



OPERATING INSTRUCTIONS

INTERFACE UNIT

DI-1616

TABLE OF CONTENTS

| | | | |
|---|---|--|----|
| 1. SAFETY PRECAUTIONS | 2 | 8. UNIT NUMBER AND COMMUNICATIONS | |
| 2. GENERAL DESCRIPTION | 3 | PORT SETTINGS | 8 |
| 3. FEATURES | 3 | 9. BACKUP BATTERY REPLACEMENT | 8 |
| 4. HANDLING PRECAUTIONS | 3 | 10. APPEARANCE | 9 |
| 5. NOTES ON PERSONAL COMPUTER | | 11. SPECIFICATIONS | 10 |
| SOFTWARE | 3 | | |
| 6. PART NAMES AND FUNCTIONS | | | |
| Front Panel | 4 | | |
| Rear Panel | 5 | | |
| 7. PERSONAL COMPUTER CONNECTIONS | | | |
| 7.1 When using the RS-232C | 6 | | |
| 7.1 When using the RS-485 | 7 | | |

Please follow the instructions in this manual to obtain the optimum results from this unit.
We also recommend that you keep this manual handy for future reference.

1. SAFETY PRECAUTIONS

- Be sure to read the instructions in this section carefully before use.
- Make sure to observe the instructions in this manual as the conventions of safety symbols and messages regarded as very important precautions are included.
- We also recommend you keep this instruction manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first so you are thoroughly aware of the potential safety hazards as well as understand the safety symbols and messages.



WARNING

Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.



CAUTION

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.



WARNING

■ When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.

■ When the Unit is in Use

- If you detect smoke or a strange smell coming from the unit during use, immediately switch off the power and disconnect the power supply plug from the AC outlet. Then, contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to

your nearest TOA dealer.

- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.



CAUTION

■ When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.

- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.

■ When the Unit is in Use

- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. A fire or electric shock may result.

2. GENERAL DESCRIPTION

The DI-1616 is a dedicated interface unit for the power amplifiers P-1030D, P-1060D, P-1090D, IP-300D, IP-450D and IP-600D. The power amplifiers' operating conditions and signal levels can be monitored and adjusted at the personal computer.

The P-1030D, P-1060D and P-1090D require an interface module which is optionally available.

3. FEATURES

- Operating status can be monitored and signal levels adjusted for up to 16 channels (8 power amplifiers) per unit.
- Different memory patterns can be stored in 16 built-in memories. By calling up one of the memory patterns through control from a personal computer or from the DP-0202, DP-0204 (both digital processors) or DX-0808 matrix unit, signal levels can be changed for each connected amplifier.
- The unit, DP-0202, DP-0204, and DX-0808 can be connected and controlled as an integrated system through the RS-485 control line.
- Wide operating voltage range of 90-250 VAC.

4. HANDLING PRECAUTIONS

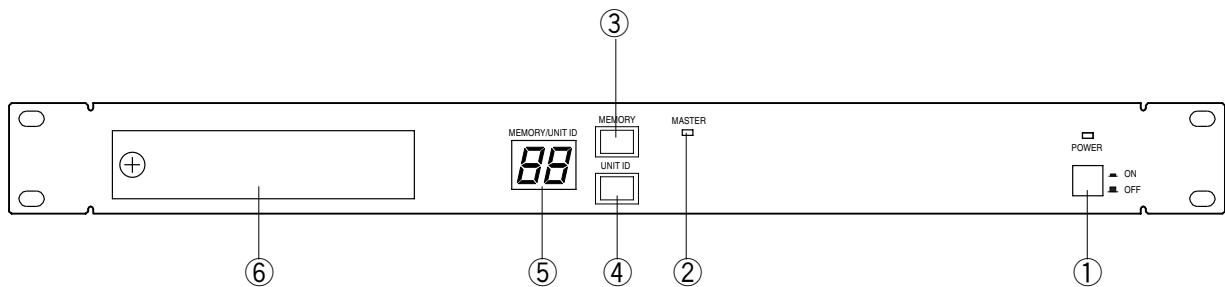
- Either an optional dedicated module IF-101S or IF-101X is required when using the P-1030D, P-1060D or P-1090D.
- To monitor and control the power amplifiers at the computer, dedicated software is required. For the software, contact your nearest TOA dealer.
- Switch on the power after completing all connector connections.
- Avoid installing the unit directly above the power amplifier in the equipment rack, in locations where the unit is exposed to the sunlight, or in humid or dusty locations because the unit may fail.
- The DI-1616 is a precision equipment. Do not give a shock or vibration to it.

