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.

Traceability Information for Europe (EMC directive 2004/108/EC)

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TOA Corporation
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1. SAFETY PRECAUTIONS

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

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

⚠️ WARNING ⚠️ CAUTION

⚠️ WARNING

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

⚠️ CAUTION

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

When Installing the Unit

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

When the Unit is in Use

• Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
  • If you detect smoke or a strange smell coming from the unit.
  • If water or any metallic object gets into the unit.
  • If the unit falls, or the unit case breaks.
  • If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  • If it is malfunctioning (no tone sounds.)
• To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest TOA dealer.
• Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.

When Installing the Unit

• Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
• When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
• Do not block the fan exhaust vent on the unit's rear and the ventilation slots on the bottom. Doing so may cause heat to build up inside the unit and result in fire.
• Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
• When installing the unit in an equipment rack, observe the following instructions. Failure to do so may result in fire or personal injury.
  • Install the rack on a solid and stable surface. Then, secure it with anchor bolts or make other appropriate arrangements to prevent it from falling down or moving.
  • Use the screws supplied with the unit to mount on TOA's rack.
  • The AC outlet to which the unit's AC power cable is connected must have allowable current capacity over the unit's current consumption.

When the Unit is in Use

• Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.
2. GENERAL DESCRIPTION

TOA's D-901 is a 19-inch rack-mounted (3U high) digital mixer configured with 12 inputs, 8 buses, and 8 outputs. It features signal processing functions necessary for sound systems such as feedback suppression and auto-mixing. All functional parameters can be set at the unit*. Settings can be stored in the unit's internal memory as "preset memory" and can be recalled using the front panel-mounted operation keys.

* Can also be set at a PC using the setting software, which can be downloaded from our website "http://www.toa-products.com/international/".

3. FEATURES

• Acoustic feedback can be suppressed through simple operation.
• Auto-Mixing functions (Ducker*1 and NOM Attenuation*2) automatically adjust the input signal volume.
• Signals are digitally processed, ensuring high-accuracy sound parameter settings.
• All settings can be performed at the unit using the LCD screen and setting keys and knobs located on the front panel. The settings can also be made at a PC using the dedicated software.
• Modular construction permits flexible configuration of inputs and outputs, from 2-IN/4-OUT to 12-IN/8-OUT systems.
• Up to 16 preset patterns can be stored in memory, which can be easily recalled from either the unit or connected external equipment.
• An RS-232C port permits remote control of the unit using an AMX or Crestron controller, or similar external equipment. The control protocol is available for download at our website http://www.toa-products.com/international/.
• A protect function prevents accidental changes of front panel key settings.
• The use of an optional D-981 or D-983 Remote Control Module, or an optional D-984VC VCA Control Module permits easy remote operation of volume control and preset memory recall.
• The use of an optional D-984VC VCA Control Module permits the sound volume to be adjusted from remote locations using the faders or volume controls.

*1 Automatically adjusts all channel gains in response to input signal level. (Refer to p. 38.)
*2 Automatically adjusts the input gain of open microphones corresponding to the number of open microphones in the system. (Refer to p. 39.)

Notes
• AMX is a trademark of AMX Corporation.
• Crestron is a trademark of Crestron Electronics, Inc.

4. HANDLING PRECAUTIONS

• Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
• Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
• Use the unit in locations where the temperature is between +5 to +40 °C (no condensation) and the humidity is less than 90%.
• The D-901 is a precision audio component. To prevent failure, avoid locations where the unit may be exposed to strong shocks or vibrations.
• Do not place combustible material under the unit.
• To clean, be sure to first switch off the power, then wipe with a dry cloth. When extremely dirty, use a soft cloth dampened in neutral detergent. Never use benzene, thinner or chemically-treated towels, which may damage the unit's finish.
5. NOMENCLATURE AND FUNCTIONS

5.1. D-901 Digital Mixer

[Front]

Parameter input section (described below)  Input channel control section (Refer to p. 9.)  Output channel control section (Refer to p. 10.)

1. Power switch [POWER, ON/ OFF]
The unit's power switches ON when this switch is pressed, and switches OFF when pressed again.

2. Power Indicator
Lights when the power is switched ON.

Parameter Input Section

3. Utility Indicator
Remains lit during selection of the utility function.

4. Utility Key [UTILITY]
Selects the utility function. Pressing this key displays the utility function setting screen on the LCD screen (5). (Refer to p. 61.)

5. LCD Screen
When the function key is pressed, its corresponding setting screen is displayed on this screen. If the unit’s internal cooling fan malfunctions, the "ERROR" indication appears on the screen even during setting operation. In this case, contact your TOA dealer.

6. System Lock Indicator [LOCK]
Lights when the protect function is enabled. (For more information on the protect function, refer to p. 68.)

7. Setting Knob [CHANGE PARAMETER, PUSH-ENTER]
This knob can be rotated to change parameters or select setting contents, and also operates as a push switch. Pressing the knob when the [OK?] indication is displayed on the LCD screen (5) enables the corresponding function.

8. Preset Indicator
Remains lit during preset memory selection.

9. Preset Key [PRESET]
Recalls the settings stored in preset memory or saves the current parameters. The preset memory setting screen appears on the LCD (5) when this key is pressed. (Refer to p. 59.)

10. Screen Shift Keys [← → ▲ ▼]
Pressing these keys change the setting items on the LCD (5).

11. Function ON/OFF Indicator
Lights when the parameter shown on the LCD (5) is enabled (ON).

12. Function ON/OFF Key [ON]
Parameters displayed on the LCD (5) are enabled (ON) when this key is pressed, and disabled (OFF) when pressed again.
Preset Memory Selection Section

13. Preset Memory Selector Keys [1 – 8]
Recall preset memory patterns 1 – 8. To recall, press the desired Preset Memory Selector key, then press the Setting knob (7).

14. Preset Memory Indicators
The LED corresponding to the currently selected Preset Memory Selection key is illuminated.

Input Channel Control Section

15. Input Channel Selector Keys [1 – 12]
Used to select the input channel for sound volume adjustment or parameter setting. The Input channel indicator [SEL] (16) lights when a key is pressed, causing the corresponding channel number to be displayed on the setting screen.

16. Input Channel Indicators [SEL, SIG, ON]
- SEL: Lights when the input channel is selected.
- SIG
Indicates the input signal level in two colors (red and green). The status of indicator shows as follows depending on the input signal levels.
Red: Signal level is 17 dB or more above the rated input signal level.
Green: Signal level is between –40 dB and +17 dB on the basis of the rated input signal level.
OFF: Signal level is lower than –40 dB below the rated input signal level.

Notes
- The indicator lights red when the signal level is set too high. In such cases, decrease the output level of connected equipment so that the indicator lights green.
- Only when the D-923AE or the D-937SP Digital input module is used, the input channel indicator flashes red if a status error occurs.
- ON: Lights when the channel is selected and active.

17. Input Volume Control [INPUT]
Adjusts the gain of the input channel selected with the Input Channel Selector keys (15).

18. Input Channel ON/OFF Key [ON]
Enables or disables the channel selected with the Input Channel Selector keys (15).

19. Input Channel ON/OFF Indicator
Lights continuously to indicate that the input channel selected with the Input Channel Selector keys (15) is enabled (ON).
Microphone Bus Control Section

Microphone bus indicator (21) to light, and allows feedback suppression (p. 54), effect (echo) (p. 55), and bus assignment (p. 56) to be set on the LCD screen.

21. Microphone Bus Indicator
Remains lit while the microphone bus is selected.

22. Feedback Suppression Indicator [FBS]
Remains lit while the feedback suppression function is enabled.

23. Effect Key [EFFECT]
The effect (echo) function is enabled when this key is pressed, and the effect (echo) parameters are displayed on the LCD screen, allowing settings to be changed. Pressing the key again disables the effect (echo) function. (Refer to p. 55.)

24. Effect Indicator
Remains lit while the effect (echo) function is enabled.

Output Channel Control Section

25. Output Signal Level Meter
Indicates the signal level of the channel selected with the Output Channel Selector keys (28).

26. Output Channel Indicators [ON, SIG, SEL]
- ON: Lights when the channel is active.
- SIG
Indicates the output signal level in two colors (red and green). The status of indicator shows as follows depending on the output signal levels.

- Red: Signal level is 17 dB or more above the rated output signal level.
- Green: Signal level is between –40 dB and +17 dB on the basis of the rated output signal level.
- OFF: Signal level is lower than –40 dB below the rated output signal level.

27. Output Volume Control [OUTPUT]
Adjusts the gain of the output channel selected with the Output Channel Selector keys (28).

28. Output Channel Selector Keys [1 – 8]
Used to select the output channel for sound volume adjustment, parameter setting or Level meter indication (25). The Output Channel indicator [SEL] (26) lights when the key is pressed, permitting parameter setting, volume adjustment with the Output volume control (27) or Level meter (25) signal level indication.

29. Output Channel ON/OFF Key [ON]
Enables or disables the channel selected with the Output Channel Selector keys (28).

30. Output Channel ON/OFF Indicator
Lights continuously to indicate that the output channel selected with the Output Channel Selector keys (28) is enabled (ON).
31. 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.

32. RS-232C Communication Port
A communications connector for a personal computer (PC) or other control equipment.

33. Control Module Slot
The control module's dedicated slot.

34. Output Module Slot
Slot for output channels 5 – 8.

35. Output Module Slot
Slot for output channels 1 – 4.

36. Input/Output Module Slot
Slot for input channels 11 and 12. Inserting an output module here provides output signals for channels 5 – 8.

37. Input/Output Module Slot
Slot for input channels 9 and 10. Inserting an output module here provides output signals for channels 1 – 4.

38. Input Module Slot
Slot for input channels 7 and 8.

39. Input Module Slot
Slot for input channels 5 and 6.

40. Input Module Slot
Slot for input channels 3 and 4.

41. Input Module Slot
Slot for input channels 1 and 2.

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

**Note**
Slots 5 – 8 accommodate only two D-971M and/or D-971E Line Output Modules together or independently in total.
5.2. 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 top and bottom of the front panel are handles used for module detachment. Never rotate them because they do not function as screws.

5.2.1. D-921F Microphone/Line Input Module

43. 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 way of the front panel setting screen.

44. 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.

5.2.2. D-921E Microphone/Line Input Module

45. 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 way of the front panel setting screen.

46. 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.

Note
   Be sure to use the supplied removable terminal plugs (3P) for connection.
5.2.3. D-922F Microphone/Line Input Module

47. 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.

48. 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)

5.2.4. D-922E Microphone/Line Input Module

49. 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.

50. 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)

5.2.5. D-936R Stereo Input Module

51. Stereo Input Terminal [1L/1R, 2L/2R, 3L/3R, 4L/4R]
Unbalanced, RCA pin 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 at the front panel setting screen. They can also be remotely selected by way of connected external equipment through the use of the control module.
Input signal level: –10 dB
5.2.6. D-923AE Digital Input Module

52. 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)

- 2: Signal
- 3: Signal
- 1: Ground

Use the XLR-3-12C or its equivalent for connection.

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

5.2.7. D-937SP Digital Input Module

53. Optical Input Terminal [OPTICAL, 1, 2]
Optical input terminal of S/PDIF format.

54. 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 at the front panel-mounted setting screen.

5.2.8. D-971M Line Output Module

55. Monaural Output Terminal [1, 2, 3, 4] (XLR-3-32 equivalent)
Electronically-balanced output terminal. (Pin 1: Ground; Pin 2: Hot; Pin 3: Cold)

- 2: Hot
- 3: Cold
- 1: Ground

Output signal level: +4 dB
Use XLR-3-11C or equivalent for connection.

5.2.9. D-971E Line Output Module

56. 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.
5.2.10. D-971R Line Output Module

57. Monaural Output Terminals [1(L), 2(R), 3(L), 4(R)]
Unbalanced, RCA pin jack output terminals. Each output is equipped with a 2-channel splitter.
Output signal level: −10 dB

5.2.11. D-972AE Digital Output Module

58. AES/EBU Digital Output Terminal [AES/EBU, 1/2] (XLR-3-32 or its equivalent)
Digital output terminal of AES/EBU format. (Pin 1: Ground; Pin 2: Signal; Pin 3: Signal)

5.2.12. D-961SP Digital Output Module

59. Optical Output Terminal [OPTICAL 1, 2]
Optical output terminal of S/PDIF format.

60. Coaxial Output Terminal [COAXIAL 1, 2]
Coaxial input/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 pin jack output delivers output in parallel.

5.2.13. D-981 Remote Control Module

61. 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 on the front panel setting screen.
Note
Be sure to use the supplied removable terminal plugs (10P) for connection.

