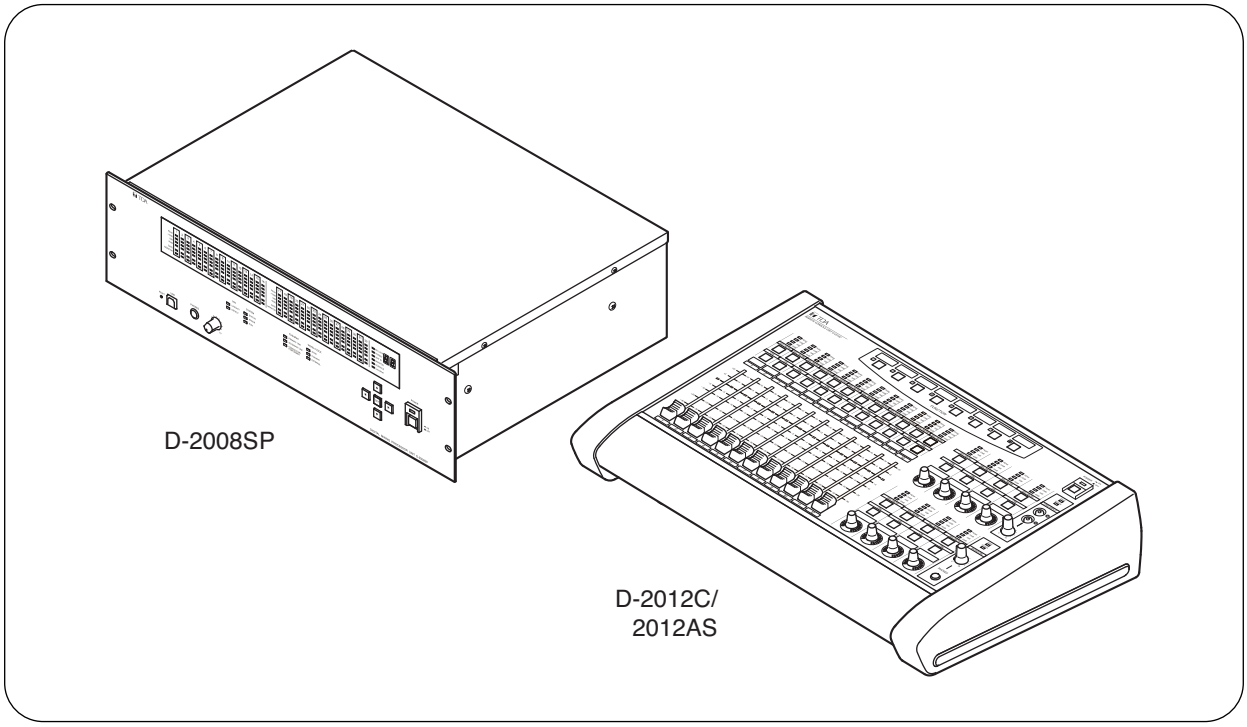
TOA

INSTALLATION MANUAL

DIGITAL MIXER

D-2000 Series
(Version 4)



Thank you for purchasing TOA's Digital Mixer.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TOA Corporation

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1. HANDLING PRECAUTIONS

- The power supply cords supplied with the D-2008SP and D-2012C are designed for exclusive use with each equipment. Never use them with other equipment.
- Use the unit in locations where the temperature is between +5 to +40 °C (41 to 104 ºF) and the humidity is less than 90 % (no condensation).
- The unit is a precision audio component. To prevent failure, do not give the unit strong shocks or vibrations.
- When mounting the D-2008SP in an equipment rack, be sure to mount a perforated panel larger than 1U size*1 above and below the unit.
- Do not position the heat-generating component such as a power amplifier immediately below the D-2008SP in the rack even if the perforated panel is mounted between them. Also, keep such components away from each other so that the ambient temperature around the D-2008SP should not exceed +40 ºC (104 ºF). Failure to do so may shorten the product life.
- When mounting the D-2012C in an equipment rack, be sure to mount a perforated panel larger than 1U size*1 above the unit.
- Do not position the heat-generating component such as a power amplifier immediately below the D-2012C in the rack. Also, keep such components away from each other so that the ambient temperature around the D-2012C should not exceed +40 ºC (104 ºF). Failure to do so may shorten the product life.
- Do not place objects on the motorized faders of the D-2012C as these faders move up and down automatically through operation such as preset memory recall.
- The largest-scale system can be configured with 4 D-2008SPs, 4 D-2012Cs, and 1 PC.
  When using the multiple D-2008SP or D-2012C units, their firmware versions must be 3.0.0 or later, and the D-2000 Setting software version must be 3.0.0 or later.
  For details on how to check their versions, read the separate Setting Software Instructions, "Menu item description."
  Firmware of the D-2008SP and D-2012C can be updated using the Setting Software ver. 3.0.0 or later*2.
  For details on how to update the firmware, read the separate Setting Software Instructions, "Method to Enable Communications between the PC and the Unit."
  The latest versions of the D-2000 Setting Software and Instruction Manual are made available on the TOA product data download site (http://www.toa-products.com/international/).
- To clean, be sure to first switch off the unit's power, then wipe with a dry cloth. When the unit gets very dirty, use a cloth damped in a neutral cleanser. Never use benzene, thinner, chemically-treated cleaning cloth, or alcohol because such volatile liquids could deform or discolor the unit.
- About the wear-and-tear items
  The D-2012C's following parts are wear-and-tear items. Replace them when they approach the end of their useful lives, which vary depending on the environments or conditions of use. Note that the replacement of such wear-and-tear parts is chargeable even when the unit is within the valid guarantee period.
  · Motor fader: 30000 reciprocations (Approx. 6 years)
  · Rotary encoder: 30000 rotations (Approx. 12 years)

*1 1U size = 44.5 mm or 1.75" (standard size)
*2 To update the D-2012C firmware ver. 2.0.0, use the dedicated "D-2012C Firmware Updater Software Program." (Refer to p. 49.)

2. NOMENCLATURE AND FUNCTIONS

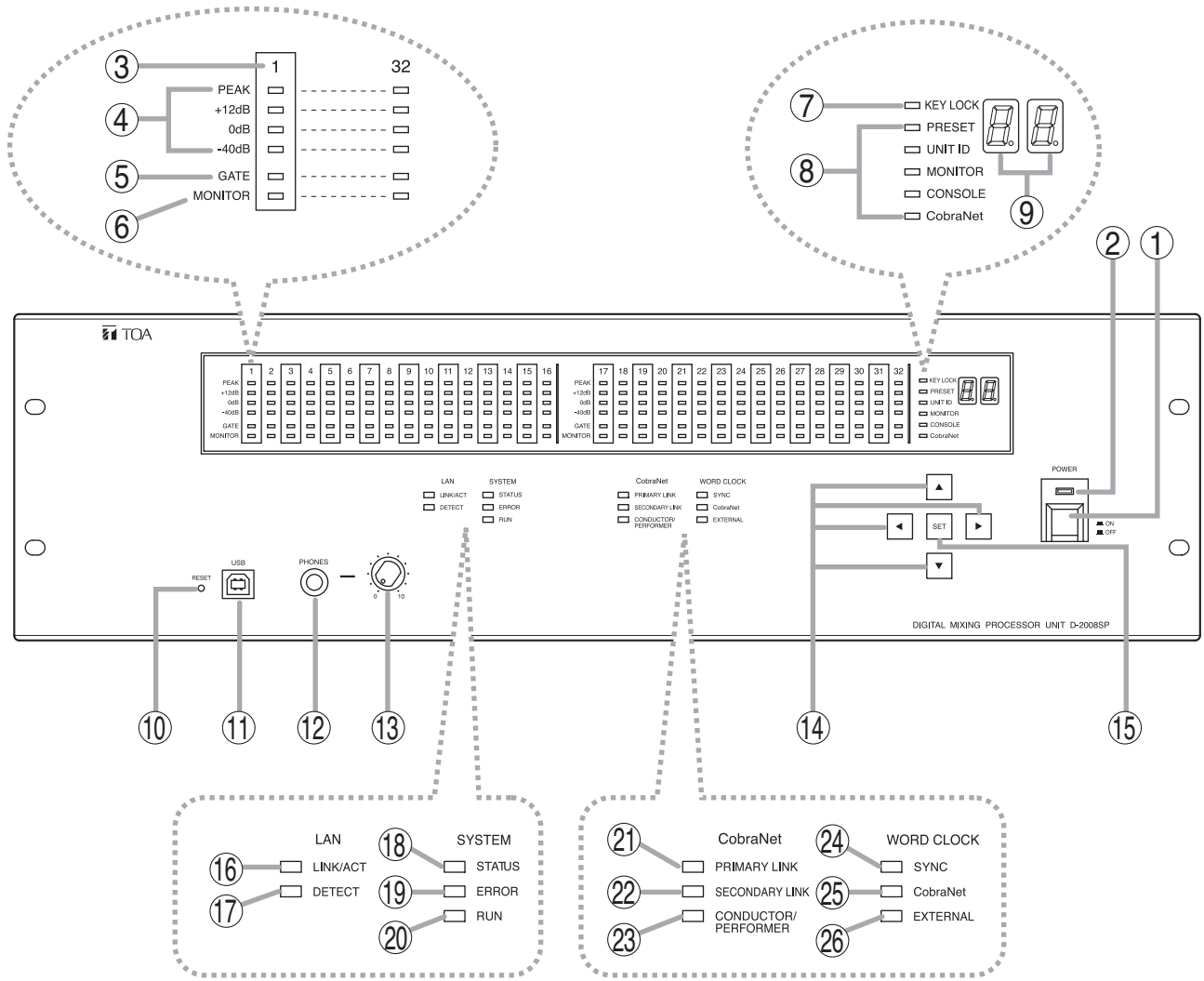
2.1. D-2008SP Digital Mixing Processor Unit

The D-2008SP Digital Mixing Processor Unit is designed to have up to 32 audio inputs and outputs in total.
A built-in multiple signal processing functions permit the unit to be used as both a mixer and a signal processor.
Its audio input/output and control ports can accept plug-in modules, making the unit have a maximum of 32 inputs or 32 outputs and up to 2 control modules.
Using the following optional modules enables the unit to perform their functions: Two D-983s Remote Control Module for providing a maximum of 48 contact inputs and 32 contact outputs, D-984VC VCA Control Module for VCA control, and D-2000CB CobraNet Interface Module for audio data transfer between CobraNet devices.
Each function can be set using the D-2000 Setting Software.
Operation can be performed through the front key operation and from a PC with the D-2000 Setting Software installed.
The D-2012C Remote Console Unit, when connected, remotely controls the D-2008SP's basic operations such as volume control.
It can be mounted in an EIA component rack (3U size*).

* 1U size = 44.5 mm or 1.75" (standard size)

Note
CobraNet is a trademark of Cirrus Logic, Inc.

[Front]



1. **Power switch [POWER ON/OFF]**
   Power is switched on and off with each depression of this switch.

2. **Power lamp**
   Lights when the power switch is set to ON.

3. **Monitor number**
   Number of channel to be monitored using headphones.

4. **Level indicators [PEAK, +12 dB, 0 dB, –40 dB]**
   Indicate the signal level of each individual channel.
   Indicate the PFL (pre-fader level) value for the input channel, and the AFL (after-fader level) value for the output channel.
   When an output channel is muted, only the PEAK indicator lights. When all output channels are muted by the "All Mute" function, all the PEAK indicators flash.

5. **Gate indicator (Orange)**
   Lights when the gate* is activated.
   * This function passes, attenuates, or cuts the input signal depending on its signal level.

6. **Monitor selection indicator (Orange)**
   Lights to indicate the corresponding channel is selected for monitoring using headphones.

7. **Key lock indicator (Red)**
   Lights when key lock function is enabled.

8. **Item selection indicators [PRESET, UNIT ID, MONITOR, CONSOLE, CobraNet] (Green)**
   The indicator of the item selected with the Selection keys (14) lights.

9. **Number display**
   Displays the number of the preset memory recalled.

10. **Reset switch**
    Restarts the D-2008SP when pressed.
    Press the switch (recessed) with a pen tip.
    Note
    Reactivating the unit stops audio signals currently being output.

11. **USB terminal**
    Not used.

12. **Headphone jack**
    Audio outputs for the channel of which Monitor selection indicator (6) is lighting can be monitored. Connect stereo headphones of 16 Ω or more. Adjust the monitor volume with the headphone volume control knob (13).

13. **Headphone volume control knob**
    Adjusts the headphone volume.

14. **Selection keys**
    Use the Up and Down keys to select the Item selection indicator.
    Use the Left and Right keys to select the preset memory number when recalling the preset memory or the desired monitor number when MONITOR is selected.

15. **Set key**
    Used for preset memory recall or key lock setting.

16. **LAN LINK/ACT indicator (Green)**
    Lights when the LAN connector on the rear panel is connected, and flashes during LAN communications.

17. **LAN DETECT indicator (Orange)**
    Lights when this unit is selected on the D-2000 Setting Software.

18. **SYSTEM STATUS indicator (Green)**
    Lights when the unit is in communication with a PC.

19. **SYSTEM ERROR indicator (Red)**
    Lights while the unit is being activated, and goes out after the activation has been completed.
    If this indicator remains lit even after activation completion, this indicates an internal fan failure. (For the relationship between the indicator and D-2008SP status, refer to the table on p. 8.)

20. **SYSTEM RUN indicator (Green)**
    Lights when the unit is in normal operation, and goes out when a failure occurs.
    (For the relationship between the indicator and D-2008SP status, refer to the table on p. 8.)

21. **CobraNet PRIMARY LINK indicator (Green)**
    Flashes during CobraNet communications via the primary port.

22. **CobraNet SECONDARY LINK indicator (Green)**
    Flashes during CobraNet communications via the secondary port.

23. **CobraNet CONDUCTOR/PERFORMER indicator (Green)**
    Flashes when the primary port is in operation as the conductor, and lights when it is in operation as the performer.

24. **WORD CLOCK SYNC indicator (Green)**
    Lights when internal word clock synchronization is stable. Goes out if the clock gets out of synchronization, then the internal mute functions, causing the audio outputs to be interrupted. Even if once the clock had got out of synchronization, when the internal clock has stabilized, such operation state automatically returns to normal.

25. WORD CLOCK CobraNet indicator (Green)
Lights when the master of the internal word clock gets synchronization from CobraNet.

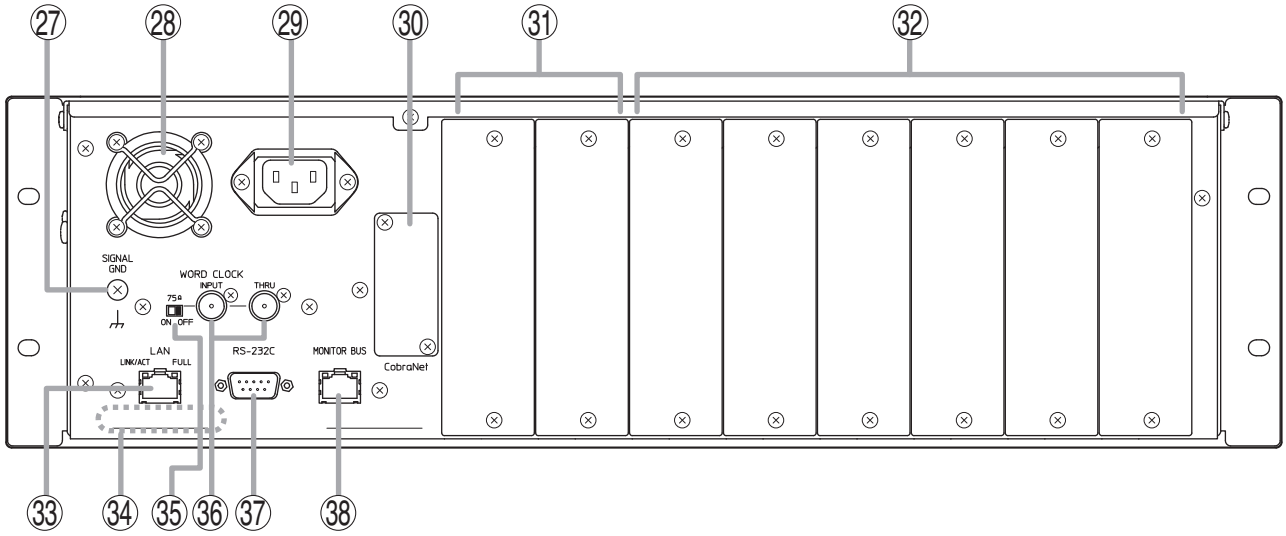
26. WORD CLOCK EXTERNAL indicator (Green)
Lights when the master of the internal word clock gets synchronization from the external word clock generator connected to the rear panel's word clock input.

• SYSTEM ERROR and SYSTEM RUN indicators vs. D-2008SP status

D-2008SP status / Indicator	During activation	After activation completion		
		Normal state	System error	Fan error
SYSTEM ERROR	Lit	Unlit	Unlit	Lit
SYSTEM RUN	Unlit	Lit	Unlit	Lit

Note
If both indicators light or remain unlit after the unit activation is complete, cycle the power. If the situation does not change after the unit power-up, the unit may break down. Contact your TOA dealer.

[Rear]



27. Functional earth terminal [SIGNAL GND]
Note: This terminal is not for protective earth.

28. Cooling fan

> **⚠ CAUTION**
> Do not block the fan exhaust vent. Doing so may cause heat to build up inside the unit and result in fire.

29. AC Inlet
Connect this inlet to the wall AC outlet using the supplied power cord.
The socket-outlet shall be installed near the equipment and the plug (disconnecting device) shall be easily accessible.

30. CobraNet interface module slot
Accepts the D-2000CB CobraNet Interface Module, allowing audio transmission with other CobraNet equipment.

31. Input/output and remote control modules slots (7 – 8)
Accept the input, output or remote control modules.
Insert the input module to use as input, output module to use as output, and remote control module to use as control input.

32. Input/output module slots (1 – 6)
Accept the input or output modules.
Insert the input module to use as input, and output module to use as output.

33. LAN connection terminal
Connect this terminal to a 10BASE-T- or 100BASE-TX-compatible network.
This terminal can also be connected to a PC and D-2012C via a switching hub.
(For the IP address setting, refer to "Network Settings" of the separate software setting manual.)

34. MAC address

This is the address* used by the unit. Since the relationship of the unit's location to its MAC address is established when setting the network attributes, keep track of this relationship for later use.

* The inherent address assigned to each network component, expressed in 12-digit hexadecimal notation.

35. Word clock termination switch

Terminates the word clock connection at 75 Ω.
To terminate the word clock connection at this unit, shift the switch to the "ON" position. In other cases, shift it to the "OFF" position. (Factory preset: OFF)

36. Word clock terminals

Used to input and output the word clock which synchronizes the audio signal processing with that of external equipment. Connect a commercially available word clock generator.*
Helps to stabilize the system that uses two or more CobraNet devices.
As “Through output” (THRU) is not electrically buffered, it can be used for input.

* Two or more CobraNet devices can be connected in series using the Through output. However, it is recommended to connect the CobraNet device with the word clock generator on a one-on-one basis.

37. RS-232C terminal

A communications connector for other control equipment.

38. Monitor bus terminal

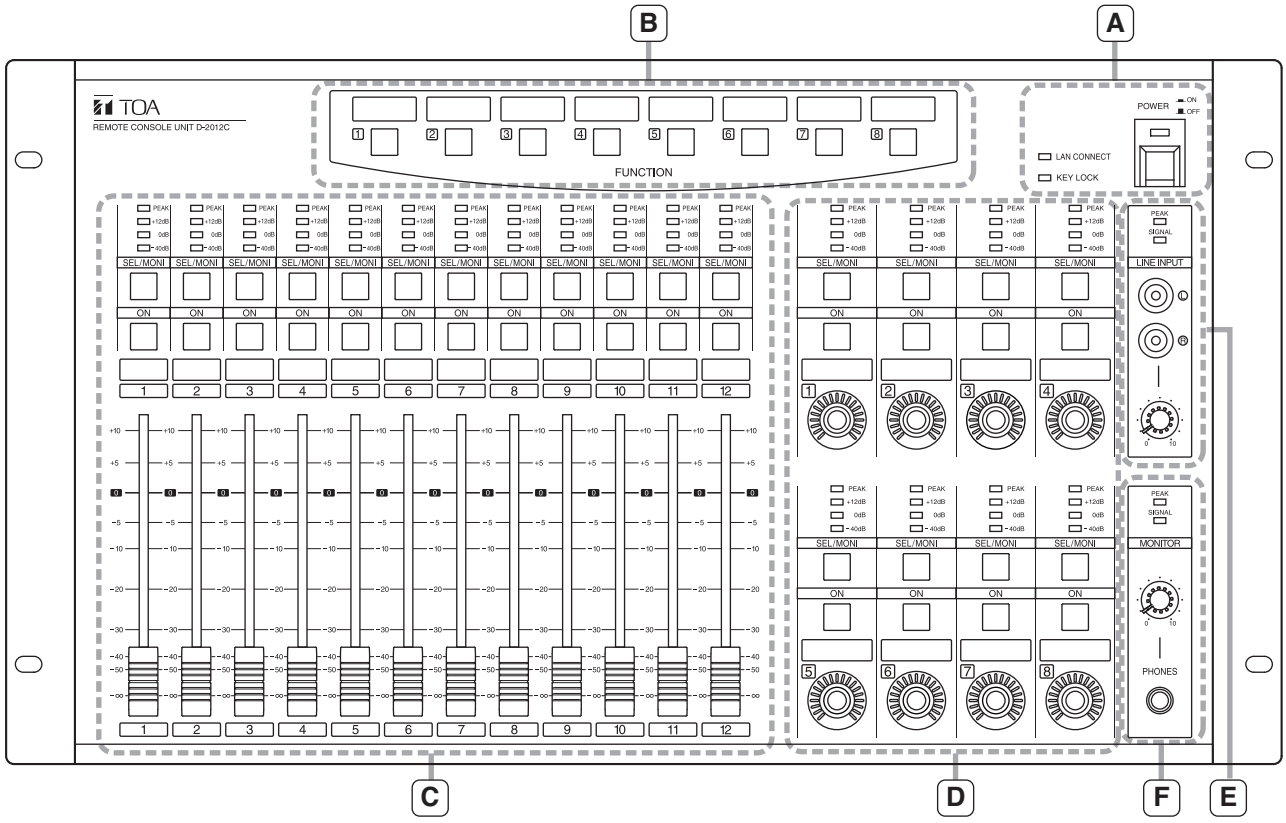
An audio transmission connector for the D-2012C
Connects to the D-2012C's Monitor bus terminal.
Audio signals are output to the D-2012C's headphone jack through the monitor bus or audio signals from the D-2012C's Line input terminal are input to the monitor bus.

2.2. D-2012C Remote Console Unit

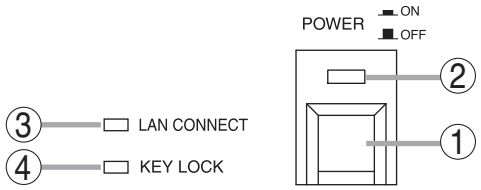
The D-2012C is designed to be used with the D-2008SP Digital Mixing Processor. The D-2012C can be LAN-connected to the D-2008SP Processor to allow remote operation of input and output channel volume adjustment, signal level monitoring, contact control and preset memory recall, etc. The D-2012C is equipped with line inputs and audio monitor bus terminal. A PC can be connected to perform such settings as selection of channels for operation and assigning functions to the function keys, using the D-2000 setting software supplied with the D-2008SP Processor. Up to 4 different fader layers can be set when assigning channels to each motorized fader and rotary encoder, allowing an individual D-2012C unit to operate up to 80 channels in monaural. More channels can be operated by performing settings for stereo link and grouping (refer to p. 60 for details about the fader layer). It can be mounted in an EIA Standard component rack (6U* size). It can also be used as a desktop unit in combination with the optional D-2012AS Console Case.

* 1U size = 44.5 mm or 1.75" (reference size)

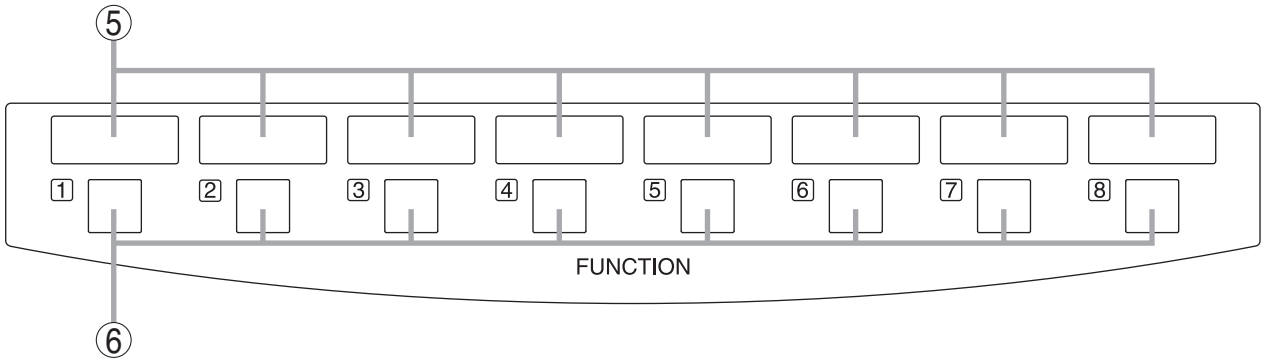
[Operation panel]



• **A-Section**



• **B-Section**



1. Power switch
Power is switched on and off with each depression of this switch.

2. Power indicator
Lights when the power is switched on.

3. LAN connection indicator
Displays the connection status of the D-2008SP to be controlled.

Lit: When all the D-2008SP units to be controlled are in controllable state.

Flashing: When both controllable and uncontrollable D-2000SP units exist in a system where multiple D-2008SP units to be controlled are used.

Unlit: When all the D-2008SP units to be controlled are in uncontrollable state.

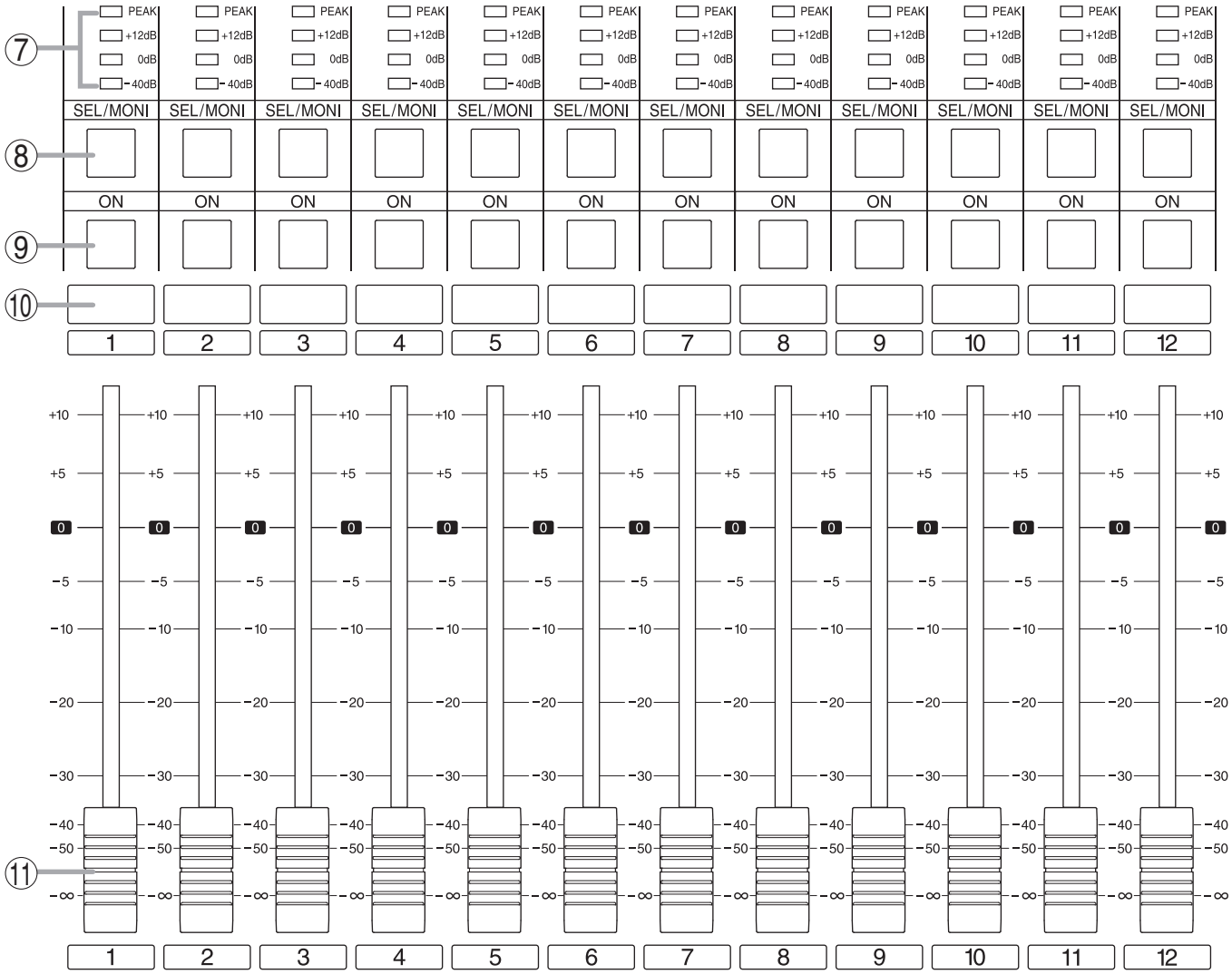
If there exists any uncontrollable D-2008SP, check the D-2008SP's power supply and connections.

4. Key lock indicator
Lights red when the operation keys or knobs are locked.

5. Write-in space
Write the name of the function assigned to the key, etc. in these spaces.

6. Function keys (1 – 8)
Execute contact control, preset memory recall or other functions assigned to the keys.
Use the D-2000 Setting Software to set functions and assign them to the keys.

• **C-Section**



7. Level indicators [PEAK, +12 dB, 0 dB, –40 dB]
Indicate signal levels for each channel. Pre-fader value is indicated for input channels and post-fader value for output channels. Adjust the sound volume so that the Peak indicator does not continuously remain lit.

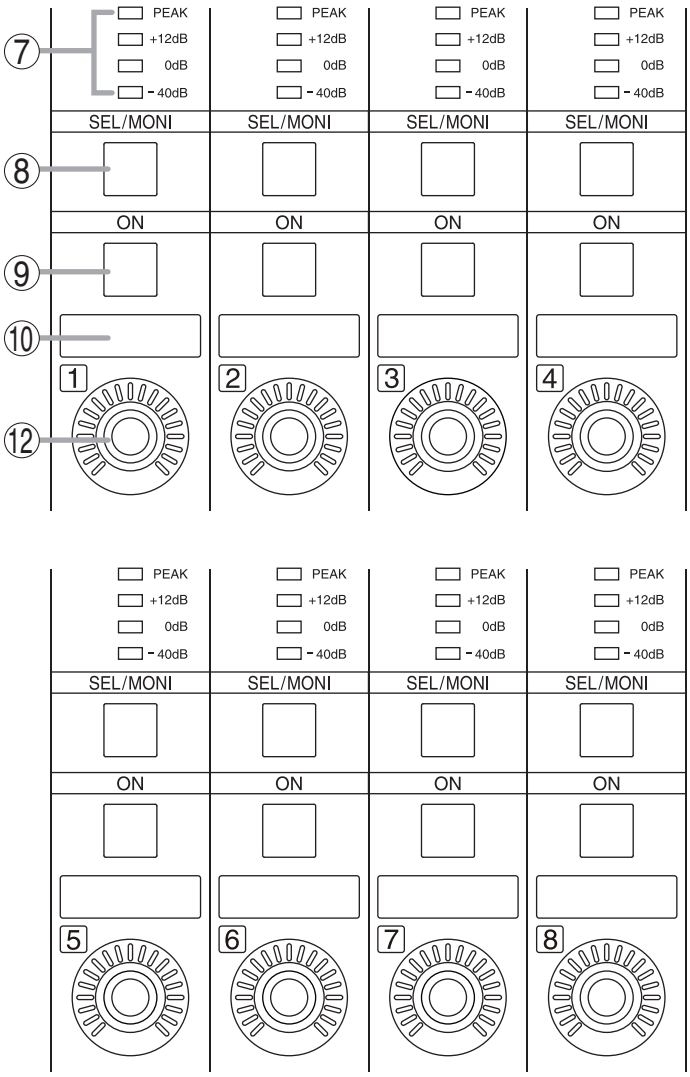
8. Monitor channel selector keys
Select the channel to be monitored. Pressing a key causes it to light and allows its corresponding channel to be monitored. Pressing the key again causes the light to go out, disabling monitoring.
It can be enabled to switch the D-2008SP's selection channel on the D-2000 Setting Software in synchronization with this key operation. (For details, read the separate Setting Software Instructions, "Console SEL/MONI key interlock setting.")

