ProVisionaire Design.

⑧ **Snapshot Name**

Displays the name of the snapshot last recalled in ProVisionaire Design.
Snapshots are stored and recalled using ProVisionaire Design.

6.2.2. Control Port / Custom Control Panel

Displays the IP address and subnet mask for controlling ProVisionaire Design and other external devices. The IP address is set using ProVisionaire Design.



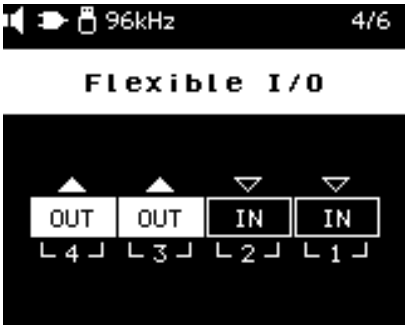
6.2.3. Dante

Displays the Dante IP address and subnet mask. In redundant mode, the Dante Primary and Dante Secondary IP addresses are displayed on separate screens. Dante IP addresses are set using Dante Controller.



6.2.4. FLEXIBLE I/O

Displays the status of FLEXIBLE I/O. In/Out switching settings are made in ProVisionaire Design.



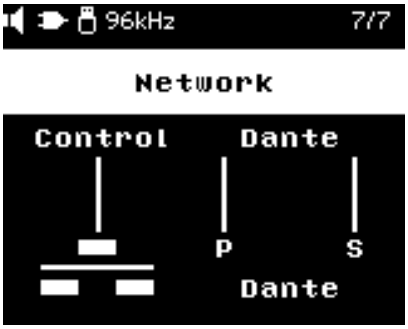
6.2.5. Version

Displays the version information. The first line is the version of the main firmware. Lines 2 to 4 indicate the firmware versions that make up the Dante module. Starting from the second line, the versions of the Dante firmware, Dante hardware, and Yamaha software are displayed. Version upgrades are performed using ProVisionaire Design.



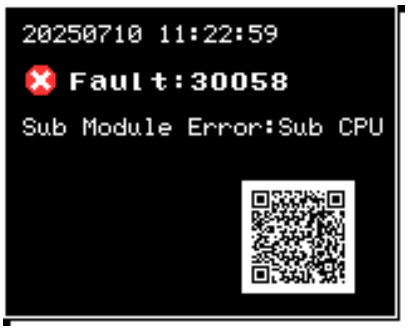
6.2.6. Network

Displays the currently set network mode. Mode switching is done using Dante Controller. For details about network modes, refer to "Network Modes."



6.2.7. Alert

If the DME malfunctions, an alert message will appear on the display. If an alert is already displayed when a higher level malfunction occurs, the alert for the higher level malfunction will be displayed. Scan the QR code displayed on the screen with a smart device such as a smartphone to view the details of the alert. For details about each alert, refer to "Message List".

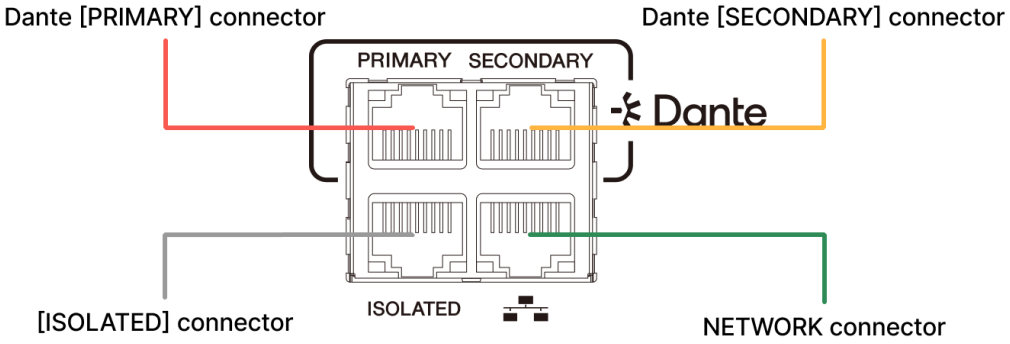


7. Network

This section explains the network specifications and connections of the DME.

7.1. Communication Connectors

The DME has four communication connectors. For the purpose of each connector, refer to "Rear panel."



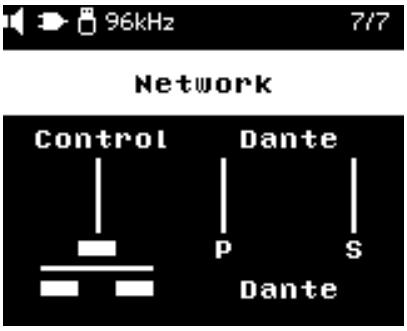
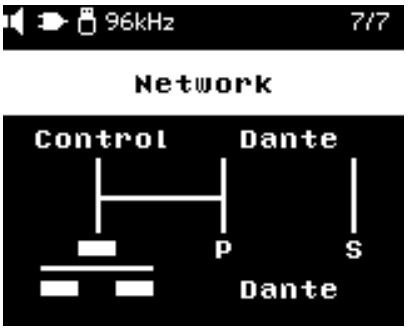
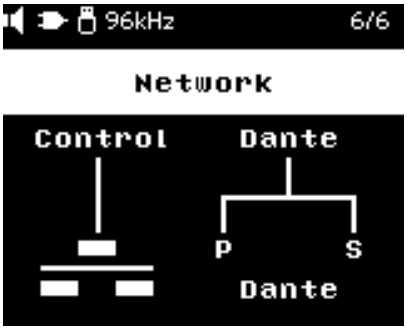
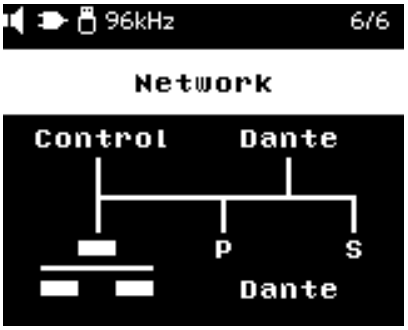
NOTE

- Currently, the ISOLATED connector does not function even if connected (as of device firmware version 3.0.0).
  This will be addressed in a future update.

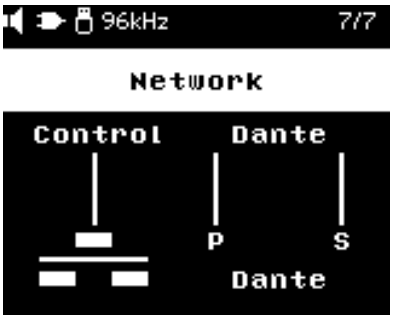
7.2. Network Modes

There are two ways to connect a DME to a Dante network: redundant connection and daisy chain connection. Along with the control line setting (Merged/Separated), you can select from four network modes. Use Dante Controller to change the network mode settings.