62. 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 on the front panel setting screen.
5.2.14. D-983 Remote Control Module

63. Contact Input Terminal [CTRL IN, 1-6, 7-12, 13-18, 19-24]
Six-circuit RJ45 contact input terminals. Assign functions to each contact on the front panel-mounted setting screen.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>CTRL IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN 1</td>
</tr>
<tr>
<td>2</td>
<td>IN 2</td>
</tr>
<tr>
<td>3</td>
<td>IN 3</td>
</tr>
<tr>
<td>4</td>
<td>IN 4</td>
</tr>
<tr>
<td>5</td>
<td>IN 5</td>
</tr>
<tr>
<td>6</td>
<td>IN 6</td>
</tr>
<tr>
<td>7</td>
<td>C</td>
</tr>
<tr>
<td>8</td>
<td>C</td>
</tr>
</tbody>
</table>

64. Contact Output Terminal [CTRL OUT, 1-4, 5-8, 9-2, 13-16]
Four-circuit RJ45 contact output terminals. Assign functions to each contact on the front panel-mounted setting screen.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>CTRL OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OUT 1</td>
</tr>
<tr>
<td>2</td>
<td>C 1</td>
</tr>
<tr>
<td>3</td>
<td>OUT 2</td>
</tr>
<tr>
<td>4</td>
<td>C 3</td>
</tr>
<tr>
<td>5</td>
<td>OUT 3</td>
</tr>
<tr>
<td>6</td>
<td>C 2</td>
</tr>
<tr>
<td>7</td>
<td>OUT 4</td>
</tr>
<tr>
<td>8</td>
<td>C 4</td>
</tr>
</tbody>
</table>

5.2.15. D-984VC VCA Control Module

65. Input channel VCA Terminal [IN CH, 1-6, 7-12]
RJ45 VCA terminals. These RJ45 VCA terminals correspond to 12 input channels.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>IN CH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN CH 1</td>
</tr>
<tr>
<td>2</td>
<td>IN CH 2</td>
</tr>
<tr>
<td>3</td>
<td>IN CH 3</td>
</tr>
<tr>
<td>4</td>
<td>IN CH 4</td>
</tr>
<tr>
<td>5</td>
<td>IN CH 5</td>
</tr>
<tr>
<td>6</td>
<td>IN CH 6</td>
</tr>
<tr>
<td>7</td>
<td>V</td>
</tr>
<tr>
<td>8</td>
<td>C</td>
</tr>
</tbody>
</table>

66. Output Channel VCA Terminal [OUT CH, 1-4, 5-8]
RJ45 VCA terminals. These RJ45 VCA terminals correspond to 8 output channels.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>OUT CH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OUT CH 1</td>
</tr>
<tr>
<td>2</td>
<td>OUT CH 2</td>
</tr>
<tr>
<td>3</td>
<td>OUT CH 3</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>6</td>
<td>OUT CH 4</td>
</tr>
<tr>
<td>7</td>
<td>V</td>
</tr>
<tr>
<td>8</td>
<td>C</td>
</tr>
</tbody>
</table>

67. Control Input Terminal [CTRL IN, 1-4, 5-8]
RJ45 Control Input terminals. These RJ45 Control Input terminals correspond to 8 control inputs.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>CTRL IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CTRL IN 1</td>
</tr>
<tr>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>3</td>
<td>CTRL IN 2</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td>5</td>
<td>CTRL IN 3</td>
</tr>
<tr>
<td>6</td>
<td>C</td>
</tr>
<tr>
<td>7</td>
<td>CTRL IN 4</td>
</tr>
<tr>
<td>8</td>
<td>V</td>
</tr>
</tbody>
</table>

68. Control Output Terminal [CTRL OUT, 1-4, 5-8]
RJ45 Control output terminals. These RJ45 Control output terminals correspond to 8 control outputs.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>CTRL OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CTRL OUT 1</td>
</tr>
<tr>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>3</td>
<td>CTRL OUT 2</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
</tr>
<tr>
<td>5</td>
<td>CTRL OUT 3</td>
</tr>
<tr>
<td>6</td>
<td>G</td>
</tr>
<tr>
<td>7</td>
<td>CTRL OUT 4</td>
</tr>
<tr>
<td>8</td>
<td>C 4</td>
</tr>
</tbody>
</table>
6. SETTING BASICS

6.1. Setting Procedures

The D-901's functions need to be set using the front-mounted keys and knob according to scenes of use. After connecting all external equipment, check the following, then follow the procedures below to set each of the unit's functions.

Check to be sure that
• The required modules are correctly inserted.
• The power supply is correctly connected.
• The power indicator lights when the power switch is turned on.

Step 1. Set which input channel signal is transmitted to which output channel.

Because the factory default setting is made so that each input (1 – 12) is assigned to all outputs (1 – 8) via the Microphone Bus*, when a microphone, or CD player or other music player is connected to an input, its signals are output from all output terminals by simply increasing the corresponding input channel gain. Make input-to-output re-assignment according to scenes of use.

* Refer to p. 82, Block Diagram.
(Refer to p. 41, Bus assignment settings.)
This setting can be performed in either of two ways: On the setting screen display or by way of the front-mounted keys.

Step 2. Set the input sensitivity.

When the D-921E or D-921F is installed, perform this setting by displaying the setting screen.
(Refer to p. 26, PAD Settings.)
When the D-922E or D-922F is installed, perform this setting using its DIP switch.
(Refer to p. 12 – 13.)
Set the sensitivity so that the front-mounted Input channel indicator [SIG] does not light red.

(Refer to p. 25, Input/Output Gain Settings.)
This setting can be performed in any of three ways: On the setting screen display (two methods) or by way of the front-mounted keys.

Note: When using the D-984VC VCA Control Module, perform gain settings as well for the input channel to be remotely controlled.

Step 3. Set the input channel gain.

(Refer to p. 25, Input/Output Gain Settings.)
This setting can be performed in any of three ways: On the setting screen display (two methods) or by way of the front-mounted keys.

Note: When using the D-984VC VCA Control Module, perform gain settings as well for the output channel to be remotely controlled.

Step 4. Set the output channel gain.

(Refer to p. 25, Input/Output Gain Settings.)
This setting can be performed in any of three ways: On the setting screen display (two methods) or by way of the front-mounted keys.

Note: When using the D-984VC VCA Control Module, perform gain settings as well for the output channel to be remotely controlled.

Step 5. Set individual functions as required.

(Refer to p. 18, Setting Flowcharts.)
Refer to the setting flowcharts for the appropriate setting method for the function to be used.

When using Stereo Link, Grouping and Crossover functions, first perform the required settings on the Utility setting screen.
Note
It is highly recommended that any changed parameters be immediately saved as preset memory on the Preset Memory setting screen. (Refer to p. 57, Preset Memory Save.) This permits the parameters of each function to be saved and protected, even if the power is switched off. All currently saved parameters can be recalled and reproduced when the power is switch on again. (Refer to p. 60, Initial Preset Memory Selection.) Settings need not be saved when temporarily setting or changing parameters.

6.2. Setting Flowcharts

All the functions described hereinafter can also be set at a PC using the dedicated software. Please access our website "http://www.toa-products.com/international/" for its download.

In the following charts, the Screen shift keys [ ▲ ▼ ] are used to move vertically (next screen display) and the shift keys [ ◄ ► ] to move horizontally between the solid line setting screen boxes ( □ ). For movements within the dotted line setting screen boxes ( ◆ ) and parameter settings for each setting screen, refer to the corresponding pages.

6.2.1. Input and output settings

(Only when using the D-921E or D-921F Microphone/Line Input Module)

Phantom power ON/OFF Settings (Only when the PAD is set to "MIC.") (p. 26)
PAD (Input Sensitivity) Settings (p. 26)

(Only when using the D-936R Stereo Input Module)

Line Input Mode Selection (p. 26)
Line (Stereo) Input Selection (p. 28)

(Only when using the D-923AE Digital Input Module)

Channel Status Verification (p. 27)
Input signal status verification Sampling frequency verification Pre-emphasis verification

(Only when using the D-937SP Digital Input Module)

Channel Status Verification (p. 27)
Input signal status verification Sampling frequency verification Pre-emphasis verification
Line (Stereo) Input Selection (p. 28)

Input trim settings (p. 28)
Input trim gain settings
Input trim polarity settings
High-pass filter settings (p. 29)
Cutoff Frequency Settings Q settings
Equalizer settings (p. 30)
Gain Settings (low frequency) Center frequency settings Q settings
Gain Settings (high frequency) Center frequency settings Q settings

1 (To next page) 2 (To next page)
Input 12 Gain Settings:

Same items as for Input 1

Output 1 Gain Settings:

Output Channel Gain Settings (p. 42)

Output Channel Group Trim Gain Settings (Only when Group is set) (p. 42)

Crossover settings (Only when Crossover function is enabled) (p. 43)

Slope Settings (High Frequency)
- Cutoff frequency settings
  - Q settings
  - Q2 settings
  - Crossover gain settings
  - Crossover filter polarity settings

Slope Settings (Low Frequency)
- Same items as for high frequency

Filter settings (p. 45)

Filter 1 Settings (Type Selection)
- Parametric equalizer
- High-pass filter (6 dB/12 dB)
- Low-pass filter (6 dB/12 dB)
- High shelving filter
- Low shelving filter
- Horn equalizer
- Notch filter
- All-pass filter

Filter 6* Settings (Type Selection)
- Same items as for Filter 1

Compressor settings (p. 50)

Threshold Level Settings
- Ratio settings
  - Attack time settings
  - Release time settings
  - Makeup gain settings

Delay Time Settings (p. 51)

Same items as for Output 1

Output 8 Gain Settings:

Same items as for Output 1

* The number of filters to be displayed differs depending on crossover configuration settings. (Refer to p. 62.)
6.2.2. Microphone bus settings

Microphone bus selector key

**SEL**

<table>
<thead>
<tr>
<th>Dynamic Mode Settings</th>
<th>Feedback suppression settings (p. 52)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Auto mode activation</td>
</tr>
<tr>
<td></td>
<td>Filter number settings</td>
</tr>
<tr>
<td></td>
<td>Dynamic mode filter initialization</td>
</tr>
<tr>
<td></td>
<td>Auto mode filter initialization</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode Confirmation (Filter 1 settings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency confirmation</td>
</tr>
<tr>
<td>Filter gain confirmation</td>
</tr>
<tr>
<td>Q confirmation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode Confirmation (Filter 12 settings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same items as for Filter 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effect key</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFECT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Echo Gain Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback ratio settings</td>
</tr>
<tr>
<td>Feedback delay settings</td>
</tr>
<tr>
<td>Initial echo (pre-) delay settings</td>
</tr>
<tr>
<td>Low-pass filter frequency settings</td>
</tr>
<tr>
<td>Low-pass filter Q settings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bus Assignment Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crosspoint gain settings</td>
</tr>
</tbody>
</table>

6.2.3. Preset memory settings

Preset key

**PRESET**

<table>
<thead>
<tr>
<th>Preset Memory Save (p. 57)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Preset Memory Recall (p. 58)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Preset Memory Delete (p. 58)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Preset Memory Crossfade Time Settings (p. 59)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Initial Preset Memory Selection (p. 60)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Configuration Save (p. 60)</th>
</tr>
</thead>
</table>
6.2.4. Utility settings

Utility key

**UTILITY**

- **Stereo Link Settings** (p. 61)
- **Group Settings** (p. 61)
- **Crossover Configuration Settings** (p. 62)
- **NOM Attenuation Settings** (p. 64)

**Contact input/output settings (p. 65)**
(Only when using the D-981 or D-983 Remote Control Module, or D-984VC VCA Control Module)

- **Input Contact Number Selection**
  - Preset memory recall
  - Volume UP
  - Volume DOWN
  - Channel ON/OFF
  - Line (stereo) input selection

- **Output Contact Number Selection**
  - Normal make/break
  - Preset memory recall tally
  - Channel ON/OFF tally
  - Contact input status tally
  - Line (stereo) input selection tally

- **Protect Settings** (p. 68)
  - Operation key protection ON/OFF

- **RS-232C port settings (p. 70)**

- **Control Mode Selection**
  - RS-232C transmission rate settings

- **All Input/Output Channel Gain Confirmation** (p. 71)
  - Gain confirmation for all 12 input channels
  - Gain confirmation for all 8 output channels

  (Only when using the D-984VC VCA Control Module)

- **All Input/Output VCA Status Confirmation** (p. 71)
  - VCA status confirmation for all 12 input channels
  - VCA status confirmation for all 8 output channels

- **Module type confirmation (p. 72)**

- **Individual Slots Confirmation**
  - All slots confirmation

- **Cooling Fan Operating Status Confirmation** (p. 73)

- **Firmware Version Confirmation** (p. 73)
6.3. Setting Keys and Knob

Parameter input section

Input channel control section

Microphone bus control section

Output channel control section

Screen shift keys
Utility key
Preset key
Setting knob
Function ON/OFF key
Preset memory selector keys

Input channel selector keys
Input volume control
Microphone bus selector key
Effect key
Output volume control
Output channel selector keys
Input channel ON/OFF key
Output channel ON/OFF key
6.4. Setting Screen Displays

[Input/Output Gain Setting Screen Example]

Indicates the object currently being set. In this example, IN1 (Input 1) is the object being set. Pressing the ▶ shift key here switches the display to the input trim gain setting screen. The [IN 1]▶ TRIM indication is displayed on the first line, and the IN 1 (Input 1) trim gain becomes the setting object.

The gain of the input channel is displayed. In this example, the gain of Input channel 1 is displayed. Setting values can be changed using the Input volume control.

The gain of the output channel is displayed. In this example, the gain of Output channel 1 is displayed. Setting values can be changed using the Output volume control.

[Equalizer Setting Screen Example]

Setting items are displayed. In this example, the PEQ-H (high frequency equalizer) gain is being set. To change the frequency or Q of PEQ-H, press the ▶ shift key. The setting item display changes to FREQ and Q each time the ▶ shift key is pressed.