5. NOTES ON PERSONAL COMPUTER SOFTWARE

Computer software for the unit is common to the control software for the DP-0202, DP-0204, and DX-0808. However, be sure to use the software of Version 2.0 or greater (usable on Windows 95/98 and Windows NT4.0).

6. PART NAMES AND FUNCTIONS

[Front Panel]



- ① **Power switch [ON/OFF]**
If the power is switched on, the power indicator lights and the unit is set for the mode it was last in before the power was switched off.

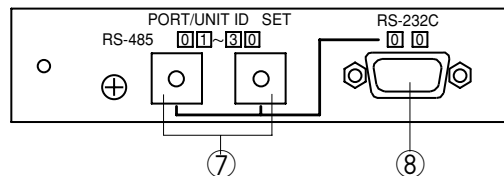
② **Master unit indicator [MASTER]**
Lights to indicate a master unit (set for unit No. 1). For the unit number setting, refer to p. 8 "8. UNIT NUMBER AND COMMUNICATIONS PORT SETTINGS".

③ **Memory key [MEMORY]**
Pressing this key will show a memory number being currently called up on the display
- ④ **Unit number key [UNIT ID]**
If this key is pressed, the unit number of the unit flashes on the display.

⑤ **Display [MEMORY/UNIT ID]**
Displays either a memory number or a unit number.

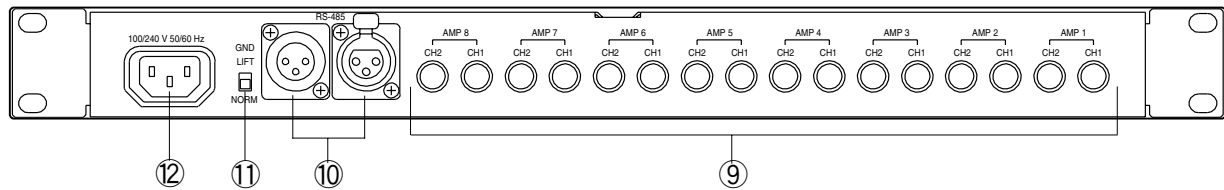
⑥ **Compartment cover**
For details of its inside, refer to the section [Front Compartment].

[Front Compartment]



- ⑦ **Unit number/port setting DIP switch [PORT/UNIT ID SET]**
Two DIP switches are provided to set unit numbers. The RS-232C communications port located in the compartment can be used when the two switches are set for [0][0], and the rear-mounted RS-485 communications port (XLR connector) when the switches are set for a number other than [0][0]. For the unit number and DIP switch settings, refer to p. 8 "8. UNIT NUMBER AND COMMUNICATIONS PORT SETTINGS".
- ⑧ **Master unit indicator [MASTER]**
This port employs a 9-pin D-sub connector for the RS-232C communications and is used when connecting a personal computer directly. This port can be used only when DIP switches ⑦ are set for [0][0]. For its connection, refer to p. 6 "7. PERSONAL COMPUTER CONNECTIONS".

[Rear Panel]



⑨ Interface connectors [AMP1 CH1,CH2-AMP8 CH1,CH2]

Connect to the CONTROL I/O connector located on the rear panel of each power amplifier or on the interface module. These interface connectors are of 8-pin DIN type, and optional cables (CX-9CC-2: 2 m or CS-9CC-5: 5 m) are made available.