9. Channel ON/OFF keys
Turn on or off the output for each channel. Pressing a key causes it to light and the signal of its corresponding channel to be output. When pressed again, the light goes out and the channel's signal output is stopped.

10. Write-in space
Write the name of the input or output channel, etc. in these spaces.

11. Motorized faders (1 – 12)
Adjust the volume of each input or output channel. With reference to fader position "0," the position "–∞" provides the minimum volume, and position "+10" the maximum volume.
Use the D-2000 Setting Software to perform settings for the input or output channels for which the volume is adjusted.

• **D-Section**



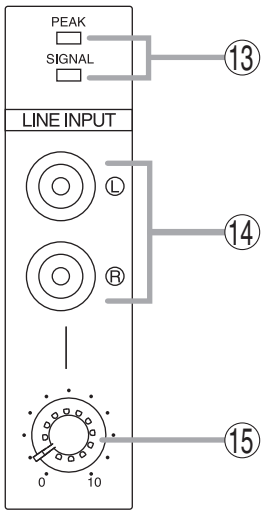
Note: Refer to p. 12 for names and functions of parts 7 – 10.

12. Rotary encoders (1 – 8)

Adjust the volume of each input or output channel. The volume increases as the encoder is rotated clockwise, and decreases as it is rotated counterclockwise. (The knob rotates endlessly.) The volume indicators around the knob light depending on the rotation of the knob.

Use the D-2000 Setting Software to perform settings for the input or output channels for which the volume is adjusted.

• **E-Section**



13. Line input signal level indicators [SIGNAL, PEAK]

Display the signal level set with the Line input volume control (15). The SIGNAL indicator lights when a signal exceeding the reference level of –20 dB is fed to the line input terminal. If a signal at the line input terminals clips, the PEAK indicator lights.

14. Line input terminals

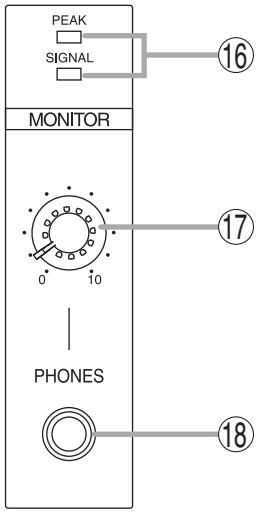
Connect stereo equipment of stereo line level of –10 dB* and 10 kΩ to these terminals. When using these terminals, perform settings on the D-2008SP side using the D-2000 Setting Software.

* 0 dB = 0.775 V

15. Line input volume control knob

Adjusts the signal input level from equipment connected to the line input terminal. The volume increases as the control knob is rotated clockwise and decreases as it is rotated counterclockwise. Adjust the level so that the SIGNAL indicator lights without lighting the PEAK indicator.

• **F-Section**



16. Monitor signal indicators [SIGNAL, PEAK]

Indicates the level of the signal being monitored. The SIGNAL indicator lights when a signal being monitored exceeding the reference level of –20 dB is fed to the line input terminal. If the signal level approaches clipping volume, the PEAK indicator lights. Select the channel to be monitored using Monitor channel selector keys (8).

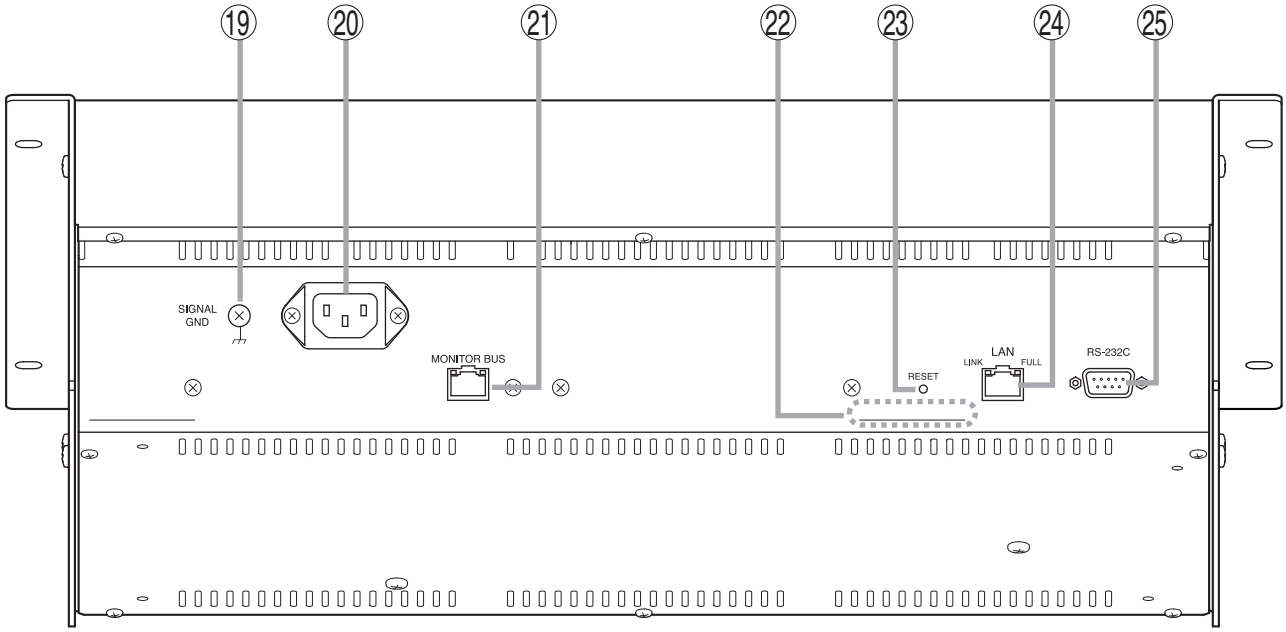
17. Monitor volume control knob

Adjusts the volume of sound monitored by the headphones connected to the Headphone jack. The volume increases as the control knob is rotated clockwise and decreases as it is rotated counterclockwise.

18. Headphone jack

Applicable impedance is 16 Ω or greater. This jack allows monitoring of the sound output from the channel selected with the Monitor channel selector keys (8). Plug in headphones of 16 Ω or more to this jack. Adjust the monitor volume with the Monitor volume control knob (17).

[Connection panel]



19. Functional earth terminal

Note: This terminal is not for protective earth.

20. AC Inlet

Connect this inlet to the wall AC outlet using the supplied power cord.

The socket-outlet shall be installed near the equipment and the plug (disconnecting device) shall be easily accessible.

21. Monitor bus terminal

An audio transmission connector for the D-2008SP. Connects to the D-2008SP's Monitor bus terminal. D-2008SP's audio signals are output to the headphone jack through the monitor bus or audio signals from the Line input terminals (14) are input to the D-2008SP.

22. MAC address

This is the address* used by the unit. Since the relationship of the unit's location to its MAC address is established when setting the network attributes, keep track of this relationship for later use.

* The inherent address assigned to each network component, expressed in 12-digit hexadecimal notation.

23. Reset switch

Avoid touching this switch, as it is used only during maintenance.

24. LAN connection terminal

Connect this terminal to a 10BASE-T- or 100BASE-TX-compatible network. This terminal can also be connected to a PC and D-2008SP via a switching hub.

(For the IP address setting, refer to "Network Settings" of the separate software setting manual.)

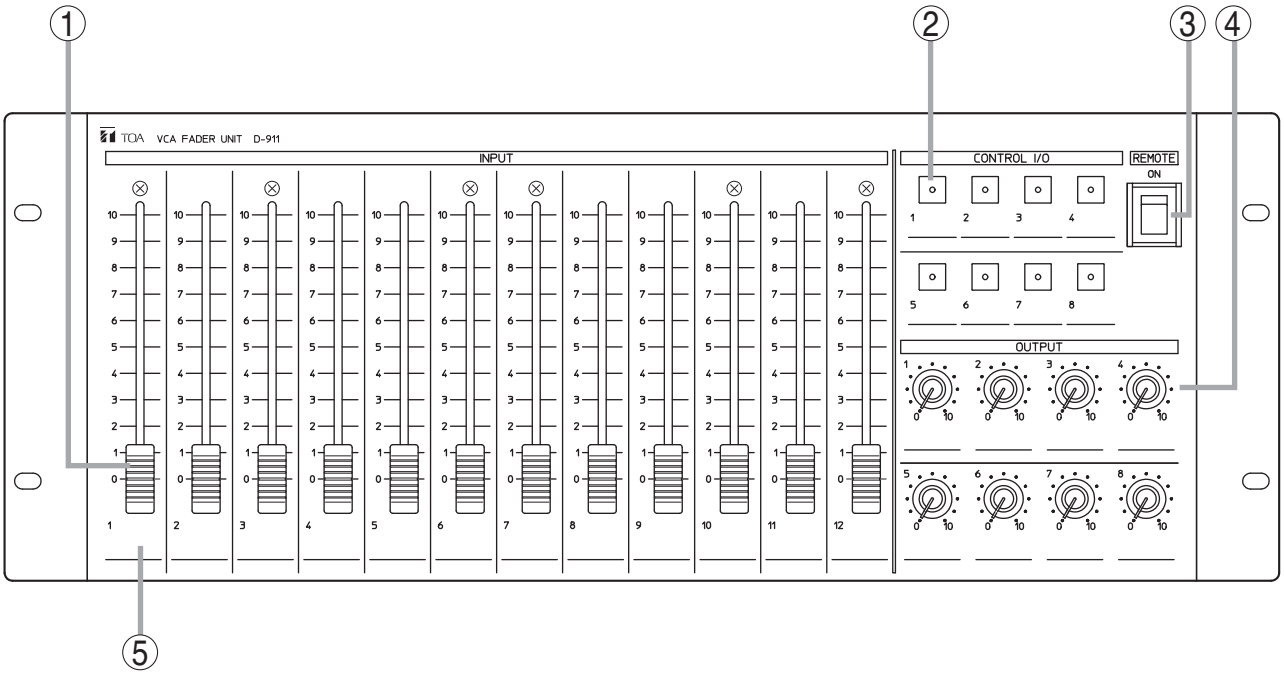
25. RS-232C terminal

This RS-232C connector is provided for maintenance purposes.

2.3. D-911 VCA Fader Unit

The D-911 VCA Fader Unit is designed for use with the D-2008SP.
Connecting to the D-984VC VCA Control Module installed in the D-2008SP permits volume adjustment of input and output channels and contact controls of the D-2008SP. For details, refer to the instruction manual enclosed with the D-911.

[Front]



1. Input fader
Adjusts the volume of each input equipment (i.e. microphones and CD players). Fader position "0" provides the minimum volume, and position "10" the maximum volume.
Assign the channel to be operated using the D-2000 Setting Software. It is also possible to assign the channel as output fader.

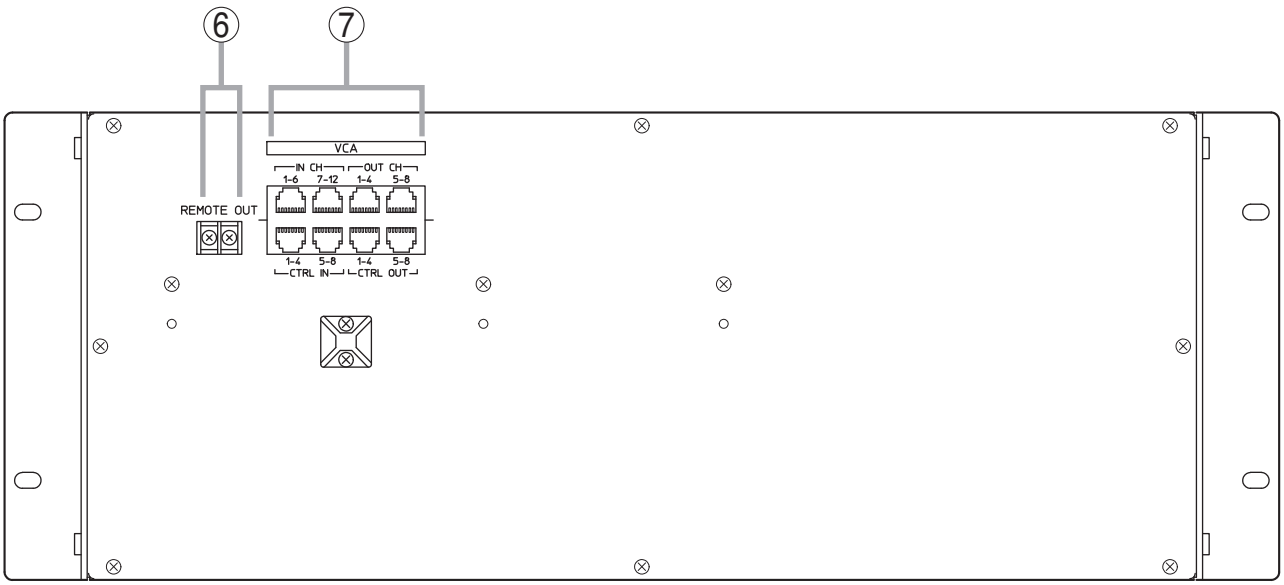
2. Control key
Recalls preset memories or controls the contact. Lights when the preset memory is recalled or the contact is turned on.
Assign the contact functions using the D-2000 Setting Software.

3. Remote (Activation) switch
Setting this switch to the ON position closes the remote (activation) output terminals (6) on the rear panel, and setting this switch to the opposite side opens the output terminals.

4. Output volume control knob
Adjusts the output volume. Position "0" provides the minimum volume, and position "10" the maximum volume.
Assign the channel to be operated using the D-2000 Setting Software.
It is also possible to assign the knob as input volume control knob.

5. Write-in space
Used to fill in input/output name, preset memory contents, or other notes for convenience of operation.

[Rear]



6. Remote (activation) output terminals
Setting the Remote (activation) switch (3) to the ON position closes the output.

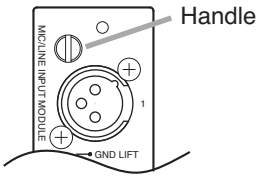
7. VCA control module connection terminals
These terminals are used exclusively for the D-984VC VCA Control module. Use an RJ45 connector for connection.

Note
Avoid connecting any other than the D-984VC to these terminals.

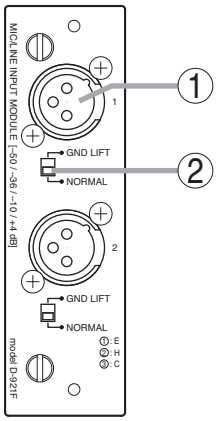
2.4. Optional Modules

Notes

- Make sure that the power is switched OFF before attaching or detaching modules.
- To avoid failures due to static electricity, do not touch the parts or terminals on the circuit board of both the unit and module.
- Ensure that the module is installed and secured with screws in the correct position.
- Cover idle slots with the blank panels attached to the unit as shipped by the factory.
- Two silver slotted screws at the upper and lower portion of the module face are handles used for module detachment. Never rotate them because they do not function as screws.

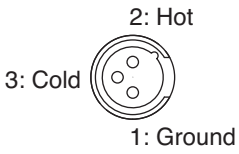


2.4.1. D-921F Microphone/Line Input Module



1. Monaural input terminal [1, 2] (XLR-3-31 equivalent)

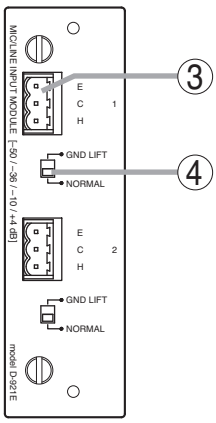
Electronically-balanced input terminal.
(Pin 1: Ground, Pin 2: Hot, Pin 3: Cold)
Use XLR-3-12C or equivalent for connection.
Input sensitivity (–50/–36/–10/+4 dB) and phantom power (+15 V) ON/OFF can be set by a PC using the setting software supplied with the D-2008SP.



2. Ground lift switch [GND LIFT/NORMAL]

Hum noise may be generated due to ground loops created when the unit is connected to other equipment. Setting the switch to the GND LIFT position cuts the ground loop.

2.4.2. D-921E Microphone/Line Input Module



3. Monaural input terminal [1, 2]

Electronically-balanced, removable terminal block.
(H: Hot, C: Cold, E: Ground)
Input sensitivity (–50/–36/–10/+4 dB) and phantom power (+15 V) ON/OFF can be set by a PC using the setting software supplied with the D-2008SP.

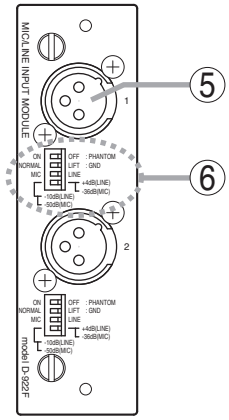
Note

Be sure to use the supplied removable terminal plugs (3P) for connection.

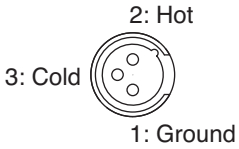
4. Ground lift switch [GND LIFT/NORMAL]

Hum noise may be generated due to ground loops created when the unit is connected to other equipment. Setting the switch to the GND LIFT position cuts the ground loop.

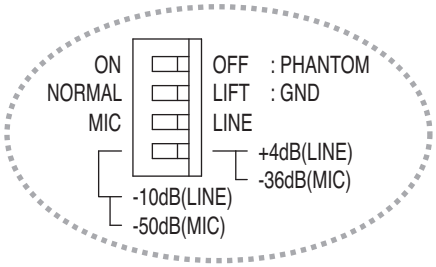
2.4.3. D-922F Microphone/Line Input Module



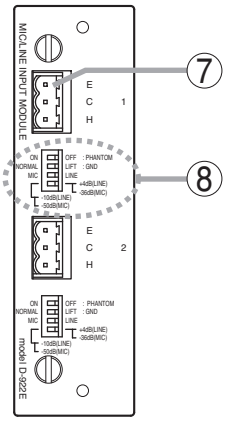
5. Monaural input terminal [1, 2] (XLR-3-31 equivalent)
Electronically-balanced input terminal.
(Pin 1: Ground, Pin 2: Hot, Pin 3: Cold)
Use XLR-3-12C or equivalent for connection.



6. Input sensitivity switch [PHANTOM, GND LIFT, MIC/LINE]
4-pole switch. Enables phantom power (+15 V; ON/OFF, enabled only when set to the MIC position), ground lift and input sensitivity.
Input sensitivity: –36 or –50 dB (MIC mode) / –10 or +4 dB (LINE mode)
Note
To use as monitor input, set the "PHANTOM" switch to OFF and "Input sensitivity" switch to "+4 dB (LINE)."

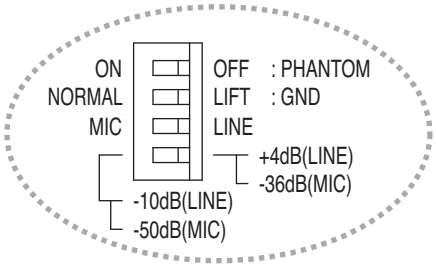


2.4.4. D-922E Microphone/Line Input Module

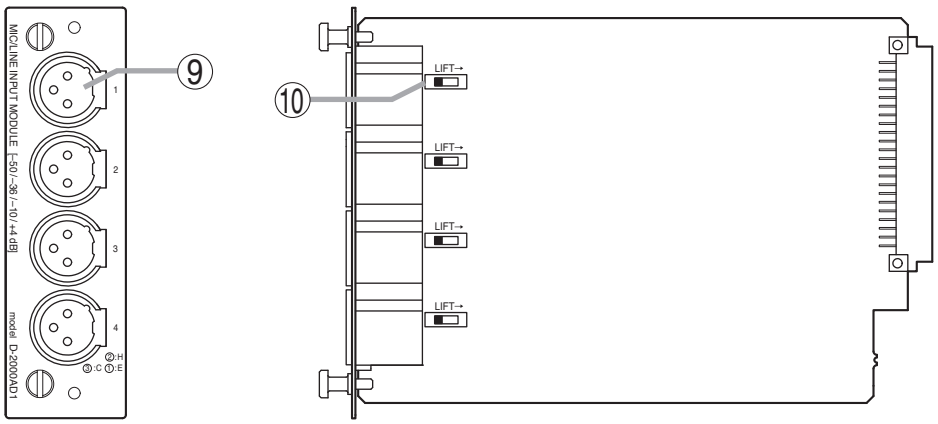


7. Monaural input terminal [1, 2]
Electronically-balanced, removable terminal block.
(H: Hot, C: Cold, E: Ground)
Note
Be sure to use the supplied removable terminal plugs (3P) for connection.

8. Input sensitivity switch [PHANTOM, GND LIFT, MIC/LINE]
4-pole switch. Enables phantom power (+15V; ON/OFF, enabled only when set to the MIC position), ground lift and input sensitivity.
Input sensitivity: –36 or –50 dB (MIC mode) / –10 or +4 dB (LINE mode)
Note
To use as monitor input, set the "PHANTOM" switch to OFF and "Input sensitivity" switch to "+4 dB (LINE)."

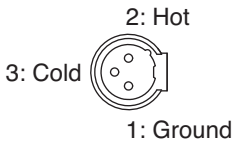


2.4.5. D-2000AD1 Microphone/Line Input Module



9. Monaural input terminal [1, 2, 3, 4] (XLR-3-31 or equivalent)

Electronically balanced input terminal.
(Pin 1: Ground, Pin 2: Hot, Pin 3: Cold)
Use XLR-3-12C or equivalent for connection.
Input sensitivity (–50/–36/–10/+4 dB) and phantom power (+48 V) ON/OFF settings can be performed by a PC using the D-2000 Setting software supplied with the D-2008SP.



Notes

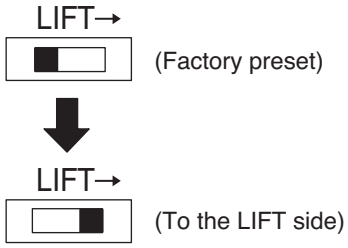
- Be sure to turn off the phantom power (+48 V) when using an unbalanced microphone or equipment such as a CD player or effecter other than a microphone. As doing otherwise may cause damage to the unit.
- To insert or remove a condenser microphone that requires external power source, turn down the fader of the corresponding channel, turn off its channel and the phantom power (+48 V), then wait at least 1 minute before inserting or removing. As doing otherwise may cause damage or failure to this module and microphone.
- Noise may be produced when or after the phantom power (+48 V) is turned on or off. Be sure to turn on or off the phantom power (+48 V) after turning down the fader of the corresponding channel and turning off the channel.
  Also, never operate the fader nor turn on and off the channel for 1 minute after turning on or off the phantom power (+48 V).
- Current consumption of the phantom power supply must be 5 mA or less per channel.

10. Ground lift switch

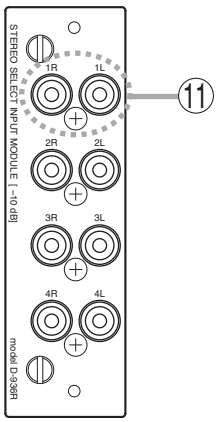
When the D-2008SP is connected to other equipment, a ground may create a loop, potentially generating hum noise. In such cases, the ground loop can be cut off by setting the DIP switch on the circuit board to the LIFT position.

Note

When shifting the DIP switch, never touch other parts on the circuit board.



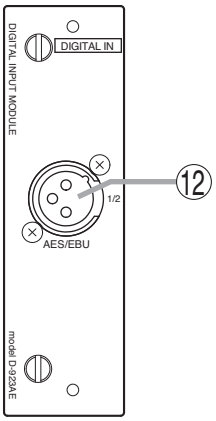
2.4.6. D-936R Stereo Input Module



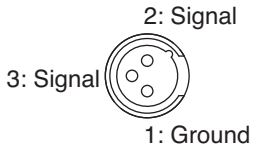
Note
This module cannot be used as a monitor input.

11. Stereo input terminal [1L/1R, 2L/2R, 3L/3R, 4L/4R]
Unbalanced, RCA jack stereo input terminals. Either a single stereo input can be selected from the 4 available stereo inputs or all 4 stereo channels can be mixed.
Mode setting and stereo selection are performed by a PC using the setting software supplied with the D-2008SP. They can also be remotely selected by way of connected external equipment through the use of the control module.
Input signal level: –10 dB

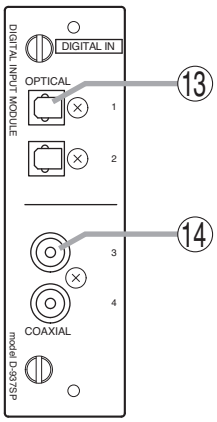
2.4.7. D-923AE Digital Input Module



12. AES/EBU digital input terminal [AES/EBU, 1/2] (XLR-3-31 equivalent)
Digital input terminal of AES/EBU format.
(Pin 1: Ground, Pin 2: Signal, Pin 3: Signal)
Use the XLR-3-12C or equivalent for connection.
Note
Use a digital audio cable with characteristic impedance of 110 Ω for connection.



2.4.8. D-937SP Digital Input Module

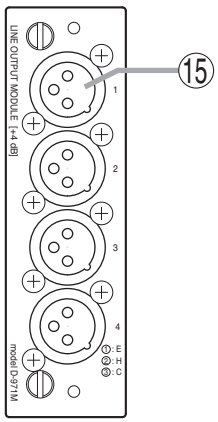


Note
This module cannot be used as a monitor input.

13. Optical input terminal [OPTICAL, 1, 2]
Optical input terminal of S/PDIF format.

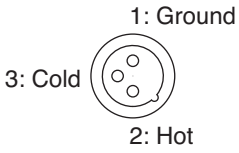
14. Coaxial input terminal [COAXIAL 3, 4]
Coaxial input terminal of S/PDIF format.
Notes
- Use a coaxial cable with characteristic impedance of 75 Ω for connection.
- One of four line inputs (stereo) is selected. Input selection is performed by a PC using the setting software supplied with the D-2008SP.

2.4.9. D-971M Line Output Module

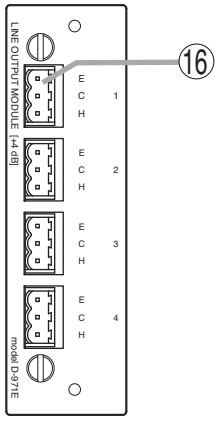


15. Monaural output terminal [1, 2, 3, 4] (XLR-3-32 equivalent)

Electronically-balanced output terminal.
(Pin 1: Ground, Pin 2: Hot, Pin 3: Cold)
Output signal level: +4 dB
Use XLR-3-11C or equivalent for connection.



2.4.10. D-971E Line Output Module



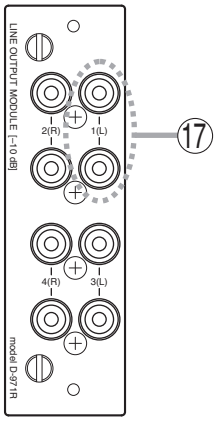
16. Monaural output terminal [1, 2, 3, 4]

Electronically-balanced, removable terminal block.
(H: Hot, C: Cold, E: Ground.)
Output signal level: +4 dB

Note

Be sure to use the supplied removable terminal plugs (3P) for connection.

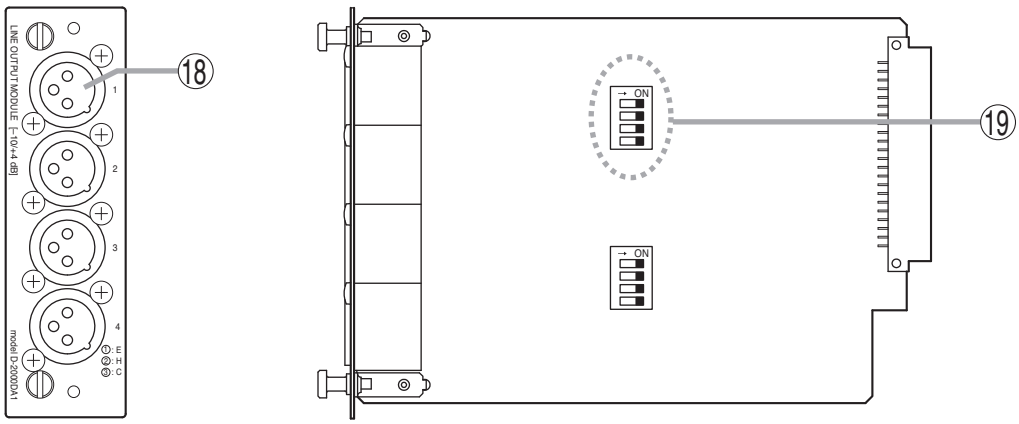
2.4.11. D-971R Line Output Module



17. Monaural output terminal [1(L), 2(R), 3(L), 4(R)]

Unbalanced, RCA jack output terminals. Each output is equipped with a 2-channel splitter.
Output signal level: –10 dB

2.4.12. D-2000DA1 Line Output Module



18. Monaural output terminal [1, 2, 3, 4] (XLR-3-32 equivalent)

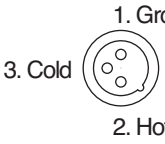
Balanced (electronically-balanced) or unbalanced output, switchable.

- Balanced output mode (factory preset)
  (Pin 1: Ground, Pin 2: Hot, Pin 3: Cold)
- Unbalanced output mode
  (Pin 1: Ground, Pin 2: Hot, Pin 3: No connection but may be connected to Pin 1 Ground)

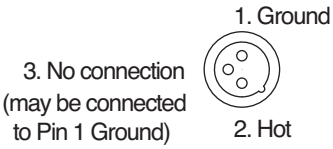
The output level can be set to either +4 dB or –10 dB.

Use XLR-3-11C or equivalent for connection.

[Balanced output mode]



[Unbalanced output mode]



Notes

- Be sure to place this terminal in Unbalanced output mode for accepting an Unbalanced input device. Balanced output mode can also be used in this case, but the output level decreases by 6 dB.
- Be sure to place this terminal in Balanced output mode for accepting a Balanced input device. Unbalanced output mode can also be used in this case, but the maximum output level decreases by 6 dB.

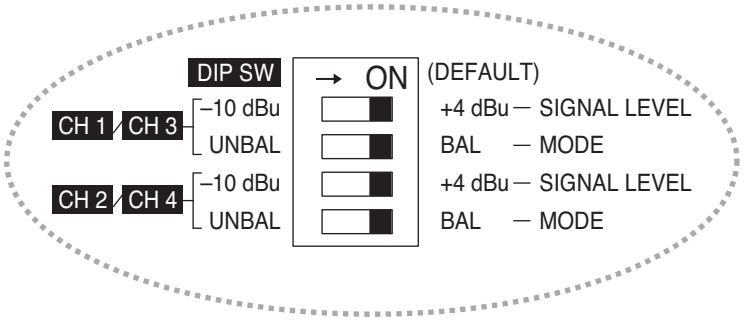
19. Output level/output mode setting switch

4-position DIP switch for setting the output level and output mode.

The output level can be set to either +4 dB or –10 dB.

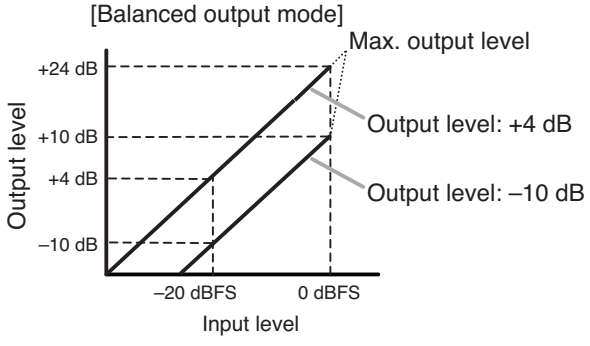
The output mode can be set to either balanced output (electronically-balanced, BAL) or unbalanced output (UNBAL).

The output is factory-preset to +4 dB/balanced output (BAL). (All switches are set to ON.)

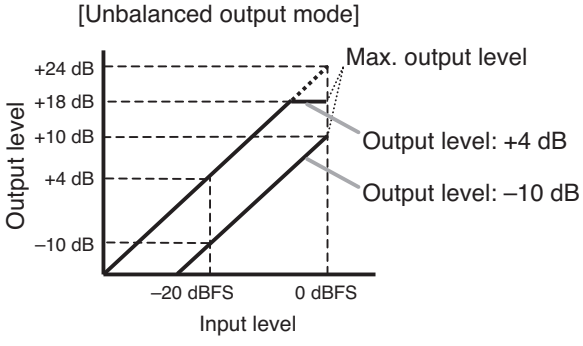


The output level in each output mode is shown below.