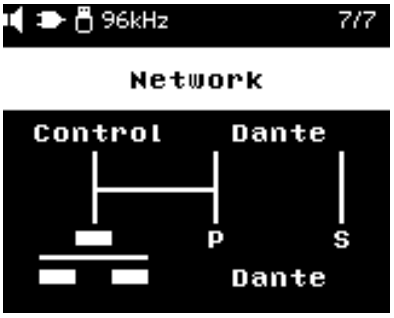
When making changes, be careful not to create a network loop.

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="2">Control
Select whether to separate or superimpose the Dante line and the control line.</td></tr>
<tr><td>Separated
The Dante line and the control line are separated</td><td>Merged
The Dante line is superimposed with the control line.</td></tr>
<tr><td rowspan="2">Dante Secondary Port</td><td>Redundant</td><td>1. Redundant
- Control Separated Mode

</td><td>2. Redundant
- Control Merged Mode

</td></tr>
<tr><td>Daisy Chain</td><td>3. Daisy Chain
- Control Separated Mode

</td><td>4. Daisy Chain
- Control Merged Mode

</td></tr>
</table>

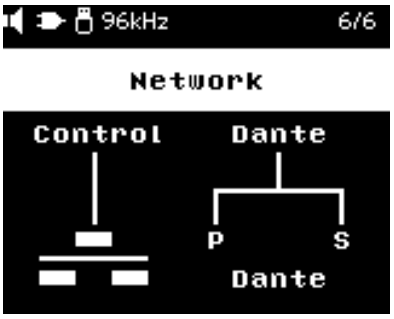
1. Redundant - Control Separated Mode (default value)

	In this mode, the control line, Dante Primary line, and Dante Secondary line are all separate. Connect each line to its respective port. Connection example: Redundant - Control Separated Mode

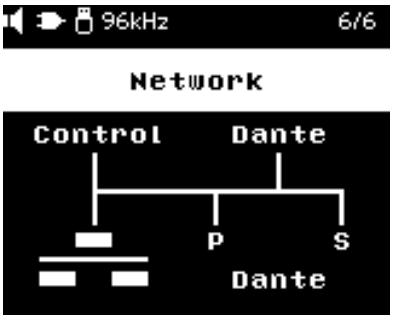
2. Redundant - Control Merged Mode

	This mode superimposes the control line on the Dante Primary line. Connect the cable that superimposes the control line on the Dante Primary line to either the NETWORK connector or the Dante [PRIMARY] connector. Connect the Dante Secondary line to the Dante [SECONDARY] connector. Connection example: Redundant - Control Merged Mode

3. Daisy Chain - Control Separated Mode

	The control line and Dante line are separate, and Dante is set to daisy chain connection mode. Connect the Dante line to either the Dante [PRIMARY] connector or the Dante [SECONDARY] connector. Connect the control line to the NETWORK connector. Connection example: Daisy Chain - Control Separated Mode

4. Daisy Chain - Control Merged Mode

	This mode superimposes the control line on the Dante line, and Dante is connected in a daisy chain. Connect the cable with the control line superimposed on the Dante line to either the NETWORK connector, the Dante [PRIMARY] connector, or the [SECONDARY] connector. Connection example: Daisy Chain - Control Merged Mode

7.3. About Dante

The DME uses Dante as the protocol for transmitting digital audio signals. Dante is a network audio protocol developed by Audinate. In a Gigabit Ethernet-compatible network environment, it has the advantage of being able to transmit multiple audio signals with different sampling frequencies/bit rates, as well as device control signals, within the same network.

For more information about Dante, visit the Audinate website.

http://www.audinate.com/

Various other information can be found on the Yamaha Pro Audio website.
https://www.yamahaproaudio.com/

NOTE

- Do not use the EEE function(*) of network switches in a Dante network.
  The EEE function may cause poor clock synchronization performance, resulting in audio interruptions.
  Therefore, please note the following:
  - If you use managed switches, turn off the EEE function of all ports used for Dante traffic. Do not use switches that cannot turn off the EEE function.
  - If you use unmanaged switches, do not use ones that support the EEE function. In such switches, the EEE function cannot be turned off.

  * EEE (Energy Efficient Ethernet) function: A technology that reduces the power consumption of Ethernet devices when network traffic is low. It is also known as Green Ethernet or IEEE802.3az.

NOTE

- The DME series, when combined with Yamaha network switches, automatically configures the switch settings for optimal Dante performance.
  Setting items: QoS, IGMP snooping, flow control disable, EEE disable, etc.
  For details on the switch, refer to below.
  https://www.yamaha.com/2/how-to-choose-a-network-switch/

■ **Relationship between latency and hop count**

The appropriate latency setting for signals sent and received over the Dante audio network differs depending on the connection method and scale. This section explains how to set latency based on the connection status of Dante-enabled devices connected to the DME.

The latency setting for the Dante audio network depends on the hop count in that network.
The hop count is the number of switches between the farthest connections of Dante devices. In addition to switching hubs, switches are also built into the DME and I/O devices. The hop count gives you an idea of the latency you should set. Typical latency settings for various hop counts are shown below.