Parameters and selection contents can be changed with the Setting knob. In this example, the equalizer gain can be changed.

Displayed when the previous screen exists. In this case, the PEQ-L (low frequency equalizer) setting screen appears when the ▲ shift key is pressed.

Displayed when the next screen exists. In this case, the COMPMODE (compressor/auto-leveler) setting screen appears when the ◀ shift key is pressed.
7. INPUT/OUTPUT GAIN SETTINGS

There are 3 possible setting methods.

7.1. Input and Output Channel Control Section Settings

**Step 1.** Press the desired Input (or Output) channel selector key. The selected channel's SEL indicator lights.

**Note**
When Group setting is performed, selecting a channel in the group allows all SEL indicators of the input channels grouped together to light all at once.

**Step 2.** Rotate the Input (or Output) volume control to set the gain.

Input/output gain setting range: –INF (–∞) to +10 dB

7.2. Input/Output Gain Setting Screen Operation

**Step 1.** Press the desired Input (or Output) channel selector key.

**Step 2.** Using the Screen shift key, display the input (or output) gain setting screen.

**Step 3.** Rotate the Setting knob to set the gain.

7.3. Input/Output Channel Gain Setting Screen Operation

Perform the "Input Channel Gain Settings" (p. 40) and "Output Channel Gain Settings" (p. 42).
8. INPUT-RELATED SETTINGS

The channel selected with the Input channel selector keys can be enabled or disabled using the Input channel ON/OFF key. To enable or disable individual functions, use the function ON/OFF key when each function is displayed.

8.1. Phantom Power ON/OFF Settings (Only with D-921E or D-921F module)

- Can be displayed and set only when MIC is selected on the PAD setting screen (explained in the next section).
- Enable or disable phantom power using the function ON/OFF key.

**Note**

Signals are muted for a specified period of time while changing settings.

- Pressing the Input channel selector key for the channel in which the D-921E or D-921F module is installed permits phantom power setting for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ▼ shift key is pressed.

8.2. PAD (Input Sensitivity) Settings (Only with D-921E or D-921F module)

- Rotate the Setting knob to set the PAD (input sensitivity).
  Parameter setting range: MIC: –50 or –36 dB
  LINE: –10 or +4 dB

**Note**

Signals are muted for a specified period of time while changing settings.

- Pressing the Input channel selector key for the channel in which the D-921E or D-921F module is installed permits PAD selection for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ▼ shift key is pressed.

8.3. Line Input Mode Selection (Only with D-936R module)

- Rotate the Setting knob to select the D-936R Stereo Input Module operation mode.
- Either a single stereo input can be selected from among the 4 available stereo inputs (SELECT mode) or all 4 stereo channels can be mixed (MIX ALL mode). Also, in MIX ALL mode, stereo sources can be selected with the input selection screen. (Refer to p. 28.)

**Note**

Signals are muted for a specified period of time while changing settings.

- The setting screen reverts to the Input/Output Gain Setting screen when the ▼ shift key is pressed.
8.4. Channel Status Verification (Only with D-923AE or D-937SP module)

<table>
<thead>
<tr>
<th>Input signal status verification</th>
<th>Sampling frequency verification</th>
<th>Pre-emphasis verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>[IN 1] STATUS LOCK</td>
<td>[IN 1] STATUS Fs 48kHz</td>
<td>[IN 1] STATUS EMPHASIS NON</td>
</tr>
</tbody>
</table>

Using D-923AE: Input trim settings (next page)
Using D-937SP: Line (stereo) input selection (next page)

8.4.1. Input signal status verification

- Input signal status of each channel can be verified.

<table>
<thead>
<tr>
<th>Display</th>
<th>Input signal status</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCK</td>
<td>Normal</td>
</tr>
<tr>
<td>UNLOCK</td>
<td>No cable connected or equipment power not turned on</td>
</tr>
<tr>
<td>Non AUDIO</td>
<td>Not an audio signal</td>
</tr>
<tr>
<td>Non PCM</td>
<td>Not PCM data</td>
</tr>
<tr>
<td>DTS CD</td>
<td>DTS CD</td>
</tr>
</tbody>
</table>
8.5. Line (Stereo) Input Selection (Only with D-936R or D-937SP module)

Using D-936R: Line input mode selection (p. 26)
Using D-937SP: Channel status verification (previous page)

- Rotate the Setting knob to select the line (stereo) number and press the function ON/OFF key to enable or disable the input. For example, when the [IN 1] indication is displayed, settings are performed for the stereo module inserted into the unit's rear-mounted IN1 and 2 slot.
- There are two operation modes for the module: MIX ALL and SELECT modes. (MIX ALL mode is provided with the D-936R only.)
  MIX ALL mode: Mixes 4 (stereo) line inputs. Any individual stereo input can also be disabled.
  SELECT mode: Selects a single (stereo) line input. Trim settings can be performed for individual line inputs.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

8.6. Input Trim Settings

Using D-921F or D-921E: PAD (Input sensitivity) settings (p. 26)
Using D-936R or D-937SP: Line (stereo) input selection (previous section)
Using D-923AE: Channel status verification (previous page)

- Rotate the Setting knob to set the input trim gain. Parameter setting range: –15 to +15 dB in 0.1 dB steps
- Pressing an Input channel selector key allows the trim to be adjusted for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

8.6.1. Input trim gain settings

8.5.2. Input trim polarity settings

- Rotate the Setting knob to set the input trim polarity. Parameter setting range: NORMAL, INVERSE
- Pressing an Input channel selector key allows the trim to be adjusted for that channel. The [IN 1] indication changes to the selected channel number indication.
8.7. High-Pass Filter Settings

The high-pass filter function can be enabled or disabled for the displayed channel by using the function ON/OFF key even when any of the following screens is displayed. The function ON/OFF Indicator lights when enabled (ON).

8.7.1. Cutoff frequency settings

- Rotate the Setting knob to set the high-pass filter cutoff frequency.
  Parameter setting range: 20 Hz – 20 kHz in 1/24 octave steps
  Note: Slope is fixed at 12 dB/oct.
- Pressing an Input channel selector key permits the high-pass filter to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ← shift key is pressed.

8.7.2. Q settings

- Rotate the Setting knob to set the high-pass filter Q.
  Parameter setting range: 0.500 – 2.563 (51 points)
- Pressing an Input channel selector key permits the high-pass filter to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
8.8. Equalizer Settings

When the (low or high frequency) Equalizer setting screen is displayed, equalization for the displayed channel can be enabled or disabled by pressing the function ON/OFF key. When enabled (ON), the function ON/OFF indicator lights.

[Screen display operations]

High-pass filter settings (previous page)

![Gain settings](IN 1) PEQ-L

GAIN +0.0 dB

![Center frequency settings](IN 1) PEQ-L

FREQ 630.0 Hz

![Q settings](IN 1) PEQ-L

Q 4.318

Compressor/auto-leveler mode selection (next page)

8.8.1. Gain settings

- Rotate the Setting knob to set the gain.
  Parameter setting range: −15 to +15 dB in 0.1 dB steps
- Pressing an Input channel selector key permits the equalizer gain to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ▲ shift key is pressed.

8.8.2. Center frequency settings

- Rotate the Setting knob to set the center frequency.
  Parameter setting range: 20 Hz – 20 kHz in 1/24 octave steps
- Pressing an Input channel selector key permits the equalizer center frequencies to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.8.3. Q settings

- Rotate the Setting knob to set the Q.
  Parameter setting range: 0.267 – 69.249 (96 points)
- Pressing an Input channel selector key permits the equalizer Q to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
8.9. Compressor/Auto-Leveler Mode Selection

Select which function to use, compressor (next section) or auto-leveler (p. 33).

Equalizer Settings (previous page)

8.10. Compressor Settings (only when the compressor mode is selected in Section 8.9.)

Note
No following displays appear when the auto-leveler mode is selected.

ON
When any of the following screens is displayed, the compression function for the displayed channel can be enabled or disabled with the function ON/OFF key. When enabled (ON), the function ON/OFF Indicator lights.

[Screen display operations]

Compressor/auto-leveler mode selection (previous section)

Threshold level

Ratio

Attack time

Release time

Makeup gain

Level sense settings (p. 34)

8.10.1. Threshold level settings

- Rotate the Setting knob to set the threshold level. Parameter setting range: –20 to +20 dB in 1 dB steps
- Pressing an input channel selector key permits the compression threshold level to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.
8.10.2. Ratio settings

```
[ IN 1 ] COMP
► RATIO  1 : 1
```

- Rotate the Setting knob to set the ratio.
  Parameter setting range: 1:1, 2:1, 3:1, 4:1, 8:1, 12:1, 20:1, INF (∞):1
- Pressing an Input channel selector key permits the compression ratio to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.10.3. Attack time settings

```
[ IN 1 ] COMP
► ATTACK  1 0 . 0 ms
```

- Rotate the Setting knob to set the attack time.
  Parameter setting range: 0.2 ms – 5 s (Refer to p. 85 for more information.)
- Pressing an Input channel selector key permits the compression attack time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.10.4. Release time settings

```
[ IN 1 ] COMP
► RELEASE  5 0 0 ms
```

- Rotate the Setting knob to set the release time.
  Parameter setting range: 10 ms – 5 s (Refer to p. 85 for more information.)
- Pressing an Input channel selector key permits the compression release time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.10.5. Makeup gain settings

```
[ IN 1 ] COMP
► GAIN  + 0 dB
```

- Rotate the Setting knob to set the makeup gain.
  Parameter setting range: –INF (–∞) to +10 dB, in 1 dB steps
- Pressing an Input channel selector key permits the compression makeup gain to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
8.11. Auto-Leveler Settings (only when the auto-leveler mode is selected in Section 8.9.)

The auto-leveler function performs to keep the output level constant by suppressing the change of sound volume. Setting the target level (the constant level to be automatically adjusted to) and the maximum gain (the amount of gain to bring the lower level to the target level) automatically compensates for the input level. Note that setting an excessive amount of gain increases the input sensitivity, easily causing feedback.

**Note:** No following displays appear when the compressor mode is selected.

When any of the following screens is displayed, the auto-leveler function for the displayed channel can be enabled or disabled with the function ON/OFF key. When enabled (ON), the function ON/OFF Indicator lights.

### Screen display operations

Compressor/auto-leveler mode selection (p. 31)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Push-Enter</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target level</td>
<td>[IN 1] LEVELER ▲</td>
<td>▲ [IN 1] LEVELER ▲</td>
</tr>
<tr>
<td>Maximum gain</td>
<td>[IN 1] LEVELER ▼</td>
<td>▼ [IN 1] LEVELER ▼</td>
</tr>
<tr>
<td>Attack time</td>
<td>[IN 1] LEVELER ▼</td>
<td>▼ [IN 1] LEVELER ▼</td>
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<tr>
<td>Release time</td>
<td>[IN 1] LEVELER ▼</td>
<td>▼ [IN 1] LEVELER ▼</td>
</tr>
</tbody>
</table>

Level sense settings (next page)

#### 8.11.1. Target level settings

- Rotate the Setting knob to set the target level.
  Parameter setting range: -20 to +10 dB in 1 dB steps
- Pressing an Input channel selector key set for the auto-leveler mode permits the auto-leveler target level to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ▲ shift key is pressed.

#### 8.11.2. Maximum gain settings

- Rotate the Setting knob to set the maximum gain.
  Parameter setting range: 0 to +20 dB in 1 dB steps
- Pressing an Input channel selector key set for the auto-leveler mode permits the auto-leveler maximum gain to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

#### 8.11.3. Attack time settings

- Rotate the Setting knob to set the attack time.
  Parameter setting range: 10 ms – 10 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key set for the auto-leveler mode permits the auto-leveler attack time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
8.12. Level Sense Settings

The level sense refers to a parameter used to adjust the sensitivity by which the gate detects an input signal level. Proper attack time settings prevent the gate function from being accidentally triggered by pulse noise. (Refer to the next page.)

[Screen display operations]

Compressor settings (p. 31) or Auto-leveler settings (previous page)

Attack time

Release time

Gate settings (next page)

8.12.1. Attack time settings

- Rotate the Setting knob to set the attack time.
  Parameter setting range: 0.2 ms – 5 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key permits the level sense attack time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.12.2. Release time settings

- Rotate the Setting knob to set the release time.
  Parameter setting range: 10 ms – 10 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key permits the level sense release time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
8.13. Gate Settings

The gate function allows the input signal to be passed, attenuated or cut depending on its signal level.

The gate allows the signal to pass when open, and attenuates or cuts the signal when closed. The gate opens when the input signal reaches a level above the Threshold plus Hysteresis parameter (half the Hysteresis) as shown in the figure at right. Once open, the input signal must reach a level below the Threshold minus Hysteresis parameter to close. The Ducker function (p. 38) and the NOM attenuation function (p. 39) are controlled by the gate's open/close operations.

When any of the following screens is displayed, the gate function for the displayed channel can be enabled or disabled with the function ON/OFF key. When enabled (ON), the function ON/OFF Indicator lights.

Note: When an input channel is set to OFF, the gate function on that channel does not operate.