[Balanced output mode]



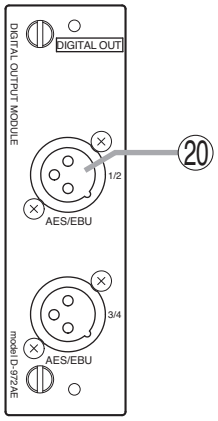
[Unbalanced output mode]



Notes

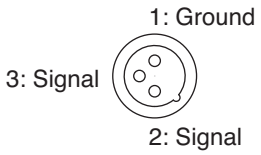
- Do not touch any other parts on the pc board when operating the switch.
- The maximum output level is +18 when set to +4 dB/unbalanced output.

2.4.13. D-972AE Digital Output Module



18. AES/EBU digital output terminal [AES/EBU, 1/2, 3/4] (XLR-3-32 or its equivalent)

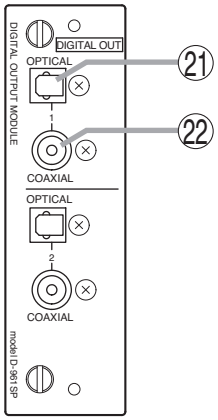
Digital output terminal of AES/EBU format.
(Pin 1: Ground, Pin 2: Signal, Pin 3: Signal)
Use the XLR-3-11C or equivalent for connection.



Note

Use the digital audio cable with characteristic impedance of 110 Ω for connection.

2.4.14. D-961SP Digital Output Module



19. Optical output terminal [OPTICAL 1, 2]

Optical output terminal of S/PDIF format.

20. Coaxial output terminal [COAXIAL 1, 2]

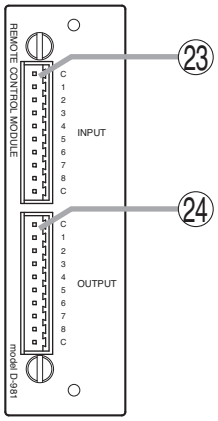
Coaxial output terminal of S/PDIF format.

Note

Use a coaxial cable with characteristic impedance of 75 Ω for connection.

Each pair of the S/PDIF optical output and the coaxial RCA jack output delivers output in parallel.

2.4.15. D-981 Remote Control Module



21. Contact input terminal [INPUT, C, 1, 2, 3, 4, 5, 6, 7, 8, C]

Removable terminal block, 8-circuit contact input terminal.
Individual contact functions are assigned by a PC using the D-2000 Setting Software supplied with the D-2008SP.

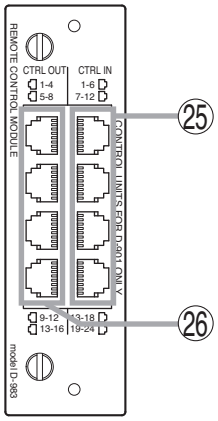
Note

Be sure to use the supplied removable terminal plugs (10P) for connection.

22. Contact output terminal [OUTPUT, C, 1, 2, 3, 4, 5, 6, 7, 8, C]

Removable terminal block, 8-circuit contact output terminal.
Individual contact functions are assigned by a PC using the D-2000 Setting Software supplied with the D-2008SP.

2.4.16. D-983 Remote Control Module



23. Contact input terminal [CTRL IN, 1-6, 7-12, 13-18, 19-24]

Six-circuit RJ45 contact input terminals.
Individual contact functions are assigned by a PC using the D-2000 Setting Software supplied with the D-2008SP.

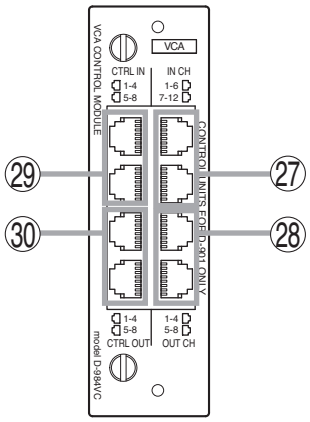
Pin No.	CTRL IN			
	1 – 6	7 – 12	13 – 18	19 – 24
1	IN 1	IN 7	IN 13	IN 19
2	IN 2	IN 8	IN 14	IN 20
3	IN 3	IN 9	IN 15	IN 21
4	IN 6	IN 12	IN 18	IN 24
5	IN 5	IN 11	IN 17	IN 23
6	IN 4	IN 10	IN 16	IN 22
7	C	C	C	C
8	C	C	C	C

24. Contact output terminal [CTRL OUT,1-4, 5-8, 9-12, 13-16]

Four-circuit RJ45 contact output terminals.
Individual contact functions are assigned by a PC using the D-2000 Setting Software supplied with the D-2008SP.

Pin No.	CTRL OUT			
	1 – 4	5 – 8	9 – 12	13 – 16
1	OUT 1	OUT 5	OUT 9	OUT 13
2	C 1	C 5	C 9	C 13
3	OUT 2	OUT 6	OUT 10	OUT 14
4	C 3	C 7	C 11	C 15
5	OUT 3	OUT 7	OUT 11	OUT 15
6	C 2	C 6	C 10	C 14
7	OUT 4	OUT 8	OUT 12	OUT 16
8	C 4	C 8	C 12	C 16

2.4.17. D-984VC VCA Control Module



25. Input channel VCA terminal [IN CH, 1 – 6, 7 – 12]

RJ45 VCA terminals.
Assign the VCA channels to this terminal.
Up to 12 channels can be controlled.
The channel assignment can be performed by a PC using the D-2000 Setting Software supplied with the D-2008SP.

Pin No.	IN CH	
	1 – 6	7 – 12
1	IN CH 1	IN CH 7
2	IN CH 2	IN CH 8
3	IN CH 3	IN CH 9
4	IN CH 6	IN CH 12
5	IN CH 5	IN CH 11
6	IN CH 4	IN CH 10
7	V	V
8	C	C

26. Output channel VCA terminal [OUT CH, 1 – 4, 5 – 8]

RJ45 VCA terminals.
Assign the VCA channels to this terminal.
Up to 8 channels can be controlled.
The channel assignment can be performed by a PC using the D-2000 Setting Software supplied with the D-2008SP.

Pin No.	OUT CH	
	1 – 4	5 – 8
1	OUT CH 1	OUT CH 5
2	OUT CH 2	OUT CH 6
3	OUT CH 3	OUT CH 7
4	C	C
5	V	V
6	OUT CH 4	OUT CH 8
7	V	V
8	C	C

27. Control input terminal [CTRL IN, 1 – 4, 5 – 8]

RJ45 Control Input terminals.
These RJ45 Control Input terminals correspond to 8 control inputs.
Individual contact functions are assigned by a PC using the D-2000 Setting Software supplied with the D-2008SP.

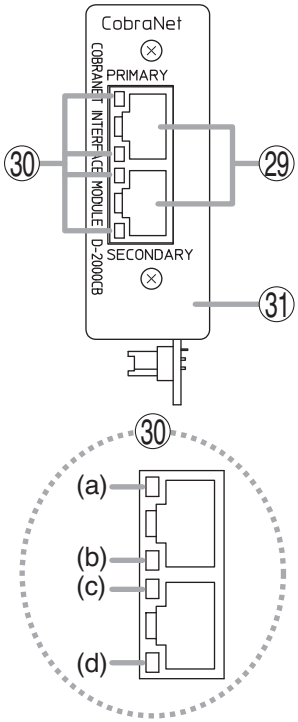
Pin No.	CTRL IN	
	1 – 4	5 – 8
1	CTRL IN 1	CTRL IN 5
2	C	C
3	CTRL IN 2	CTRL IN 6
4	C	C
5	CTRL IN 3	CTRL IN 7
6	C	C
7	CTRL IN 4	CTRL IN 8
8	V	V

28. Control output terminal [CTRL OUT, 1 – 4, 5 – 8]

RJ45 Control output terminals.
These RJ45 Control output terminals correspond to 8 control outputs.
Individual contact functions are assigned by a PC using the D-2000 Setting Software supplied with the D-2008SP.

Pin No.	CTRL OUT	
	1 – 4	5 – 8
1	CTRL OUT 1	CTRL OUT 5
2	C 1	C 5
3	CTRL OUT 2	CTRL OUT 6
4	C 3	C 7
5	CTRL OUT 3	CTRL OUT 7
6	C 2	C 6
7	CTRL OUT 4	CTRL OUT 8
8	C 4	C 8

2.4.18. D-2000CB CobraNet Interface Module



29. CobraNet terminals [PRIMARY/SECONDARY]

Terminals used for CobraNet connection. Connect with the commercially available CobraNet device via a switching hub.

Connect the Primary and Secondary terminals to each single switching hub or two cascade-connected switching hubs.

Notes

- Be sure to connect both the Primary and Secondary terminals to a switching hub.
- After connection completion, press the D-2008SP's front-mounted Reset switch to restart the D-2008SP.
- Concerning a switching hub, contact TOA dealer.

30. Indicators

LED name

LED	Name
(a)	PRIMARY operation/CONDUCTOR indicator
(b)	PRIMARY LINK/ACT indicator
(c)	SECONDARY operation/ CONDUCTOR indicator
(d)	SECONDARY LINK/ACT indicator

Detailed function

LED	Function	LED color	LED status	System status
(a) (c)	Operation/CONDUCTOR indicator	Orange	Flashing or lit	CobraNet operation Flashing: Conductor Lit: Performer **Note** One of the PRIMARY and SECONDARY indicators flashes or lights.
			Unlit	Not operating **Note** Both of the PRIMARY and SECONDARY indications could not go out at a time.
(b) (d)	LINK/ACT indicator	Green	Flashing or lit	Link to the switching hub, or data transmission and reception
			Unlit	Unconnected

31. Panel

3. INSTALLATION

3.1. Inserting the D-2000CB

> **⚠ WARNING** 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 qualified service personnel.

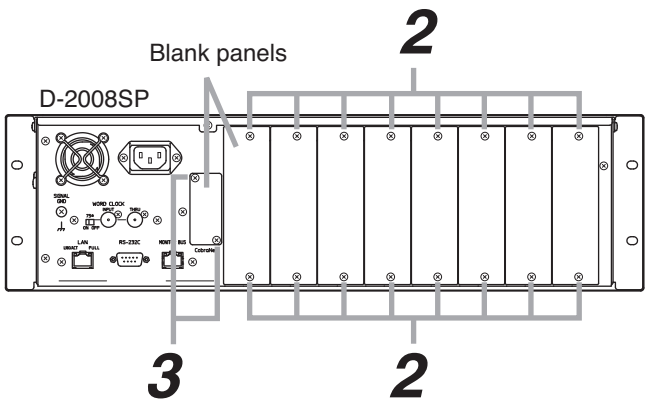
Be sure to install the D-2000CB first before inserting other modules into the slots.

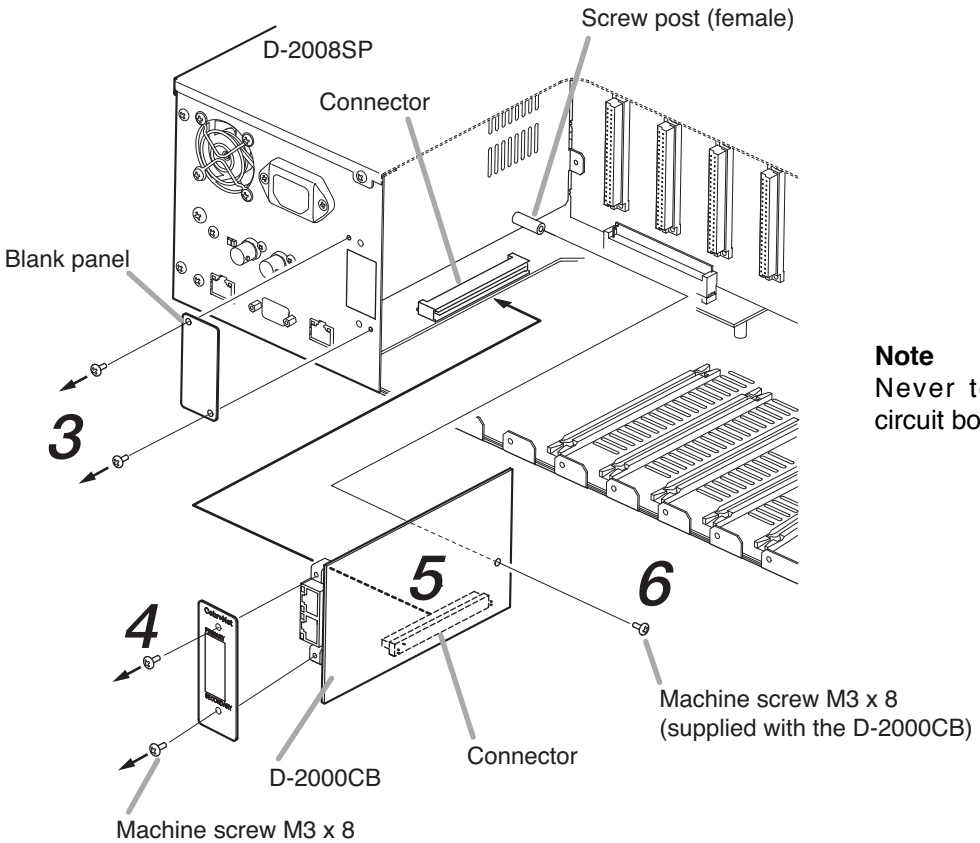
Step 1. Remove the D-2008SP's power plug from an AC wall outlet.

> **⚠ WARNING** Never do this work with the power cord connected to the AC outlet, as doing so may cause electric shock.

Step 2. Remove 8 blank panels by unscrewing 16 screws on the D-2008SP's rear panel.

Step 3. Remove the blank panel covering the CobraNet interface module slot by unscrewing 2 screws on the D-2008SP's rear panel.
The removed screws are not used.





Note
Never touch the parts on the circuit board.

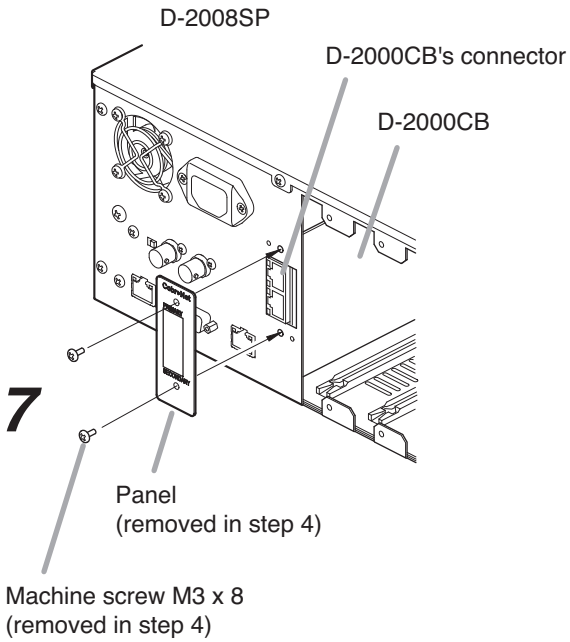
Step 4. Remove the D-2000CB's panel.
Note: The removed 2 screws are used in step 7.

Step 5. Insert the D-2000CB's connector into the D-2008SP's internal connector.

> **⚠ CAUTION** Terminal pins of the connector are exposed on the solder side of the D-2000CB board. Never touch these terminal pins when inserting the connector to prevent finger injury.

Step 6. Secure the D-2000CB to the inside of the D-2008SP with 1 screw.
Note
Be sure to secure the D-2000CB with the screw.
Doing otherwise may cause its connector to be disconnected, resulting in malfunction.

Step 7. Secure the panel to the CobraNet interface module slot section with 2 screws.
Ensure that 2 connectors of the D-2000CB project from the rectangle hole in the panel before tightening screws.



[Installing the input, output, and control modules]

After mounting completion of the D-2000CB, install other modules with the removed screws that held the blank panels.
Further, replace the removed blank panels to the idle slots.

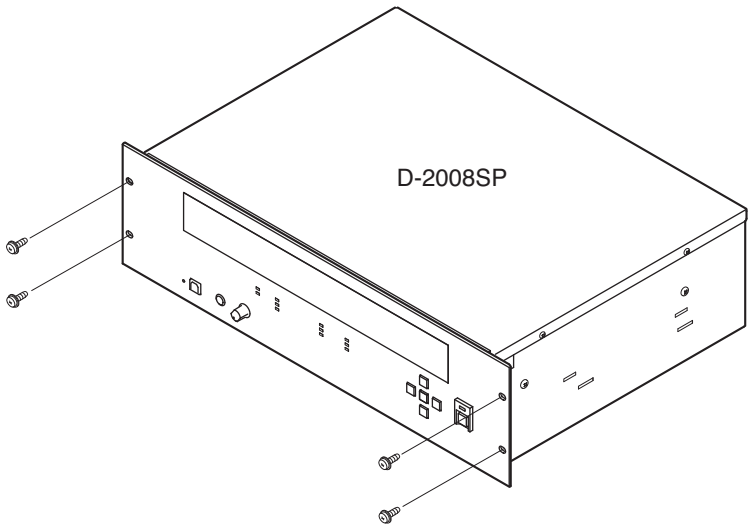
3.2. Rack Mounting

⚠ CAUTION

(When rack mounting screws are supplied)
The supplied rack-mounting screws can be used for the TOA equipment rack only. Do not use them for other racks.
When installing the unit in a rack other than that of TOA, be sure to use the screws with a diameter of over 5 mm (0.2") and length of over 12 mm (0.47") to mount the unit.
Failure to do so may cause personal injury.

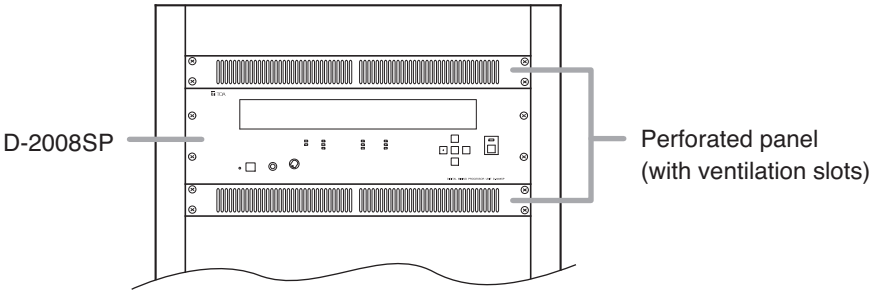
(When rack mounting screws are not supplied)
Rack mounting screws are not supplied with the unit.
Be sure to use the screws with a diameter of over 5 mm (0.2") and length of over 12 mm (0.47") to mount the unit.
Failure to do so may cause personal injury.

3.2.1. D-2008SP

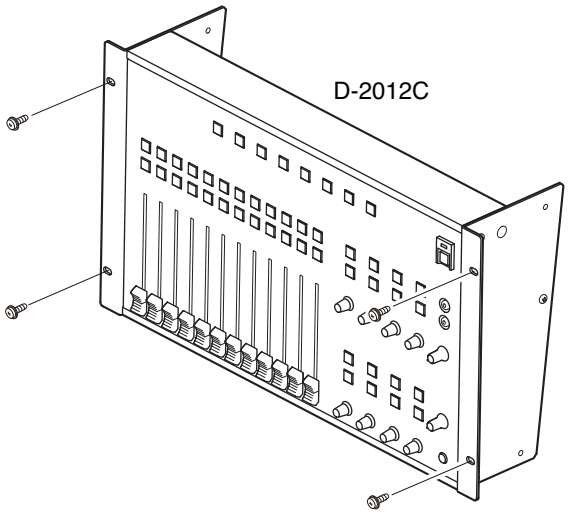


Notes
- To achieve sufficient ventilation, be sure to mount a perforated panel larger than 1U size* above and below the unit.
- Do not position the heat-generating component such as a power amplifier immediately below the D-2008SP in the rack even if the perforated panel is mounted between them. Also, keep such components away from each other so that the ambient temperature around the D-2008SP should not exceed +40 ºC (104 ºF). Failure to do so may shorten the product life.

* 1U size = 44.5 mm or 1.75" (standard size)



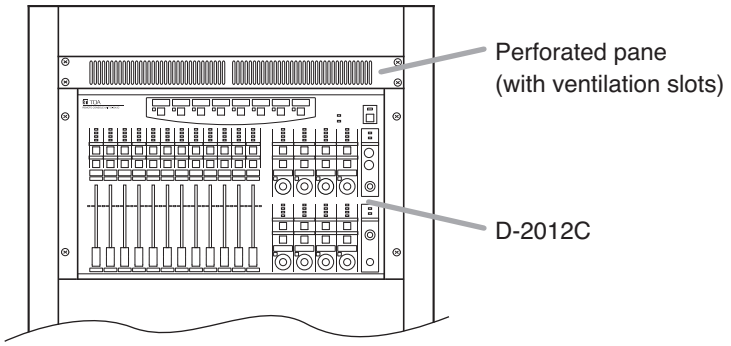
3.2.2. D-2012C



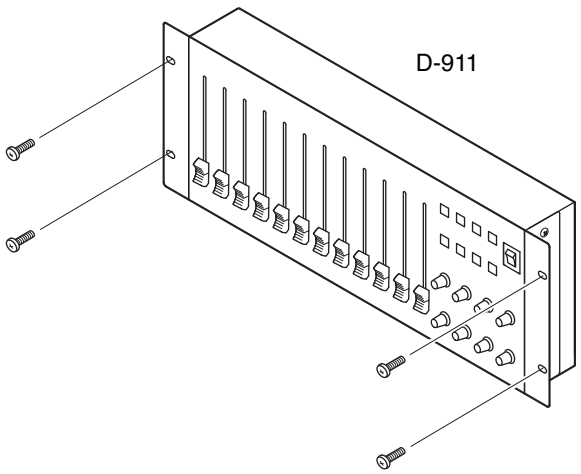
Notes

- To achieve sufficient ventilation, be sure to mount a perforated panel larger than 1U size* above the unit.
- Do not position the heat-generating component such as a power amplifier immediately below the D-2012C in the rack. Also, keep such components away from each other so that the ambient temperature around the D-2012C should not exceed +40 ºC. Failure to do so may shorten the product life.

* 1U size = 44.5 mm or 1.75" (standard size)



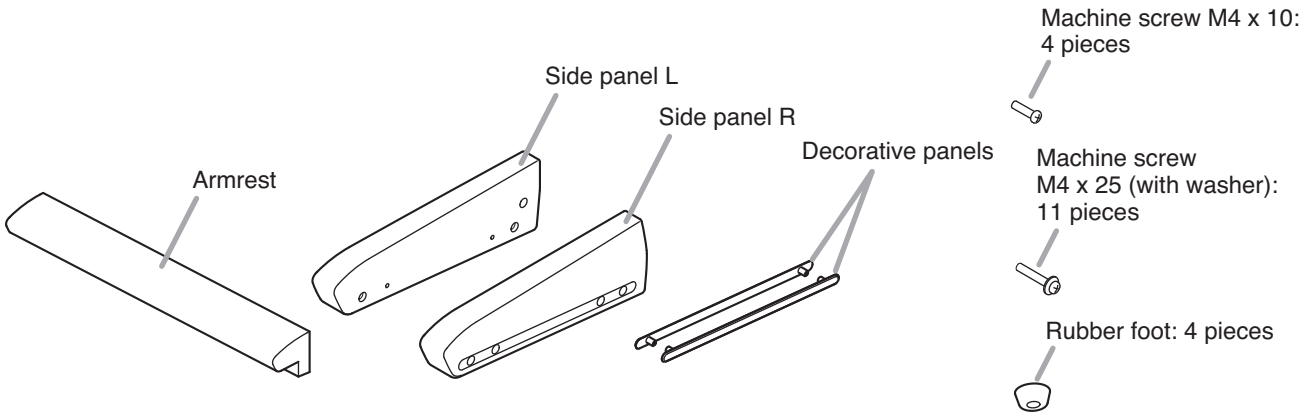
3.2.3. D-911



3.3. When Installing the D-2012C on a Desk

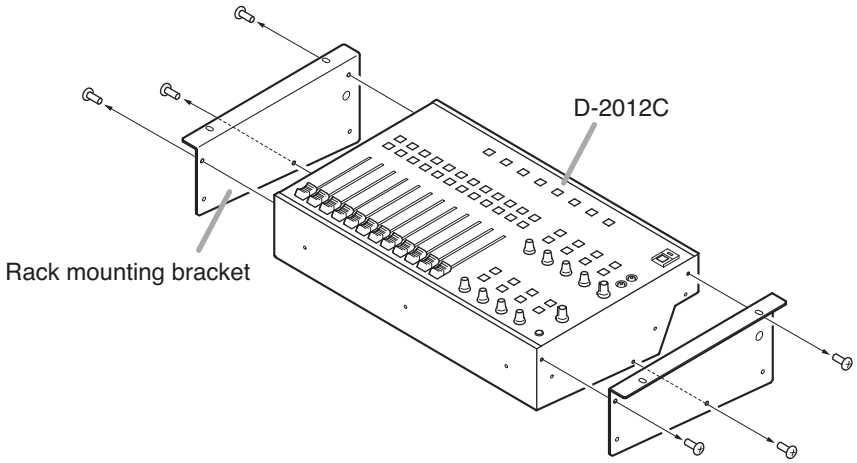
Attaching the D-2012AS Console Case to the D-2012C allows the D-2012C to be used on a desk.

3.3.1. Components of the D-2012AS Console Case

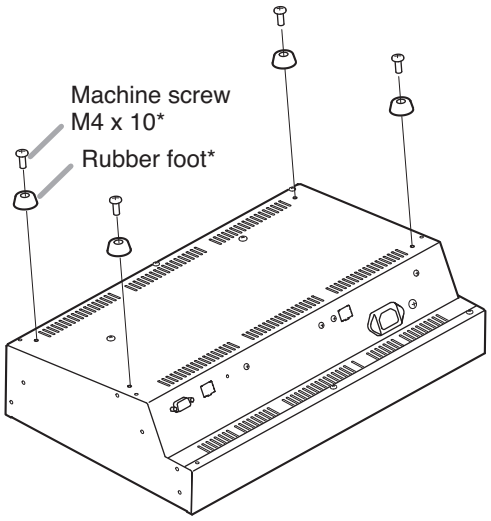


3.3.2. Attaching the D-2012AS Console Case

Step 1. Remove 3 screws on each side of the D-2012C to detach the rack mounting brackets.
The removed screws are not used.



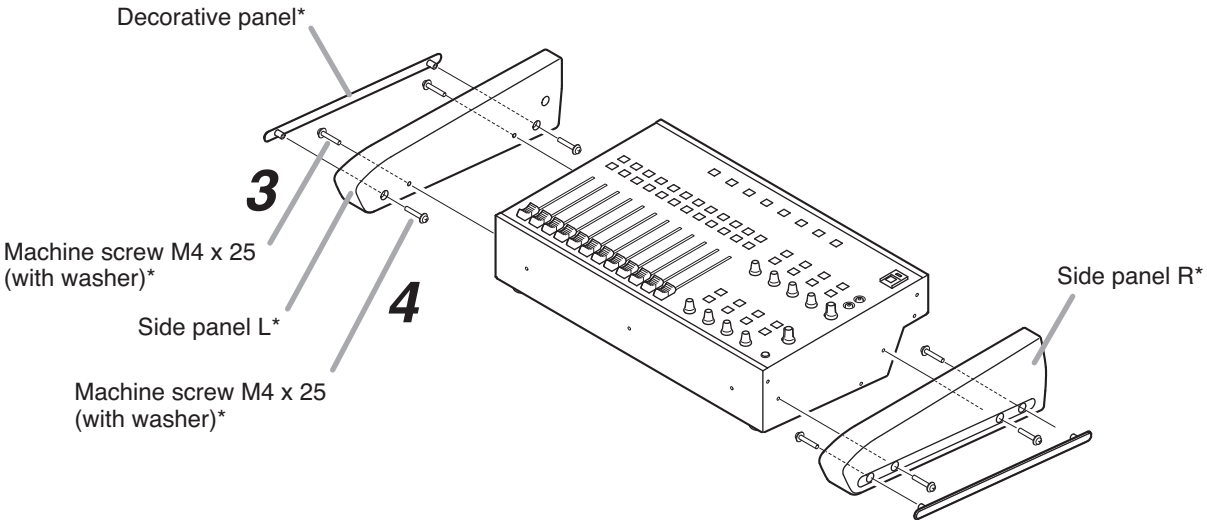
Step 2. Attach the 4 rubber feet to the bottom surface of the D-2012C using the 4 supplied screws.
Be sure to attach the rubber feet, as the air vents are provided at the bottom surface.



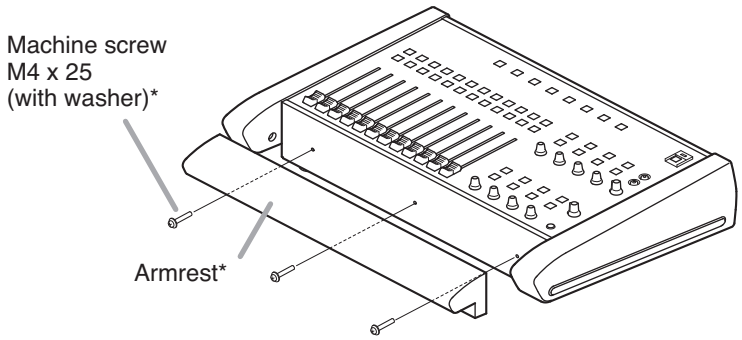
* Component parts of the D-2012AS.

Step 3. Attach the side panel L to the left side of the D-2012C and side panel R to its right side with 2 each screws.

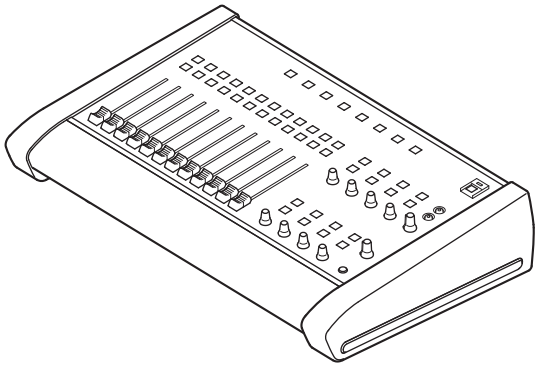
Step 4. Fit each decorative panel into the holes on the side panels L and R, then secure them with 2 each screws from the side panels inside.



Step 5. Attach the armrest to the D-2012C's front panel with 3 screws.