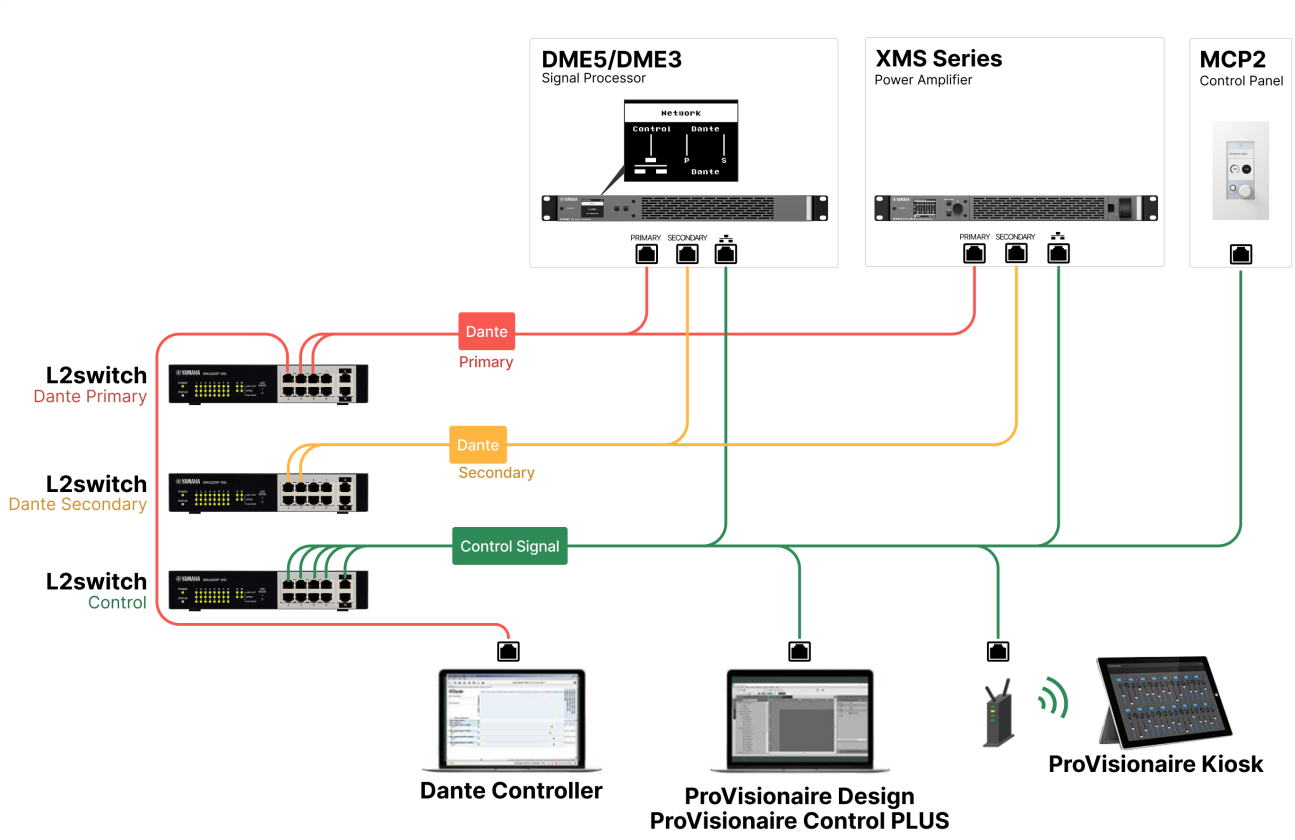
Hop count	Latency (ms)
Up to 3	0.25
Up to 5	0.5
Up to 10	1.0
Up to 20	2.0
21 or more (or if problems occur)	5.0

7.4. Connection Examples

7.4.1. Redundant connection

Dante's redundant connections create an environment that is more resistant to network failures than networks built using daisy chains. A redundant connection is a connection method that consists of two lines: a main line (primary) and a sub-line (secondary). Normally, communication is performed over the primary line, but if a problem such as a disconnection occurs on the primary line, communication will automatically switch to the secondary line.

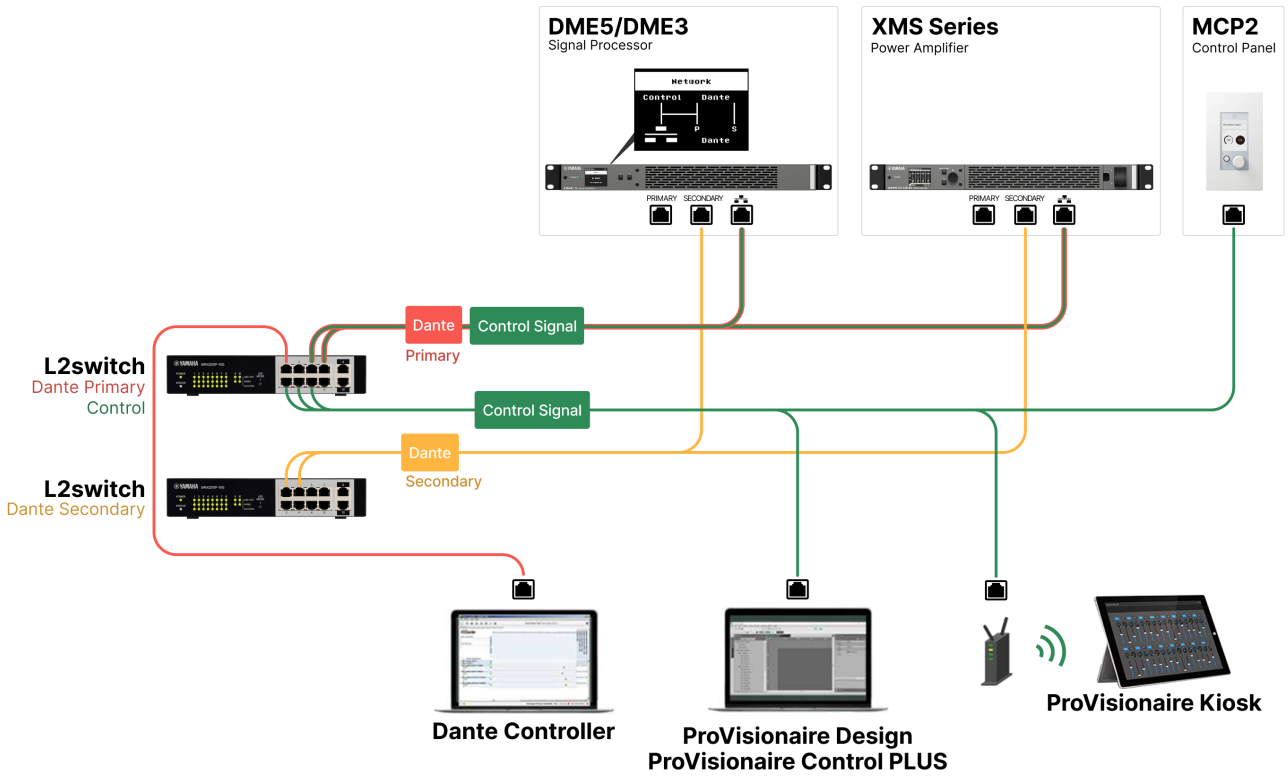
Control Separated



NOTE

- When building a system like the one shown above, set the DME network mode to "Redundant - Control Separated Mode."