[Screen display operations]

- Threshold level settings
- Hysteresis settings

8.13.1. Threshold level settings

- Rotate the Setting knob to set the threshold level.
  Parameter setting range: -50 to +20 dB in 1 dB steps
- Pressing an Input channel selector key permits the gate threshold level to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

8.13.2. Hysteresis settings

- Rotate the Setting knob to set the hysteresis (the difference between the input signal levels used to open and close the gate).
  Parameter setting range: 0 to +10 dB in 1 dB steps
- Pressing an Input channel selector key permits the gate hysteresis to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
8.13.3. Depth settings

- Rotate the Setting knob to set the depth (signal attenuation when the gate is closed).
  Parameter setting range: –INF (−∞) to 0 dB in 1 dB steps
- Pressing an Input channel selector key permits the gate depth to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.13.4. Hold time settings

- Rotate the Setting knob to set the hold time (the interval the gate is kept open when an input signal level drops below the closing threshold level).
  Parameter setting range: 10 ms – 10 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key permits the gate hold time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.13.5. Attack time settings

- Rotate the Setting knob to set the attack time (the time required for the gate to open).
  Parameter setting range: 10 ms – 10 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key permits the gate attack time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.13.6. Release time settings

- Rotate the Setting knob to set the release time (the time required for attenuation to reach the gain set in the depth setting when the gate is closed).
  Parameter setting range: 10 ms – 10 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key permits the gate release time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

Both the Ducker function (next page) and the NOM Attenuation function (p. 39) are Auto-Mixing Functions that automatically adjust individual input channel gains in response to input signal level. The auto-mixing functions can operate in each of the 4 groups, GROUP A through D. Although all the input channels are grouped into GROUP A by default, they can be individually assigned to the desired groups. The figure below shows the block diagram of the Auto-Mixing (Auto MIX) section.

[Auto-mixing block diagram]

The diagram below shows an example where the input channels 1 and 2 are assigned to GROUP A, and the input channels 3 and 4 to GROUP B.
8.15.1. Priority settings

- Rotate the Setting knob to set priorities.
  Parameter setting range: 1 – 8 (1: Highest priority; 8: Lowest priority)
- Pressing an Input channel selector key permits ducker priorities to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ➪ shift key is pressed.

8.15.2. Attenuation settings

- Rotate the Setting knob to set an attenuation.
  Parameter setting range: –INF (→∞) to 0 dB in 1 dB steps
- Pressing an Input channel selector key permits the ducker attenuation to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
8.15.3. Attack time settings

- Rotate the Setting knob to set the attack time (the time required for the attenuation to be a set value). Parameter setting range: 10 ms – 10 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key permits the ducker attack time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.15.4. Release time settings

- Rotate the Setting knob to set the release time (the time required for the attenuation to reach the original gain of 0 dB). Parameter setting range: 10 ms – 10 s (Refer to p. 86 for more information.)
- Pressing an Input channel selector key permits the ducker release time to be set for that channel. The [IN 1] indication changes to the selected channel number indication.

8.16. NOM Attenuation ON/OFF Settings

The NOM Attenuation function is one of the D-901's auto-mixing functions, and automatically adjusts individual input channel gains in response to input signal level. Refer to p. 37 for the block diagram of the Auto-Mixing section.
NOM is an acronym of Number of Open Microphones, and represents the number of microphones in open status (the number of input channels with open gates).
The NOM attenuation function automatically adjusts the open microphone's input channel gain depending on the number of open microphones. The open microphone channel gain is attenuated by the gain set on the Utility setting screen (p. 61) each time the number of open microphones doubles. The use of this function allows an output level to be kept constant, thus helping to prevent feedback.
This function operates in individual auto-mixing groups (p. 37).

Note: When an input channel is set to OFF, the NOM function on that channel does not operate.
8.17. Input Channel Gain Settings

NOM attenuation
ON/OFF settings
(Previous page)

- Rotate the Setting knob to set the input channel gain.
  Parameter setting range: –INF (–∞) to +10 dB
- Press the function ON/OFF key to enable or disable the channel.
- Pressing an Input channel selector key permits the gain to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ▼ shift key is pressed.

Bus assignment settings
(next page) or Input channel group trim gain settings (next section)

8.18. Input Channel Group Trim Gain Settings (Only when Group is set)

- The indication at left is displayed only when Group setting is performed. Perform the Group settings on the Utility setting screen (p. 61).
- Rotate the Setting knob to set the group trim gain (offset gain).
  Parameter setting range: –INF (–∞) to +10 dB in 0.1 dB steps
- Pressing an Input channel selector key permits the group trim gain to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ▼ shift key is pressed.

[Screen display operations]

Input channel gain settings (previous page) or Input channel group trim gain settings (previous page)

Bass assignment

Crosspoint gain

8.19.1. Bus assignment settings

Set input-to-output signal paths.

- Rotate the Setting knob to select the output channel bus (1 – 8 or MicB*), then press the function ON/OFF key to enable or disable the assignment.
- * Microphone bus: The "M" indication is displayed when enabled.

[Setting example]

- Pressing an Input channel selector key permits the bus assignment to be set for that channel. The [IN 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

Note

The bus assignment settings can also be performed using only the input/output channel controls on the front panel.

(Example: Input channel 1 → Output channels 5 and 8)

Press the desired Output channel selector key(s) while holding down the Input channel selector key.

The set output channel's indicator [SEL] lights.

Pressing the microphone bus selector key sends the signal from the selected input channel to the microphone bus.

Tip

The channel is simultaneously assigned to both L and R channels when assigned from "stereo-linked" input channels to "stereo-linked" output channels. (Refer to p. 56 Stereo Link Settings.)

[Example] When Inputs 1 and 2 and outputs 1 and 2 are both "stereo-linked," pressing the Input Channel 1 selector key and Output Channel 1 selector key sets the assignment of Input 1 → Output 1 and Input 2 → Output 2, causing the Output Channels 1 and 2 indicators [SEL] to light.

8.19.2. Crosspoint gain settings

- Rotate the Setting knob to set the crosspoint gain.
  Parameter setting range: –INF (→) to 0 dB in 1 dB steps
- Pressing an Input channel selector key permits the input channel selection.
- Pressing an Output channel selector key permits the output channel selection.
- Pressing the function ON/OFF key enables or disables the selected assignment.
9. OUTPUT SETTINGS

Output channels selected with the Output channel selector keys can be enabled or disabled using the output channel ON/OFF key. Use the function ON/OFF key to enable or disable each function displayed on the LCD screen.

9.1. Output Channel Gain Settings

- Rotate the Setting knob to set the output channel gain. Parameter setting range: –INF (−∞) to +10 dB
- Press the function ON/OFF key to enable or disable the displayed channel.
- Pressing an Output channel selector key permits the gain to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

9.2. Output Channel Group Trim Gain Settings (Only when Group is set)

- The indication at left is displayed only when Group setting is performed. Perform the Group settings on the Utility setting screen (p. 56).
- Rotate the Setting knob to set the group trim gain (offset gain). Parameter setting range: –INF (−∞) to +10 dB in 0.1 dB steps
- Pressing an Output channel selector key permits the group trim gain to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

Filter settings (p. 45),
Output channel group trim gain settings (next section), or Crossover settings (next page)
9.3. Crossover Settings (Only when Crossover function is enabled)

The following screens are displayed only when the crossover function is enabled on the Utility setting screen. (Refer to p. 62 for more information.)

[Screen display operations]

Output channel gain settings
(previous page) or
Output channel group trim
gain settings (previous page)

(High frequency)

Slope

Cutoff frequency

Q

Q2

(Displayed when parameters other than THRU are selected)

(Displayed depending on the type of slope)

Crossover gain

Crossover filter polarity

(Displayed when parameters other than THRU are selected)

(Displayed depending on the type of slope)

Filter settings (p. 45)

9.3.1. Slope settings

- Rotate the Setting knob to select the type of slope. Parameter setting range: THRU (through), 6 dB (6 dB/oct), 12BS (12 dB/oct BS), etc. (Refer to p. 87 for more information.)

Notes

1. Slope type: BS (Bessel), BW (Butterworth), LR (Linkwitz-Riley), VQ (Variable Q)

2. Displayed slope type differs depending on the Crossover configuration setting. (Refer to p. 62.)

- Using the shift key, the display is moved to the Crossover Gain setting screen if THRU is selected, and to the Cutoff Frequency setting screen if parameters other than THRU are set.

- Pressing an Output channel selector key permits the crossover filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
9.3.2. Cutoff frequency settings

- Rotate the Setting knob to set the cutoff frequency.
  Parameter setting range: 20 Hz – 20 kHz in 1/24 octave steps
- Pressing an Output channel selector key permits the crossover filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

![Cutoff Frequency Settings](image)

9.3.3. Q settings

- The Q setting can be performed only when the type of slope is VQ.
- Rotate the Setting knob to set the Q.
  Parameter setting range: 0.500 – 2.563 (51 points)
- Pressing an Output channel selector key permits the crossover filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

![Q Settings](image)

9.3.4. Q2 settings

- The Q2 setting can be performed only when the type of slope is 24VQ.
- Rotate the Setting knob to set the Q2.
  Parameter setting range: 0.500 – 2.563 (51 points)
- Pressing an Output channel selector key permits the crossover filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

![Q2 Settings](image)

9.3.5. Crossover gain settings

- Rotate the Setting knob to set the crossover gain.
  Parameter setting range: –15 to +15 dB in 0.1 dB steps
- Pressing an Output channel selector key permits the crossover filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

![Crossover Gain Settings](image)

9.3.6. Crossover filter polarity settings

- Rotate the Setting knob to set the crossover filter polarity.
  Parameter setting range: NORMAL and INVERSE
- Pressing an Output channel selector key permits the crossover filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
9.4. Filter Settings

When any of the following screens is displayed, the filter function for the displayed channel can be enabled or disabled by pressing the function ON/OFF key. When enabled (ON), the function ON/OFF Indicator lights.

[Screen display operations]

Output channel gain settings (p. 42), Output channel group trim gain settings (p. 42), or Crossover settings (p. 43)

* The number of displayed filters differs depending on the crossover configuration settings on the Utility setting screen. (Refer to p. 62.)

Tip
Filters range from 1 to 6 in number, and the setting items for each filter are the same. Press the ▲ and ▼ shift keys to change the filter number.
[Setting procedures (Example of setting output 1 – filter 2 as a horn equalizer)]

Step 1. Press the \( \downarrow \) shift key to display a filter.

Step 2. Rotate the Setting knob to select the type of filter.

Step 3. Press the \( \uparrow \) shift key to display the setting items for the selected filter.

Step 4. Rotate the Setting knob to set the parameters for each item.

Step 5. Repeat Steps 3 and 4 when there are two or more setting items.
9.4.1. Parametric equalizer

- Rotate the Setting knob to select PEQ and enter the Parametric Equalizer setting screen.
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

**Gain settings**

- Rotate the Setting knob to set the gain.
  Parameter setting range: −15 to +15 dB in 0.1 dB steps
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

**Center frequency settings**

- Rotate the Setting knob to set the center frequency.
  Parameter setting range: 20 Hz – 20 kHz in 1/24 octave steps
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

**Q settings**

- Rotate the Setting knob to set the Q.
  Parameter setting range: 0.267 – 69.249 (96 points)
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

9.4.2. High-pass filter

- Rotate the Setting knob to select either HPF-6 dB or HPF-12 dB and enter the High-Pass Filter setting screen.
  The indications of 6 dB and 12 dB represent the slope: 6 dB/oct and 12 dB/oct, respectively.
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

**Cutoff frequency settings**

- Rotate the Setting knob to set the cutoff frequency.
  Parameter setting range: 20 Hz – 20 kHz in 1/24 octave steps
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
9.4.3. Low-pass filter

- Rotate the Setting knob to select either LPF-6 dB or LPF-12 dB, and enter the Low-Pass Filter setting screen.
  - The indications of 6 dB and 12 dB represent the slope: 6 dB/oct and 12 dB/oct, respectively.
- Setting items, parameter setting ranges and operations are the same as those for the high-pass filter.

9.4.4. High shelving filter

- Rotate the Setting knob to select H-Shelv and enter the High Shelving Filter setting screen.
- Setting items and operations are the same as those for the high shelving filter.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

9.4.5. Low shelving filter

- Rotate the Setting knob to select L-Shelv and enter the Low Shelving Filter setting screen.
- Setting items and operations are the same as those for the high shelving filter.
- Parameter setting range
  - Gain: −15 to +15 dB in 0.1 dB steps
  - Roll-off frequency: 20 – 500 Hz in 1/24 octave steps
9.4.6. Horn equalizer

- Rotate the Setting knob to select HORN EQ and enter the Horn Equalizer setting screen.
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.

[Gain settings]

- Rotate the Setting knob to set the gain.
  Parameter setting range: 0 to +18 dB in 0.5 dB steps
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

9.4.7. Notch filter

- Rotate the Setting knob to select NOTCH and enter the Notch Filter setting screen.
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

[Center frequency settings]

- Rotate the Setting knob to set the center frequency.
  Parameter setting range: 20 Hz – 20 kHz in 1/24 octave steps
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

[Q settings]

- Rotate the Setting knob to set the Q.
  Parameter setting range: 8.651 – 69.249 (Refer to p. 87 for more information.)
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

9.4.8. All-pass filter

- Rotate the Setting knob to select ALL PASS and enter the All-Pass Filter setting screen.
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the shift key is pressed.
[Center frequency settings]

- Rotate the Setting knob to set the center frequency.
  Parameter setting range: 20 Hz – 20 kHz in 1/24 octave steps
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

[Q settings]

- Rotate the Setting knob to set the Q.
  Parameter setting range: 0.267 – 69.249 (96 points)
- Pressing an Output channel selector key permits the filter to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

9.5. Compressor Settings

When any of the following screens is displayed, the compression function for the displayed channel can be enabled or disabled with the function ON/OFF key. When enabled (ON), the function ON/OFF Indicator lights.