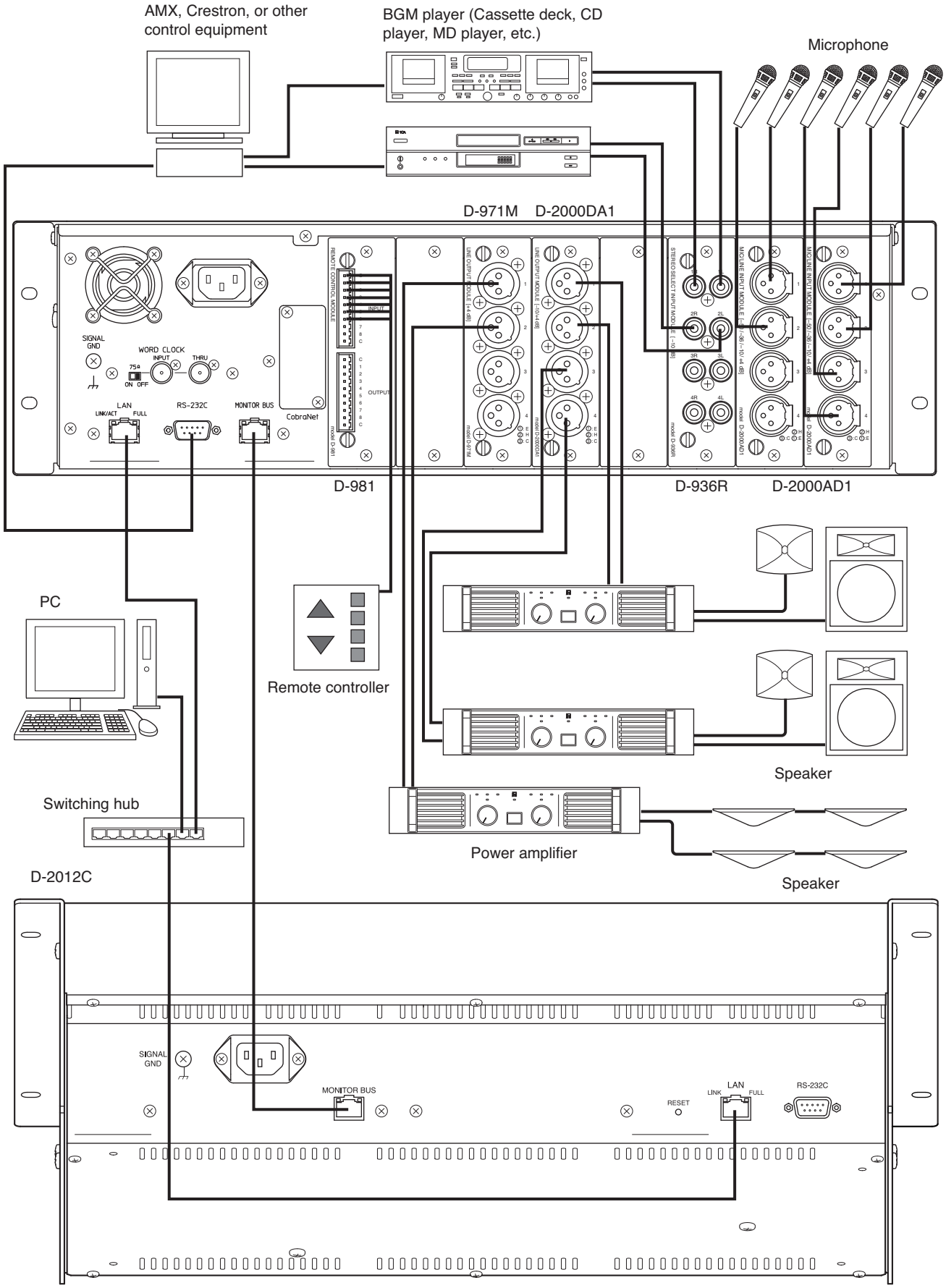
[Finished assembly]



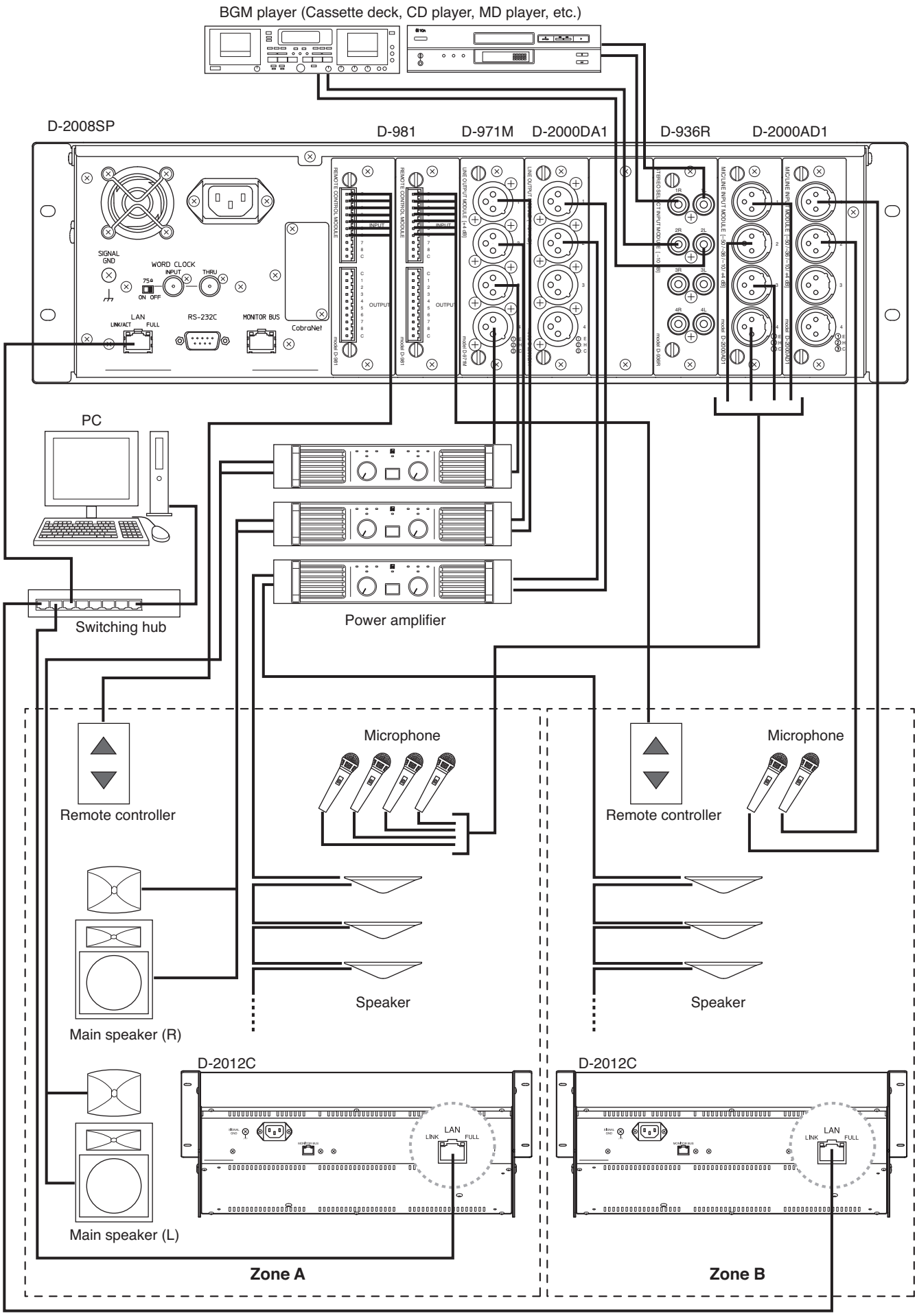
* Component parts of the D-2012AS.

4. CONNECTION

4.1. Connection Example 1



4.2. Connection Example 2



4.3. Removable Terminal Plug Connection

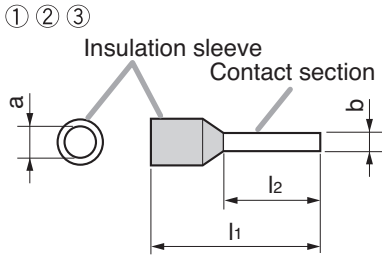
Notes

- Avoid soldering stranded or shielded cable, as contact resistance may increase when the cable is tightened and the solder is crushed, possibly resulting in an excessive rise in joint temperatures.
- When connecting 2 cables or a shielded cable to a single terminal, use a ferrule terminal with an insulation sleeve to crimp the cables because such cable conductors could become loose.

Recommended ferrule terminals for signal cables
(made by Phoenix Contact)

Unit: mm (in)

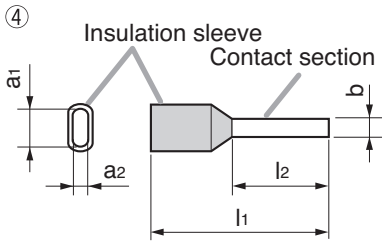
	Model Number	a	b	l_1	l_2
①	AI 0,34-8 TQ	2 (0.08)	0.8 (0.03)	12.5 (0.49)	8 (0.31)
②	AI 0,5-8 WH	2.5 (0.1)	1.1 (0.04)	14 (0.55)	8 (0.31)



Recommended ferrule terminals for power supply cables
(made by Phoenix Contact)

Unit: mm (in)

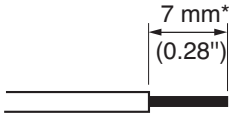
	Model Number	a	a_1	a_2	b	l_1	l_2
③	AI 1,5-8 BK	3.4 (0.31)	—	—	1.8 (0.07)	14 (0.55)	8 (0.31)
④	AI-TWIN 2 x 1,5-8 BK	—	6.6 (0.26)	3.6 (0.14)	2.3 (0.09)	16 (0.63)	8 (0.31)



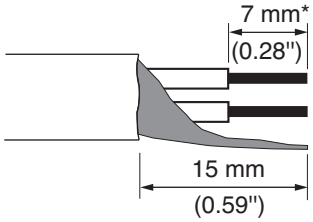
Crimping tool: CRIMPFOX UD6-4 (made by Phoenix Contact)

Cable sheath to trim

Solid cable and stranded cable



Shielded cable



* Expose 8 mm (0.31") or more when using the above ferrule terminal, and cut off an extra conductor protruding from the sleeve.

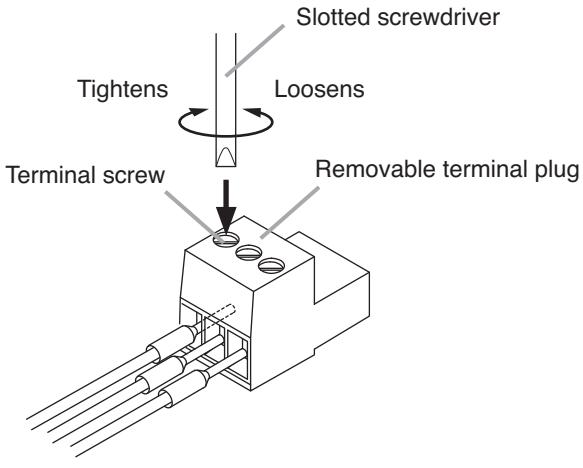
Wiring procedures

Step 1. Wiring the supplied removable terminal plug.

1-1. Loosen the terminal screws to insert the wire.

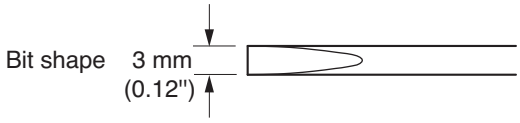
1-2. Tighten the terminal screws.
Ensure that the wire does not break free when pulled. If the wire does pull free, repeat the connection procedure from the start.

Step 2. Insert the wired terminal plug into the corresponding terminal block in the unit's rear panel.



Note
Do not reverse Steps 1 and 2 above. Force is applied to the connected receptacle pins while tightening the terminal screw and they may be damaged, resulting in bad connector contact.

Tip
Recommended slotted screwdriver type:
Screwdriver with blade that is 3 mm (0.12") in width

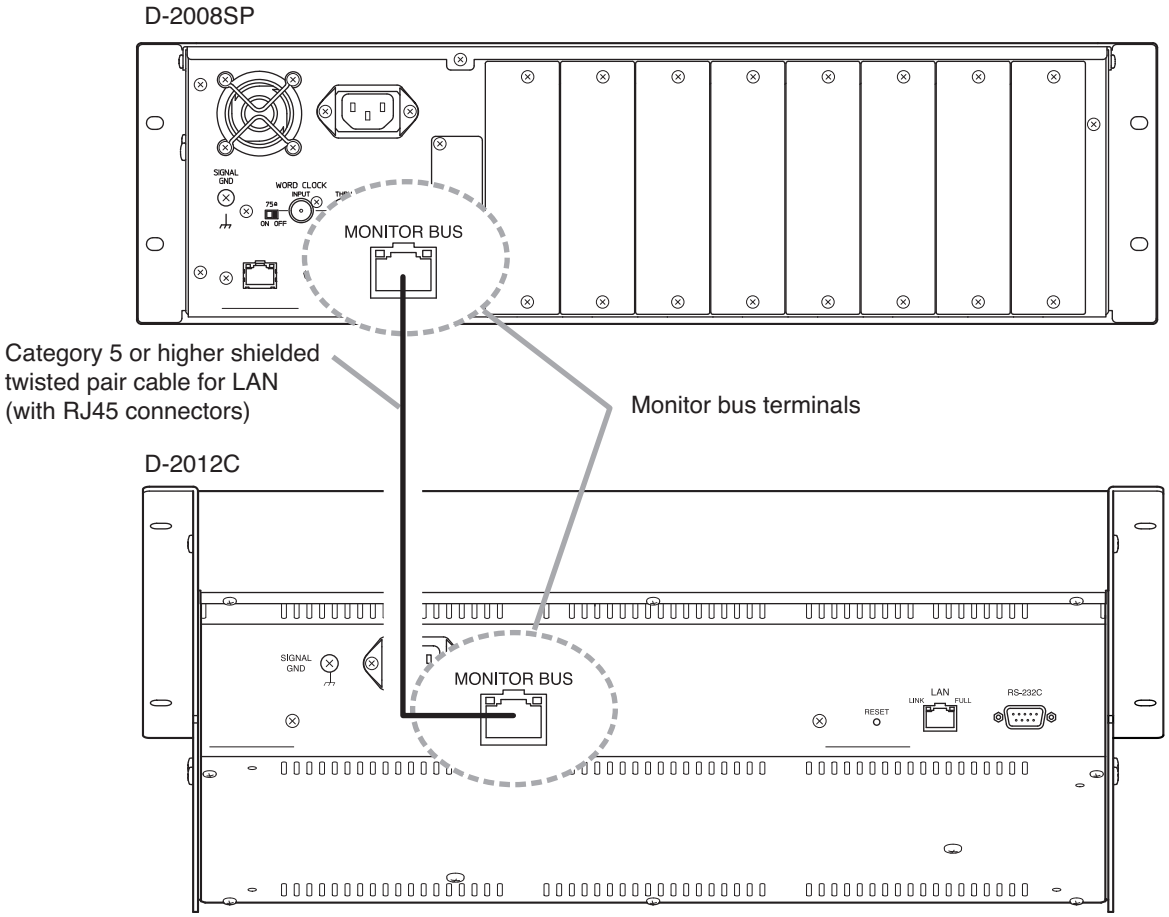


4.4. Connecting the Monitor Bus Terminal of the D-2008SP and D-2012C

When using the D-2012C's Line input terminal or headphone jack, connect the D-2012C's Monitor bus terminal to the Monitor bus terminal on the D-2008SP.

Notes

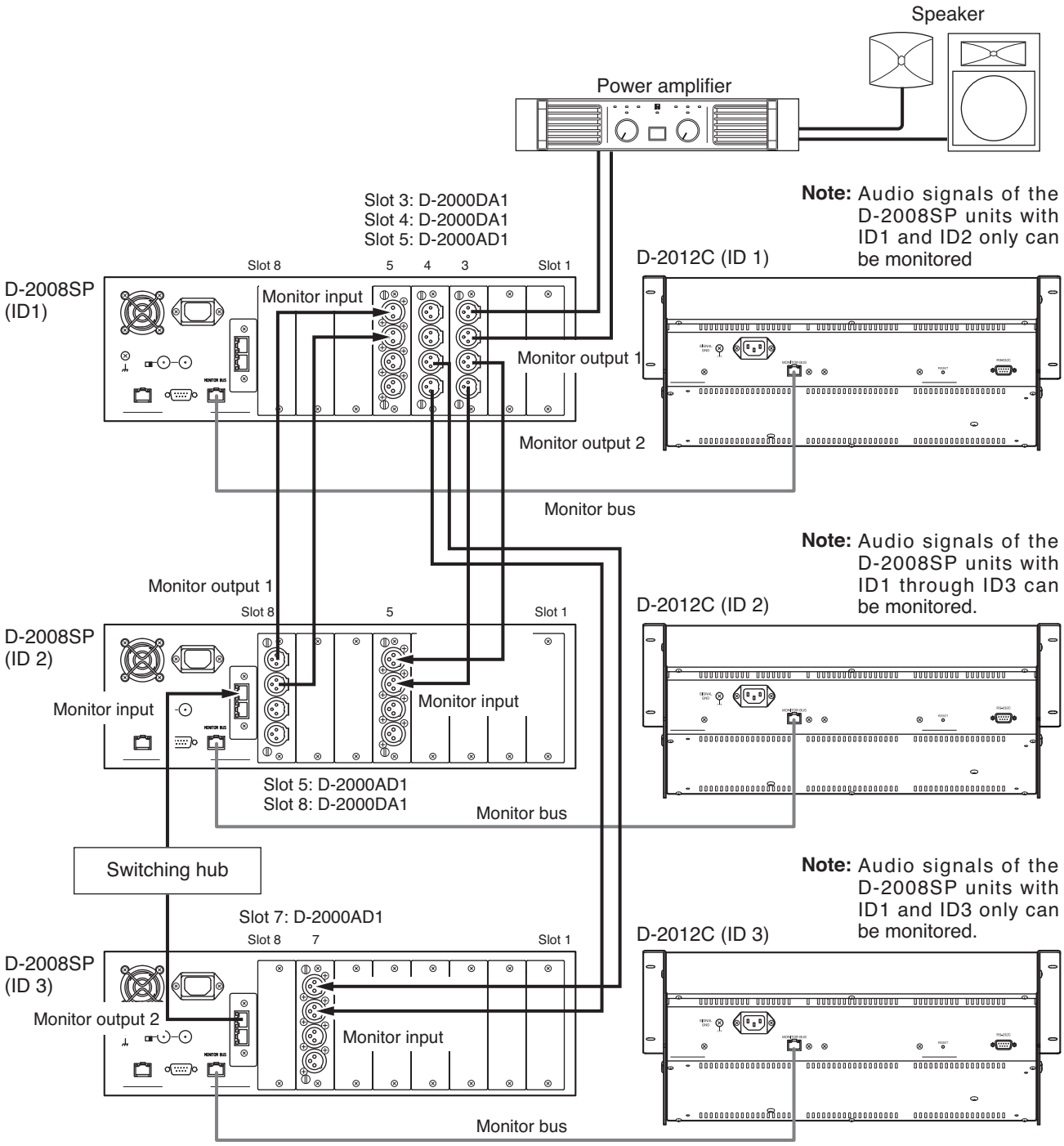
- Set the identical ID number for the D-2008SP and D-2012C to be connected through monitor bus terminals. Use the D-2000 Setting Software to set the ID number.
- If D-2008SP Console Setting is performed using the D-2000 Setting Software, the D-2008SP can be set to receive audio signal from the D-2012C's line input terminal. If D-2012C Function Setting is set, the D-2012C's monitor channel output can also be monitored with headphones.
  Additionally, if the D-2008SP's output channel is set to "Monitor," output from the monitor channel selected at the D-2012C can also be output to the D-2008SP's output channel.



4.5. Audio Monitor Line Connection When Multiple Units Are Connected

Connecting multiple D-2008SP units through monitor input and output terminals allows audio signals other than that of the main unit to be monitored.

[Connection Example]

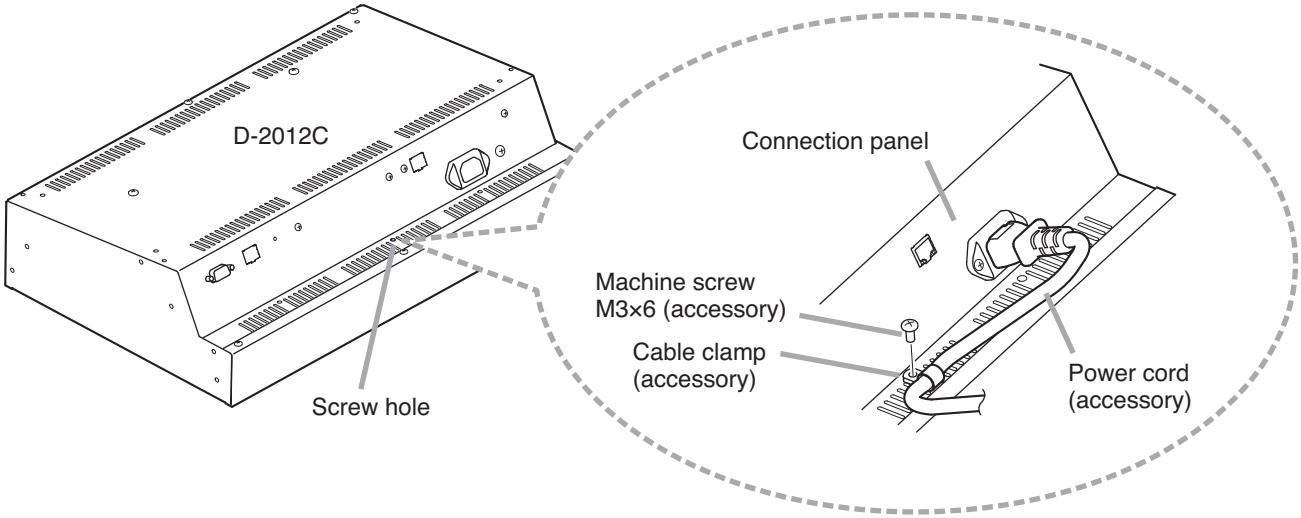


Notes

- Set the identical ID number for the D-2008SP and D-2012C to be connected through monitor bus terminals. Use the D-2000 Setting Software to set the ID number.
- Insert the audio module used for monitor input into one of Slots 5 – 8.
- Neither the D-936R Stereo input module nor D-937SP Digital input module can be used as a monitor input.
- When using the D-922F and D-922E Microphone/Line input module as monitor inputs, set the "PHANTOM" switch to "OFF" and "Input sensitivity" to "+4 dB (LINE)."
- The headphones connected to the D-2008SP can only monitor audio signals from the channels of this D-2008SP.

4.6. D-2012C's AC Power Cord Connection

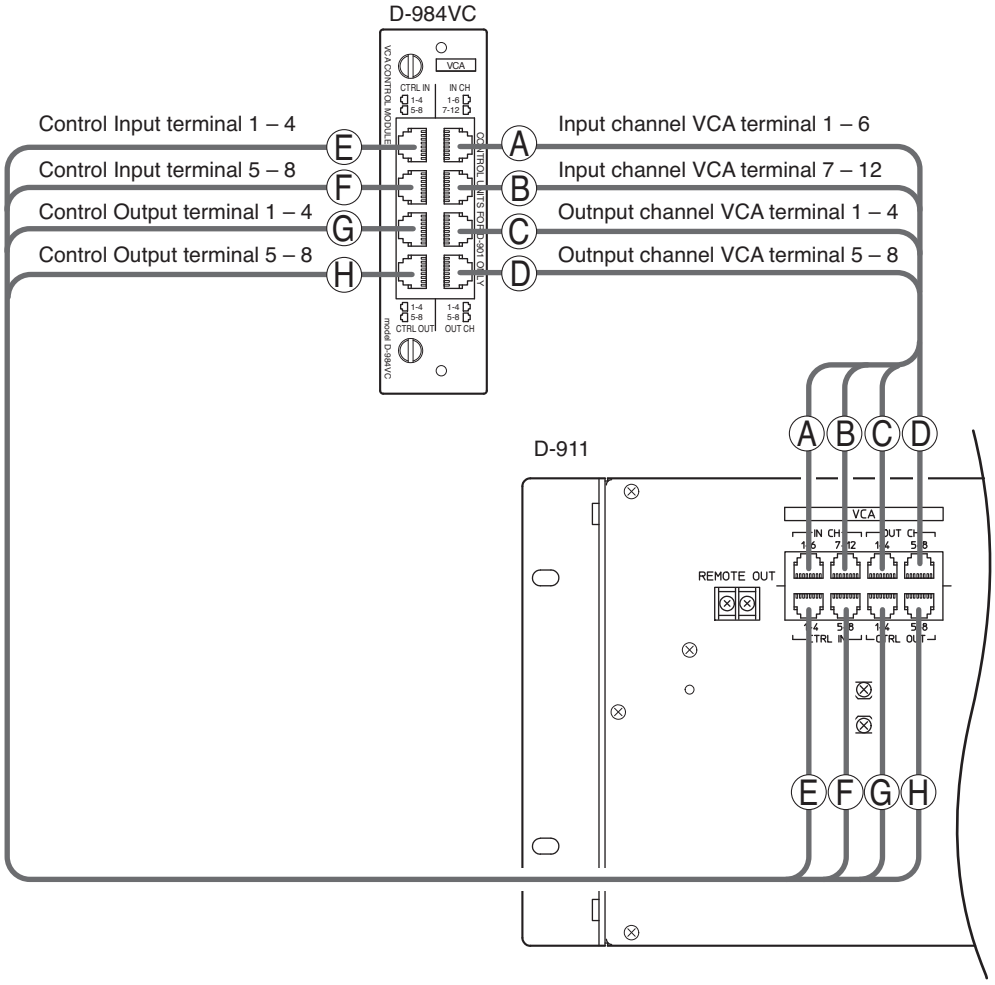
To prevent the AC power cord from accidentally coming off, secure it with the supplied cable clamp as shown below.



4.7. D-911 Connection

Connect the D-911 to the D-984VC VCA Control Module installed in the D-2008SP.
Connect each of eight terminals to the D-984VC's terminal of the same name by way of the fully-connected straight cable as shown on the right.

[Connection]

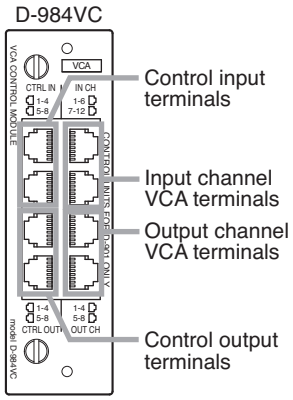


4.8. D-984VC Specifications

The optional VCA Fader Unit D-911 can remotely control the VCA Control Module D-984VC.
However, You can make a special unit having the same functions as the D-911 referring to the technical information described here.

4.8.1. Connection cable and pin arrangements of each terminal

- For connecting to each terminal, use a CAT5 (Category 5) UTP cable fitted with RJ45 connectors at both ends.
  Note
  Use a STP cable in an environment where the cable is susceptible to noises.
- Maximum cable length is 100 m.
- Pin arrangement of the D-984VC's terminals



[Input channel VCA terminals]

Pin No.	IN CH 1 – 6	IN CH 7 – 12
1	IN CH 1	IN CH 7
2	IN CH 2	IN CH 8
3	IN CH 3	IN CH 9
4	IN CH 6	IN CH 12
5	IN CH 5	IN CH 11
6	IN CH 4	IN CH 10
7	V	V
8	C	C

① ②

[Output channel VCA terminals]

Pin No.	OUT CH 1 – 4	OUT CH 5 – 8
1	OUT CH 1	OUT CH 5
2	OUT CH 2	OUT CH 6
3	OUT CH 3	OUT CH 7
4	C	C
5	V	V
6	OUT CH 4	OUT CH 8
7	V	V
8	C	C

③ ④

[Control input terminals]

Pin No.	CTRL IN 1 – 4	CTRL IN 5 – 8
1	CTRL IN 1	CTRL IN 5
2	C	C
3	CTRL IN 2	CTRL IN 6
4	C	C
5	CTRL IN 3	CTRL IN 7
6	C	C
7	CTRL IN 4	CTRL IN 8
8	V	V

⑤ ⑥

[Control output terminals]

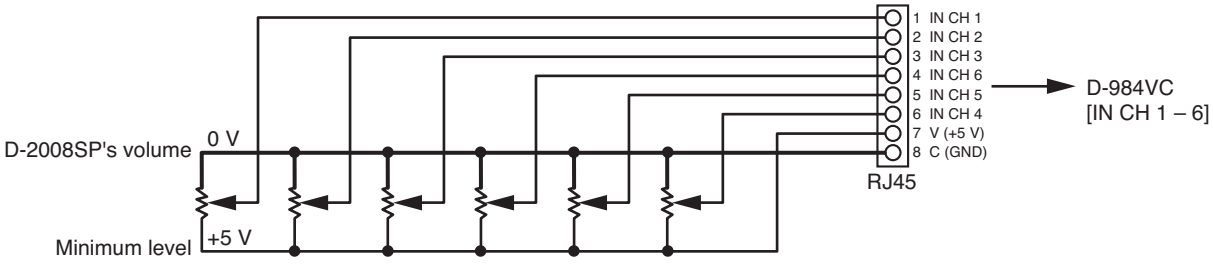
Pin No.	CTRL OUT 1 – 4	CTRL OUT 5 – 8
1	CTRL OUT 1	CTRL OUT 5
2	C 1	C 5
3	CTRL OUT 2	CTRL OUT 6
4	C 3	C 7
5	CTRL OUT 3	CTRL OUT 7
6	C 2	C 6
7	CTRL OUT 4	CTRL OUT 8
8	C 4	C 8

⑦ ⑧

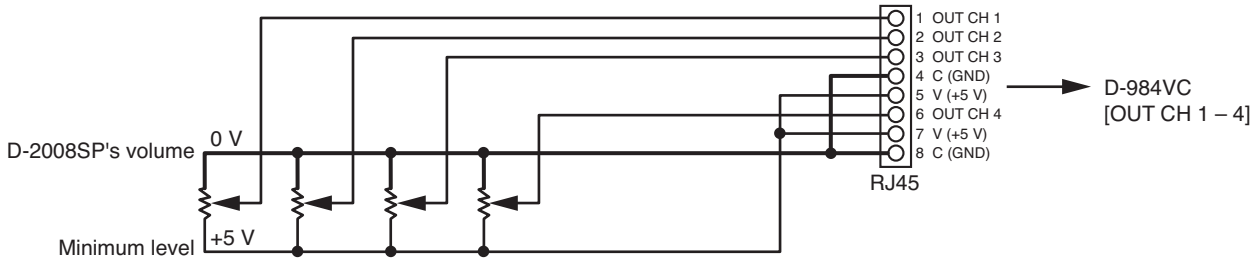
4.8.2. Input and output channel VCA controls (1) – (4)

- With 5 V at an input channel VCA pin (IN CH 1 – 12) or at an output channel VCA pin (OUT CH1 – 8), the corresponding channel's sound volume is minimum. With 0 V, the sound volume is at the level set by the D-2008SP.
- Use 10 kΩ potentiometers of taper B.
- Up to 6 volume controls can be connected to each V pin.

[Connections to the input channel VCA terminal]

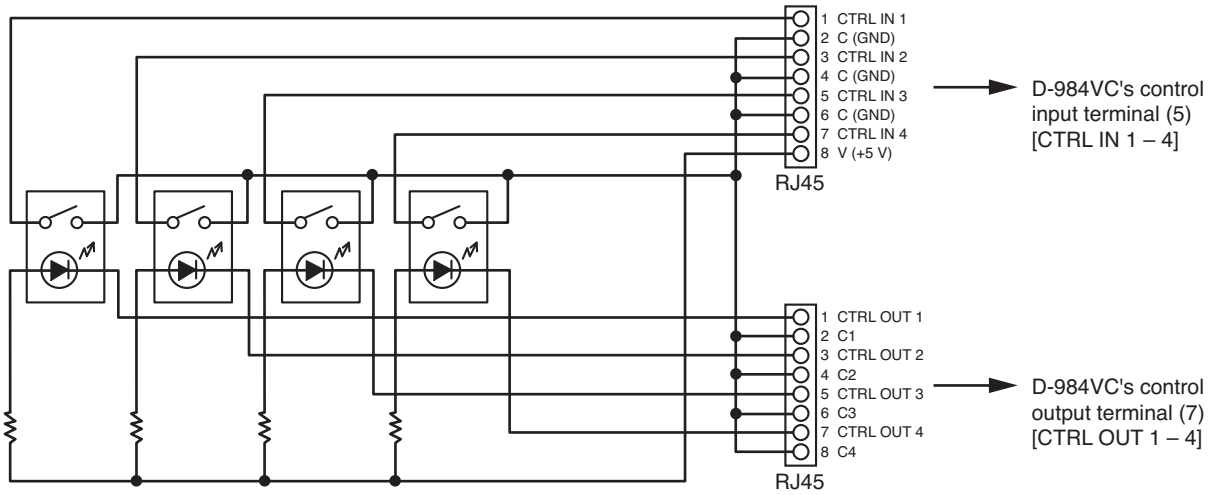


[Connections to the output channel VCA terminal]

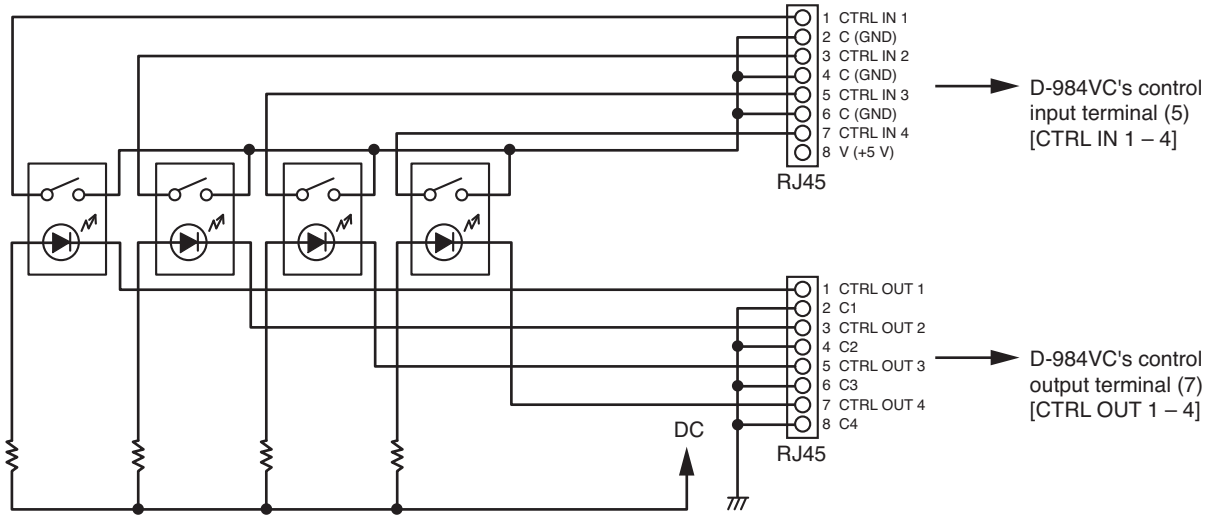


4.8.3. Contact controls (5) – (8)

- Preset memory recall function is assigned to the contact input and output pins at the factory. To change this function assignment to give channel ON/OFF or stereo input selection, refer to the separate Setting Software Instructions .
- The V pins of the control input terminals (5) and (6) can be used for LED connections. To do this, connect the contact COM pins to use out of the C1 – 4 pins of the control output (7) or the C5 – 8 pins of the control output (8) to the C pins of the control input (5) or (6). (The diagram below is an example where the control output's C1 – 4 pins are connected to the control input's C pins.)