⑩ RS-485 communications port [RS-485]

This port employs a 3-pin XLR connector for RS-485 communications, and can be used when DIP switches located in the front compartment are set for other than [0][0]. Use this port to connect equipment when using two or more DI-1616 units or when interlocking the DI-1616 with the DP-0202, DP-0204 or DX-0808. Refer to p. 6 "7. PERSONAL COMPUTER CONNECTIONS" for connection, and to p. 8 "8. UNIT NUMBER AND COMMUNICATIONS PORT SETTINGS" for DIP switch setting.

⑪ Ground lifting switch [GND]

Cuts a noise-generating ground loop created when the DI-1616 is connected with other equipment in an equipment rack. Usually, set this switch to the NORM position.

⑫ AC inlet

Connects to the supplied AC power cord.

7. PERSONAL COMPUTER CONNECTIONS

The DI-1616 interfaces the power amplifier with the personal computer, and lets the computer display the power amplifier status or set the signal level on the computer's screen. Up to 30 DI-1616s (240 power amplifiers) can be controlled. Although the digital processors DP-0202 and DP-0204, and the matrix unit DX-0808 can be controlled simultaneously, the total number of all connected units must be up to 30 per system. Both RS-232C and RS-485 interface standards can be used. The communication speed is 192,000 bps.

- **RS-232C**

Use this port when the system includes only one DI-1616 unit and the distance between the unit and personal computer is shorter than 10 m.

- **RS-485**

Use this port when using only one DI-1616 and the distance to the computer exceeds 10 m or when using plural DI-1616s or when using the DI-1616 in combination with the DP-0202, DP-0204, and/or DX-0808.

7.1 When using the RS-232C

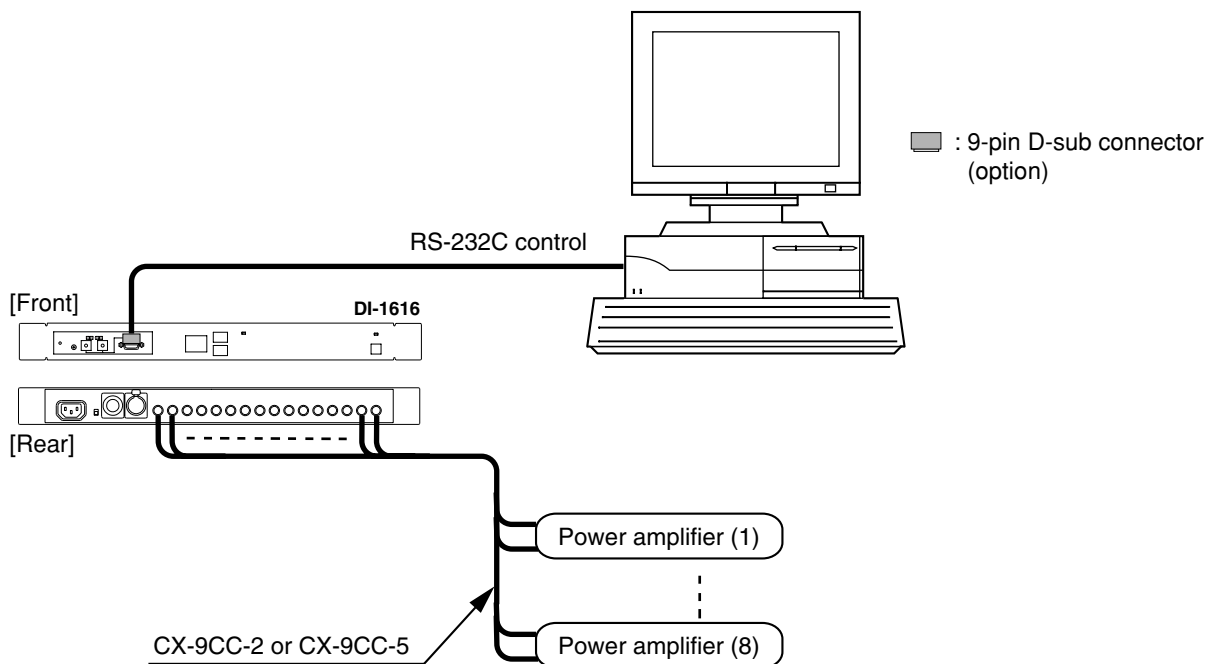
Because only one unit is connected, the unit number is 1. Set DIP switches in the front compartment for [0][0], and connect the unit to the personal computer as shown in Fig. 1. Use a straight cable for the communications cable.