[Screen display operations]

Filter settings (P. 45)

Ratio

Threshold level

Makeup gain

Delay time settings (next page)

9.5.1. Threshold level settings

- Rotate the Setting knob to set the threshold level.
  Parameter setting range: –20 to +20 dB in 1 dB steps
- Pressing an Output channel selector key permits the compressor threshold level to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the  key is pressed.

9.5.2. Ratio settings

- Rotate the Setting knob to set the ratio.
  Parameter setting range: 1:1, 2:1, 3:1, 4:1, 8:1, 12:1, 20:1, INF (∞):1
- Pressing an Output channel selector key permits the compression ratio to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
9.5.3. Attack time settings

- Rotate the Setting knob to set the attack time.
  Parameter setting range: 0.2 ms – 5 s (Refer to p. 85 for more information.)
- Pressing an Output channel selector key permits the compressor attack time to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

9.5.4. Release time settings

- Rotate the Setting knob to set the release time.
  Parameter setting range: 10 ms – 5 s (Refer to p. 85 for more information.)
- Pressing an Output channel selector key permits the compressor release time to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

9.5.5. Makeup gain settings

- Rotate the Setting knob to set the makeup gain.
  Parameter setting range: –INF (–∞) to +10 dB in 1 dB steps.
- Pressing an Output channel selector key permits the compression makeup gain to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.

9.6. Delay Time Settings

- Rotate the Setting knob to set the delay time.
  Parameter setting range: 0 – 682.6 ms in 0.021 ms steps
- Press the function ON/OFF key to enable or disable the delay function.
- Pressing an Output channel selector key permits the delay time to be set for that channel. The [OUT 1] indication changes to the selected channel number indication.
- The setting screen reverts to the Input/Output Gain Setting screen when the ▲ shift key is pressed.
10. MICROPHONE BUS SETTINGS

The Microphone Bus setting screen is displayed when the Microphone Bus selector key is pressed.

10.1. Feedback Suppression Settings

[Suppressing acoustic feedback with a simple operation]

Step 1. Set the volume controls of connected external equipment to the state in which they will actually be used.

Step 2. Activate the Auto mode on the Feedback Suppression setting screen. (Refer to the next page.)

All filters (12 bands) that suppress feedback are set after they are initialized.

Notes
- Auto mode cannot be initiated if the number of Auto mode filters is set to 0. (Refer to the next page.)
- Large sounds are produced during Auto mode operation.
- Setting takes about 1.5 minutes. (This may differ depending on the unit installation circumstances.)
- No keys can be used during Auto mode operation. Press the Setting knob to interrupt setup operations.

[Settings to be performed as required]

Step 3. Set the Dynamic mode or the number of filters on the Feedback Suppression setting screen, or perform individual settings on the Feedback Suppression Filter setting screen as required.

Notes
- When the number of filters to be used for the Auto and Dynamic modes have been changed, reactivate the Auto mode.
- Take care when executing filter initialization, as feedback may occur.
- It is recommended that the Auto mode be reset when the equalizer setting value has been changed, because the feedback points may change.

[Screen display operations]

Feedback suppression filter setting confirmation (p. 54)

10.1.1. Dynamic mode settings

- Press the function ON/OFF key to enable or disable the feedback suppression function.
- Enabling the function permits feedback to be suppressed in real time as it occurs. (Dynamic mode)
10.1.2. Auto mode activation

- Press the Setting knob to automatically search for the feedback points and set the filters for feedback suppression. (Auto mode)
- Both the FBS (Feedback suppression) and the LOCK (System lock) indicators flash during Auto mode operation.
- To interrupt the Auto mode operation, press the Setting knob.
- When the number of filters is set to "0" for Auto mode, the indication "Can't use Auto" is displayed on the LCD screen, disabling the Auto mode activation.
- To cancel the function, press the ◄ or ► shift key, and the screen changes to display the previous or next setting item.

10.1.3. Filter number settings

- Rotate the Setting knob to set the number of filters to be used for Auto and Dynamic modes.
- Filters are assigned to both modes from 12 filters in total.
- Filters used for Auto and Dynamic modes are assigned to Auto mode followed by Dynamic mode in order of filter number as shown below.

[Example for "AUTO : DYN  7 : 5" (default setting)]

<table>
<thead>
<tr>
<th>Filter No.</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Auto mode</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Dynamic mode</td>
</tr>
</tbody>
</table>

[Example for "AUTO : DYN  8 : 4"]

<table>
<thead>
<tr>
<th>Filter No.</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Auto mode</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Dynamic mode</td>
</tr>
</tbody>
</table>

- Even when the number of filters is changed, filters are not initialized.

For example, when filter assignment is changed from "AUTO : DYN  7 : 5" to "AUTO : DYN  8 : 4" (refer to the above setting examples), Filter 8 operation mode is switched to Auto mode, however, keeping the filter parameters once set by Dynamic mode operation.

The Filter parameters and Mode confirmation display (next page) remain unchanged as those for Dynamic mode till Auto mode is activated.

10.1.4. Dynamic mode filter initialization

- All filters set for the Dynamic mode are initialized when the Setting knob is pressed.
- To cancel the function, press the ◄ or ► shift key, and the screen changes to display the previous or next setting item.

10.1.5. Auto mode filter initialization

- All filters set for the Auto mode are initialized when the Setting knob is pressed.
- To cancel the function, press the ◄ shift key, and the screen returns to display the previous setting item.
10.2. Feedback Suppression Filter Setting Confirmation

The settings of all 12 Dynamic and Auto mode feedback suppression filters can be quickly confirmed.

[Screen display operations]

Feedback suppression settings (p. 52)

Filter 1 mode confirmation

Frequency confirmation

Filter gain confirmation

Q confirmation

Tip
Feedback suppression filters range from 1 to 12 in number, and the setting items for each filter are the same. Press the ▲ and ▼ shift keys to change the filter number.

10.2.1. Mode confirmation

• The DYN indication is displayed for filters set by the Dynamic mode operation, while the AUTO indication is displayed for filters set by the Auto mode operation, and the "----" indication for filters that are not set.

10.2.2. Frequency confirmation

• Set filter frequencies can be confirmed.

10.2.3. Filter gain confirmation

• Set filter gains can be confirmed.

10.2.4. Q confirmation

• Set filter Q can be confirmed.
10.3. Effect (Echo) Settings

The D-901 has an echo function, a part of an effect function.

- The Effect (echo) setting screen can be displayed by pressing the Effect key, or by using the Screen shift keys on the Microphone Bus setting screen.

- The effect (echo) function can be enabled or disabled with the function ON/OFF key or Effect key when any of the following screens is displayed.

- The function ON/OFF and Effect indicators light when enabled (ON).

[Screen display operations]

Feedback suppression filter setting confirmation (previous page)

Bus assignment and crosspoint gain settings (next page)

[Effect (echo) function block diagram]

10.3.1. Echo gain settings

- Rotate the Setting knob to set the echo gain.
  Parameter setting range: \(-\infty\) to 0.0 dB in 1 dB steps

10.3.2. Feedback ratio settings

- Rotate the Setting knob to set the feedback ratio.
  Parameter setting range: 0 – 99% in 1% steps

10.3.3. Feedback delay settings

- Rotate the Setting knob to set the feedback delay time.
  Parameter setting range: 0 – 682 ms
10.3.5. Low-pass filter frequency settings

- Rotate the Setting knob to set the low-pass filter frequency.
  Parameter setting range: 20 Hz – 20 kHz

10.3.6. Low-pass filter Q settings

- Rotate the Setting knob to set the low-pass filter Q.
  Parameter setting range: 0.500 – 2.563 (51 points)

10.4. Bus Assignment and Crosspoint Gain Settings
(Microphone Bus → Output Channel)

[Screen display operations]

Effect (echo) settings (previous page)

10.4.1. Bus assignment settings

- Rotate the Setting knob to select the output channel bus (1 – 8),
  then press the function ON/OFF key to enable or disable the
  assignment. When disabled (OFF), the "–" indication is displayed.
- All buses 1 – 8 are enabled by default.

10.4.2. Crosspoint gain settings

- Rotate the Setting knob to set the crosspoint gain.
  Parameter setting range: –INF (–∞) to 0 dB in 1 dB steps
- Pressing an Input channel selector key permits the input channel
  selection.
- Pressing an Output channel selector key permits the Output
  channel selection.
- Pressing the function ON/OFF key enables or disables the
  selected assignment.
11. PRESET MEMORY SETTINGS

The preset setting screen is displayed when the Preset key is pressed.

Pressing the key again exits the preset setting screen in any of the following settings, displaying the Input/Output Gain Setting screen.

11.1. Preset Memory Save

Set parameters can be stored in memory (number of memories: 16).

[Parameters that can be stored in memory]

Input channel parameters: PAD, Phantom power, Line input mode selection, Line input selection, Input trim gain, Input trim polarity, High-pass filter, Equalizer (low and high frequencies), Compressor/auto-leveler mode selection, Compressor/auto-leveler, Level sense, Gate, Auto-mixing group, Ducker, NOM attenuation ON/OFF, Input channel gain, Channel ON/OFF, Group trim gain, and Bus assignment

Output channel parameters: Output channel gain, Group trim gain, Channel ON/OFF, Filters 1 – 6 (including crossover), Compressor, and Delay

Microphone bus parameters: Feedback suppression (Dynamic mode ON/OFF, Filter number, and Filter parameters set in Auto and Dynamic modes), Echo, and Bus assignment

Others: Stereo link, Group, Crossover configuration, NOM attenuation, and Channel selection status

**Step 1.** Press the ◀ and ▶ shift keys to select the desired preset memory number.

**Step 2.** Press the Setting knob to execute the function.

The indication "Now Saving..." is displayed and saving begins. Saving is completed when the indication turns off.

**Note:** To cancel the function, press the Preset key.
11.2. Preset Memory Recall

Recall the stored preset memory.

Step 1. Press the \( \leftarrow \) and \( \rightarrow \) shift keys to select the desired preset memory number.

Tip
The screen at left can be recalled for preset memory numbers 1 – 8 by simply pressing the desired Preset Memory selector key, regardless of the currently displayed setting screen. However, the display cannot be switched to another screen by way of the \( \uparrow \) and \( \downarrow \) keys.

Step 2. Press the Setting knob to execute the function.

The indication "Now Loading..." is displayed and loading begins. Recall is completed when the indication turns off.

Note: To cancel the function, press the Preset key.

11.3. Preset Memory Delete

Delete the stored preset memory.

Step 1. Press the \( \leftarrow \) and \( \rightarrow \) shift keys to select the preset memory number to be deleted.

Step 2. Press the Setting knob to execute the function.

The indication "Now Deleting..." is displayed and deletion begins. Deletion is completed when the indication turns off.

Note: To cancel the function, press the Preset key.
11.4. Preset Memory Crossfade Time Settings

Set the crossfade time when the currently selected preset memory is switched over to a newly recalled one by pressing the preset memory number.

[Parameters to be cross-faded]
Input/output channel gains, channel ON/OFF, bus assignment, cross-point gains.
Parameters other than those above instantaneously switch when the preset memory is recalled.

Note
When the currently selected preset memory is switched over to a newly recalled one, the channels of which phantom power ON/OFF, PAD, line input mode, and line input selection have been changed are muted for a specified period of time.

Preset memory delete (previous page)

Initial preset memory selection (next page)

[Setting example]

Step 1. Press the ← and → shift keys to select the desired preset memory number.

Note
On the [All No.] screen, crossfade time of all memories can be set at a time.
The following screen appears when each memory setting is different.

Step 2. Rotate the Setting knob to change the crossfade time.
Parameter setting range: 0.0 – 10.0 s, 0.5 s steps

Tips
• Saving the configuration (see the next page) causes the parameters to be cross-faded to change at the set crossfade time.
• Configuration can also be saved by pressing the Setting knob on this screen.
• To cancel the function, press the Preset key.
11.5. Initial Preset Memory Selection

Select the preset memory number (1 – 16) or LAST MEMORY to be automatically recalled when the power is switched on.

Preset memory crossfade time settings (previous page)

• Press the ▼ and ▲ shift keys to select the desired preset memory number to be automatically recalled when the power is switched on.
• Setting the LAST MEMORY permits the preset memory number recalled last before the unit’s power-off to be automatically recalled at the power-on.

Note
The preset memory is set to LAST MEMORY by default, and the preset memory No.1 is recalled.
• Performing the Configuration Save (next item) allows the selected memory number to be saved as a preset memory number recalled at unit’s power-on operation. Be sure to perform the Configuration Save after changing the preset number selection.
• The Configuration save can also be executed by pressing the Setting knob at this screen.
• To cancel the function, press the Preset key.