- The current capacity is 40 mA per V pin. When more current is needed, connect a power supply separately as shown below.

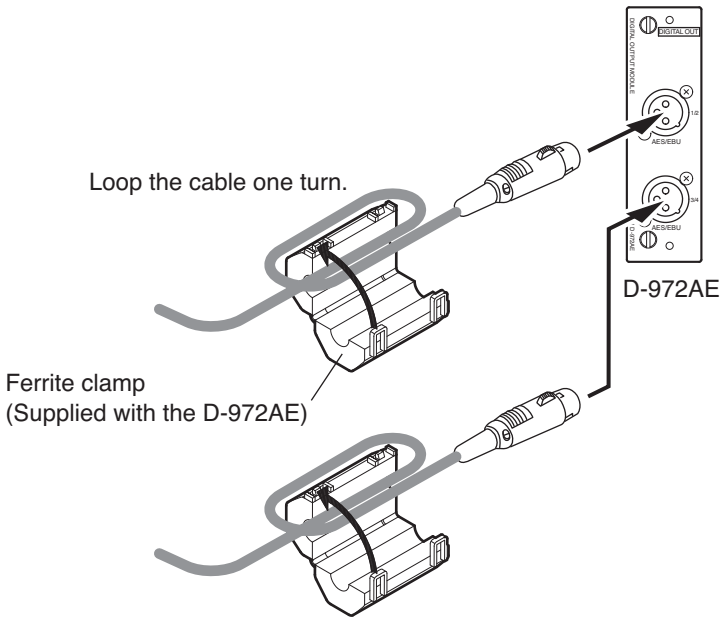


- Never connect the V pins of control inputs (5) and (6) to the V pins of VCA pins (1) – (4) as the sound volume may be affected due to voltage drop caused by these connections.

4.9. Ferrite Cable Clamp Attachment (For D-972AE only)

To reduce electromagnetic noise, place the supplied ferrite clamp over each digital output cable when making a cable connection to the D-972AE Digital Output Module.

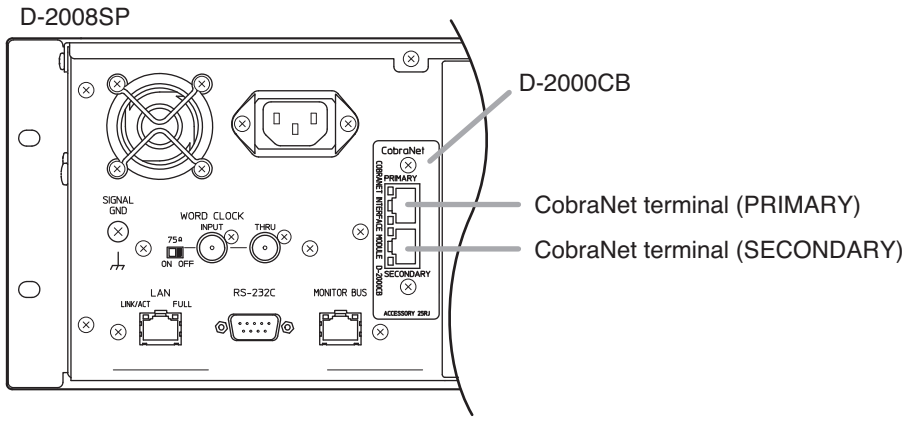
Install one ferrite clamp per digital output cable.



4.10. System Expansion Using CobraNet Connection

4.10.1. CobraNet connection outline

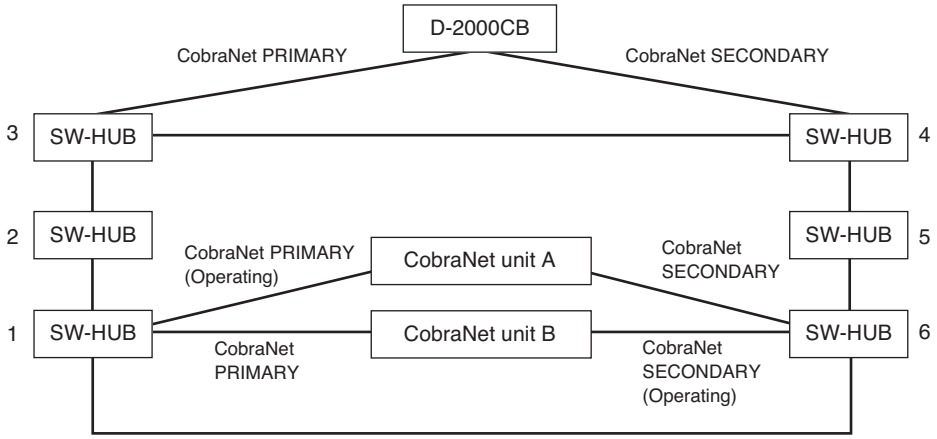
The system can be expanded by inserting the D-2000CB CobraNet Interface Module into the D-2008SP and connecting it to other CobraNet equipment.
Connect the D-2000CB to other CobraNet equipment via a switching hub.
Connect each of CobraNet Primary and Secondary ports of the D-2000CB to the same switching hub or different switching hubs connected in cascade.



Notes

- Make the CobraNet terminals completely independent from other LAN.
- The distance between each of D-2000CB modules and the switching hub is less than 100 m.
- Be sure to make connections of both terminals PRIMARY and SECONDARY.
- Audio signals may be interrupted temporarily at the time of switching between PRIMARY and SECONDARY ports.
- When connecting CobraNet terminal PRIMARY or SECONDARY to multiple switching hubs, be sure to connect the hubs in cascade.
- Up to 7 switching hubs can be connected in cascade. The number of switching hubs between the D-2000CB and all CobraNet devices connected to the D-2000CB should be 7 or less. (Refer to connection examples 1 and 2 on the next page.)
- When using multiple switching hubs, making star connection at the hub directly connected to the D-2000CB as shown in Connection example 2 is highly recommended to reduce the number of cascade-connected hubs.

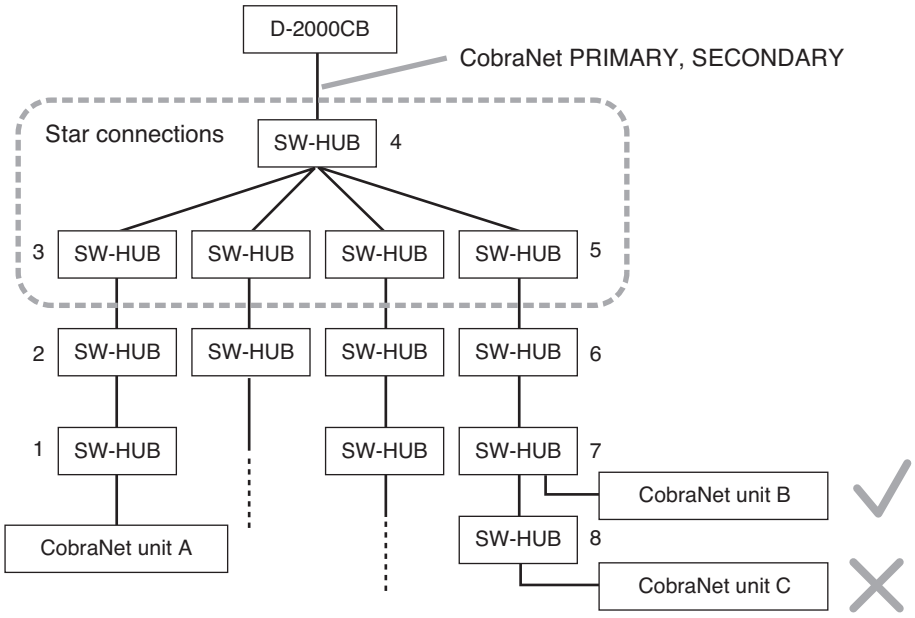
[Connection example 1: Redundant configuration of switching hubs]



As shown in the example above, when the CobraNet unit A is operating via the CobraNet PRIMARY and the CobraNet unit B is operating via the CobraNet SECONDARY, 6 switching hubs are used for communications between both units. Therefore, in a redundant configuration of switching hubs*, the number of hubs cascade-connected from the D-2000CB should be 3 or less.

* A method of connecting a single unit's CobraNet PRIMARY and SECONDARY terminals to each different switching hub to prevent the system from going down when a cable is broken or power fails.

[Connection example 2: Non-redundant configuration of switching hubs]



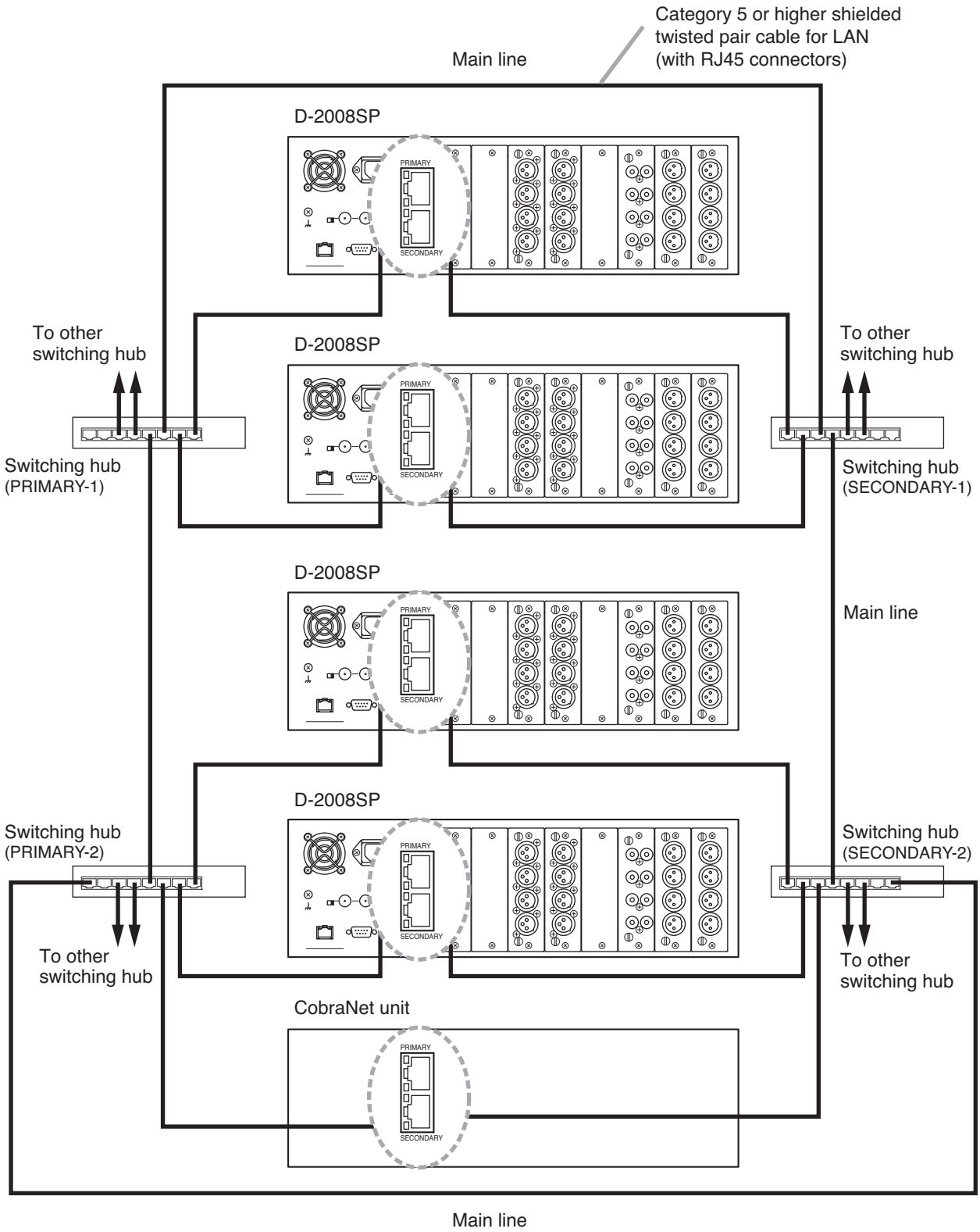
As 7 switching hubs are on the communication path from the CobraNet unit A to the CobraNet unit B, there is no problem for the system. However, as the number of hubs from the CobraNet unit A to the CobraNet unit C is 8, there may be a system failure.

4.10.2. Redundant configuration of switching hubs

In the connection example below, the CobraNet PRIMARY and SECONDARY terminals of each unit are individually connected to different switching hubs. Even if any one of the switching hubs fails or Main line breaks, the system is kept operating using another Main line, thus preventing system down.

Notes

- Cycle the entire system's power after connection completion.
- Perform spanning tree setting within switching hubs. For the settings, refer to the instruction manual of the switching hub.
- Audio signals may be interrupted temporarily at the time when the network configuration automatically changes due to failure of any switching hub or disconnection of the main line.
- Contact your TOA dealer for more information on switching hubs.

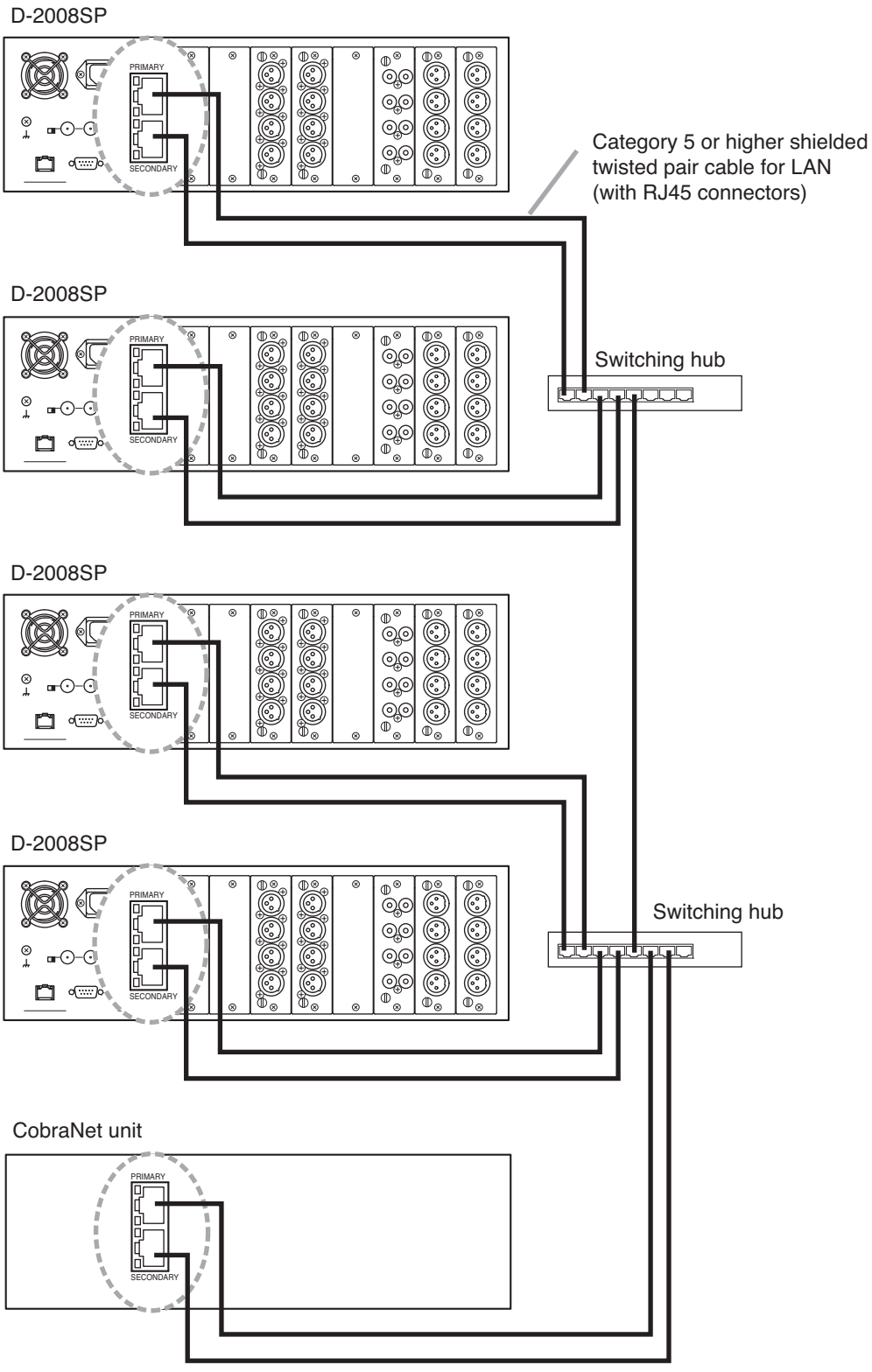


4.10.3. Non-redundant configuration of switching hubs

In the connection example below, both CobraNet PRIMARY and SECONDARY terminals of each unit are connected to the same switching hub.

Notes

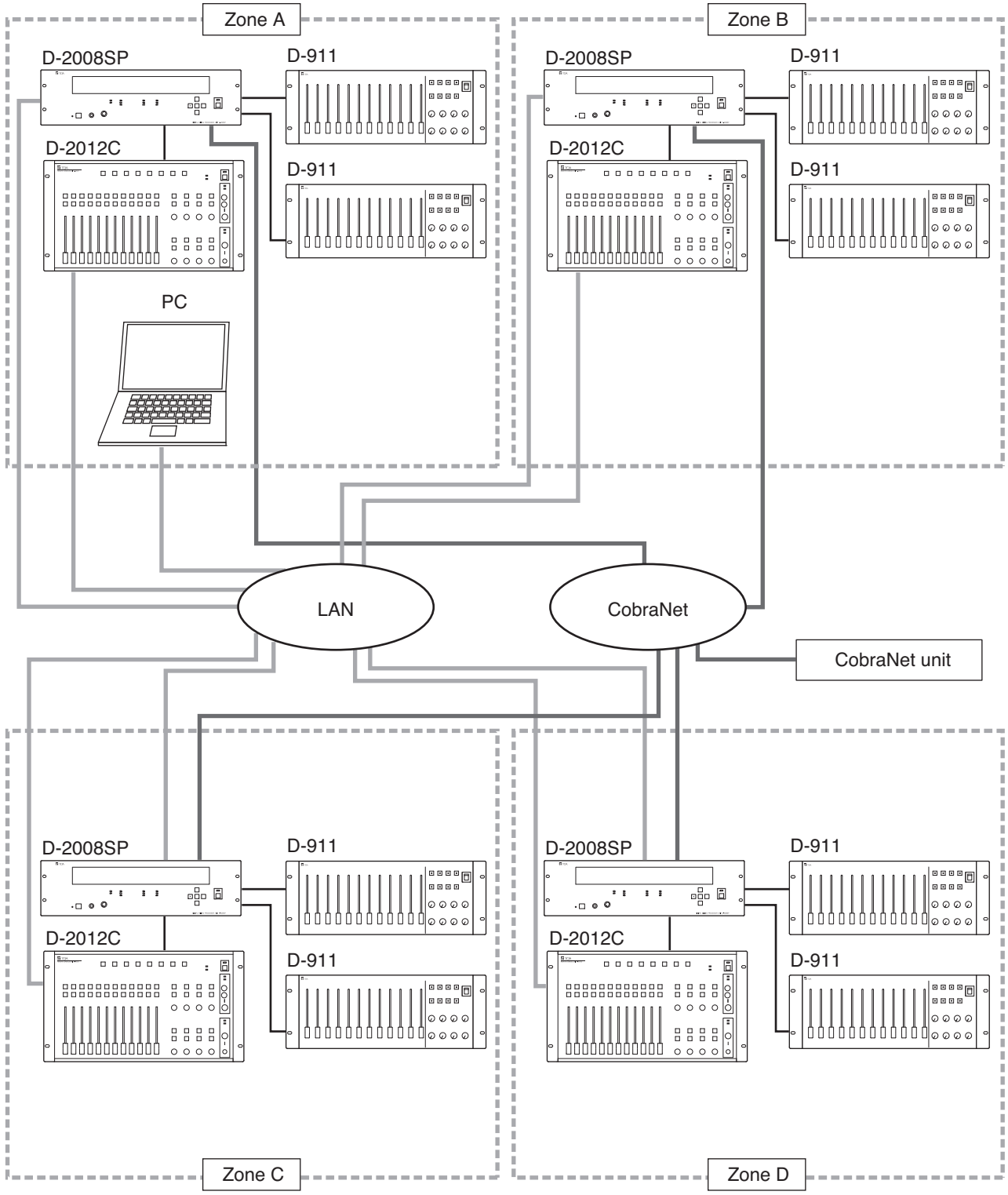
- Cycle the entire system's power after connection completion.
- Contact your TOA dealer for more information on switching hubs.



4.10.4. Largest-scale system connection example

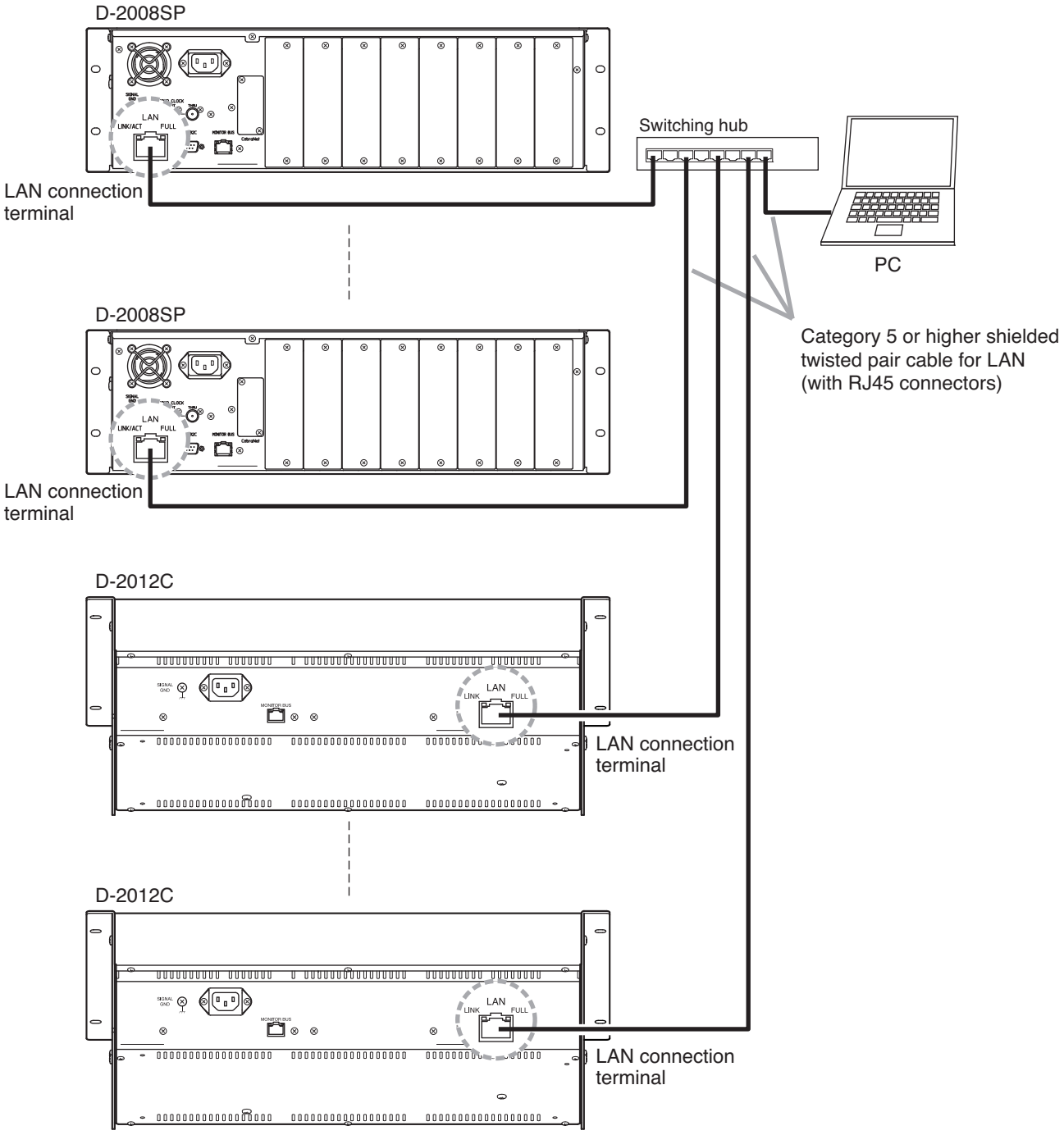
D-2008SP: Up to 4 units (Up to 128 inputs/outputs*)
D-2012C: Up to 4 units
PC: 1 unit
D-911: Up to 8 units (The D-984VC VCA control module must be inserted into the D-2008SP.*)

* Control module cannot be used in a system of 128 audio input/output channels. The maximum number of audio input/output channels decreases to 96 when 8 D-911 units are connected.



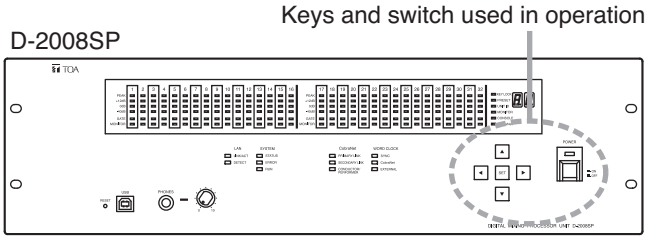
5. PC CONNECTIONS

Connect a PC, the D-2008SP, and the D-2012C to a switching hub using LAN straight cables individually.

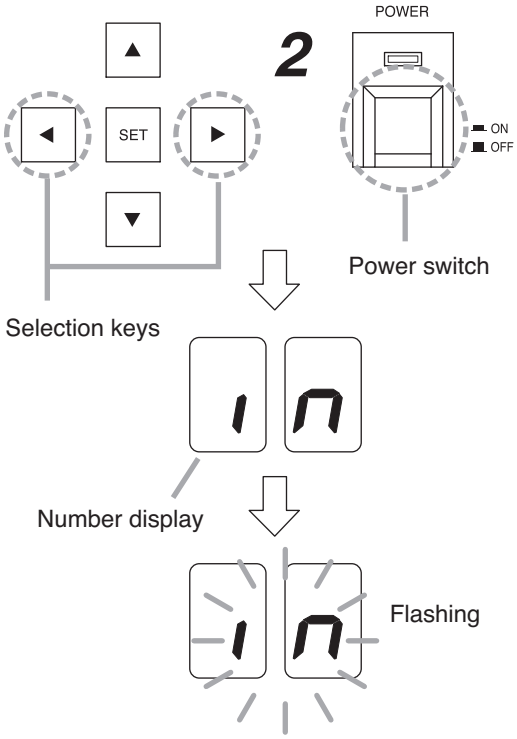


6. RETURNING SETTINGS TO THEIR INITIAL FACTORY DEFAULT (D-2008SP ONLY)

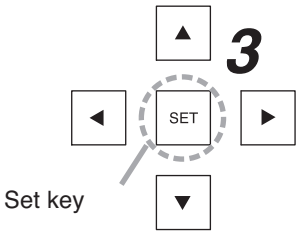
Step 1. Turn off the power.



Step 2. Turn on the power while holding down the Selection keys "◄" and "►." Release all the keys when the "in" indication appears on the Number display.



Step 3. Press the Set key when the "in" indication begins to flash.
All setting items return to their initial factory settings.
Note
For the factory default settings, refer to the separate Setting Software Instructions.



Note
The D-2012C has no parameters to be initialized.

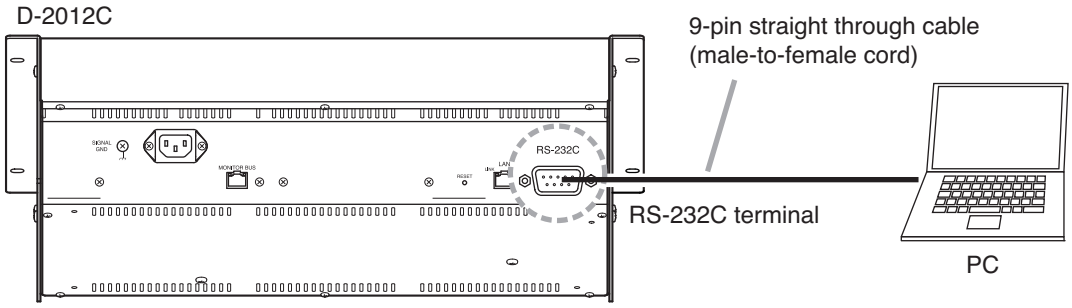
7. FIRMWARE UPDATE PROCEDURE (D-2012C ONLY)

Only when updating the D-2012C firmware ver. 2.0.0, follow the procedure below using the dedicated "D-2012C Firmware Updater Software Program*."

* Included in the CD supplied with the D-2008SP firmware version 3.0.0 or later.

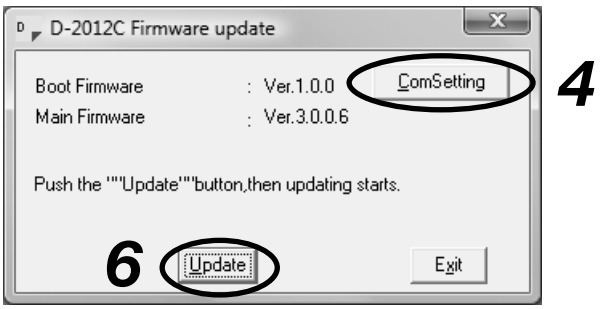
Note
When the D-2012C firmware version is 3.0.0 or later, update can be performed using the Setting software via a LAN.
D-2012C firmware version can be checked in the connection setting in the Setting software. For details, refer to the separate Software setting instruction.

Step 1. Connect both RS-232C ports of the D-2012C and the PC using a 9-pin straight through cable (male-to-female cord).

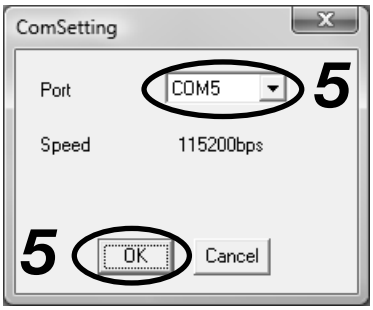


Step 2. Insert the CD supplied with the D-2008SP into the PC's CD drive.

Step 3. Double-click "English - D2000_Software - d2012c _update _200 _to_300.exe" in the CD.
"D-2012C Firmware Updater software" activates.



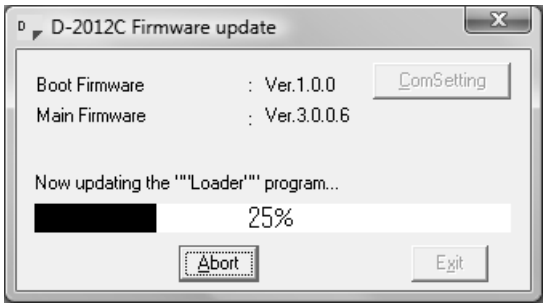
Step 4. Click the [ComSetting] button.
The ComSetting screen appears.



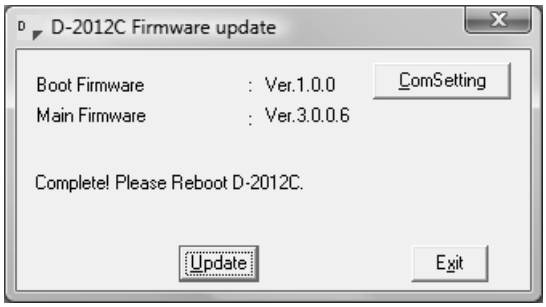
Step 5. Set the PC's Com port the D-2012C is connected to, and click [OK] button.
The ComSetting screen closes.

Note: Set the "Speed" to 115200.

Step 6. Click the [Update] button of the D-2012C Firmware update screen.
The firmware update starts being transferred from the PC to the D-2012C.