Connect the computer's RS-232C connector to the unit's RS-232C connector (9-pin D-sub connector) located in the front compartment.

Note

The RS-232C is a one-to-one communications method. However, as a guideline, the maximum transmission distance is 10 m. If exceeding 10 m, it is recommended that the RS-485 port be used even though only one unit is connected.

[Fig.1]



7.2 When using the RS-485

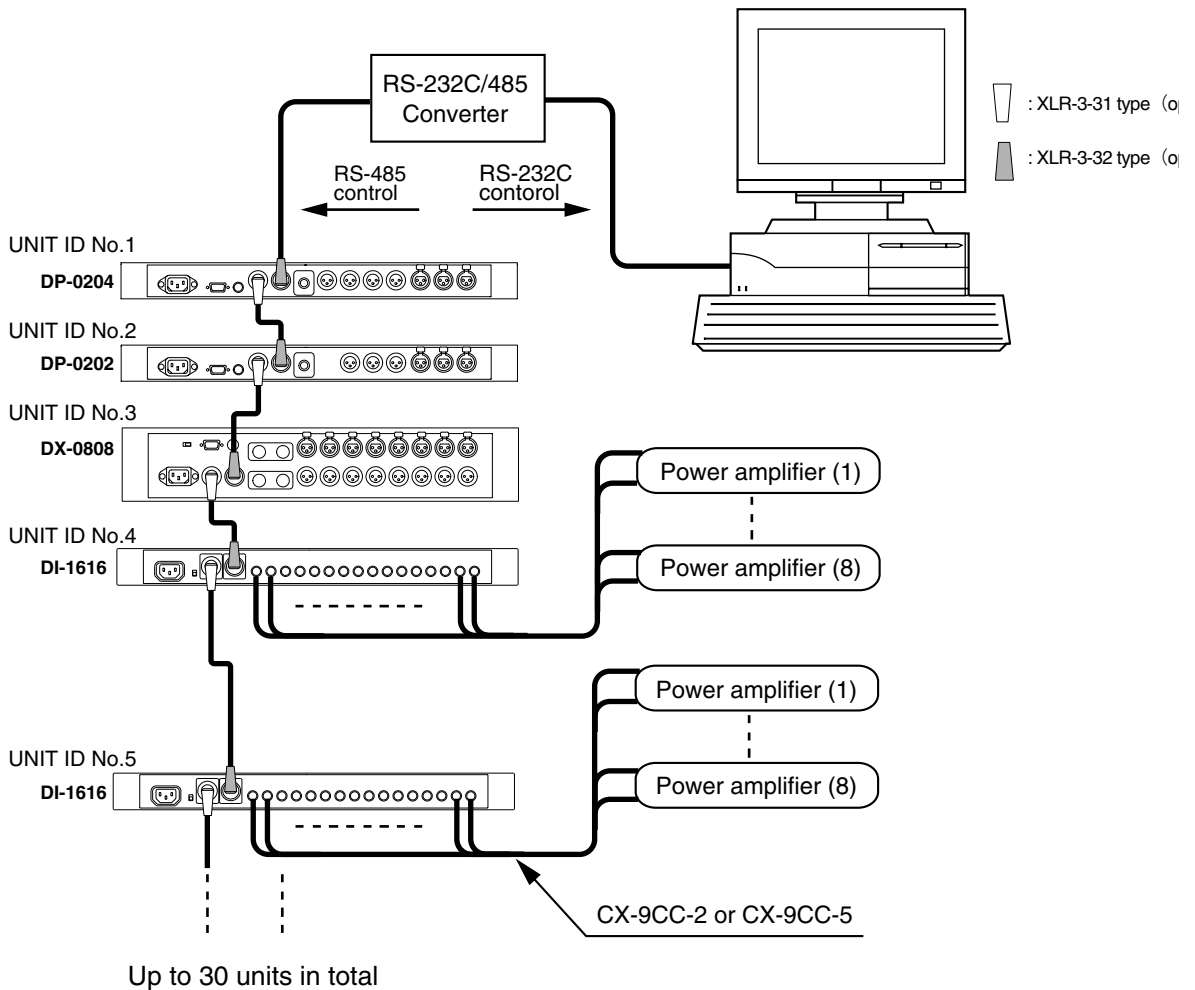
Because multiple units are controlled, a unit number must be preset for each unit. To preselect the DI-1616 as unit No. 1, set DIP switches in the front compartment for [0][1]. Refer to p. 8 "8. UNIT NUMBER AND COMMUNICATIONS PORT SETTINGS" for DIP switch setting.