11.6. Configuration Save

Preset memory crossfade time settings (previous section)

• Pressing the Setting knob saves the settings for the Preset Memory Crossfade Time, the Contact Input/Output functions, Protect function, and Initial preset memory.
• To cancel the function, press the Preset key.
12. UTILITY SETTINGS

The utility setting screen is displayed when the Utility key is pressed.

12.1. Stereo Link Settings

- Rotate the Setting knob to select the channels to be "Stereo-Linked."
- Press the function ON/OFF key to enable or disable the Stereo-Link setting.

[Setting example]

```
[UTO] STR LINK
[IN 1] = [IN 2] ON
```

**Note**
The output channel that is enabled for crossover function - a parameter except "NONE" is set - in the Crossover Configuration Settings (p. 62) is displayed on the screen as follows, not being set as a "Stereo-Linked" channel.

```
[UTO] STR LINK
[OUT 1] = [OUT 2] --
```

- The following "Stereo-Linked" channel parameter settings are synchronized:
  - Input channel: PAD, Phantom power, Input trim gain, High-pass filter, Parametric equalizer, Compressor/auto-leveler*, Gate*, Auto-mixing group, Ducker, NOM attenuation ON/OFF, Input channel gain, Channel ON/OFF, and Group settings
  - Output channel: Output channel gain, Filters 1 - 6 (including crossover), Compressor*, Delay, and Group settings
  - Operations are also synchronized.

**Tip**
When the input channel and the output channel are both set for Stereo Link, the bus assignment setting is also synchronized. (Refer to p. 41.)

12.2. Group Settings

By grouping multiple channels together, the gains of these channels can be simultaneously adjusted using the Input or Output volume control.

**Step 1.** Rotate the Setting knob to display the channels to be grouped in the [ ] area on the lower row.

**Step 2.** Press the shift key.
Step 3. Rotate the Setting knob to select the channels to be grouped together with the channels displayed in the [ ] area on the upper row.
(The selected channels are displayed in the " " area on the lower row.

Step 4. Press the function ON/OFF key to confirm the selected channels.
All of the channels set for grouping are displayed on the upper row at the right.

Note
When group settings are performed, the offset gain between the channels in the [ ] area on the upper row and the selected channels are set as the selected channels' group trim value. Therefore, after grouping, the fader gain is the same if the channels grouped together are within the same group.

Tip
The channels set for grouping are displayed on the lower row at the right when the shift key is pressed to revert to the initial Group setting screen.

12.3. Crossover Configuration Settings

Enable or disable the Crossover function. When enabling, set the crossover filter’s maximum slope as well. When enabled, the Crossover setting screen is displayed on the Output setting screen, depending on setting contents. (Refer to p. 43.) Also, the number of filters to be displayed on the Filter setting screen (p. 45) used in the output settings changes depending on the setting contents.

Note
The "Stereo-Linked" (p. 61) output channel will not use the crossover function. That output channel is displayed on the screen as shown at right, being made invalid for the crossover configuration setting.

Group settings (previous page)

Crossover configuration (low frequency) settings (next page)

Step 1. Rotate the Setting knob to display the channel to be set in the [ ] area on the lower row.

Step 2. Press the shift key.

Step 3. Rotate the Setting knob to enable or disable the crossover function.
Crossover configuration
(high frequency) settings
(previous page)

(Low frequency)

[UTY] XOVER - LF ▲
[OUT1] NONE ▼

[UTY] XOVER - LF ▲
[OUT8] NONE ▼

NOM attenuation settings
(next page)

• The crossover function (low frequency) is disabled.
• The Crossover setting screen is not displayed.

• The crossover function (low frequency) is used as a low-pass filter. A slope of up to 12 dB/oct can be set.
• The Crossover setting screen is displayed. (A slope of up to 12 dB/oct is displayed.)

• The crossover function (low frequency) is used as a low-pass filter. A slope of up to 24 dB/oct can be set.
• The Crossover setting screen is displayed. (A slope of up to 24 dB/oct is displayed.)

Note
The setting method is the same as that used for the crossover configuration (high frequency).

Number of filters usable for the Filter settings
The settings above determine the number of filters to be displayed on the Filter setting screen (p. 45) as follows:

<table>
<thead>
<tr>
<th>XOVER-H Setting</th>
<th>NONE</th>
<th>HPF12</th>
<th>HPF24</th>
</tr>
</thead>
<tbody>
<tr>
<td>XOVER-L Setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NONE</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>LPF12</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>LPF24</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
12.4. NOM Attenuation Settings

NOM is an acronym of Number of Open Microphones, and represents the number of microphones in open status (the number of input channels with open gates). The NOM attenuation function automatically adjusts the open microphone’s input channel gain depending on the number of open microphones. The open microphone channel gain is attenuated by the gain set on the following setting screen each time the number of open microphones doubles. The use of this function allows an output level to be kept constant, thus helping to prevent feedback. Set each input channel to enable or disable this function. (Refer to p. 39.)

This function operates in each of the auto-mixing groups, GROUP A through D (p. 37).

[Screen display operations]

Crossover configuration (low frequency) settings (previous page)

When using the D-981, D-983, or D-984VC: Contact input/output settings (next page)

When not using the D-981, D-983, or D-984VC: Protect settings (p. 68)

- Rotate the Setting knob to set the attenuation gain for each group.
  Parameter setting range: 0 – 20 (0 log10NOM – 20 log10NOM)
12.5. Contact Input/Output Settings (Available only when D-981, D-983, or D-984VC is used)

Many different functions assigned to the input and output contacts of the D-981 or D-983 Remote Control Module, or the D-984VC VCA Control Module can be remotely controlled by connected external equipment. Use the Setting knob to select the functions to be assigned.

Notes
- To make subsequent settings valid when the power is ON after the initial Contact input/output settings, save the configuration (p. 60). Settings are saved as system data, and setting status is maintained even if the preset memory is recalled.
- Configuration can also be saved by pressing the Setting knob at this screen.

12.5.1. Function assignment to the input contact

Each of the following functions can be assigned to input contacts (1 – 8 when the D-981 or D-984VC is used, and 1 – 24 when the D-983 is used).
- Preset memory recall, Input and output channel volume adjustment,
- Channel ON/OFF setting, and Line (stereo) input selection

[Screen display operations]

NOM attenuation settings (previous page)

<table>
<thead>
<tr>
<th>Input contact number selection</th>
<th>Preset memory recall</th>
<th>Volume UP</th>
<th>Volume DOWN</th>
<th>Channel ON/OFF (Contact)</th>
<th>Channel ON/OFF (Pulse)</th>
<th>Line (stereo) input selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:NONE</td>
<td>Preset number</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No function is assigned.

Select the preset memory number.

Select the channel number.

Select the channel number.

Channels are enabled when the contact closes, and disabled when the contact opens.

Select the slot number and Line (stereo) input number for the D-936R or the D-937SP (only when the D-936R or the D-937SP is used).
(Example. S2-1: First line (stereo) input for the stereo module inserted into Slot 2)
[Setting Procedures (Example. Assigning Preset Memory 3 recall to Contact Input 2)]

Step 1. Rotate the Setting knob to select the input contact number.

Step 2. Press the shift key.

Step 3. Rotate the Setting knob to select the function to be assigned to the contact input.

Step 4. Press the shift key.

Step 5. Rotate the Setting knob to select the setting contents for each function.

Tip
Pressing the Setting knob executes the Configuration save and allows the display to revert to the input contact number selection screen.
12.5.2. Function assignment to the output contact

The following functions can be assigned to output contacts (1 – 8 when the D-981 or D984-VC is used, and 1 – 16 when the D-983 is used).

- Preset memory recall tally
- Channel ON/OFF tally
- Contact input status tally
- Line (stereo) input selection tally

The procedures for assigning functions are the same as those used when assigning functions to the input contacts.

[Screen display operations]

Input contact number selection (p. 65)

Output contact number selection

Set to [Normally break]*.

Set to [Normally make]*.

Preset memory recall tally

Select the preset memory number.

Channel ON/OFF tally

Select the channel number.

Contact input status tally

Select the contact input number.

Line (stereo) input selection tally

Select the slot number and line (stereo) input number for the D-936R or the D-937SP (only when the D-936R or the D-937SP is used).

(Example. S2-1: First line (stereo) input for the stereo module inserted into Slot 2)

* Normally break: Turning on the power sets the contact output to "break."
* Normally make: Turning on the power sets the contact output to "make."

Note: All contact outputs are at break while the power is off.
12.6. Protect Settings

Operation misses can be avoided by protecting front panel-mounted key operations.

Tips
• To make subsequent protections valid when the power is ON after the initial Protect function settings, save the configuration (p. 60). (However, if the Protection function is enabled in the way described below, the configuration save needs not be performed because the latest configuration including the Protection function settings are automatically saved at the moment of the key operation.) Settings are saved as system data, and setting status is maintained even if the preset memory is recalled.
• Control operations can be performed either by way of the RS-232C port or the remote control module even when in protection mode.
• Configuration can also be saved by pressing the Setting knob at this screen.

When using the D-981, D-983, or D-984VC:
  Contact input/output settings (p. 65)
When not using the D-981, D-983, or D-984VC:
  NOM attenuation settings (p. 64)

[Enabling and disabling the Protect function]
Press the Setting knob while holding down the Utility key to enable the Protect function and lock the system. (The System Lock indicator lights.) To release the lock and disable the Protect function, press the Setting knob again while holding down the Utility key. (The System lock indicator extinguishes.)

Note
Both the system lock and unlock operations automatically save the configuration.

[Keys that can be protected]

* Bus assignment operations by way of the Input and Output channel selector keys are also locked and disabled.
• Rotate the Setting knob to select the key(s) to be protected.
• The Protect function can be enabled or disabled for the selected key(s) by pressing the function ON/OFF key.

• Enables or disables the Protect function for all keys.
  ON: Simultaneously enables the Protect function for all keys.
  ---: Enables the Protect function for a part of keys.
  OFF: Simultaneously disables the Protect function for all keys.

• Enables or disables the Protect function for the Utility key.
• When enabled (ON), the Utility function cannot be set.

• Enables or disables the Protect function for the Preset key.
• When enabled (ON), the Preset Memory function cannot be set using the Preset key. (Preset memory can be recalled using the Preset memory selector keys.)

• Enables or disables the Protect function for the Setting knob, the Function ON/OFF key, and bus assignment operation by way of the Input and Output channel selector keys.
• When enabled (ON), parameters cannot be set.

• Enables or disables the Protect function for the Screen shift keys.
• When enabled (ON), screen displays cannot be changed with the shift keys.

• Enables or disables the Protect function for the Preset memory selector keys (1 – 8).
• When enabled (ON), preset memory cannot be recalled using the Preset memory selector keys. (Preset function can be set using the Preset keys.)

• Enables or disables the Protect function for the Input volume control and the Input channel ON/OFF key.
• When enabled (ON), the input volume cannot be adjusted with the Input volume control, and the input channels cannot be enabled or disabled.

• Enables or disables the Protect function for the Output volume control and the Output channel ON/OFF key.
• When enabled (ON), the output volume cannot be adjusted with the Output volume control, and the output channels cannot be enabled or disabled.

• Enables or disables the Protect function for the Input channel selector keys, the Output channel selector keys, and the Microphone bus selector key.
• When enabled (ON), the selector keys cannot be used.

• Enables or disables the Protect function for the Effect key.
• When enabled (ON), the Effect key cannot be used.
12.7. RS-232C Port Settings

[Screen display operations]

Protect settings (p. 68)

Control mode selection

RS-232C transmission rate

• Rotate the Setting knob to select the mode that matches the type of equipment connected to the unit's RS-232C port.
  UPDATE: A PC is connected to update the unit's firmware using the utility program. (Refer to p. 74.)
  REMOTE: A conventional remote controller (AMX, Crestron, etc.) is connected.
  PC CTRL: A PC is connected to control the unit using the dedicated setting software program (to be downloaded from our International site, see below).

Tips
• While the D-901 is communicating with a PC, the front-mounted system lock indicator flashes.
• In the above status, attempting to change settings with the front-mounted knobs or keys notifies the operator of prohibited operation by way of the indication shown below.

12.7.2. RS-232C transmission rate settings

• Rotate the Setting knob to set the RS-232C transmission rate.
  Parameter setting range: 115200, 38400, 19200, 9600 bps

Tip
Settings are automatically saved as system data, and setting status is maintained even if the power is turned off.
12.8. All Input/Output Channel Gain Confirmation

RS-232C port settings (previous page)

[UTY] ALL FADER ▲ ▼

- Gains of all input channels can be simultaneously confirmed. Channels are Input Nos. 1 through 12 from left to right.

- Gains of all output channels can be simultaneously confirmed. Channels are Output Nos. 1 through 8 from left to right.

12.9. All Input/Output VCA Status Confirmation (Only when the D-984VC is used)

All input/output channel gain confirmation (previous section)

[UTY] ALL VCA ▲ ▼

- VCA status of all input channels can be simultaneously confirmed. Channels are Input Nos. 1 through 12 from left to right. Maximum value: 0 V, Minimum value: 5 V

- VCA status of all output channels can be simultaneously confirmed. Channels are Input Nos. 1 through 8 from left to right. Maximum value: 0 V, Minimum value: 5 V

Module type confirmation (next page)

Note

The above screens show the statuses of VCA input and output terminals. When channels are set for the stereo link or group, all their gains change synchronizing with the lowest numbered channel’s gain. Irrespective of these settings for channels, the VCA statuses are displayed for individual channels as shown above.
12.10. Module Type Confirmation

Types of modules installed in the unit's rear slots can be confirmed.