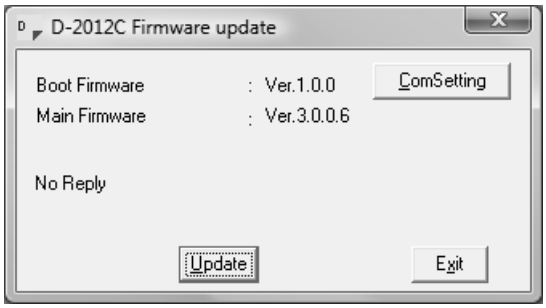
The following screen appears after the update ends.



[If "No Reply" is displayed]

If the screen on the right appears after clicking the [Update] button, confirm the following:

- RS-232C cable specification and connection
  Check that 9-pin straight cable (male - female) is used.
- PC communication settings (**Step 4**)



After confirming all the above items, follow the procedure from **Sep 3** again.
If the same "No Reply" indication still appears in this **Step 6**, turn the D-2012C's power off, and on again. Then, follow the steps again from the beginning.

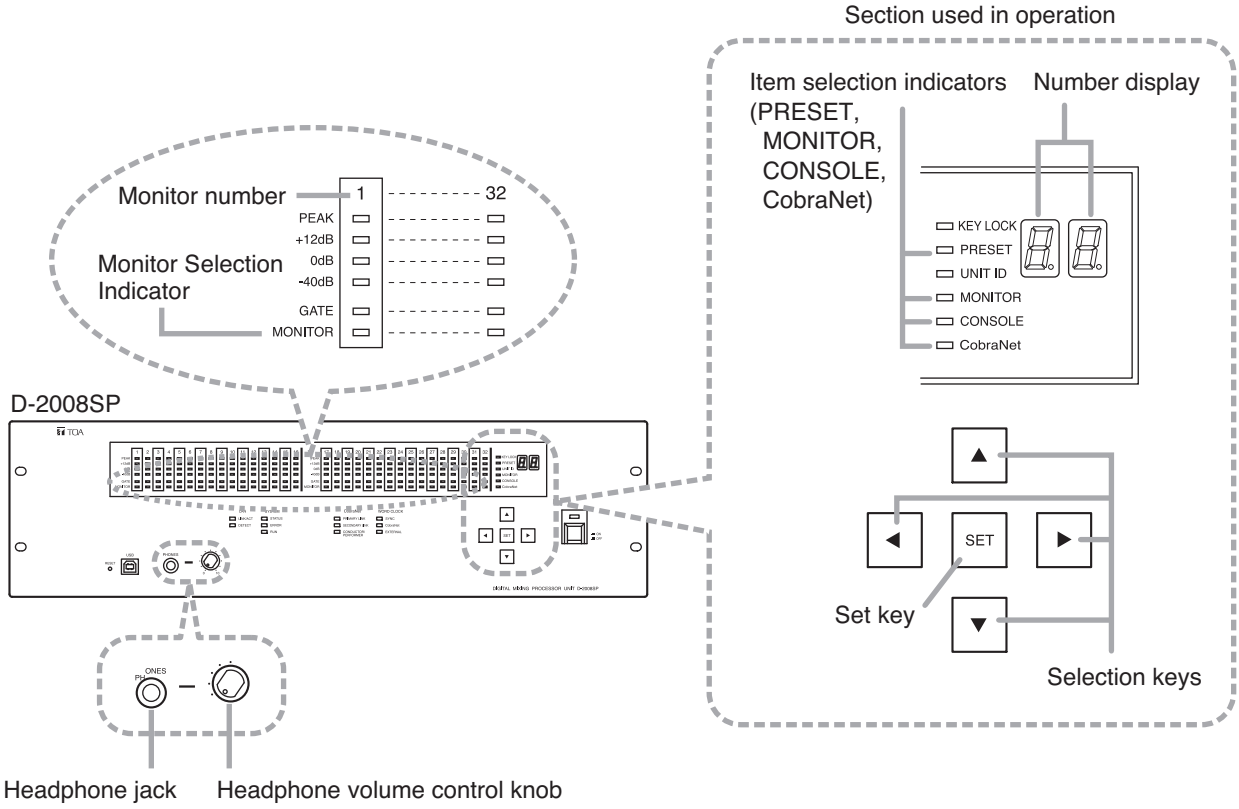
Step 7. Turn the D-2012C's power off, and on again.

Step 8. Click the [Exit] button to end the firmware update.

8. OPERATIONS

8.1. D-2008SP Operation

Using the front panel-mounted keys, preset memories can be recalled, and input or output channel to be monitored can be selected.
Input or output channel can be monitored through headphones connected to a front panel-mounted headphone jack. Its output sound can be adjusted with a front panel-mounted headphone volume control knob.
For the channel with stereo link established, it can be monitored in stereo.
For the channel in monaural, the same audio signal is provided to the left and right headphone speakers.

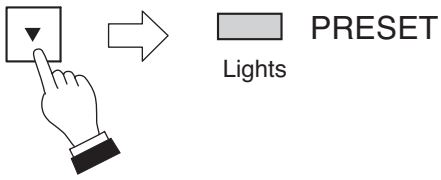


8.1.1. Recalling preset memories

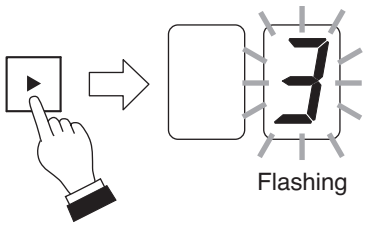
Follow the procedure below to recall each parameter setting stored as preset memory* using the D-2000 Setting Software or D-2012C Remote console unit.

Note
When multiple D-2008SP and D-2012C units are installed in the system, the D-2008SP with ID1 must be included to simultaneously operate other units in the system through the following operation.

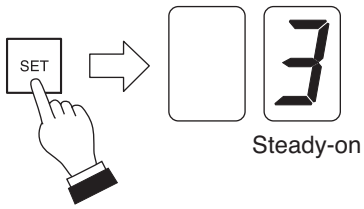
Step 1. Press the Selection key "▲" or "▼" several times to light "PRESET" (Item selection indicator).
Preset memory Number is displayed on the Number display.



Step 2. Press the Selection key "◄" or "►" to select preset memory Number (1 – 32).
During this period, the number displayed on the Number display is flashing.



Step 3. Press the Set key to confirm the preset memory Number. When confirmed, the displayed Number changes from flashing to steady-on state, and the parameters stored under its preset memory number is recalled.



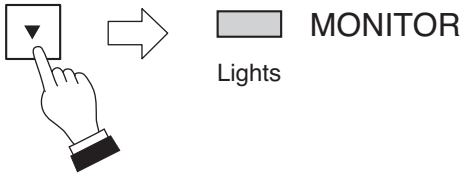
* Parameters stored in preset memory are as follows:

Input channel parameters:	PAD, phantom power, line input mode selection, line input selection, input trim gain, input trim polarity, input filter, compressor / auto leveler mode selection, compressor / auto leveler, level sensibility, gate, auto mixing function group, ducker, NOM attenuation function ON/OFF, input channel gain, channel ON/OFF, and group trim gain
Bus channel parameters:	Feedback suppression (dynamic mode ON/OFF, settings of the number of filters, and filter value set in auto mode and dynamic mode), sub-in-mix-gain, sub-in-mix ON/OFF, bus channel gain, channel ON/OFF, and group trim gain
Output channel parameters:	Output channel gain, group trim gain, channel ON/OFF, filter (including crossover), compressor, delay time, and mute
Others:	Stereo link setting, crossover function configuration setting, NOM attenuation function setting, and matrix assignment

8.1.2. Selecting the input or output channel to be monitored

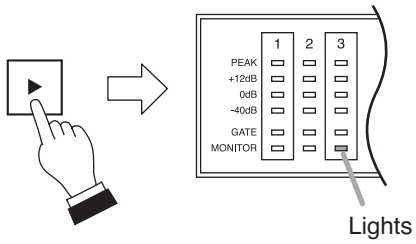
D-2008SP's input or output channels in operation can be monitored.

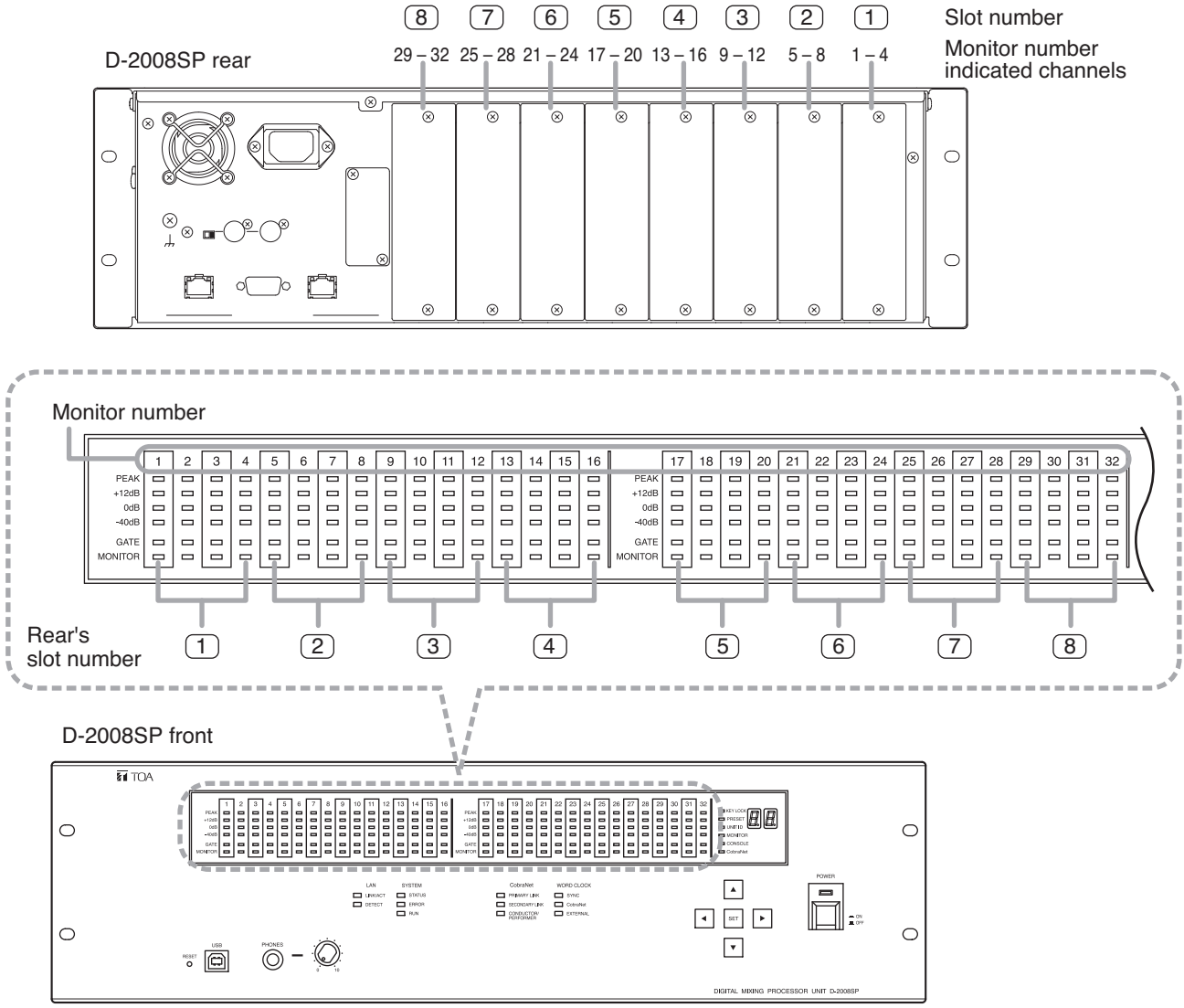
Step 1. Press the Selection key "▲" or "▼" several times to light "MONITOR" (Item selection indicator).



Step 2. Press the Selection key "◄" or "►" to select monitor number (1 – 32).
The monitor selection indicator of the selected number lights.
Note: Idle channel is skipped.

Monitor Numbers are assigned in groups of 4 to each module slot as shown below.
Idle channels will result if no module is installed in a slot or if a single 2-channel module is installed (in this case, the remaining 2 channels become idle).





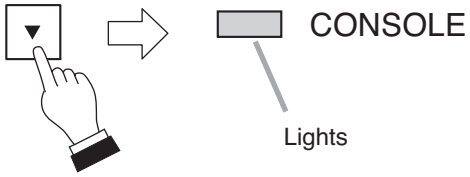
Step 3. Connect headphones to the headphone jack, then adjust the sound volume with the headphone volume control knob.

8.1.3. Selecting the D-2012C's monitor channels

The line input and headphone output of the D-2012C Remote Console connected to the D-2008SP processor's Monitor bus terminal can be monitored.

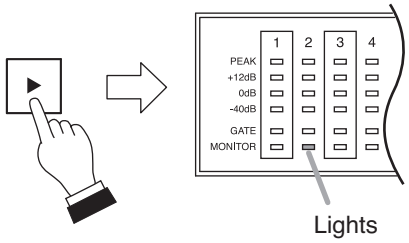
Note
Before selecting, connect the D-2008SP's Monitor bus terminal to the D-2012C's Monitor bus terminal and perform console settings using the D-2000 Setting Software.

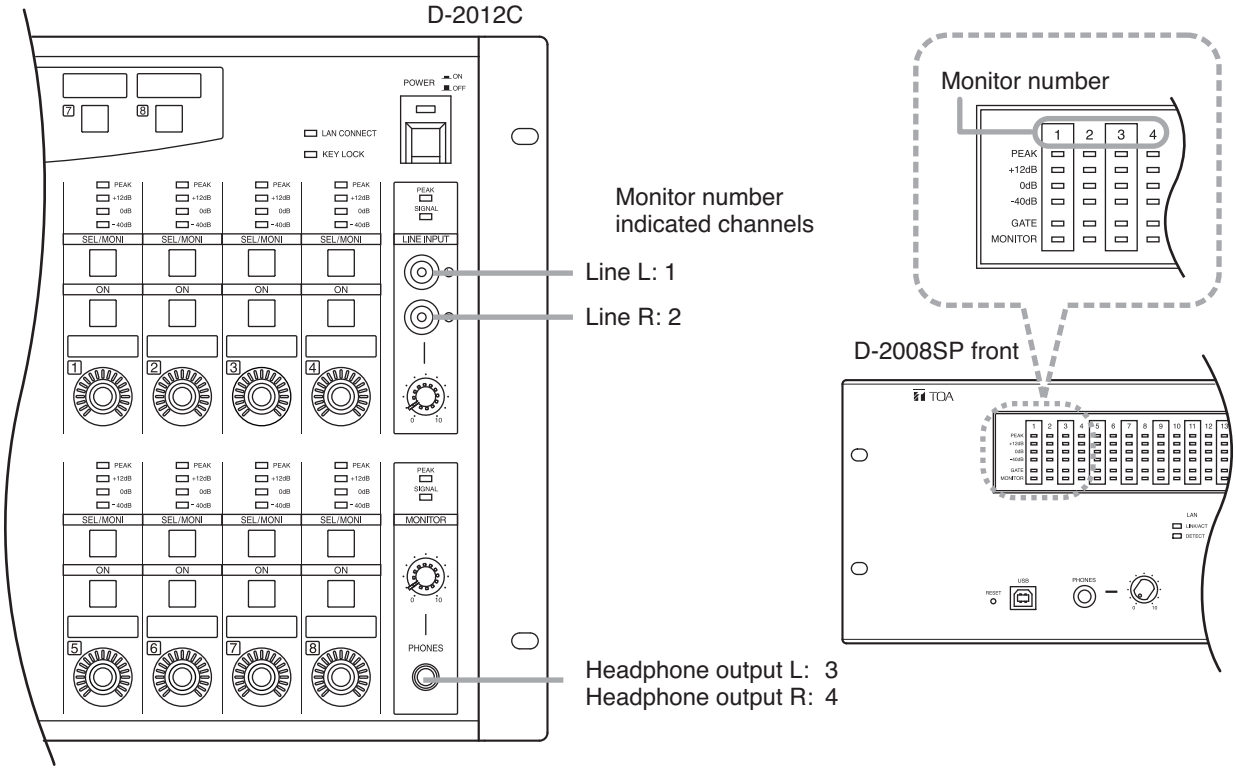
Step 1. Press the Selection key "▲" or "▼" several times to light "CONSOLE" (Item selection indicator).



Step 2. Press the Selection key "◄" or "►" to select monitor number (1 – 4).
The monitor selection indicator of the selected number lights.

Monitor numbers 1 and 2 respectively correspond to the D-2012C's Line inputs L and R, while monitor numbers 3 and 4 correspond to the D-2012C's Headphone outputs L and R.



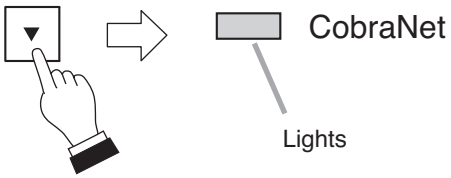


Step 3. Connect headphones to the headphone jack, then adjust the sound volume with the headphone volume control knob.

8.1.4. Selecting CobraNet's monitor channels

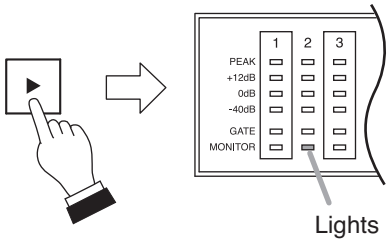
When the D-2000CB CobraNet Interface Module has been inserted into the D-2008SP and connected to other CobraNet equipment, CobraNet's input and output channel preprogrammed using the D-2000 Setting Software can be monitored.

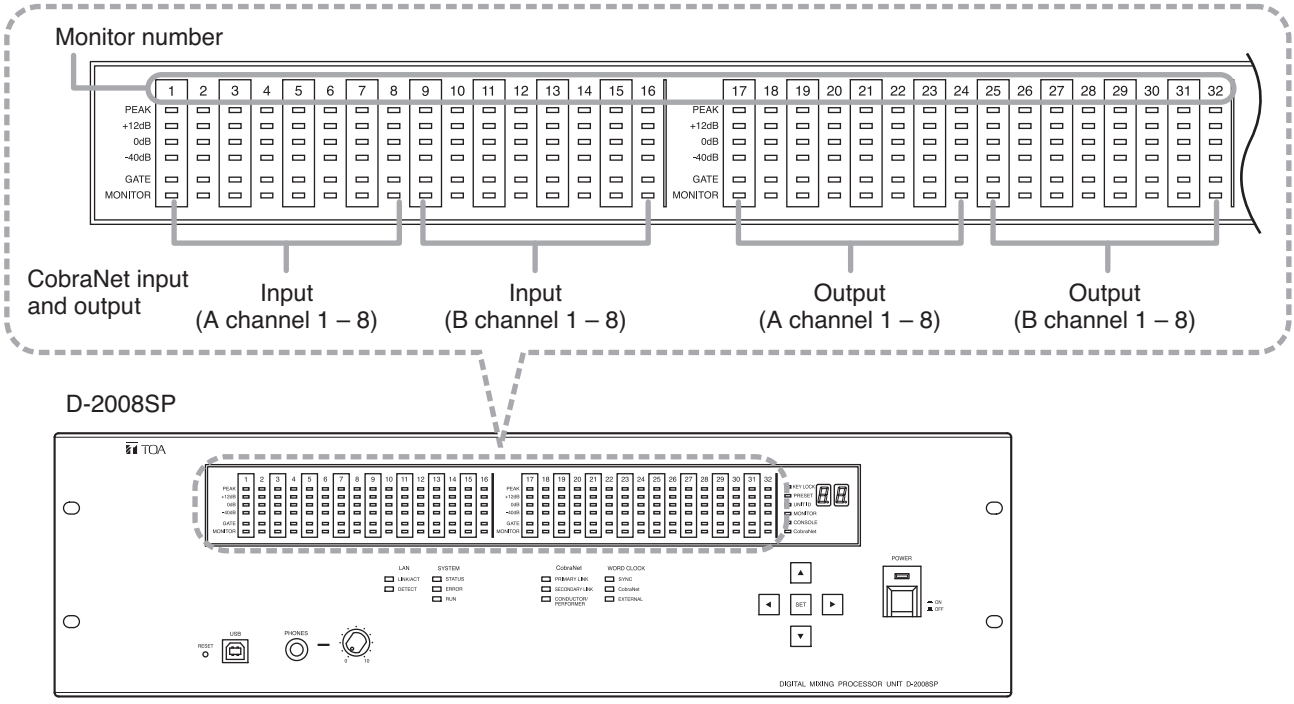
Step 1. Press the Selection key "▲" or "▼" several times to light "CobraNet" (Item selection indicator).



Step 2. Press the Selection key "◄" or "►" to select monitor number (1 – 32).
The monitor selection indicator of the selected number lights.
Note: Idle channel is skipped.

Monitor numbers correspond as follows to the D-2008SP input and output channels set in the D-2000 Setting Software bundle settings:



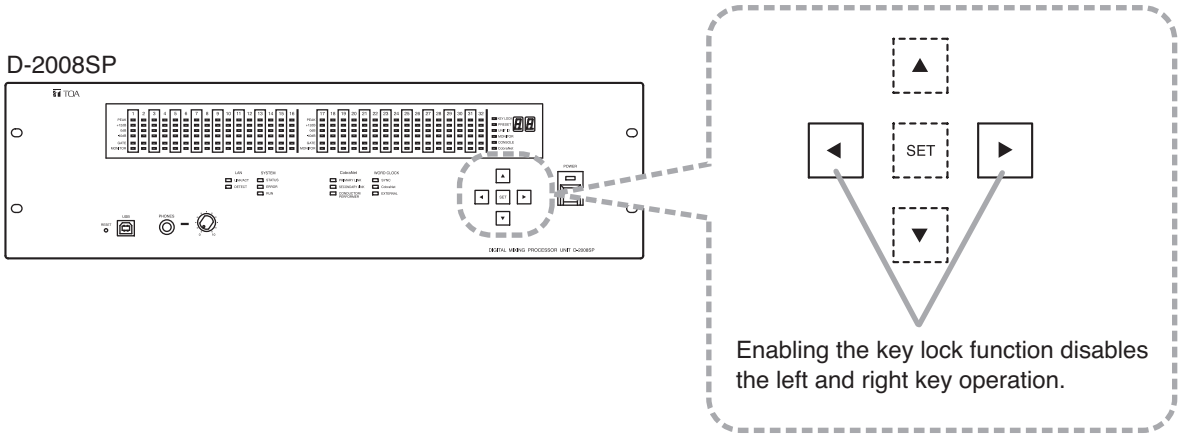


Step 3. Connect headphones to the headphone jack, then adjust the sound volume with the headphone volume control knob.

8.1.5. Key lock function ON/OFF

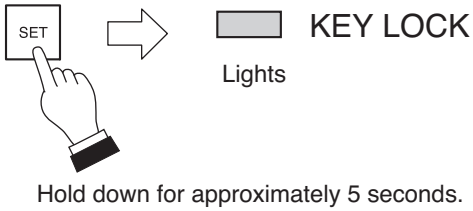
Enabling the key lock function disables the following operations made on the D-2008SP's front panel.

- Recalling preset memories
- Selecting the input or output channel to be monitored
- Selecting the D-2012C's monitor channels
- Selecting CobraNet's monitor channels



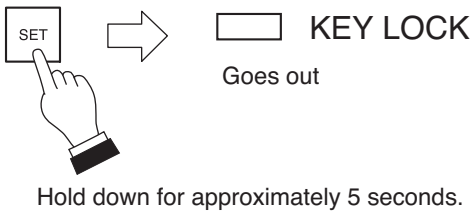
[Setting the key lock function to ON]

Hold down the Set key for approximately 5 seconds while the Key Lock indicator is unlit.
The Key Lock indicator then lights, enabling the key lock function.



[Setting the key lock function to OFF]

Hold down the Set key for approximately 5 seconds while the Key Lock indicator is lit.
The Key Lock indicator goes out, disabling the key lock function.



8.2. D-2012C Operation

8.2.1. Key-assignable functions

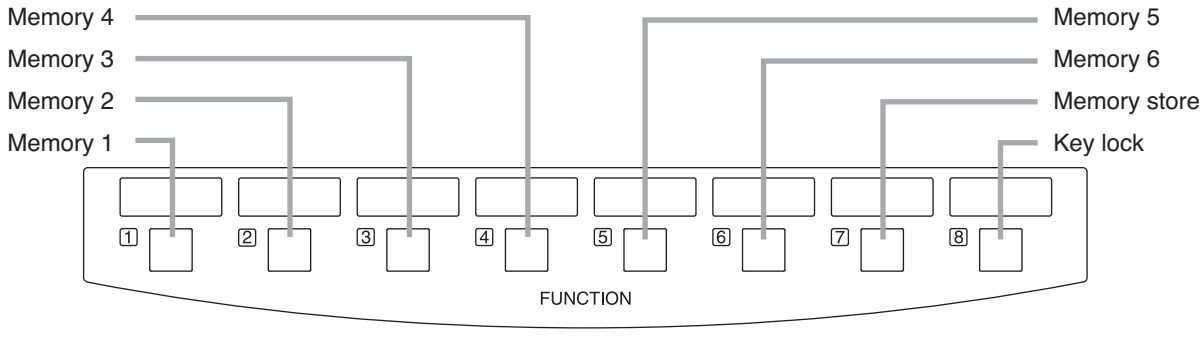
The following functions can be assigned to the D-2012C's function keys. The function keys are explained on the following pages using the name of the function assigned to each key (example: Memory key).

Note
To implement the following functions (except Stereo Input) with the function key operation, the D-2008SP with ID1 must be included in the system.

- Memory
  Recalls the setting status stored in preset memory. The D-2012C's current setting status can be stored in preset memory by pressing the function key assigned to the memory function in combination with the function key assigned to the memory storage function. (Refer to p. 58.)
- Memory Store
  Press the key assigned to the memory store function in combination with the function key assigned to the memory function. (Refer to p. 58.)
- Line Input (valid only when the D-936R or D-937SP module is installed)
  Switches the line (stereo) input of the D-936R Stereo Input Module or D-937SP Digital Input Module. (Refer to p. 59.)
- LED Control
  Causes the D-2008SP's front panel-mounted level indicator to go out. (Refer to p. 59.)
- Fader Layer
  Recalls the channel assignment status stored in the fader layer. (Refer to p. 60.)
- Console Switch
  Sets the contact output of the D-981 or D-983 Remote Control Module or the D-984VC VCA Control Module installed in the D-2008SP processor to ON. (Refer to p. 61.)
- Key Lock
  Enables and disables manual operation of the D-2012C's motorized faders, function keys, rotary encoders, etc. (Refer to p. 62.)
- Monitor Clear
  Clears the selection of channels to be monitored. (Refer to p. 63.)
- External Control Switch
  Allows the D-2008SP with ID 1 to transmit the function key ON/OFF data to an AMX or other external control devices using external control protocol. The external control device can transmit the external control command to the D-2008SP with ID 1, controlling its function key's indicator ON or OFF.
  (Refer to p. 61.)

Note
Functions shown in the following figure are assigned by default. To change these assignments, use the D-2000 Setting Software supplied with the D-2008SP processor. For details, please read the separate software setting manual.

[Default Setting]



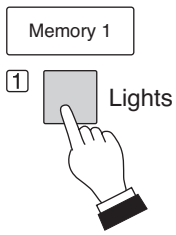
D-2012C function key section

8.2.2. Preset memory recall

Each parameter stored as preset memory using the D-2000 Setting Software or the D-2012C can be recalled.

[Operation]

Pressing the Memory key switches the operation panel settings to the setting status stored under the designated preset memory number. In this event, the depressed key lights.



Notes
- Even if the preset memory number switches, the fader layer number remains unchanged.
- The figure shows an example in which "Memory 1" has been assigned to Function key 1.

8.2.3. Storage in preset memory

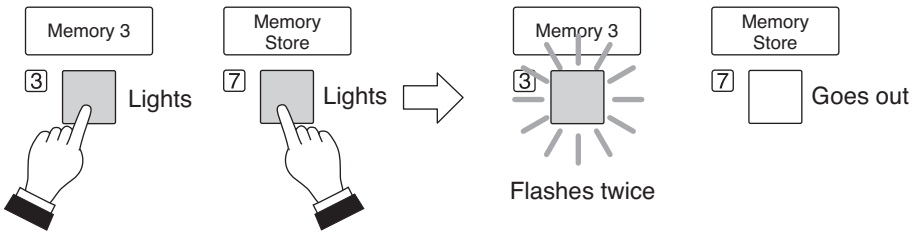
Store the current setting status of each channel in preset memory.
Parameters stored in preset memory are as follows:

[Parameters Stored In Preset Memory]

Input channel parameters:	PAD, phantom power, line input mode selection, line input selection, input trim gain, input trim polarity, input filter, compressor / auto leveler mode selection, compressor / auto leveler, level sensibility, gate, auto mixing function group, ducker, NOM attenuation function ON/OFF, input channel gain, channel ON/OFF, and group trim gain
Bus channel parameters:	Feedback suppression (dynamic mode ON/OFF, settings of the number of filters, and filter value set in auto mode and dynamic mode), sub-in-mix-gain, sub-in-mix ON/OFF, bus channel gain, channel ON/OFF, and group trim gain
Output channel parameters:	Output channel gain, group trim gain, channel ON/OFF, filter (including crossover), compressor, delay time, and mute
Others:	Stereo link setting, crossover function configuration setting, NOM attenuation function setting and matrix assignment

[Storage]

Continue to press the Memory key for approximately 2 seconds while holding down the Memory Store key. After the two keys have lit, the Memory key flashes twice and the operation panel's current setting status is stored in the designated preset memory number.



Press for approximately 2 seconds.

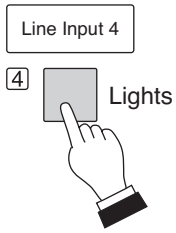
Note
The figure shows an example in which "Memory 3" has been assigned to Function key 3, and "Memory Store" to Function key 7.

8.2.4. Switching Line Inputs (valid only when the D-936R or D-937SP module is installed)

This function switches the line inputs (In 1 – 4) of the D-936R Stereo Input Module or the D-937SP Digital Input Module.

[Operation]

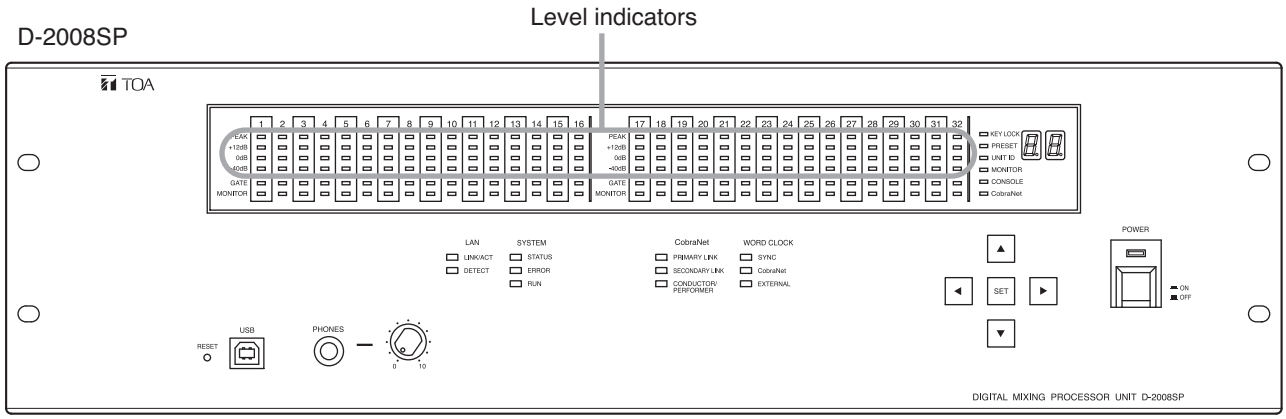
Pressing the Line Input key selects the designated line (stereo) input.
In this event, the depressed key lights.



Note
The figure shows an example in which "Line Input (In 4)" has been assigned to Function key 4.

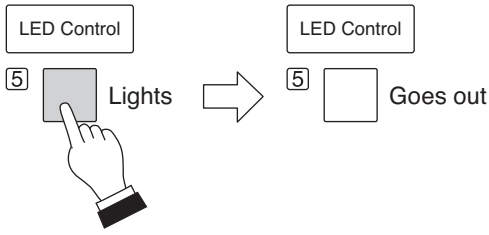
8.2.5. D-2008SP level indicator control (LED control)

This function turns off the level indicators on the front panel of the D-2008SP Digital Mixing Processor.

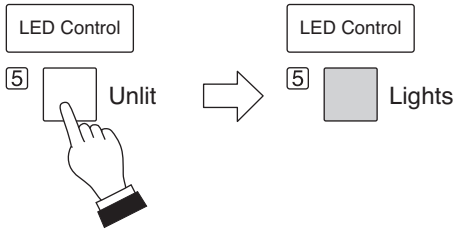


[Operation]

Press the LED Control key, and the D-2008SP's front panel-mounted level indicators go out.
In this event, the depressed control key goes out.