Control Merged



NOTE

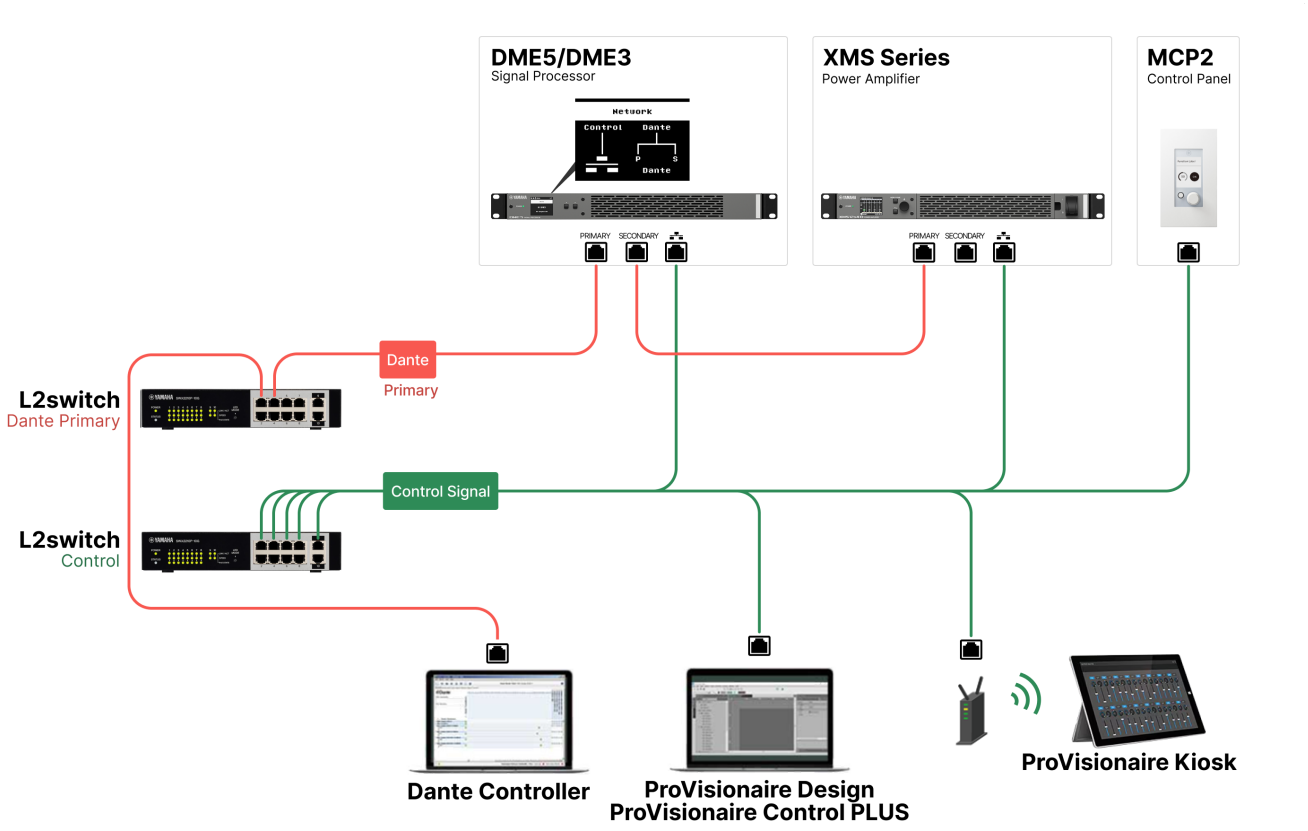
- When building a system like the one shown above, set the DME network mode to "Redundant - Control Merged Mode."
- If you are running the Dante audio network and a ProVisionaire Design network on the same computer, we recommend using multiple NICs to separate the networks.

7.4.2. Daisy chain connection

Daisy chaining is a method of connecting devices in series. It simplifies network construction and reduces the number of required network switches.
However, as more devices are connected, transmission latency between the devices at the ends of the chain increases. To prevent audio dropouts on the Dante network, you must set a higher Dante latency setting. Additionally, if a cable is disconnected or damaged, the network will be segmented at that point, and communication with downstream devices will be lost.

If the Dante latency is set to its default value (1.0 msec), make sure the number of switches between the two most distant Dante devices does not exceed 10. In addition to switching hubs, switches are also built into the DME and I/O devices. If the number of switches exceeds 10, communication delays within the network will increase and audio dropouts may occur. To avoid this, set the Dante latency to a larger value or use an L2 switch (compatible with Gigabit Ethernet) to split the network.

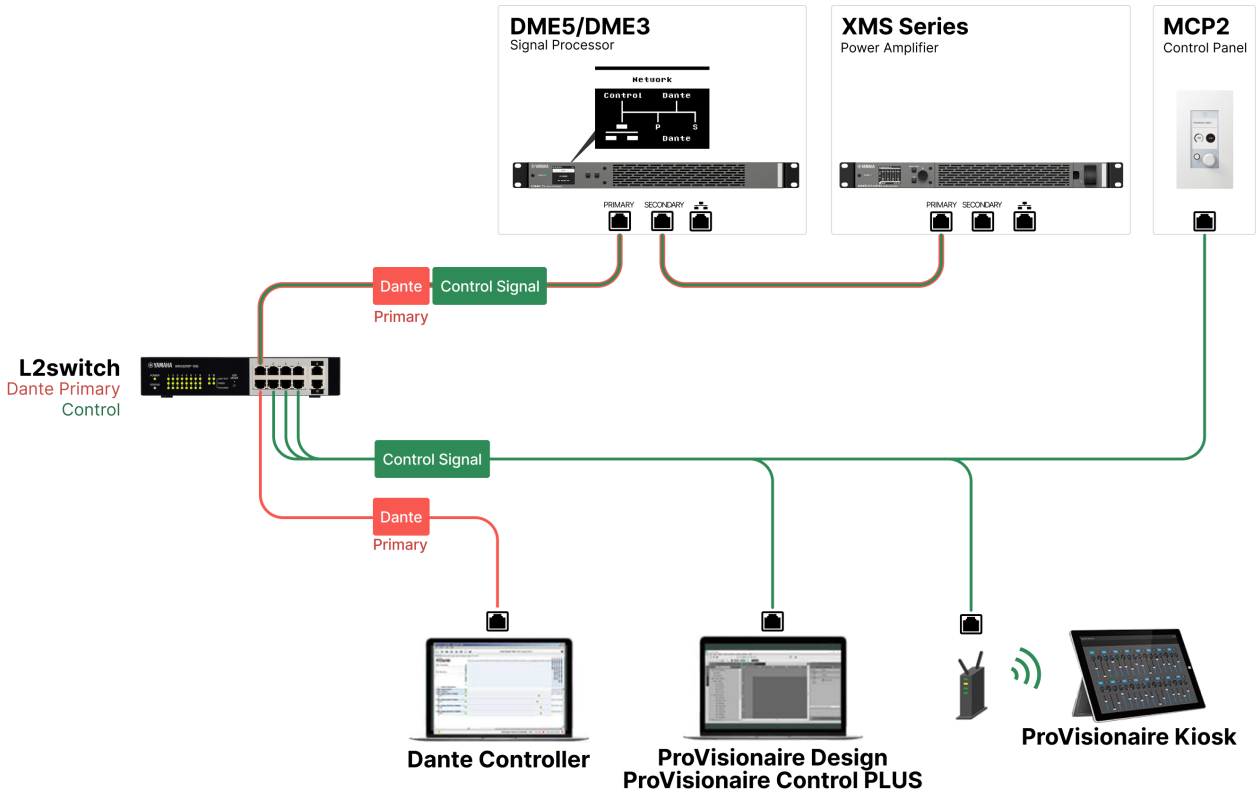
Control Separated



NOTE

- When building a system like the one shown above, set the DME network mode to "Daisy Chain - Control Separated Mode."