Figure 2 shows the example of connection between the personal computer and each unit. Note that an adaptor to convert the RS-232C port into RS-485 type is required because personal computers are usually equipped with only the RS-232C port. Connect the personal computer's RS-232C port to the female RS-485 connector on the rear panel of equipment of unit No. 1 via the conversion adaptor. Connect other units as shown in Fig. 2. Up to 30 units can be connected.

Notes

- When the system employs the DI-1616 together with the DP-0202, DP-0204, or DX-0808, do not select the DI-1616 as unit No. 1.
- Both DP-0202 and DP-0204 incorporate a RS-232C/RS-485 converter function. Therefore, when the DP-0202 or DP-0204 is designated as master unit, it can be directly connected to the personal computer without using the conversion adaptor. In this case, make the same connection as for the RS-232C control (see Fig.1).

[Fig.2]



8. UNIT NUMBER AND COMMUNICATIONS PORT SETTINGS

When using two or more DI-1616s or when using the DI-1616 together with the DP-0202, DP-0204 (both digital processors) and/or DX-0808 (matrix unit), different numbers must be given to different equipments so that the personal computer transmits data to each connected equipment. This number is a unit number, which must be preset in consecutive numbers of 1-30.

● Unit number setting

1. Open the front compartment using a screwdriver.
2. Switch on the power.
3. Press the unit number display key [UNIT ID] on the front panel.
4. Using two DIP switches in the compartment, set a unit number.

● Example

Set the switches for [0][1] if a unit number is 1, and for [2][5] if No. 25. The set number flashes on the display.

● Notes on equipment of unit No. 1

The DIP switches on equipment of unit No. 1 can be set for [0][0] (RS-232C port) or [0][1] (RS-485 port) to allow selection of the communications port. Referring to p. 6 "7. PERSONAL COMPUTER CONNECTIONS", select either port. In either case, a number [1] flashes on the display.

● Starting values

The unit is factory-preset to unit No. 1 ([0][0], RS-232C port). Take care not to assign the same unit number to different units. To confirm the unit's unit number, press the unit number display key on the front panel.

9. BACKUP BATTERY REPLACEMENT

The DI-1616 has an internal battery for data backup. Note the following points when replacing the battery.

● Type of battery

One CR-2032 lithium battery is used. Be sure to use the same type battery when replacing.

● Life of battery

Approximately six years. It is highly recommended that the battery be replaced at shorter intervals.

● Low voltage indication

If the battery voltage drops below the marginal level, the indication of "39" is shown on the memory/unit ID display on the front panel. Replace the battery immediately when this indication is displayed.