[Screen display operations]

All input/output channel gain confirmation (previous section)

Individual slots confirmation

All slots confirmation

Cooling fan operation status confirmation (next page)

12.10.1. Individual slots confirmation

- Rotate the Setting knob to confirm the type of module installed in each slot.
- The slot number and installed module type are displayed on the lower row.

The module types are as follows:

- D-921F or D-921E: D-921F/E (A)
- D-922F or D-922E: D-922F/E (B)
- D-936R: D-936R (C)
- D-971M or D-971E: D-971M/E (D)
- D-971R: D-971R (E)
- D-981: D-981 (F)
- No module installed: BLANK (–)

- For the slot where a wrong module is inserted (for example, an output module is inserted into an input slot), "(*)" is displayed.
12.10.2. All slots confirmation

- Slot numbers are displayed on the upper row, and the inserted module types on the lower row.
  A: D-921E or D-921F Microphone/line input module
  B: D-922E or D-922F Microphone/line input module
  C: D-936R Stereo input module
  D: D-971E or D-971M Line output module
  E: D-971R Line output module (RCA connector)
  F: D-981 Remote control module
  I: D-923AE Digital input module
  J: D-937SP Digital input module
  K: D-961SP Digital output module
  L: D-972AE Digital output module
  M: D-983 Remote control module
  N: D-984VC VCA control module
  :- Blank
  *: A wrong module installed

- When a wrong module is inserted into a slot, the initial screen that indicates the relevant slot with "*" mark appears after the unit's power is switched ON as shown below.

12.11. Cooling Fan Operating Status Confirmation

- The operating status of the rear-mounted cooling fan can be confirmed on the screen.
  Normal operation: [UTILITY] FAN RUNNING
  Operation failure: [UTILITY] FAN WARNING

- When "ERROR" is displayed, check to be sure that the fan exhaust vent is not blocked or that a foreign object has not jammed the vent. The fan is detected as having failed when it stops or if its rotation speed is extremely slow. In such cases contact your TOA dealer.
- If the fan rotation speed decreases dramatically, the display switches over to the cooling fan failure screen even when another screen is displayed. Pressing the Setting knob turns off the failure indication.

12.12. Firmware Version Confirmation

- The firmware version number can be confirmed.
13. RESTORING FACTORY DEFAULT SETTINGS

Perform the following procedure to reset all parameters to the factory default settings.

Step 1. Turn the power switch OFF.

Step 2. Turn the power switch ON while holding down both the ◄ and ► shift keys. Keep pressing both keys until "[SYSTEM] Initialize OK?" is displayed on the LCD screen.

Step 3. Press the Setting knob.
    The LCD screen display changes to "[SYSTEM] Initializing..."
    Then, all parameters are reset to the factory default settings, and the Input/Output Gain Setting screen is displayed.

Note
    The factory default Bus Assignment setting is made so that each input (1 – 12) is assigned to all outputs (1 – 8) via the Microphone Bus. Other default parameters are shown on p. 85 – 88.

14. FIRMWARE UPDATE

The D-901's firmware can be updated using the software program (D901PCvxxxx_fxxx.exe)*1 made available on the TOA internet site [http://www.toa-products.com/]. To update the firmware, download the software program to install it into your PC. (For the installation procedure, refer to the "D901 PC Software Instruction Manual" also available on the same site.)

The firmware update is performed by using the D-901 Firmware Update Utility program simultaneously installed with the D-901 PC Software.

Follow the procedure for the firmware update below.
After updating the firmware, use the latest D-901 instruction manual that can also be downloaded from the website above.

*1 The software version number can be confirmed at the xxx indication. For example when the PC Software version is 3.00 and Firmware version is 3.01, it is indicated as "D901PCv300e_f301.exe.

Step 1. Connect both RS-232C ports of the D-901 and the PC using a 9-pin straight cable (male-to-female cord).

Step 2. Make RS-232C port settings at the D-901.
    Set the control mode to "UPDATE*2" and the transmission rate to "115200 bps" (recommended). (Refer to p. 70.)

*2 Set "NONE" for the version 1.xx firmware.
Step 3. Select the menu items [Start → Program → TOA Digital Audio Control → Update D-901 Firmware].
The D-901 Firmware Update screen appears.

The default communication settings are as follows:
Communication port: COM 1
Baud rate: 115200 bps
Unless otherwise necessary to change, follow Step 6.
To change the settings, follow Step 4.

Step 4. Click the Comm Settings button.
The Comm Settings screen appears.

Step 5. Set the PC's Com port the D-901 is connected to, and the Speed (baud rate*) equal to the D-901's
RS-232C transmission rate.
Click OK, then the Comm Settings screen closes.
* Set the same value as that set in Step 2.

Step 6. Click the Update button of the D-901 Firmware Update screen.
The firmware update starts being transferred from the PC to the D-901.

The following screen appears after the update ends.
15. RACK MOUNTING

Mount the unit in an equipment rack using the supplied rack-mounting screws and fiber washers.

Cautions
- Install the unit as far as possible away from amplifiers or other equipment that generate heat.
- The socket-outlet shall be installed near the equipment and the plug (disconnecting device) shall be easily accessible.
- When installing the unit in an equipment rack, pay attention not to block the ventilation slots on the unit's bottom. It is recommended that a Perforated panel of over 1-unit in size be mounted directly below the unit as shown below.

Note
The supplied rack mounting screws are special screws for the TOA equipment rack. They cannot be used for other racks.
16. CONNECTIONS

16.1. Connection Example 1

AMX, Crestron, or other control equipment

BGM player (Cassette deck, CD player, MD player, etc.)

Microphone

D-901

Remote controller

Speaker

Power amplifier
16.2. Connection Example 2 (Broadcasting to two separate zones)
16.3. Removable Terminal Plug Connection

Cautions
- Be sure to use shielded cables for audio signal lines.
- 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.

**Cable end treatment**
- Solid or stranded cable: 7 mm
- Shielded cable: 7 mm and 20 mm

**Connector connections**

**Step 1.** Detach the unit’s rear-mounted input/output connector (removable terminal plug) from the unit.

**Step 2.** Loosen the terminal screw, then insert the cable.

**Step 3.** Retighten the terminal screw. (Pull on the cable to ensure it is securely connected.)

**Step 4.** Remount the input/output connector to the unit.

**Tip**
Recommended slotted screwdriver type: Screwdriver with blade that is 3 mm in width

**16.4. 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.
16.5. Connections of the D-984VC

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.

16.5.1. Connecting to the D-984VC

- For connecting to each terminal, use a CAT5 (Category 5) UTP cable fitted with a RJ45 connector.
  **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

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>IN CH 1</th>
<th>IN CH 2</th>
<th>IN CH 3</th>
<th>IN CH 4</th>
<th>IN CH 5</th>
<th>IN CH 6</th>
<th>IN CH 7</th>
<th>IN CH 8</th>
<th>IN CH 9</th>
<th>IN CH 10</th>
<th>IN CH 11</th>
<th>IN CH 12</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Pin No.</th>
<th>CTRL IN 1</th>
<th>CTRL IN 2</th>
<th>CTRL IN 3</th>
<th>CTRL IN 4</th>
<th>CTRL IN 5</th>
<th>CTRL IN 6</th>
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</table>

With 5 V at an input channel VCA pin (IN CH 1 – 12) or at an output channel VCA pin (OUT CH 1 – 8), the corresponding channel's sound volume is minimum. With 0 V, the sound volume is at the level set by the D-901.
- Use 10 kΩ potentiometers of taper B.
- Up to 6 volume controls can be connected to each V pin.

16.5.2. 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 CH 1 – 8), the corresponding channel's sound volume is minimum. With 0 V, the sound volume is at the level set by the D-901.
- 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]
16.5.3. 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 line input selection, refer to p. 69.
- The V pins of the control input terminals 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.
17. BLOCK DIAGRAM

Microphone/Line Input Module (D-921F or D-921E)

+15 V  PAD  AD

Microphone/Line Input Module (D-922F or D-922E)

+15 V  PAD  AD

DIP SW

DIP SW

Stereo Input Module (D-936R)

L  R  L  R  L  R  L  R

Selector

AD  AD

Digital Input Module (D-923AE)

DIR  DE-EMP  SRC

Automatic

Digital Input Module (D-937SP)

OPTICAL  OPTICAL  COAXIAL  COAXIAL

DIR  DE-EMP  SRC

Automatic

Only when using the D-984VC

Front panel
Only when using the D-984VC

Line Output Module (D-971M or D-971E)
- DA
- DA
- DA
- DA

Line Output Module (D-971R)
- DA
- DA
- DA
- DA

Digital Output Module (D-972AE)
- DIT
- DIT
- DIT
- DIT

Digital Output Module (D-961SP)
- OPTICAL
- COAXIAL
- OPTICAL
- COAXIAL

Remote Control Module (D-981)
- IN 1
- IN 8
- OUT 1
- OUT 8

Remote Control Module (D-983)
- IN 1
- IN 24
- OUT 1
- OUT 16

VCA Control Module (D-984VC)
- IN CH 1
- IN CH 2
- OUT CH 1
- CTRL IN 1
- CTRL IN 8
- CTRL OUT 1
- CTRL OUT 8

CPU
- RS-232C

Line Output Module (D-971R)
- DA
- DA
- DA
- DA

Digital Output Module (D-972AE)
- DIT
- DIT
- DIT
- DIT

Digital Output Module (D-961SP)
- OPTICAL
- COAXIAL
- OPTICAL
- COAXIAL

Remote Control Module (D-981)
- IN 1
- IN 8
- OUT 1
- OUT 8

Remote Control Module (D-983)
- IN 1
- IN 24
- OUT 1
- OUT 16

VCA Control Module (D-984VC)
- IN CH 1
- IN CH 2
- OUT CH 1
- CTRL IN 1
- CTRL IN 8
- CTRL OUT 1
- CTRL OUT 8

CPU
- RS-232C
18. LEVEL DIAGRAMS

18.1. Analog Input/Output

Microphone/Line Input Module
D-921F, D-921E, D-922F, or D-922E

DSP

Line Output Module
D-971M, D-971E, or D-971R

Digital Clipping Level (+20 dB)

Peak LED Turns ON
(+17 dB)

SIG LED Turns ON
(-40 dB)

Max. Input (+24)

LINE (+4)

LINE (-10)

MIC (-36)

MIC (-50)

dBu

+20

+10

0

-10

-20

-30

-40

-50

+20

+10

0

-10

-20

-30

-40

-50

dBu

18.2. Digital Input/Output

Digital Input Module
D-923AE or D-937SP

DSP

Digital Output Module
D-972AE or D-961SP

Max. Input (0 dBFS)

Clipping Level (+20 dB)

Peak LED Turns ON
(+17 dB)

SIG LED Turns ON
(-40 dB)

dBFS

0

-20

-40

-60

dBFS

0

-20

-40

-60
19. PARAMETER SETTING ITEMS AND SETTING RANGES

Note: Underlined parameters are factory-preset.

### [Input and Output/Trim Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Channel Gain</td>
<td>$-\infty$ to $+10$ dB</td>
</tr>
<tr>
<td>Input Trim Gain</td>
<td>$-15$ to $+15$ dB ($0$ dB), $0.1$ dB steps</td>
</tr>
<tr>
<td>Input Trim Polarity</td>
<td>NORMAL, INVERSE</td>
</tr>
<tr>
<td>Input Channel Group Trim Gain</td>
<td>$-\infty$ to $+10$ dB, $0.1$ dB steps</td>
</tr>
<tr>
<td>Output Channel Gain</td>
<td>$-\infty$ to $+10$ dB ($0$ dB)</td>
</tr>
<tr>
<td>Output Channel Group Trim Gain</td>
<td>$-\infty$ to $+10$ dB, $0.1$ dB steps</td>
</tr>
</tbody>
</table>

### [D-921F or D921E settings (enabled when the module is mounted)]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phantom Power</td>
<td>ON, OFF</td>
</tr>
<tr>
<td>PAD (Input Sensitivity)</td>
<td>$-50$, $-36$, $-10$, $+4$ dB</td>
</tr>
</tbody>
</table>

### [D-936R settings (enabled when the module is mounted)]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Input Mode</td>
<td>MIX ALL, SELECT</td>
</tr>
</tbody>
</table>

### [High-Pass Filter Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutoff Frequency</td>
<td>20 Hz to 20 kHz ($60$ Hz), $1/24$ octave steps</td>
</tr>
<tr>
<td>Slope</td>
<td>$12$ dB/oct</td>
</tr>
<tr>
<td>Q</td>
<td>$0.500$ to $2.563$ ($0.707$) ($51$ points)</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>

### [Equalizer Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>$-15$ to $+15$ dB ($0$ dB), $0.1$ dB steps</td>
</tr>
<tr>
<td>Center Frequency</td>
<td>20 Hz to 20 kHz (Low: $630$ Hz, High: $1.25$ kHz), $1/24$ octave steps</td>
</tr>
<tr>
<td>Q</td>
<td>$0.267$ to $69.249$ ($4.318$) ($96$ points)</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>