Pressing the LED Control key again causes the D-2008SP's front panel-mounted level indicators to light.
In this event, the depressed control key lights.



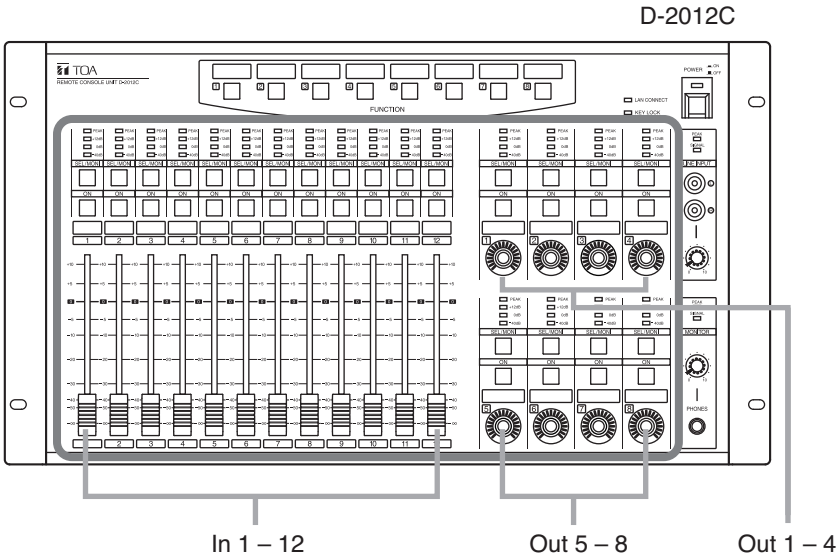
Note
The figure shows an example in which "LED control" has been assigned to Function key 5.

8.2.6. Fader layer switching

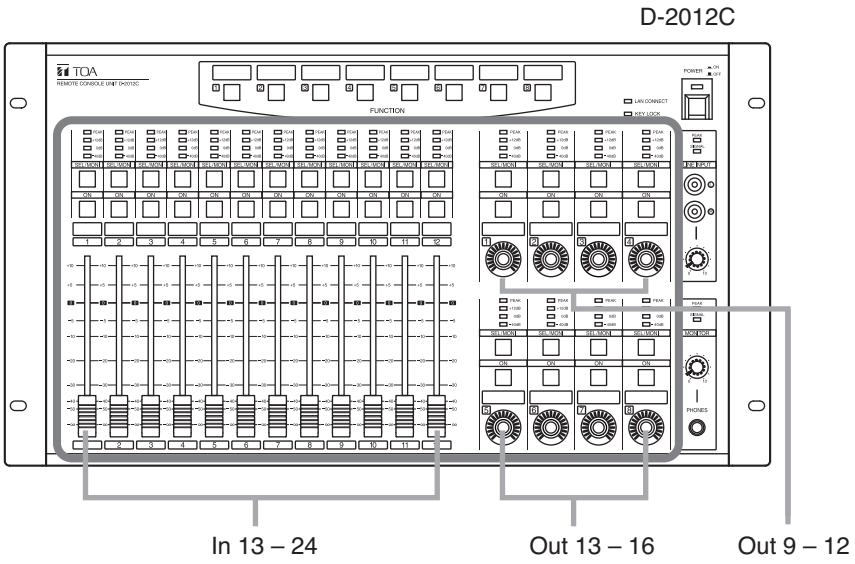
There are 12 motorized faders and 8 rotary encoders on the D-2012C's operation panel. Store a combination of their channel assignments as a single fader layer in advance using the D-2000 Setting Software. Since 4 different fader layers can be set, up to 4 channels can be assigned to each motorized fader and rotary encoder. By switching the channel assignment status using the Fader Layer key, up to 80 channels can be operated in monaural per D-2012C Console. If stereo link and grouping settings are performed, more channels can be operated.

[Fader Layer Setting Example]

(Fader layer 1 setting status: Inputs 1 – 12 & outputs 1 – 8)



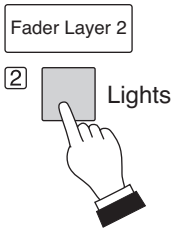
(Fader layer 2 setting status: Inputs 13 – 24 & outputs 9 – 16)



Tip
Bus channels and CobraNet channels can also be assigned.

[Fader Layer Switching]

Pressing the Fader Layer key switches the operation panel settings to the status stored in the designated fader layer number. In this event, the depressed key lights.



Notes
- Even if the fader layer number switches, the preset memory number remains unchanged.
- The figure shows an example in which "Fader Layer 2" has been assigned to Function key 2.

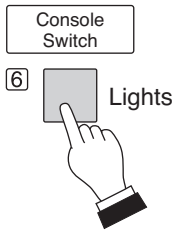
8.2.7. D-2008SP control output ON/OFF (console switch)

Enables or disables the contact output of the D-981 or D-983 Remote Control Module installed in the D-2008SP Digital Mixing Processor. The contact output terminals assigned to the "Console switch" using the D-2000 Setting Software can be operated. Operation differs depending on the setting of the contact output terminal's control method.

Note
Unify the control method of all the contact output terminals assigned to a single console switch to either "Momentary" or "Latch."

[When the Control Method Is Set to "Momentary"]

The set contact output is enabled as long as the Console Switch key is held down and the continuously depressed key remains lit. If the Console Switch key is released, the set contact output is disabled and the depressed key goes out.



[When the Control Method Is Set to "Latch"]

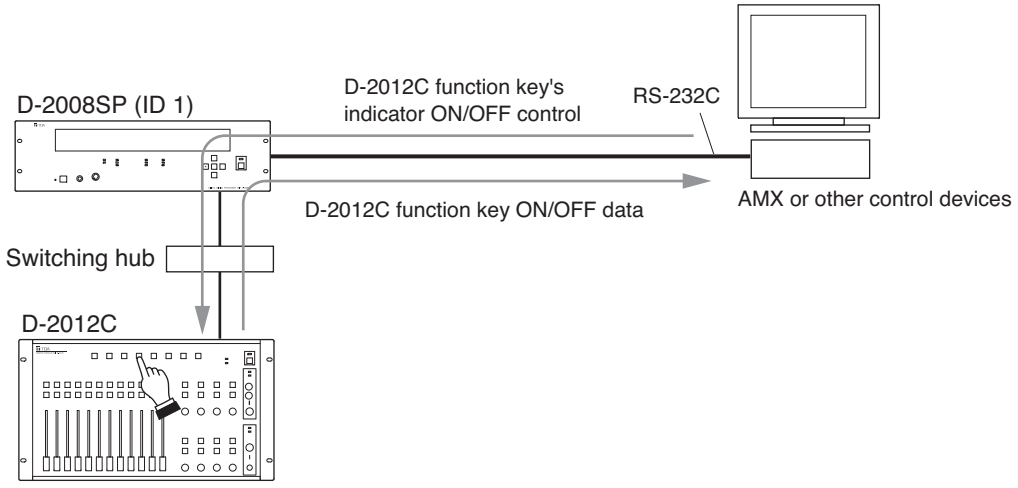
The set contact output is enabled if the Console Switch key is pressed and the depressed key lights. Pressing the Console Switch key again disables the set contact output and causes the depressed key to go out.

Note
The figure shows an example in which "Console switch" has been assigned to Function key 6.

8.2.8. D-2008SP (ID 1) external control switch

Allows the D-2008SP with ID 1 to transmit the function key ON/OFF data to an AMX or other external control devices using external control protocol (RS-232C or LAN).
The external control device can transmit the external control command to the D-2008SP with ID 1, controlling its function key's indicator ON or OFF.

[Example of control using RS-232C]

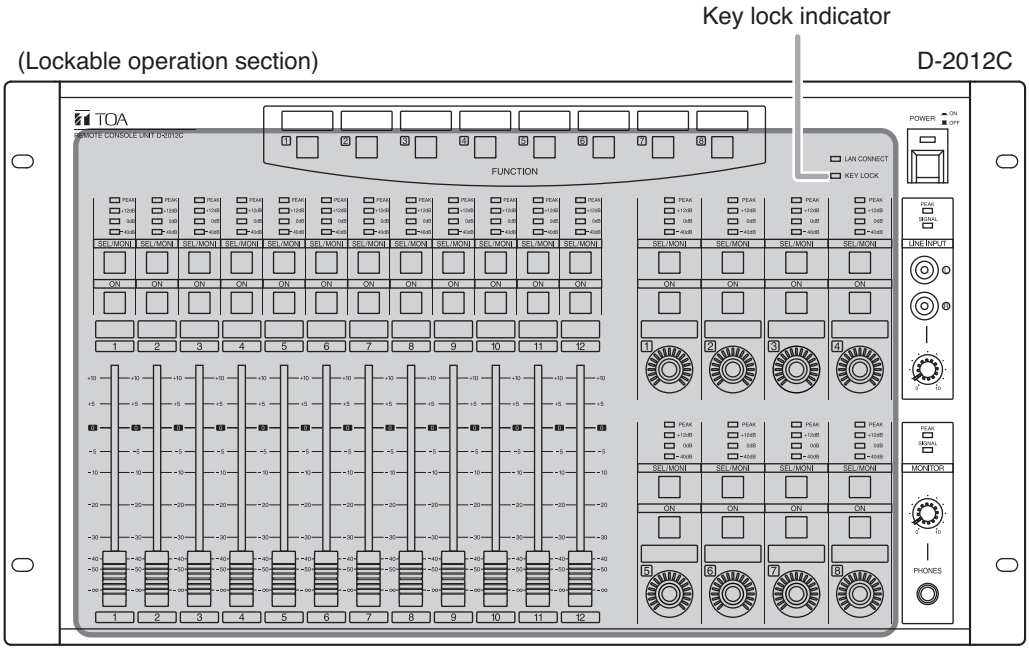


[Operation]

When the External Control Switch key is pressed, data that the key has been pressed is transmitted from the D-2008SP to the external control device using the external control protocol. To light or extinguish the External Control Switch key's indicator, controls should be made from the external control device using the external control protocol.

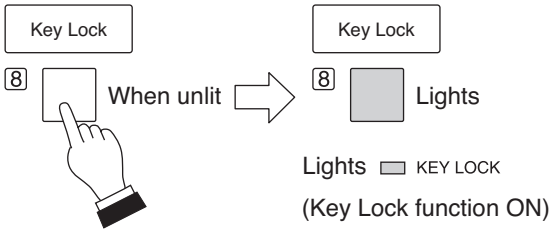
8.2.9. Key lock function ON/OFF

Setting the Key Lock function to ON allows operation of the following keys to be disabled: the D-2012C's operation panel-mounted function keys (except the Key Lock key), motorized faders, rotary encoders, Monitor Channel Selection keys, and Channel ON/OFF keys.



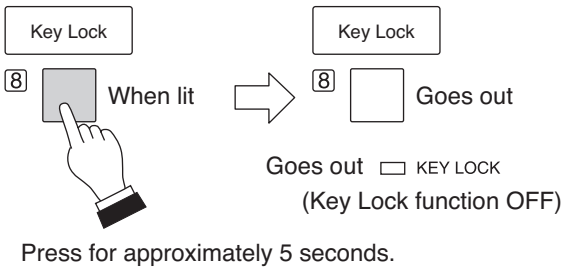
[When Enabling the Key Lock Function]

Holding down the Key Lock key for approximately 5 seconds while it is unlit causes the depressed key to light and enables the Key Lock function. In this event, the key lock indicator lights. While the Key Lock function is enabled, any key pressed other than the Key Lock key does not change status and remains lit or unlit. If a motorized fader is moved, it returns to its original position if the fader is released. Also, if a rotary encoder is rotated, the LEDs that indicate volume do not change.



[When Disabling the Key Lock Function]

Holding down the Key Lock key for approximately 5 seconds while the Key Lock key is lit causes the depressed key to go out and disables the Key Lock function. In this event, the key lock indicator goes out.



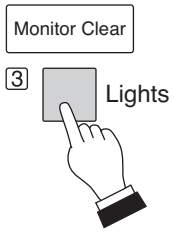
Note
The figure shows an example in which "Key lock" has been assigned to Function key 8.

8.2.10. Monitor channel clear

This function clears the selection of all the monitor channels assigned to the monitor bus to which the D-2012C in operation is connected.

[Operation]

If the Monitor Clear key is pressed, the selection of monitor channels is cleared and the depressed key lights.

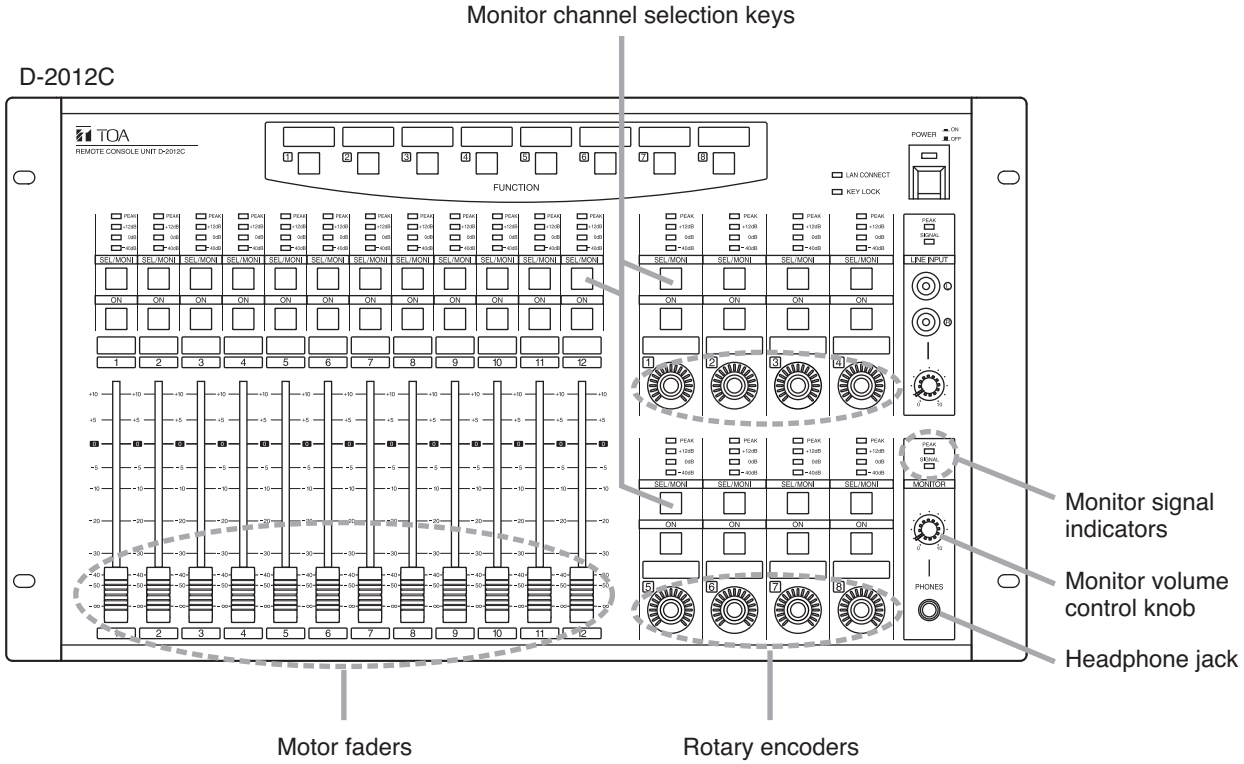


Note
The figure shows an example in which "Monitor clear" has been assigned to Function key 3.

8.2.11. Monitoring

Output of the channel being operated using the D-2012C Remote Console's motor faders or rotary encoders can be monitored.

Notes
- Set the identical ID number for the D-2008SP and D-2012C to be connected through monitor bus terminals. Use the D-2000 Setting Software to set the ID number.
- Properly perform connections and settings for the D-2008SP's monitor input/output channels. (Refer to p. 37.) Audio signals for the channel where monitor audio signal routing is not performed cannot be monitored even if selected.
- Monitor channel selection keys do not perform grouping operation.



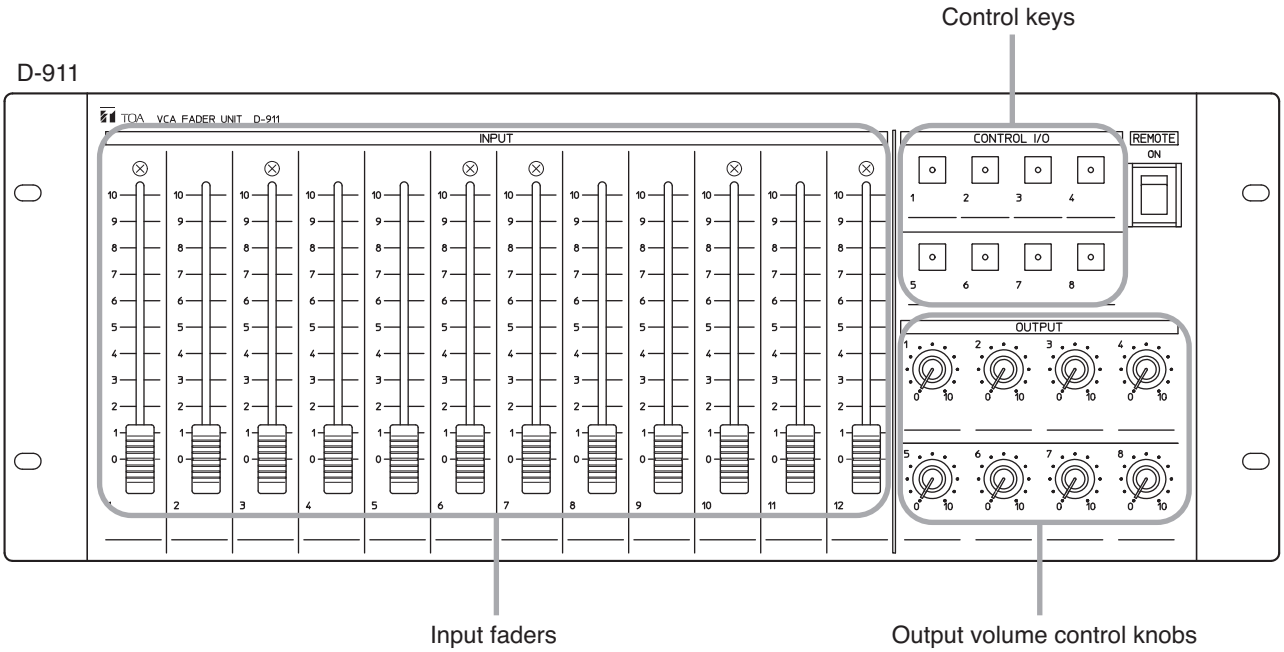
Step 1. When two or more fader layers are in use, select the fader layer that allows operation of the channel to be monitored.
Fader layers can be switched through operation of the function key assigned to Fader Layers 1 – 4. (Refer to p. 60.)

Step 2. Set the Monitor channel selection key for the channel to be monitored to ON.
The level of the selected output can be confirmed by means of the monitor signal indicator.

Step 3. Connect headphones to the Headphone jack and adjust the volume using the monitor volume control knob.

8.3. D-911 Operation

Only the D-2008SP's channels to which the D-984VC module is connected can be controlled.



8.3.1. Volume adjustment

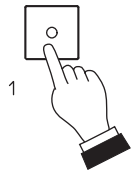
Volume of the channel assigned to the D-984VC using the D-2000 Setting software can be adjusted using the D-911's input fader or output volume control knob.

Notes

- For channels with stereo link or group settings established at the D-2008SP, only the lowest numbered channel in the preset link or group is enabled.
- Fader position "10" of the D-911 provides the channel gain set by the D-2008SP. As a guide, fader position "8" provides channel gain about 10 dB lower than the set gain at the D-2008SP.

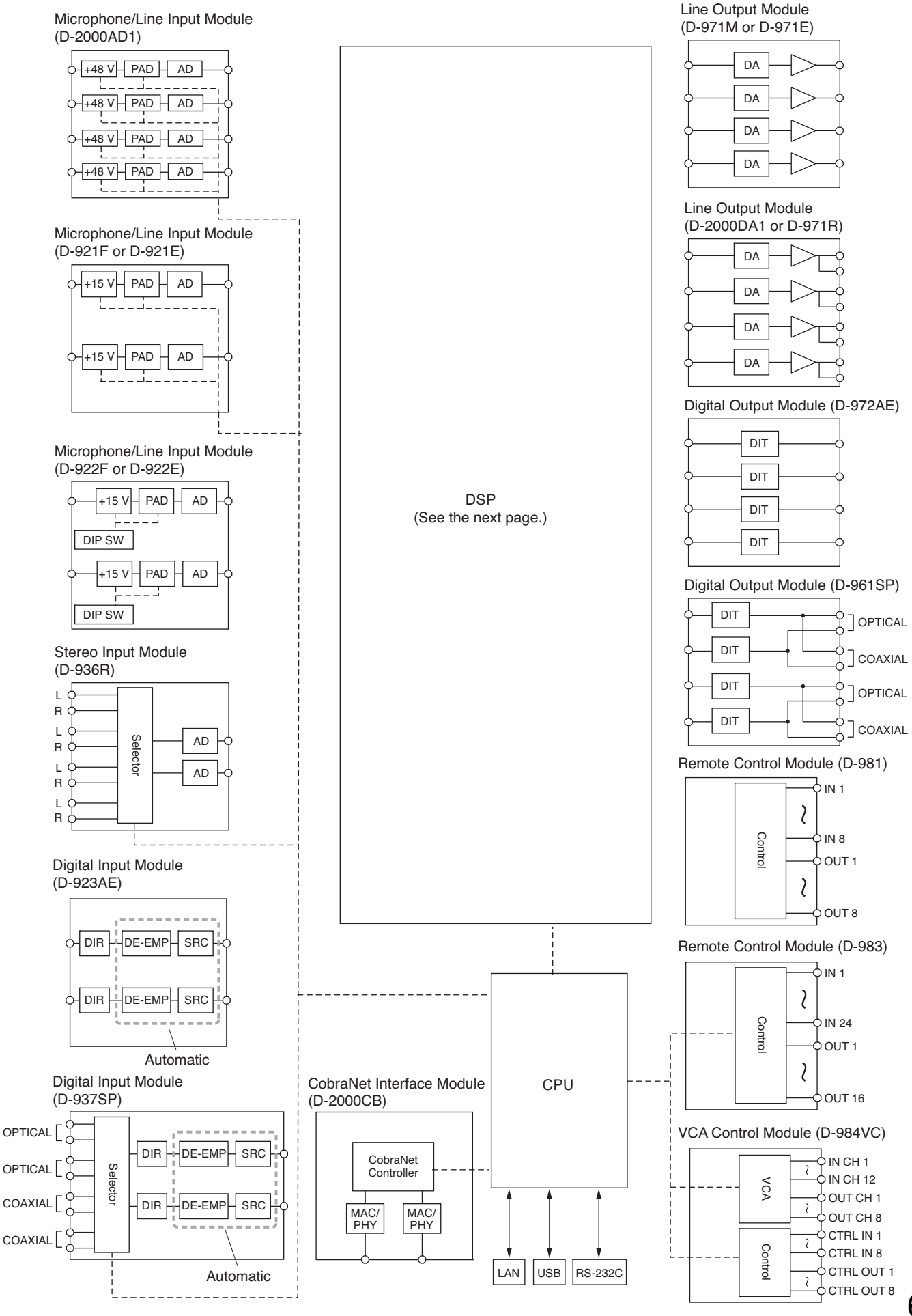
8.3.2. Contact control

Preset memory recall, Volume level up and down functions can be assigned to the D-984VC's contacts using the D-2000 Setting Software.
Assigned functions can be implemented by pressing the Control keys 1 – 8.

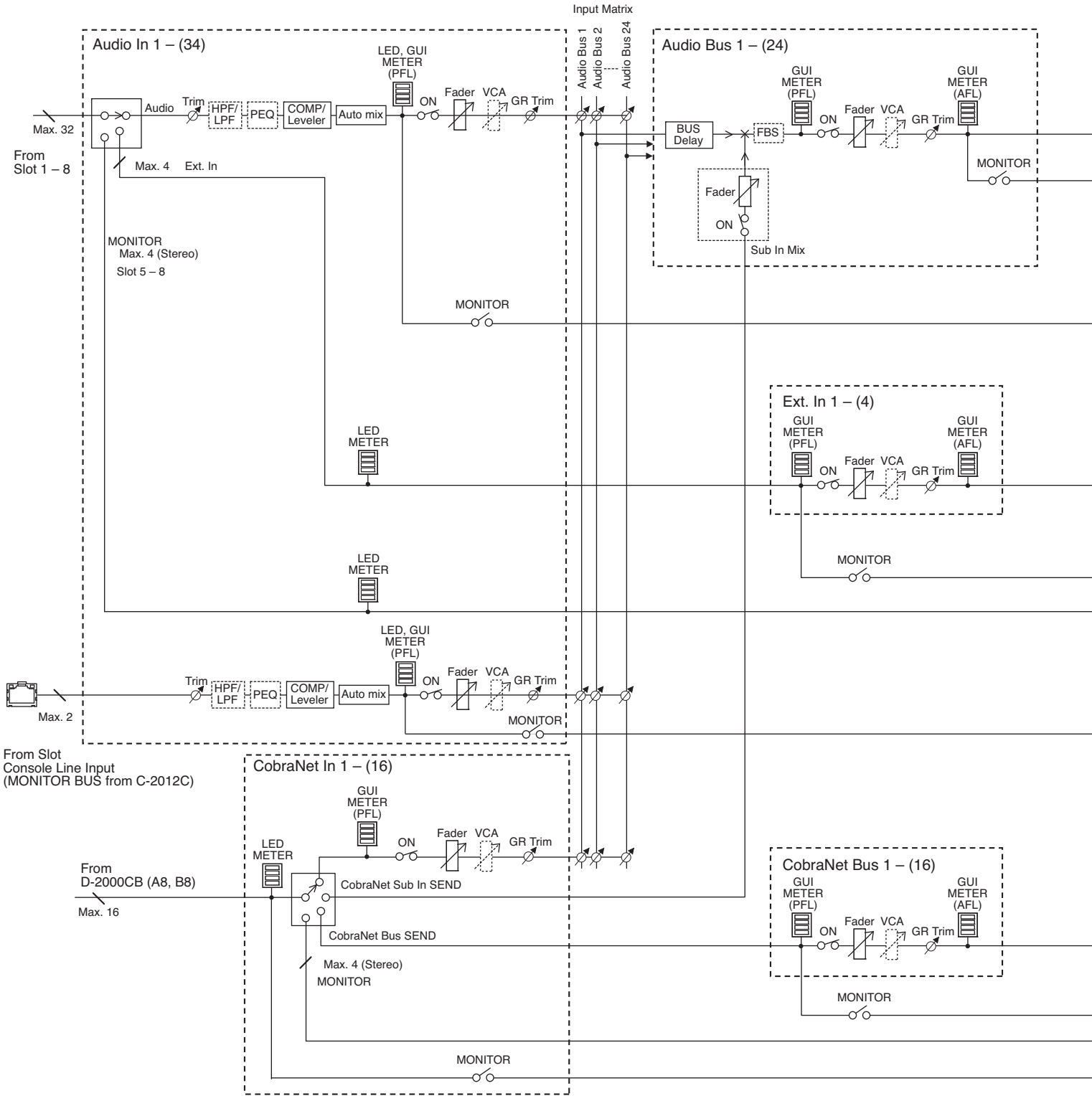


9. BLOCK DIAGRAMS

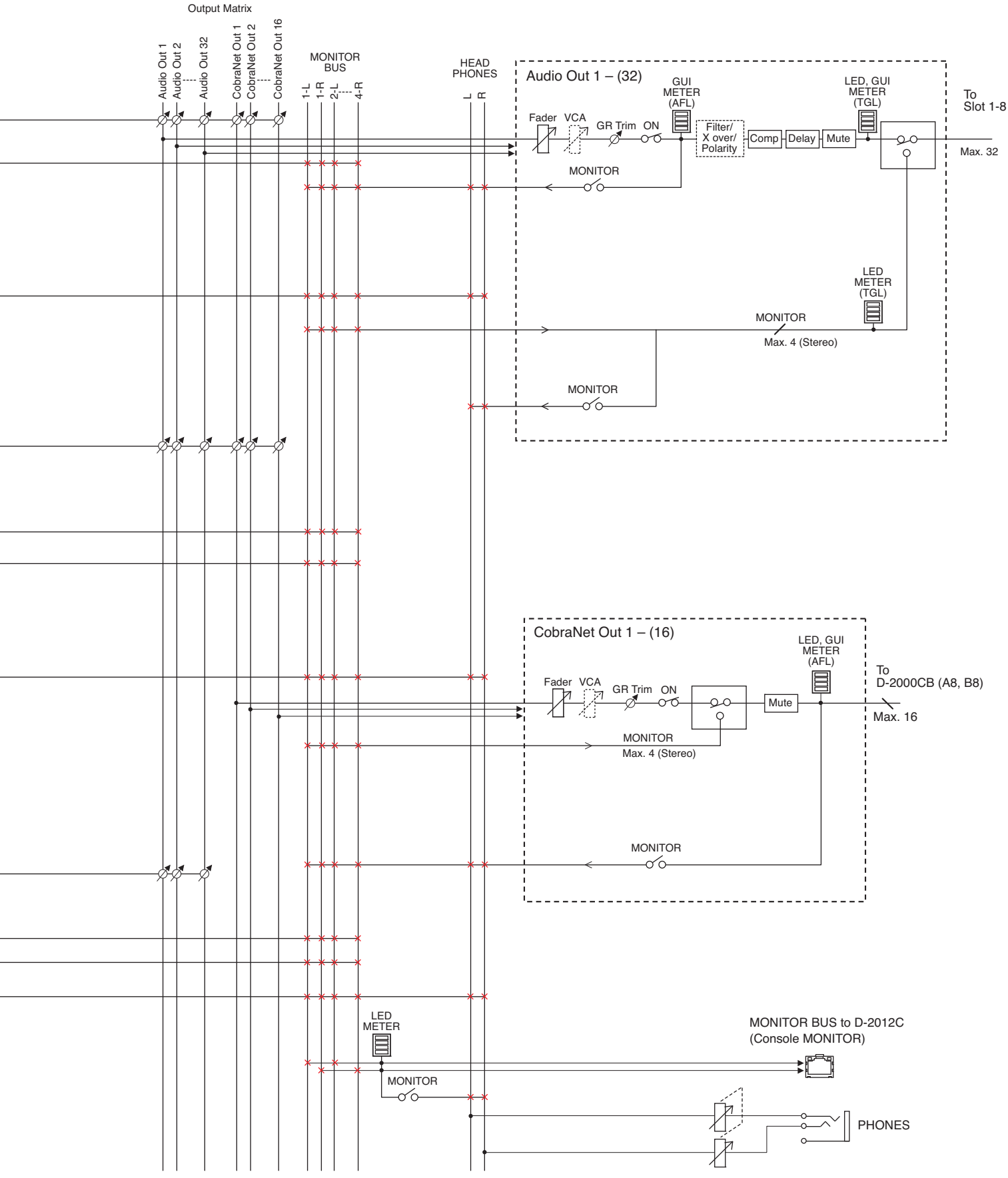
9.1. D-2008SP



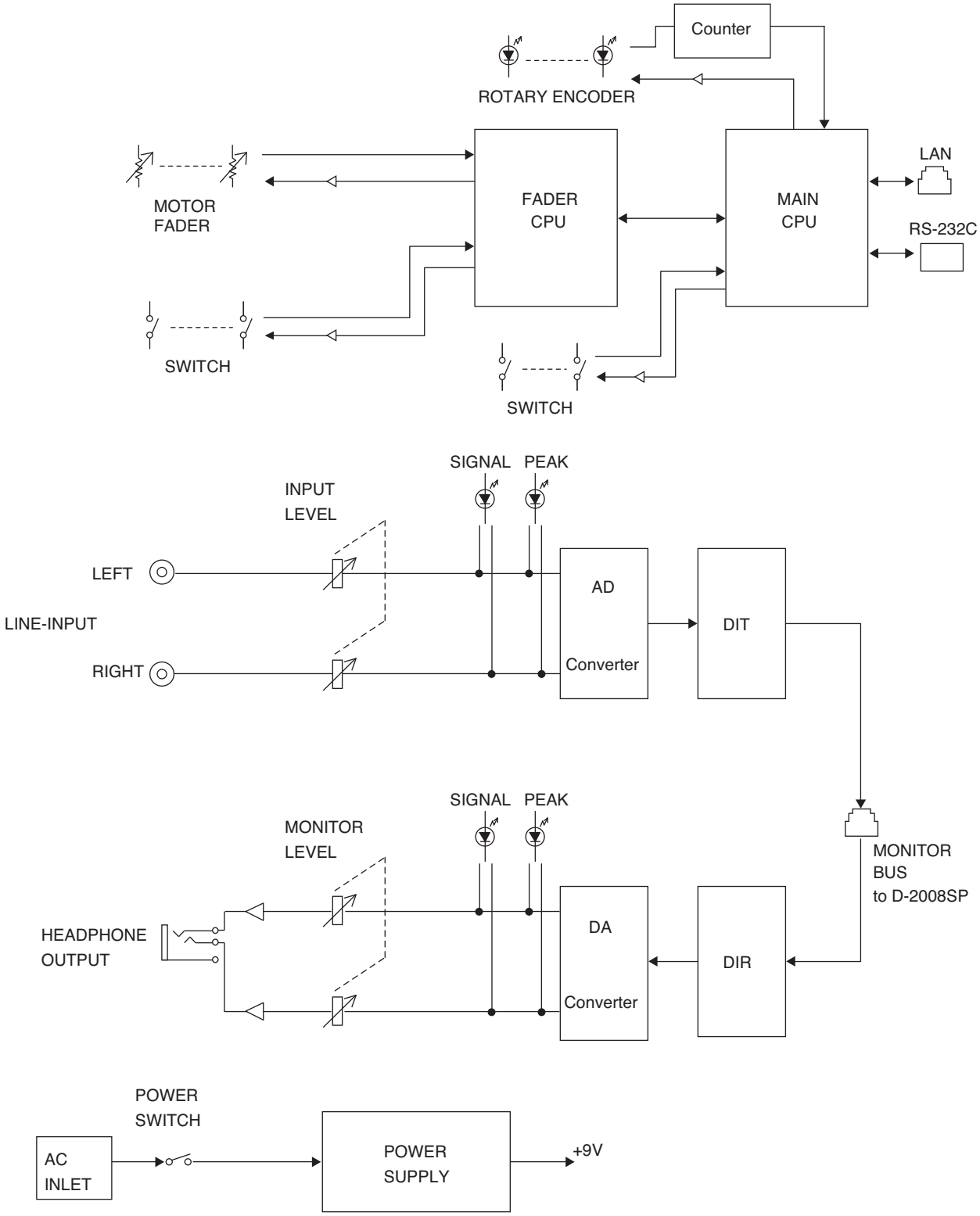
[DSP part block diagram of D-2008SP]