Control Merged



NOTE

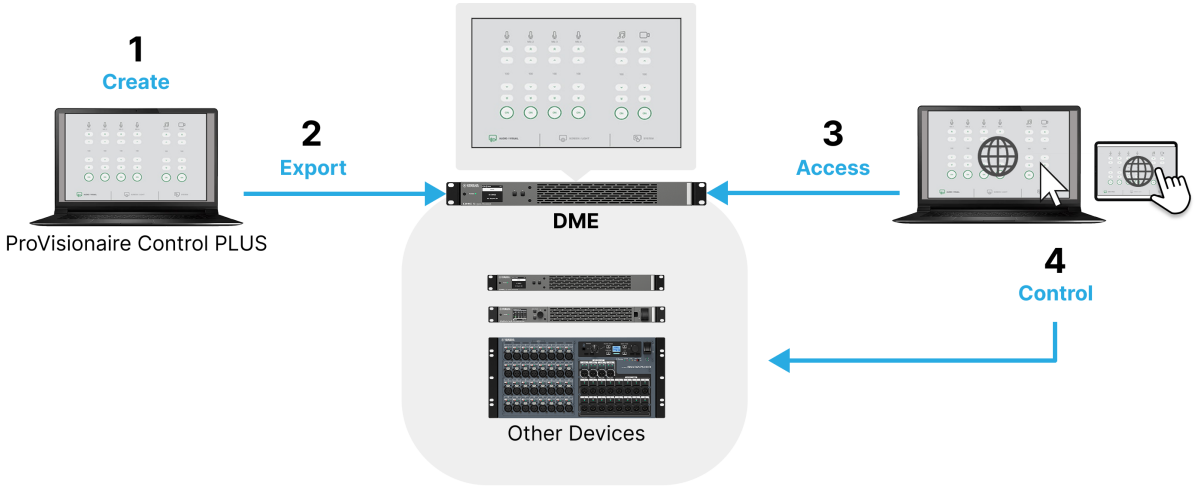
- When building a system like the one shown above, set the DME network mode to "Daisy Chain - Control Merged Mode."
- Be careful not to create loops in the network.

8. Functions

This section introduces some useful DME functions.

8.1. Custom Control Panel

The Custom Control Panel function allows you to operate the DME and peripheral devices via a control panel. A control panel created with Provisionaire Control PLUS can be run on a DME, and the control panel can be accessed and operated from a browser.



8.1.1. Workflow

1. **Create a controller file in ProVisionaire Control PLUS.**
   For instructions on how to create controller files, refer to the **"ProVisionaire Control PLUS User Guide"**.
2. **Transfer the controller file created in ProVisionaire Control PLUS to the DME.**
   There are two ways to perform transfer.
   - **Transfer from ProVisionaire Control PLUS**
     For the transfer method, refer to the "Custom Control Panel" in the **"ProVisionaire Control PLUS User Guide"**.
   - **Transfer from ProVisionaire Kiosk**
     For the transfer method, refer to "Transferring Controller Files" in the **"ProVisionaire Kiosk User Guide"**.

NOTE

- One DME unit can only hold one controller file.
  If a new transfer is performed while the DME is still holding the controller file, the file will be replaced.
- If a PIN is set, you will need to enter it when performing transfer. For details, refer to the **"ProVisionaire Control PLUS User Guide"**.

3. **Enter the IP address displayed on the "Control Port/Custom Control Panel screen" in the address bar of your browser.**
   The control panel held by the DME is displayed.

4. **Use the control panel to control peripheral devices.**

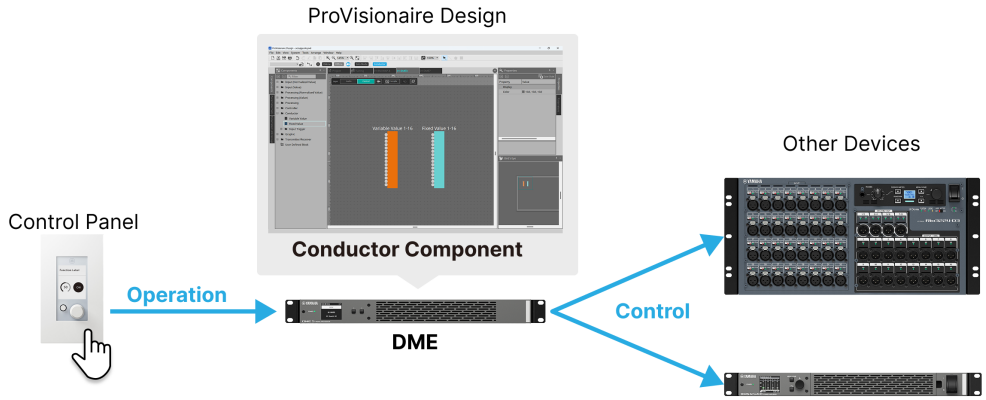


NOTE

- Multiple computers can connect to the control panel simultaneously.
- For more information on the display environment (supported browsers and operating systems), please refer to the Yamaha Pro Audio website.
  https://www.yamahaproaudio.com/

8.2. Conductor

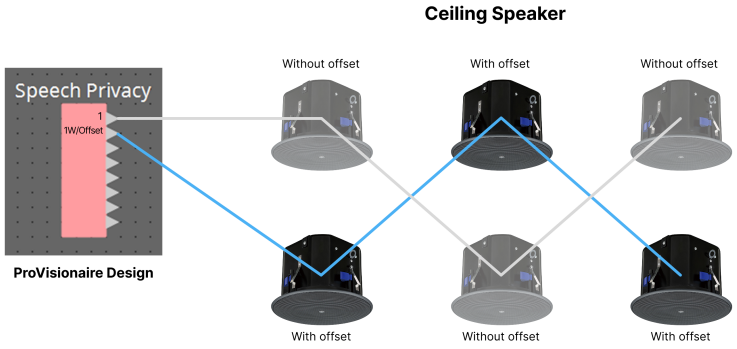
The Conductor is a function that allows the DME to control peripheral devices. The Conductor is provided as a control component of the DME. The peripheral devices can be controlled by assigning presets/snapshots and parameters of DME peripheral devices to the Conductor component and then operating these with an external controller or control component.



The Conductor is configured using ProVisionaire Design.
For details, refer to "Conductor" in the **"ProVisionaire Design Component Guide"**.

8.3. Speech Privacy

The Speech Privacy feature mixes ambient sounds with distracting sounds to make conversations in specific locations more difficult for others to hear. Each DME unit supports only one instance of this function. Two mixed signals are output per system: one without offset and one with an offset that offsets the playback point. By alternately positioning the speakers that output each signal, the discomfort caused by phase shifts where the sounds overlap is reduced.