● How to replace

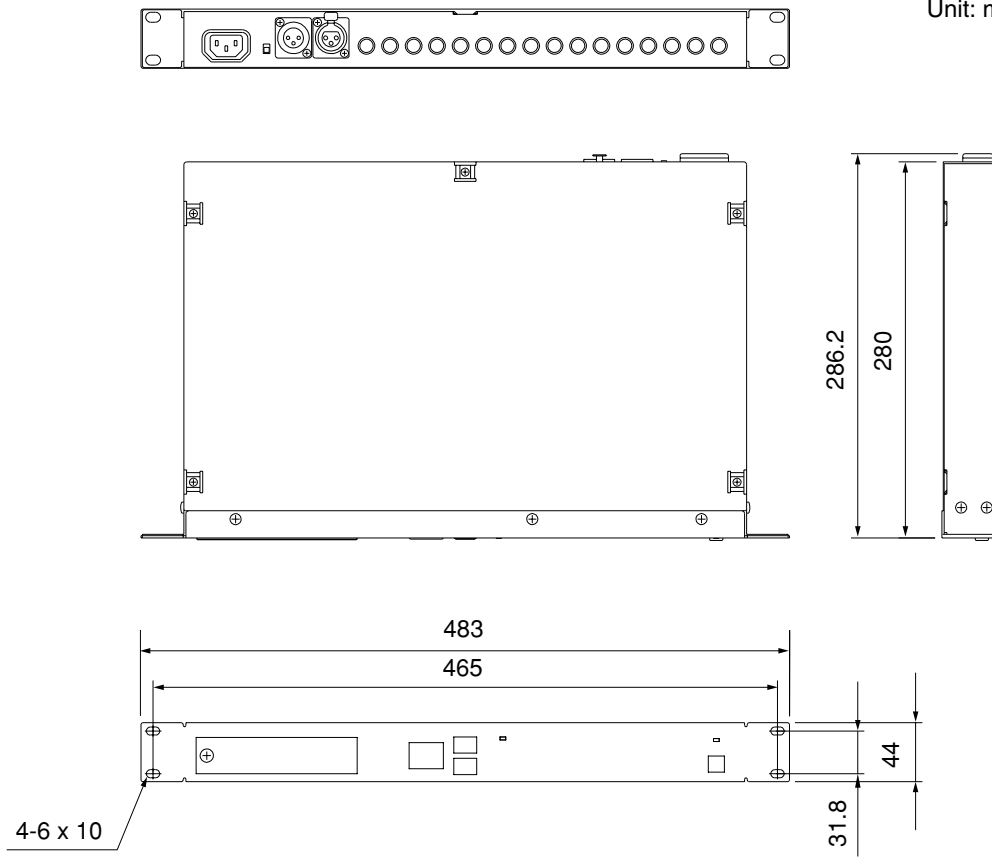
Follow the procedures below to replace the battery without erasing data stored in the unit.

1. Supply the power to the unit continuously for over ten minutes.
2. After supplying the power, set the power switch to the OFF position and remove the AC cord from a wall outlet.
3. Open the unit's top panel.
4. Pull out the battery from the circuit board, and quickly replace it with a new one. Data can be maintained if the battery is replaced within five minutes.

Note: Take care correct polarities (face and back of the battery) when installing a new battery.

10. APPEARANCE

Unit: mm



11. SPECIFICATIONS

| | |
|---------------------------|--|
| Power Source | AC100 – 240 V, 50/60 Hz, 15 W |
| Frequency Characteristics | 20 – 20 kHz (+0 dB, –2 dB) |
| Distortion | Under 0.07% (1 kHz, +4 dB*) |
| Control/Monitoring | 16 channels (8 power amplifiers) |
| Level Control | 8-pin Mini-DIN connector Input: 16 channels, +4 dB*, 10 kΩ, unbalanced Output: 16 channels, +4 dB*, 2 kΩ, unbalanced Level setting: 0 to –∞ dB changeable in 1 dB steps (muting: –∞ dB) |
| Monitoring | Power supply status, protection, fan (temperature), output level |
| Memory | 16 memory patterns |
| Interface Standard | Single unit control: RS-232C, 9-pin D-sub connector Plural units control: RS-485, XLR-3-31 and XLR-3-32 |
| Memory/Unit No. Display | Double-digit LED |
| Master Display | Green LED |
| PC Software | Operating on the Windows 95/98 and Windows NT4.0 |
| Finish | Front panel: Rolled steel plate, black, paint Case: Surface-treated steel plate, black |
| Dimensions | 482 (w) x 44 (h) x 294 (d) mm |
| Weight | 4 kg |

* 0 dB = 0.775 V

Notes

- The design and specifications are subject to change without notice for improvement.
- Windows and Windows NT are trademarks of Microsoft Corporation.

• Accessories

| | |
|---------------------------|---|
| AC power cord | 1 |
| Rack mounting screw | 4 |
| Instruction manual | 1 |