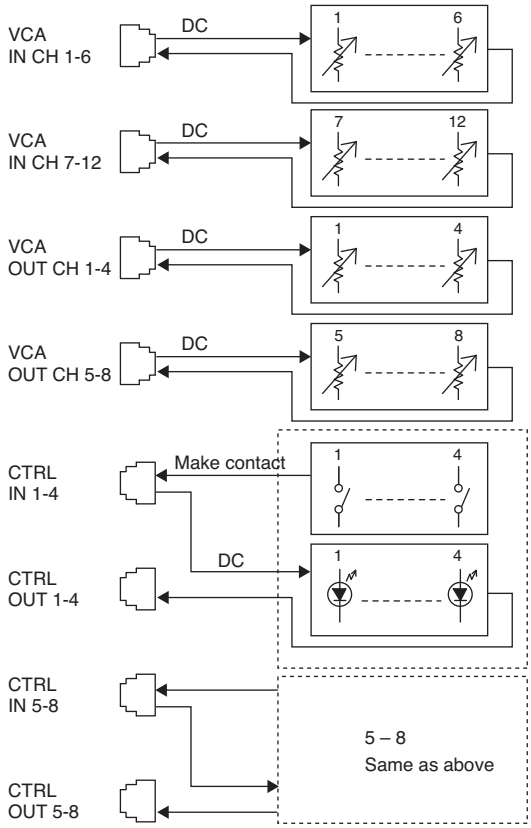
VCA : Only when D-984VC is used


Output Matrix
Audio Out 1
Audio Out 2
Audio Out 32
CobraNet Out 1
CobraNet Out 2
CobraNet Out 16
MONITOR BUS
1-L
1-R
2-L
4-R
HEAD PHONES
L
R
Audio Out 1 – (32)
GUI METER (AFL)
LED, GUI METER (TGL)
To Slot 1-8
Fader
VCA
GR Trim
ON
Filter/ X over/ Polarity
Comp
Delay
Mute
Max. 32
MONITOR
LED METER (TGL)
MONITOR
Max. 4 (Stereo)
MONITOR
CobraNet Out 1 – (16)
LED, GUI METER (AFL)
To D-2000CB (A8, B8)
Fader
VCA
GR Trim
ON
Mute
Max. 16
MONITOR
Max. 4 (Stereo)
MONITOR
LED METER
MONITOR
MONITOR BUS to D-2012C (Console MONITOR)
PHONES

9.2. D-2012C

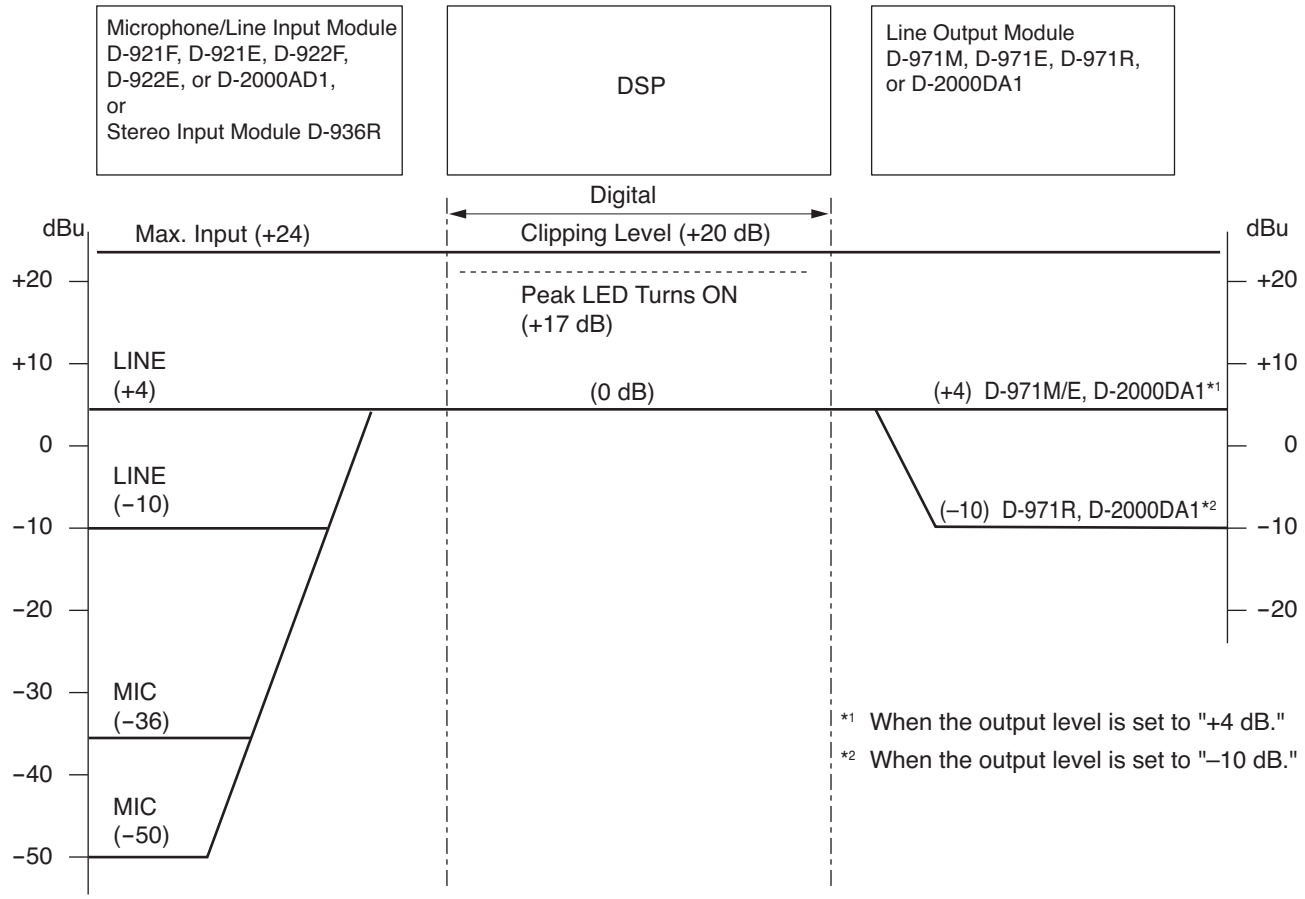

Counter
ROTARY ENCODER
MOTOR
FADER
FADER
CPU
MAIN
CPU
LAN
RS-232C
SWITCH
SWITCH
SIGNAL
PEAK
INPUT
LEVEL
LEFT
LINE-INPUT
RIGHT
AD
Converter
DIT
MONITOR
LEVEL
MONITOR
BUS
to D-2008SP
HEADPHONE
OUTPUT
DA
Converter
DIR
POWER
SWITCH
AC
INLET
POWER
SUPPLY
+9V

9.3. D-911

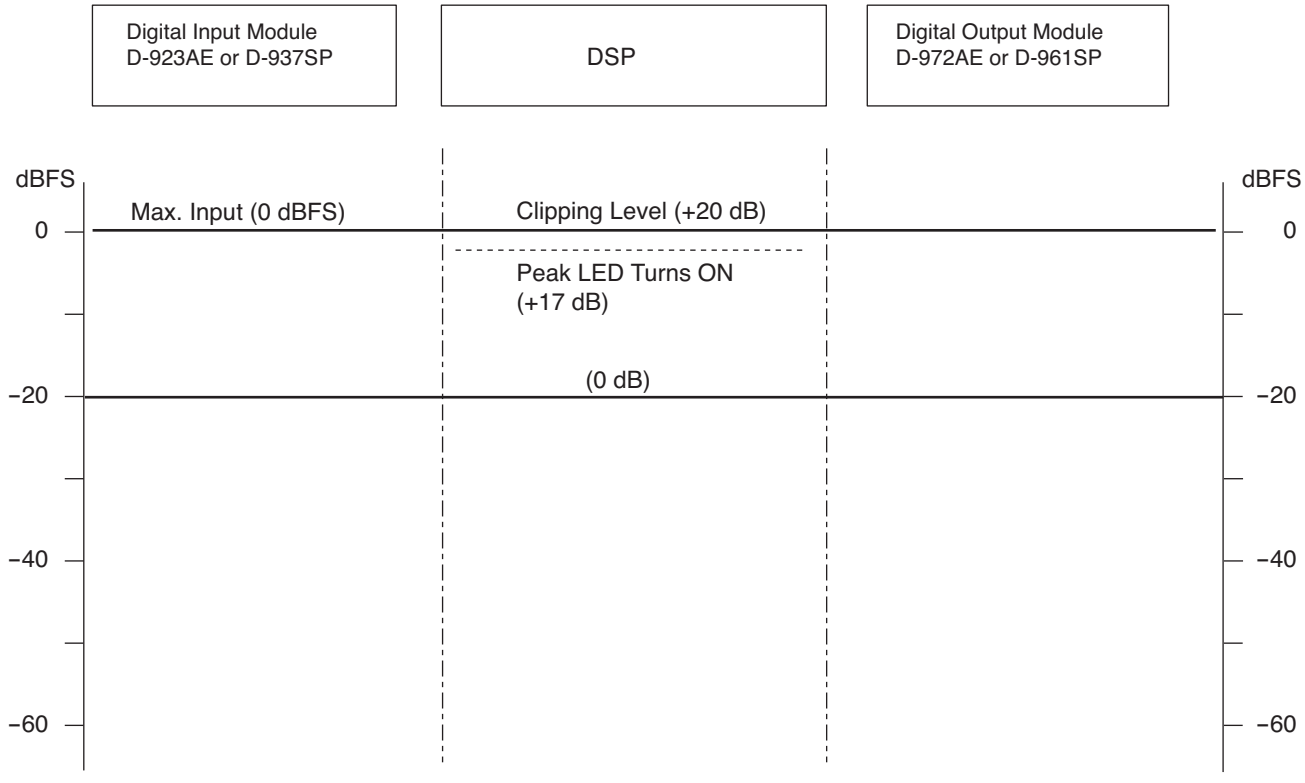

VCA
IN CH 1-6
DC
1
6
VCA
IN CH 7-12
DC
7
12
VCA
OUT CH 1-4
DC
1
4
VCA
OUT CH 5-8
DC
5
8
CTRL
IN 1-4
Make contact
1
4
DC
CTRL
OUT 1-4
1
4
CTRL
IN 5-8
5 – 8
Same as above
CTRL
OUT 5-8

10. LEVEL DIAGRAMS

10.1. Analog Input/Output



10.2. Digital Input/Output



11. SPECIFICATIONS

11.1. D-2008SP Digital Mixing Processor Unit

Model No.		D-2008SP CE	D-2008SP CE-AU/CN	D-2008SP KR	D-2008SP CU	D-2008SP TW
Power Source		220 – 240 V AC, 50/60 Hz	220 – 240 V AC, 50 Hz	220 V AC, 60 Hz	120 V AC, 60 Hz	100 – 120 V AC, 60 Hz
Power Consumption		76 W			78 W	
Frequency Response		20 Hz – 20 kHz, ±1 dB (±4 dB* input)				
Sampling Frequency		48 kHz				
Input/Output		Input: Max. 32 channels, modular construction (modules optional) Output: Max. 32 channels, modular construction (modules optional) Monitor bus: 1 stereo input, 1 stereo output Connector: RJ45 connector Connection cable: Shielded twisted pair (STP) Cat 5 or higher LAN cable (data lines: 2 pairs) Maximum cable distance: 100 m or 109.36 yd (between D-2008SP and D-2012C) Headphones: 1 stereo				
Signal Processing	Feedback Suppression Function	12 filters (auto/dynamic), Max. 4 bus channels				
	Auto Mixing Function	Ducker (auto muting), NOM attenuation				
	Auto Mixing Group	4 groups				
	Equalizer/Filter	Parametric equalizer: 20 Hz – 20 kHz, ±15 dB, Q: 0.267 – 69.249 Filtering: High-pass filter 20 Hz – 20 kHz, 6 dB/oct, 12 dB/oct Low pass filter 20 Hz – 20 kHz, 6 dB/oct, 12 dB/oct Notch filter 20 Hz – 20 kHz, Q: 8.651 – 69.249 All-pass filter 20 Hz – 20 kHz, Q: 0.267 – 69.249 High shelving filter 6 Hz – 20 kHz, ±15 dB Low shelving filter 20 – 500 Hz, ±15 dB Horn equalizer 20 kHz, 0 to +18 dB (0.5 dB steps) Crossover filter: 20 Hz – 20 kHz, 6 dB/oct, 12 dB/oct, 18 dB/oct, 24 dB/oct				
	Compressor /Auto-Leveler	(Compressor mode) Threshold: –20 to +20 dB (1 dB steps) Ratio: 1:1, 1.1:1, 1.2:1, 1.3:1, 1.5:1, 1.7:1, 2:1, 2.3:1, 2.6:1, 3:1, 4:1, 5:1, 7:1, 8:1, 10:1, 12:1, 20:1, ∞:1 Attack time: 0.2 ms – 5 s Release time: 10 ms – 5 s Gain: –∞ to +10 dB Knee Type: Hard knee, Soft knee 1, Soft knee 2 (Auto-leveler mode) Target level: –20 to +20 dB (1 dB steps) Maximum gain: 0 to +20 dB (1 dB steps) Attack time: 10 ms – 10 s Release time: 100 ms – 10 s				
	Output Delay	Delay time: 0 – 1360 ms (0.021 ms steps)				
	Bus Delay	Delay time: 0 – 677 ms (0.021 ms steps)				
	Matrix	Input: Max. 34 (32 + 2) channels x 24 bus Output: Max. 44 (24 + 4 + 16) bus x 32 channels				
	CobraNet Matrix	Input: Max. 16 channels x 24 bus Output: Max. 28 (24 + 4) bus x 16 channels				
	Crosspoint Gain	–∞ to 0 dB (1 dB steps)				
Preset Memory		32				
Auxiliary Function		Key lock function				

* 0 dB = 0.775 V

LAN	Network I/F:	1 10BASE-T/100BASE-TX circuit (selectable by automatic recognition), RJ45 connector for maintenance use, connection via a switching hub
	Network Protocol:	TCP/IP
	Connection Cable:	Category 5 or higher shielded twisted pair cable for LAN (CAT5-STP or better)
	Maximum Cable Distance:	100 m or 109.36 yd (between this unit and a switching hub or PC)
Control	RS-232C: D-sub connector (9 pins), for external control Module: Remote control module slot x 2	
Operating Temperature	5 to 40 °C (41 to 104 ºF)	
Finish	Panel: Aluminum, hair-line finish, black Case: Pre-coated steel plate	
Dimensions	482 (w) x 132.6 (h) x 343.4 (d) mm (18.98" x 5.22" x 13.52")	
Weight	6.3 kg (13.89 lb)	

[Recommended PC requirements]

Hardware Requirements	
CPU	2 GHz, Intel Pentium 4 or higher
Memory	Over 1.5 GB (2 GB or more recommended)
Display	1024 x 768 resolution or higher
Free Hard Disk Space	Over 16 MB (for D-2000 Setting Software installation) or over 500 MB (when ".NET Framework" needs to be installed)
CD/DVD Drive	CD-ROM drive
LAN Card	Compatible to 10BASE-T or faster connection
Software Requirements	
OS	Windows XP Service Pack 2 or later, 32/64-bit Windows Vista, 32/64-bit Windows 7 Following are the verified operating systems: Windows XP Service Pack 2 (Home Edition, Professional) 32-bit Windows Vista Service Pack 2 (Ultimate, Business) 64-bit Windows Vista Service Pack 2 (Business) 32-bit Windows 7 (Ultimate, Professional) 64-bit Windows 7 (Professional)
Required Component	.NET Framework 3.5 SP1

Notes

- The design and specifications are subject to change without notice for improvement.
- Pentium is a trademark of Intel Corporation.
- Windows and Windows Vista are trademarks of Microsoft Corporation.
- Regarding other company names and products, they are also trademarks of individual companies.

- **Accessories**

Power cord (2 m or 6.56 ft) 1
Rack mounting screw 5 x 12 (with plane washer)* 4
Blank Panel (preinstalled on the module slot) 8
Module mounting screw (spare) 4
CD (Setting Software, Setting Software Instructions, etc.) 1

* Not supplied with the D-2008SP CU.

11.2. D-2012C Remote Console Unit

Model No.	D-2012C CE	D-2012C CE-AU/CN	D-2012C KR	D-2012C TW
Power Source	220 – 240 V AC, 50/60 Hz	220 – 240 V AC, 50 Hz	220 V AC, 60 Hz	100 – 120 V AC, 60 Hz
Power Consumption	18 W			
Volume Adjustment	100 mm (3.94") motorized fader x 12, rotary encoder x 8			
Line Input	1 channel (stereo), +10 dB* to –20 dB*, 10 kΩ, unbalanced, RCA jack			
Headphone output	Stereo, 100 mW + 100 mW (at 32 Ω load), standard stereo phone jack			
Monitor Bus	1 stereo input, 1 stereo output Connector: RJ45 connector Connection Cable: Shielded twisted pair (STP) Cat 5 or higher LAN cable (data lines: 2 pairs) Maximum Cable Distance: 100 m or 109.36 yd (between D-2012C and D-2008SP)			
LAN	Network I/F: 1 channel, 10BASE-T- or 100BASE-TX-compatible network (switching: automatic recognition), RJ45 connector, connection via a switching hub Network Protocol: TCP/IP Connection Cable: Category 5 or higher shielded twisted pair cable for LAN (CAT5-STP or better) Maximum Cable Distance: 100 m or 109.36 yd (between D-2012C and a switching hub))			
Control	RS-232C: D-sub connector (9P), for maintenance use			
Operating Temperature	5 to 40 °C (41 to 104 °F)			
Finish	Panel: Surface treated steel sheet, laminated with polycarbonate sheet, gray, mat finish Rack mount bracket: Surface treated steel sheet, gray, mat finish			
Dimensions	482 (w) x 266 (h) x 138 (d) mm (18.98" x 10.47" x 5.43")			
Weight	6.6 kg (14.55 lb)			

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**

Power cord (2 m or 6.56 ft) 1
Fader knob (Yellow)* 3
Fader knob (Red)* 3
Rack mounting screw 5 x 12 (with plane washer) 4
Cable clamp 1
Machine screw M3 x 6 1

* Convenient for color coding to distinguish channels to which stereo link or group settings are assigned.

11.3. D-911 VCA Fader Unit

Power Supply	5 V DC (supplied from the optional D-984VC)
Connector	RJ45 connector x 8
Input Fader Control	Input fader (100 mm or 3.94") x 12
Output Volume Control	Output volume control x 8
Contact Control	Illuminated switch x 8
Remote Output	No-voltage make contact output (contact capacity: 30 V DC, 4 A)
Remote Switch	Seesaw switch for activating the remote function of the power distributor
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	482.6 (w) x 177 (h) x 61.3 (d) mm (19" x 6.97" x 2.41") (excluding projection)
Weight	3 kg (6.61 lb)

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**

Fader knob (Red, Yellow)* ..... 3 each
Volume knob (Red)* 2
Rack mounting screw 5 x 12 (with plane washer) 4
Rack mounting bracket (preinstalled on the unit) 2

* Convenient for color coding to distinguish channels to which stereo link or group settings are assigned.

11.4. D-921F Microphone/Line Input Module

Input	2 channels, Mic/Line changeable Mic: –50/–36 dB*, 4.7 kΩ, electronically-balanced, XLR-3-31 type Line: –10/+4 dB*, 10 kΩ, electronically-balanced, XLR-3-31 type Phantom power supply (+15 V, can be used when set for the microphone) Ground lift switch
A/D Converter	24 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB (+4 dB* input)
Dynamic Range	Over 100 dB (IHF-A weighted) (+4 dB* input)
Total Harmonic Distortion	Under 0.05 % (+4 dB* input)
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	150 g (0.33 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

11.5. D-921E Microphone/Line Input Module

Input	2 channels, Mic/Line changeable Mic: –50/–36 dB*, 4.7 kΩ, electronically-balanced, 3-pin removable terminal block Line: –10/+4 dB*, 10 kΩ, electronically-balanced, 3-pin removable terminal block Phantom power supply (+15 V, can be used when set for the microphone) Ground lift switch
A/D Converter	24 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB (+4 dB* input)
Dynamic Range	Over 100 dB (IHF-A weighted) (+4 dB* input)
Total Harmonic Distortion	Under 0.05 % (+4 dB* input)
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	140 g (0.31 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**
3-pin removable terminal plug (preinstalled on the unit) 2

11.6. D-922F Microphone/Line Input Module

Input	2 channels, –50/–36/–10/+4 dB* (Selectable with the DIP switch), 4.7 kΩ, electronically-balanced, XLR-3-31 type Phantom power supply (+15 V, can be set with the DIP switch) Ground lift switch (can be set with the DIP switch)
A/D Converter	20 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB (+4 dB* input)
Dynamic Range	Over 85 dB (IHF-A weighted) (+4 dB* input)
Total Harmonic Distortion	Under 0.2 % (+4 dB* input)
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	135 g (0.3 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

11.7. D-922E Microphone/Line Input Module

Input	2 channels, –50/–36/–10/+4 dB* (Selectable with the DIP switch), 4.7 kΩ, electronically-balanced, 3-pin removable terminal block Phantom power supply (+15 V, can be set with the DIP switch) Ground lift switch (can be set with the DIP switch)
A/D Converter	20 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB (+4 dB* input)
Dynamic Range	Over 85 dB (IHF-A weighted) (+4 dB* input)
Total Harmonic Distortion	Under 0.2 % (+4 dB* input)
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	125 g (0.28 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**
3-pin removable terminal plug (preinstalled on the unit) 2

11.8. D-2000AD1 Microphone/Line Input Module

Input	4 channels, Mic/Line selectable (Selectable with the D-2000 Setting Software) Mic: –50/–36 dB*, 2.6 kΩ, electronically-balanced Line: –10 dB*, 2.6 kΩ/+4 dB*, 7 kΩ, electronically-balanced Connector: XLR-3-31 type Phantom power supply (48 V DC, can be set for the Mic, 5 mA or less per channel) Ground lift switch
A/D Converter	24 bit
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB (+4 dB* input)
Dynamic Range	104 dB (IHF-A weighted) or more (+4 dB* input)
Total Harmonic Distortion	0.008 % or less (+4 dB* input)
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	200 g (0.44 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

11.9. D-936R Stereo Input Module

Input	4 stereo inputs (Selection of 1 stereo or mixing or all 4 stereo inputs) –10 dB*, 10 kΩ, RCA jack
A/D Converter	24 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB (+4 dB* input)
Dynamic Range	Over 100 dB (IHF-A weighted)
Total Harmonic Distortion	Under 0.05 %
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	145 g (0.32 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

11.10. D-923AE Digital Input Module

Input	2 channels, 2.0 – 7.0 V (p-p), 110 Ω, XLR-3-31 type
Applicable Format	AES/EBU (2 channel multiplexed)
Sampling Frequency	32 – 48 kHz
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	130 g (0.29 lb)

Note: The design and specifications are subject to change without notice for improvement.

11.11. D-937SP Digital Input Module

Input	Stereo 1 channel (Selectable one of 4 inputs) 0.5 V (p-p), 75 Ω, Coaxial RCA jack x 2 Square optical connector x 2
Applicable Format	S/PDIF (2 channel multiplexed)
Sampling Frequency	32 – 48 kHz
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	130 g (0.29 lb)

Note: The design and specifications are subject to change without notice for improvement.

11.12. D-971M Line Output Module

Output	4 channels, +4 dB*, adaptable load of over 600 Ω, electronically-balanced, XLR-3-32 type
D/A Converter	24 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB
Dynamic Range	Over 100 dB (IHF-A weighted)
Total Harmonic Distortion	Under 0.05 %
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	165 g (0.36 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

11.13. D-971E Line Output Module

Output	4 channels, +4 dB*, adaptable load of over 600 Ω, electronically-balanced, 3-pin removable terminal block
D/A Converter	24 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB
Dynamic Range	Over 100 dB (IHF-A weighted)
Total Harmonic Distortion	Under 0.05 %
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	140 g (0.31 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**
3-pin removable terminal plug (preinstalled on the unit) 2

11.14. D-971R Line Output Module

Output	4 channels (2 outputs for each channel), –10 dB*, adaptable load of over 600 Ω, RCA jack
D/A Converter	24 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB
Dynamic Range	Over 100 dB (IHF-A weighted)
Total Harmonic Distortion	Under 0.05 %
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	150 g (0.33 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

11.15. D-2000DA1 Line Output Module

Output	4 channels, +4 dB*/–10 dB* (Selectable with the DIP switch), adaptable load of over 600 Ω, electronically-balanced/unbalanced (Selectable with the DIP switch), XLR-3-32 type
D/A Converter	24 bits
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ±1 dB
Dynamic Range	Over 104 dB (IHF-A weighted)
Total Harmonic Distortion	Under 0.008 %
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	200 g (0.44 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

11.16. D-972AE Digital Output Module

Output	4 channels, 5.0 V (p-p), 110 Ω, XLR-3-32 type
Applicable Format	AES/EBU (2 channel multiplexed)
Sampling Frequency	48 kHz
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	130 g (0.29 lb)

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**
Ferrite clamp 2

11.17. D-961SP Digital Output Module

Output	Stereo 2 channels (with splitter, each pair of optical output and coaxial output in parallel), 0.5 V (p-p), 75 Ω, Coaxial RCA jack x 2 Square optical connector x 2
Applicable Format	S/PDIF (2 channel multiplexed)
Sampling Frequency	48 kHz
Finish	Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions	35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight	130 g (0.29 lb)

Note: The design and specifications are subject to change without notice for improvement.

11.18. D-981 Remote Control Module

Contact Input		COM + Terminals 1 – 8: Open voltage: 5 V DC, short-circuit: 5 mA, 10-pin removable terminal block
Control	Preset Memory Selection	Any preset memory can be recalled. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
	Volume	Volume can be turned UP or DOWN for any input and output channels. Control system: 1 step variation for no-voltage make single pulse of over 100 ms 1 step continuous operation for every 70 ms for no-voltage make of over 100 ms. Can be reset when at break. Variable range: –∞ dB to +10 dB
	Channel	Any input/output channels can be turned ON and OFF. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
	Stereo Selection	Any stereo input can be selected. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
Contact Output		COM + Terminals 1 – 8: No-voltage make contact input, contact capacity: 24 V DC, 100 mA 10-pin removable terminal block
Finish		Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions		35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight		125 g (0.28 lb)

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**
10-pin removable terminal plug (preinstalled on the unit) 2

11.19. D-983 Remote Control Module

Contact Input		COM + Terminals 1 – 24: Open voltage 5 V DC, short-circuit current 5 mA, RJ45 connector x 4
Control	Preset Memory Selection	Any preset memory can be recalled. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
	Volume Control	Any input/output channel volume can be turned UP or DOWN. Control method: 1 step variation with no-voltage make single pulse of over 100 ms 1 step continuous operation for every 70 ms for no-voltage make of over 100 ms. Can be reset when at break. Variable range: –∞ dB to +10 dB
	Channel	Any input/output channel can be turned ON and OFF. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
	Stereo Selection	Input stereo channel of the D-936R (optional) or the D-937SP (optional) can be selected. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
Contact Output		COM + Terminals 1 – 16: No-voltage make contact, contact capacity: 24 V DC, 100 mA, RJ45 connector x 4
Finish		Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions		35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight		170 g (0.37 lb)

Note: The design and specifications are subject to change without notice for improvement.

11.20. D-984VC VCA Control Module

VCA Control Input		+5 V, GND, Terminals 1 – 20 (12 Input channels, 8 output channels), RJ45 connector x 4 Control contacts: Volume control of each input/output channel Variable range: –∞ dB to +10 dB
Contact Input		COM + Terminals 1 – 8: Open voltage 5 V DC, short-circuit current 5 mA, RJ45 connector x 2
Control	Preset Memory Selection	Any preset memory can be recalled. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
	Volume Control	Any input/output channel volume can be turned UP or DOWN. Control method: 1 step variation with no-voltage make single pulse of over 100 ms 1 step continuous operation for every 70 ms for no-voltage make of over 100 ms. Can be reset when at break. Variable range: –∞ dB to +10 dB
	Channel	Any input/output channel can be turned ON and OFF. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
	Stereo Selection	Input stereo channel of the D-936R (optional) or the D-937SP (optional) can be selected. Control method: No-voltage make of over 100 ms or no-voltage make single pulse of over 100 ms
Contact Output		COM + Terminals 1 – 8: No-voltage make contact, contact capacity: 24 V DC, 100 mA, RJ45 connector x 2
Finish		Panel: Pre-coated steel plate, black (30 % gloss)
Dimensions		35 (w) x 119.5 (h) x 178.4 (d) mm (1.38" x 4.7" x 7.02")
Weight		170 g (0.37 lb)

Note: The design and specifications are subject to change without notice for improvement.

11.21. D-2000CB CobraNet Interface Module

Network I/F	CobraNet: 100 BASE-TX, PRIMARY/SECONDARY 2 system RJ45 connector, Enables decentralized installation, Audio transmission only Connection cable: Category 5 or higher shielded twisted pair cable for LAN (CAT5-STP or better) To be connected via the specified switching hub **Note:** This network should be completely independent of the LAN. Number of D-2008SP connection: Max. 4 Switching hub stage: Max. 7 Max extend distance: 100 m or 109.36 yd (connected via a switching hub)
Input	16 channels, 20 bit/24 bit
Output	16 channels, 20 bit/24 bit
Sampling Frequency	48 kHz
Finish	Panel: Pre-coated steel plate
Dimensions	17 (w) x 80 (h) x 140 (d) mm or 0.67" x 3.15" x 5.51" (excluding projection)
Weight	100 g (0.22 lb)

Note: The design and specifications are subject to change without notice for improvement.

• **Accessory**

Machine screw M3 x 8 1

11.22. D-2012AS Console Case

Finish	Side panels: MDF, paint, black, mat finish Armrest: MDF, leather upholstery, black, mat finish Decorative panels: Stainless steel, silver
Dimensions	505 (w) x 127.5 (h) x 333.4 (d) mm or 19.88" x 5.02" x 13.13" (assembled with the D-2012C)
Weight	2.3 kg or 5.07 lb, 7.5 kg or 16.53 lb (assembled with the D-2012C)

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**

Machine screw M4 x 25 (with washer) 11
Machine screw M4 x 10 4
Rubber foot 4

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