The Speech Privacy is configured using ProVisionaire Design.
For details, refer to "Speech Privacy" in the **"ProVisionaire Design Component Guide"**.

8.4. Mute Group

The Mute Group allows you to link peripheral devices such as the DME, microphones, and speakers with the audio settings in the conferencing application in an online conferencing environment using a PC connected via USB to the DME.

The Mute Group is configured using ProVisionaire Design.
For details, refer to "Mute Group" in the **"ProVisionaire Design Component Guide".**

9. Appendix

9.1. Precautions When Using the USB TO DEVICE connector

● USB devices that can be used

・Use a USB flash drive. Other USB devices (such as USB hubs, mice, and computer keyboards) cannot be used even if they are connected. This device can be used with USB 1.1 to 2.0 USB flash drives. (However, operation of all USB flash drives is not guaranteed.)

The rated output of the USB port is 5 V / 500 mA max. If a device requiring more than 500mA of current is connected, the power supply will be cut off. In this case, rebooting the device is required to resume power supply.

● Supported file specifications

WAV files

File extension .wav only.

Sampling rates of 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz are supported.
16-bit, 24-bit and 32-bit PCM mono and stereo are supported.

MP3 files

Only one MPEG audio is supported.

Layer 3 is supported (only files with the mp3 extension). Free format is not supported.
Sample rates of 32kHz, 44.1kHz, and 48kHz are supported. Bit rates of 32 to 320kbps and VBR (Variable Bit Rate) are supported.

● Connecting a USB flash drive

・ Do not insert or remove the USB flash drive while a file operation is in progress. Also, do not turn off the power during file operations. Doing so may cause the device to stop functioning or may corrupt the USB flash drive or its data. Wait at least six seconds before reinserting a USB flash drive after removal.

Notice

- If you use a USB extension cable, use one that is 1m or less in length.

● Formatting a USB flash drive

Use a USB flash drive formatted to FAT32 or FAT16. Format the USB flash drive on a computer. USB flash drives formatted on other equipment may not work properly with this device.

● Preventing accidental erasure

Some USB flash drives have a write-protect function to prevent accidental erasure of their data. If the USB flash drive contains important data, write-protect it to prevent overwriting.

9.2. Message List

Messages displayed on the DME display and countermeasures are as follows.

Data ID	Data Name	Message [Normal]	Message [Warning]	Message [Error]	Message [Fault]
30002	EXT TEMP Limit	-	Environmental temperature exceeded device upper limit. Please check air flow.	-	-
30009	FAN Rotation Error	-	FAN rotation speed out of control. Please check that fan rotation is not obstructed by some external blockage.	-	FAN stopped. Please contact service center.
30010	Fan Lifespan Warning	-	FAN will soon reach end of expected lifespan. Please contact service center.	-	-
30011	Low Battery	-	Remaining battery charge is low.Please contact service center for assistance.	Battery charge will soon be exhausted.Please contact service center for assistance.	No battery charge remaining. Some data cannot be preserved correctly.Please contact service center for assistance.
30022	Leader W/C Unlock	-	-	Wrong word clock detected on leader word clock source.	-
30024	Storage Lifespan Warning	-	Storage device will soon reach end of expected lifespan. Please contact service center.	-	-
30025	Storage Access Error	-	Error occurred while writing data to storage.	-	Error occurred while writing data to storage. Please contact service center.
30026	IP Address Duplicate	-	-	IP Address collision detected.	-

Data ID	Data Name	Message [Normal]	Message [Warning]	Message [Error]	Message [Fault]
30033	Dante Module Error	-	-	-	Dante module is not responding. Please try to recover Dante firmware or contact service center.
30034	No Dante Connection	-	No network is connected to the Dante port. Please check the Dante connection.	-	-
30037	Wrong Dante Clock	-	Dante word clock settings are wrong. Please check the settings.	-	-
30038	Muted - Dante Clock Err.	-	-	Muted due to incorrect Dante word clock settings. Please check Dante word clock settings.	-
30039	Dante Clock Offset Err.	-	Dante Clock Frequency Offset is unstable. Please check network configuration including Ethernet switch settings.	-	-
30040	Dante Redundancy Triggered	-	Dante Audio transmission has switched to Secondary network.	-	-
30041	Dante Secondary Error	-	The Dante secondary port is not functioning.	-	-
30047	Power ON	Power ON	-	-	-
30049	Device Initialized	Memory initialization performed.	-	-	-
30050	Time Synchronized	Date and time is synchronized.	-	-	-
30051	Firmware Updated	Firmware update performed.	-	-	-
30052	Scene/Snapshot Store	Scene/Snapshot store performed.	-	-	-

Data ID	Data Name	Message [Normal]	Message [Warning]	Message [Error]	Message [Fault]
30053	Scene/Snapshot Recall	Scene/Snapshot recall performed.	-	-	-
30057	Dante Link 100Mbps	-	Dante link speed is less than Gigabit. Try plugging into a different network switch or a different port. Alternatively, try using a different network cable.	-	-
30058	Sub Module Error	-	-	-	Internal sub module is not responding. Please contact service center.
30059	Sub Module Rebooted	-	-	Internal sub module has rebooted unintentionally.	-
30060	Illegal MAC address	-	-	-	Illegal MAC address has been detected at control ethernet interface. Please contact service center.
30061	Dante MAC Address Err.	-	-	-	Illegal MAC address has been detected at Dante ethernet interface. Please contact service center.
30062	IP Address Assigned	IP address is assigned to the network interface.	-	-	-
30063	IP Address Assigned (Auto IP)	IP address is assigned (AutoIP) to the network interface.	-	-	-
30064	IP Address Released	IP address assigned by DHCP server is released.	-	-	-
30065	Internal Network Error	-	-	Unable to establish connection with internal sub module due to incorrect network address.	-

Data ID	Data Name	Message [Normal]	Message [Warning]	Message [Error]	Message [Fault]
30066	Dante (TX) Overflow	-	-	Dante Audio Flow Resource (TX) exceeded. Please re-design Dante patch to match Dante Flow resources.	-
30067	Dante (RX) Overflow	-	-	Dante Audio Flow Resource (RX) exceeded. Please re-design Dante patch to match Dante Flow resources.	-
30068	Dante Settings Locked	-	Unable to apply Dante setting changes to the Dante module due to Dante Device Lock or DDM permission settings.	-	-
30071	DSP Resource Overflow	-	-	The resource for audio signal processing is unexpectedly overflowed, which might cause audible noise.	-
30072	Incompatible Data/File	-	-	Unable to Load/Import Data/File due to incompatible data format.	-
30073	Incompatible RC Protocol	-	-	Unable to communicate/respond to external remote control device/software due to incompatible protocol version.	-
30074	DHCP Server No Response	-	-	DHCP server is not responding to the device.	-
30075	NTP Server No Response	-	-	NTP server is not responding to the device.	-

Data ID	Data Name	Message [Normal]	Message [Warning]	Message [Error]	Message [Fault]
30076	Missing License	-	-	Some or entire functions of this device stop working due to missing or insufficient licenses. Please activate additional licenses or remove corresponding functions.	-
30077	Setting Data Corrupted/Lost	-	-	Corrupted data/file is detected.	-
30078	Storage Full	-	-	Storage Full	-
30079	Unsupported File System	-	-	The storage drive is formatted with unsupported file system type. Please re-format the storage to a supported format.	-
30080	Removable Drive Mounted	Removal drive has been mounted to device.	-	-	-
30081	Removable Drive Unmounted	Removal drive has been unmounted from device.	-	-	-
30082	File Not Found	File cannot be found.	-	-	-
30083	Authentication Failed	-	Wrong PIN code/Password was entered.	-	-
30086	Scene/Snapshot Recall Failed	-	-	Failed to recall the Scene/Snapshot data.	-
30087	Data Sync Failed	-	-	Synchronization sequence has been stopped unexpectedly.	-
30093	Illegal Serial Number	-	-	-	An invalid serial number has been detected. Please contact service center for assistance.

Data ID	Data Name	Message [Normal]	Message [Warning]	Message [Error]	Message [Fault]
30094	USB Over-current Error	-	-	Excessive power consumption has been detected on the USB port. Please disconnect any connected USB devices and check for abnormalities. To continue using the USB port after inspection, please restart the host device.	-

9.3. General Specifications

		DME5	DME3
Sampling Frequency		48 kHz / 96 kHz	
Signal Delay		Less than 3ms INPUT to OUTPUT @ FS=96kHz	
Memory		Parameter sets: 1000, Snapshots: 10000	
Cooling		variable speed fan x 1, front to rear airflow	
NC value		NC= 20 to 25 *1	
Number of Analog Inputs		8ch + FLEXIBLE I/O 4ch(max) *2	
Number of Analog Outputs		4ch + FLEXIBLE I/O 4ch(max) *2	
Dante Interface	Number of Channel	64IN, 64OUT	16IN, 16OUT
	Sampling Frequency	48 kHz / 96 kHz	
	Bit Depth	24bit or 32bit	
USB TO HOST	Number of Channel	2IN, 2OUT	
	Sampling Frequency	48kHz	
USB TO DEVICE	Sampling Frequency/ Bit Depth (WAV)	44.1kHz, 48kHz, 88.2kHz, 96kHz/ 16bit, 24bit, 32bit	
	Sampling Frequency/ Bit Rate (MP3)	32kHz, 44.1kHz, 48kHz/ 32kbps, 64kbps, 128kbps, 192kbps, 320kbps	
Connector	Analog	Euro block mini 12pin x 4 (3pin x 16)	
	Dante	RJ-45 x 2 (PRIMARY/SECONDARY)	
	NETWORK	RJ-45 x 1	
	ISOLATED	RJ-45 x 1	
	USB TO HOST	USB Type-C（USB2.0）	
	USB TO DEVICE	USB Type-C（USB2.0）	
	GPI	Euro block mini 16pin x 2	Euro block mini 16pin x 1
	AC IN	AC INLET x 1	
NETWORK Specification	Level	1000Base-T/100Base-TX	
	Cable Requirements	CAT5e or higher *3	
Power Requirements		100-240 V, 50/60 Hz	
Power Consumption		60 W	
Heat Dissipation		52 kcal/h	
Dimensions		W480 x H44 x D359 mm	
Weight		4.0 kg	
Approximate Munsell Value of Exterior Color		N5	

	DME5	DME3
In Operation Temperature	0°C to 40°C	
Storage Temperature	-20°C to 60°C	
Accessories	Owner's Manual x 1, AC power cord x 1, Euro block plug mini 16pin x 2(DME5), x 1(DME3) Euro block plug mini 3pin x 16, Cable hook(For USB Type-C) x 1 Cable Ties x 18	

*1: Measurement position: 1m from the front of the unit. Typ. Operation Temperature 25°C

*2: FLEXIBLE I/O can be set to INPUT or OUTPUT for each channel and used exclusively.

*3: STP cable is recommended for connection.

9.3.1. Audio Specifications

At the time of measurement, output impedance of signal generator:150ohms. Setting of Output Load Impedance is 10kΩ.

Frequency Response

Fs=96kHz or Fs=48kHz@20Hz-20kHz, ref to the nominal output level @1kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-8 FLEXIBLE I/O INPUT 1-4	OUTPUT 1-4 FLEXIBLE I/O OUTPUT 1-4	10kΩ	GAIN : 0dB	-1.5	0.0	0.5	dB

Total Harmonic Distortion

Fs=96kHz or Fs=48kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-8, FLEXIBLE I/O INPUT 1-4	OUTPUT 1-4, FLEXIBLE I/O OUTPUT 1-4	10kΩ	+4dBu@20Hz-20kHz GAIN : +66dB			0.5	%
INPUT 1-8, FLEXIBLE I/O INPUT 1-4	OUTPUT 1-4, FLEXIBLE I/O OUTPUT 1-4	10kΩ	+4dBu@20Hz-20kHz GAIN : 0dB			0.1	%

*Total Harmonic Distortion is measured with a 48dB/octave low pass filter @80kHz

Hum&Noise
Fs=96kHz or 48kHz, EIN=Equivalent Input Noise

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-8, FLEXIBLE I/O INPUT 1-4	OUTPUT 1-4, FLEXIBLE I/O OUTPUT 1-4	10kΩ	Rs=150Ω, GAIN : +66dB		-124 EIN		dBu
					-57		dBu
INPUT 1-8, FLEXIBLE I/O INPUT 1-4	OUTPUT 1-4, FLEXIBLE I/O OUTPUT 1-4	10kΩ	Rs=150Ω, GAIN : 0dB		-83		dBu

*Hum & Noise are measured with a A-weight filter.

Dynamic Range
Fs=96kHz or 48kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-8, FLEXIBLE I/O INPUT 1-4	OUTPUT 1-4, FLEXIBLE I/O OUTPUT 1-4	10kΩ	GAIN : 0dB		107		dB

*Dynamic range are measured with a A-weight filter.

Crosstalk(@1kHz)

from/to *1	to/from *1	Conditions *1	Min.	Typ.	Max.	Unit
INPUT N	INPUT (N-1) or (N+1)	INPUT adjacent inputs, GAIN:0dB (CH N±1) → GAIN:0dB (CH N)			-100	dB
OUTPUT N	OUTPUT (N-1) or (N+1)	OUTPUT, adjacent inputs			-100	dB

*Crosstalk is measured with a 48dB/octave filter @22kHz
*1 INPUT and OUTPUT include FLEXIBLE I/O.

9.3.2. Analog Input Standards

Input Terminal	GAIN	Actual Load Impedance	For Use With Nominal	Input Level			Connector
				Sensitivity *1	Nominal	Max. before clip	
INPUT 1-8 FLEXIBLE I/O INPUT 1-4	+66dB	10kΩ	50-600Ω Mics & 600Ω Lines	-82dBu (0.062mV)	-62dBu (0.616mV)	-42dBu (6.16mV)	Euro block mini (Balanced)
	0 dB			-16dBu (123mV)	+4dBu (1.23V)	+24dBu (12.3V)	

*1 Sensitivity is the lowest level that will produce an output of +4dBu (1.23V) or the nominal output level when the unit is set to maximum gain.(all faders and level controls are maximum position.)

*2 In these specifications, 0dBu = 0.775 Vrms.

*3 +48V DC (phantom power) is supplied to INPUT(1-8) and FLEXIBLE I/O INPUT 1-4 Euro block mini connectors via each individual switch.

9.3.3. Analog Output Standards

Output Terminal	Actual Source Impedance	For Use With Nominal	Output Level		Connector
			Nominal	Max. before clip	
OUTPUT 1-4 FLEXIBLE I/O OUTPUT 1-4	220Ω	10kΩ Lines	+4dBu (1.23 V)	+24dBu (12.3 V)	Euro block mini (Balanced)

*In these specifications, 0dBu = 0.775 Vrms.

9.3.4. Digital I/O Standards

Terminal	Format	Data length	Level	Audio	Connector
Dante Primary, Secondary	Dante	24bit / 32bit	1000Base-T	64ch (DME5 to other devices) 64ch (Other devices to DME5)	RJ-45 *1
				16ch (DME3 to other devices) 16ch (Other devices to DME3)	
USB TO DEVICE	USB 2.0	[WAV] 16bit / 24bit / 32bit	USB 2.0	[WAV] mono / stereo Sampling Frequency: 44.1kHz / 48kHz / 88.2kHz / 96kHz	USB C chassis
		[mp3] 32kbps / 64kbps / 128kbps / 192kbps / 320kbps		[mp3] mono / stereo Sampling Frequency: 32kHz / 44.1kHz / 48kHz	
USB TO HOST	USB 2.0	16 bit	USB 2.0	2ch input 2ch output Sampling Frequency:48kHz	USB C chassis

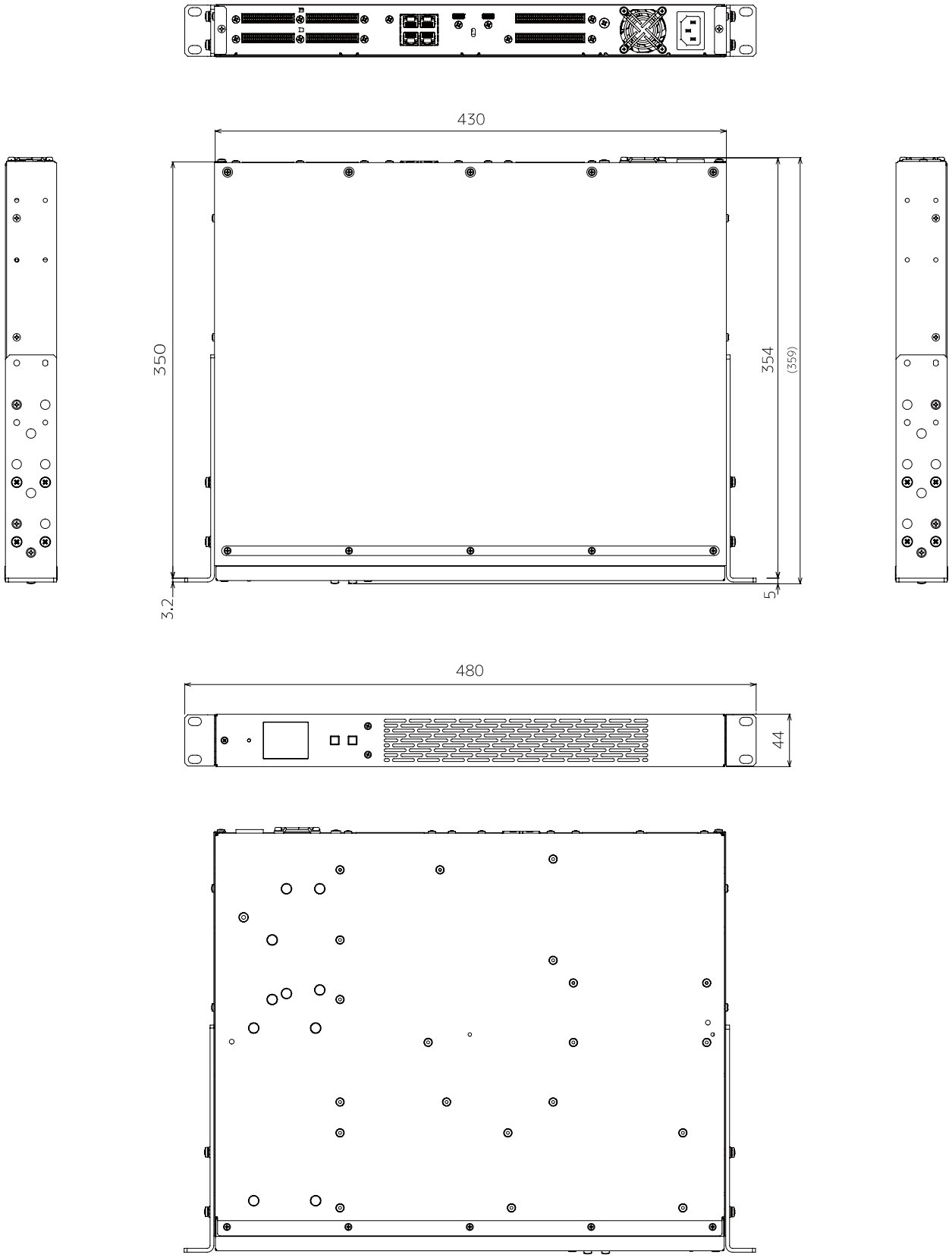
*1 STP cable is recommended for connection.

9.3.5. Control I/O Standards

Terminal	Format	Level	Connector
Control NETWORK	IEEE802.3	1000Base-T 100Base-TX	RJ-45 *1
Isolated NETWORK	IEEE802.3	1000Base-T 100Base-TX	RJ-45 *1
USB TO DEVICE	USB 2.0	USB 2.0	USB C chassis
GPI	GPI	TTL, analog	Euro block mini

*1 STP cable is recommended for connection.

9.4. Dimensions



Units：mm

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