### [Compressor/Auto-Leveler Mode Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor/Auto-Leveler Mode</td>
<td>COMP, LEVELER</td>
</tr>
</tbody>
</table>

### [Compressor Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold Level</td>
<td>$-20$ to $+20$ dB ($0$ dB), $1$ dB steps</td>
</tr>
<tr>
<td>Ratio</td>
<td>$1:1$, $2:1$, $3:1$, $4:1$, $8:1$, $12:1$, $20:1$, $\infty:1$</td>
</tr>
<tr>
<td>Attack Time</td>
<td>$0.2$, $0.5$, $0.7$, $1.0$, $1.5$, $2$, $3$, $5$, $7$, $10$, $20$, $50$, $70$, $100$, $120$, $150$, $200$, $250$, $300$, $500$, $700$ ms, $1$, $2$, $3$, $5$ s</td>
</tr>
<tr>
<td>Release Time</td>
<td>$10$, $20$, $50$, $70$, $100$, $120$, $150$, $200$, $250$, $300$, $500$, $700$ ms, $1$, $2$, $3$, $5$ s</td>
</tr>
<tr>
<td>Gain</td>
<td>$-\infty$ to $+10$ dB ($0$ dB), $1$ dB steps</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>
### [Auto-Leveler Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Level</td>
<td>–20 to +10 dB (0 dB), 1 dB steps</td>
</tr>
<tr>
<td>Maximum Gain</td>
<td>0 to +20 dB (+6 dB), 1 dB steps</td>
</tr>
<tr>
<td>Attack Time</td>
<td>10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 1.2, 1.5, 2, 2.5, 3, 5, 7, 10 s</td>
</tr>
<tr>
<td>Release Time</td>
<td>100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 1.2, 1.5, 2, 2.5, 3, 5, 7, 10 s</td>
</tr>
</tbody>
</table>

### [Gate Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold Level</td>
<td>–50 to +20 dB (–40 dB), 1 dB steps</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>0 to +10 dB, 1 dB steps</td>
</tr>
<tr>
<td>Depth</td>
<td>–∞ to 0 dB (–20 dB), 1 dB steps</td>
</tr>
<tr>
<td>Hold Time</td>
<td>10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 2, 3, 5 s</td>
</tr>
<tr>
<td>Attack Time</td>
<td>10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 2, 3, 5, 10 s</td>
</tr>
<tr>
<td>Release Time</td>
<td>10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 2, 3, 5, 10 s</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>

### [Level Sense Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attack Time</td>
<td>0.2, 0.5, 0.7, 1.0, 1.5, 2, 3, 5, 7, 10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 2, 3, 5 s</td>
</tr>
<tr>
<td>Release Time</td>
<td>10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 2, 3, 5 s</td>
</tr>
</tbody>
</table>

### [Auto-Mixing Group Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-Mixing Group</td>
<td>GROUP A, GROUP B, GROUP C, GROUP D</td>
</tr>
</tbody>
</table>

### [Ducker Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority Level</td>
<td>1 – 8 (in order of the priority level from high to low)</td>
</tr>
<tr>
<td>Depth</td>
<td>–∞ to 0 dB (–20 dB), 1 dB steps</td>
</tr>
<tr>
<td>Attack Time</td>
<td>10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 2, 3, 5, 10 s</td>
</tr>
<tr>
<td>Release Time</td>
<td>10, 20, 50, 70, 100, 120, 150, 200, 250, 300, 500, 700 ms, 1, 2, 3, 5, 10 s</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>

### [NOM Attenuation Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attenuation Gain</td>
<td>0 log$<em>{10}$ NOM – 20 log$</em>{10}$ NOM (10)</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>
### [Delay Time Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay Time</td>
<td>0 – 682.6 ms, 0.021 ms steps</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>

### [Crossover Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutoff Frequency</td>
<td>20 Hz – 20 kHz (1 kHz), 1/24 octave steps</td>
</tr>
<tr>
<td>Slope</td>
<td>Through, 6 dB/oct, 12 dB/oct BS, 12 dB/oct BW, 12 dB/oct LR, 18 dB/oct BS, 18 dB/oct BW, 24 dB/oct BS, 24 dB/oct BW, 24 dB/oct LR</td>
</tr>
<tr>
<td>Q</td>
<td>0.500 – 2.563 (51 points)</td>
</tr>
<tr>
<td>Q2</td>
<td>0.500 – 2.563 (51 points)</td>
</tr>
<tr>
<td>Gain</td>
<td>-15 to +15 dB (0 dB), 0.1 dB steps</td>
</tr>
<tr>
<td>Polarity</td>
<td>NORMAL, INVERSE</td>
</tr>
</tbody>
</table>

### [Filter Settings]

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parametric Equalizer (PEQ)</td>
<td>Gain</td>
<td>-15 to +15 dB (0 dB), 0.1 dB steps</td>
</tr>
<tr>
<td></td>
<td>Center frequency</td>
<td>20 Hz – 20 kHz (1 kHz), 1/24 octave steps</td>
</tr>
<tr>
<td></td>
<td>Q</td>
<td>0.267 – 69.249 (96 points)</td>
</tr>
<tr>
<td>High-pass Filter (HPF)</td>
<td>Cutoff frequency</td>
<td>20 Hz – 20 kHz (1 kHz), 1/24 octave steps</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>6 dB/oct</td>
</tr>
<tr>
<td></td>
<td>Q</td>
<td>0.500 – 2.563 (51 points)</td>
</tr>
<tr>
<td>Low-pass Filter (LPF)</td>
<td>Cutoff frequency</td>
<td>20 Hz – 20 kHz (1 kHz), 1/24 octave steps</td>
</tr>
<tr>
<td></td>
<td>Slope</td>
<td>6 dB/oct</td>
</tr>
<tr>
<td></td>
<td>Q</td>
<td>0.500 – 2.563 (51 points)</td>
</tr>
<tr>
<td>High Shelving Filter</td>
<td>Gain</td>
<td>-15 to +15 dB (0 dB), 0.1 dB steps</td>
</tr>
<tr>
<td></td>
<td>Roll-off frequency</td>
<td>6 – 20 kHz, 1/24 octave steps</td>
</tr>
<tr>
<td>Low Shelving Filter</td>
<td>Gain</td>
<td>-15 to +15 dB (0 dB), 0.1 dB step</td>
</tr>
<tr>
<td></td>
<td>Roll-off frequency</td>
<td>20 – 500 Hz, 1/24 octave steps</td>
</tr>
<tr>
<td>Horn Equalizer (Horn EQ)</td>
<td>Gain</td>
<td>0 to +18 dB, 0.5 dB step</td>
</tr>
<tr>
<td>Notch Filter</td>
<td>Center frequency</td>
<td>20 Hz – 20 kHz (1 kHz), 1/24 octave steps</td>
</tr>
<tr>
<td>All-pass Filter</td>
<td>Center frequency</td>
<td>20 Hz – 20 kHz (1 kHz), 1/24 octave steps</td>
</tr>
<tr>
<td></td>
<td>Q</td>
<td>0.267 – 69.249 (96 points)</td>
</tr>
</tbody>
</table>

### [Bus Assignment and Crosspoint Gain Settings]

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 1</td>
<td>Output 1 – 8: ON, OFF</td>
</tr>
<tr>
<td>Microphone Bus</td>
<td>Output 1 – 8: ON, OFF</td>
</tr>
<tr>
<td>Gain</td>
<td>-∞ to 0 dB, 1 dB steps</td>
</tr>
<tr>
<td>Input 2 – 12</td>
<td>Same as above</td>
</tr>
<tr>
<td>Microphone Bus</td>
<td>Output 1 – 8: ON, OFF</td>
</tr>
</tbody>
</table>
### Feedback Suppression Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>DYNAMIC</td>
<td>Dynamic mode ON/OFF</td>
<td>ON, OFF</td>
</tr>
<tr>
<td>AUTO START</td>
<td>Auto mode activation</td>
<td></td>
</tr>
<tr>
<td>AUTO : DYNAMIC</td>
<td>Number of the filters used in each mode</td>
<td>AUTO : 0 – 9 (7), DYNAMIC : 3 – 12 (5)</td>
</tr>
<tr>
<td>CLEAR DYNAMIC</td>
<td>Reset the filters set for Dynamic mode</td>
<td></td>
</tr>
<tr>
<td>CLEAR AUTO</td>
<td>Reset the filters set for Auto mode</td>
<td></td>
</tr>
</tbody>
</table>

### Feedback Suppression Filter Setting

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>-15 to +15 dB, 0.1 dB steps</td>
</tr>
<tr>
<td>Center Frequency</td>
<td>20 Hz – 20 kHz, 1/24 octave steps</td>
</tr>
<tr>
<td>Q</td>
<td>0.267 – 69.249 (96 points)</td>
</tr>
</tbody>
</table>

**Note**
Performing the feedback suppression function automatically sets the above parameters. They can be confirmed on the setting screen, but not manually changed.

### Effect (echo) Settings

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echo Gain</td>
<td>$-\infty$ to 10.0 dB ($-10$ dB), 1 dB steps</td>
</tr>
<tr>
<td>Feedback Ratio</td>
<td>0 – 99% (30%), 1% steps</td>
</tr>
<tr>
<td>Feedback Delay</td>
<td>0 – 682 ms (120 ms), 1 ms steps</td>
</tr>
<tr>
<td>Initial Echo (Pre-) Delay</td>
<td>0 – 682 ms (80 ms), 1 ms steps</td>
</tr>
<tr>
<td>Low-pass Filter Frequency</td>
<td>20 Hz – 20 kHz (3.75 kHz)</td>
</tr>
<tr>
<td>Q</td>
<td>0.500 – 2.563 (51 points)</td>
</tr>
<tr>
<td>ON/OFF</td>
<td>ON, OFF</td>
</tr>
</tbody>
</table>

### Preset Memory Crossfade Time Settings

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crossfade Time</td>
<td>0 – 10 s, 0.5 s steps</td>
</tr>
</tbody>
</table>

### Initial Preset Memory Settings

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset Memory</td>
<td>LAST MEMORY , 1 – 16</td>
</tr>
</tbody>
</table>

### Contact Input/Output Settings

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Input</td>
<td>Memory (factory-preset: 1 – 8), Volume Up/Down, Channel On/Off, Stereo input, None (factory-preset: 9 – 24)</td>
</tr>
<tr>
<td>Contact Output</td>
<td>Normally break (factory-preset: 9 – 24), Normally make, Memory (factory-preset: 1 – 8), Channel On/Off, Contact input status, Stereo input</td>
</tr>
</tbody>
</table>

### RS-232C Port Settings

<table>
<thead>
<tr>
<th>Setting Item</th>
<th>Setting Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Mode</td>
<td>UPDATE, REMOTE, PC CTRL</td>
</tr>
<tr>
<td>RS-232C transmission rate</td>
<td>115200, 38400, 19200, 9600 bps</td>
</tr>
</tbody>
</table>
## 20. SPECIFICATIONS

### 20.1. D-901 Digital Mixer

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Source</strong></td>
<td>100 – 120 V, 230 V AC, 50/60 Hz</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>40 W</td>
</tr>
<tr>
<td><strong>Frequency Response</strong></td>
<td>20 – 20,000 Hz, ±1 dB (±4 dB input)</td>
</tr>
<tr>
<td><strong>Input</strong></td>
<td>Max. 12 channels, modular construction (modules optional)</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>Max. 8 channels, modular construction (modules optional)</td>
</tr>
<tr>
<td><strong>Feedback Suppression Function</strong></td>
<td>12 filters (auto/dynamic)</td>
</tr>
<tr>
<td><strong>Auto Mixing Function</strong></td>
<td>Ducker (auto muting), NOM attenuation</td>
</tr>
<tr>
<td><strong>Auto Mixing Group</strong></td>
<td>4 groups</td>
</tr>
<tr>
<td><strong>Equalizer/Filter</strong></td>
<td>Filter: High-pass filter 20 – 20,000 Hz, 6 dB/oct, 12 dB/oct</td>
</tr>
<tr>
<td></td>
<td>Low pass filter 20 – 20,000 Hz, 6 dB/oct, 12 dB/oct</td>
</tr>
<tr>
<td></td>
<td>Notch filter 20 – 20,000 Hz, 8.651 – 69.249</td>
</tr>
<tr>
<td></td>
<td>All-pass filter 20 – 20,000 Hz, 0.267 – 69.249</td>
</tr>
<tr>
<td></td>
<td>High shelving filter 6 – 20,000 Hz, ±15 dB</td>
</tr>
<tr>
<td></td>
<td>Low shelving filter 20 – 500 Hz, ±15 dB</td>
</tr>
<tr>
<td></td>
<td>Horn equalizer 20 kHz, 0 to +18 dB (1 dB steps)</td>
</tr>
<tr>
<td><strong>Crossover Filter</strong>:</td>
<td>20 – 20,000 Hz, 6 dB/oct, 12 dB/oct, 18 dB/oct, 24 dB/oct</td>
</tr>
<tr>
<td><strong>Compressor /Auto-Leveler</strong></td>
<td>Threshold: –20 to +20 dB (1 dB steps)</td>
</tr>
<tr>
<td></td>
<td>Ratio: 1:1, 2:1, 3:1, 4:1, 8:1, 12:1, 20:1, ∞:1</td>
</tr>
<tr>
<td></td>
<td>Attack time: 0.2 ms – 5 s</td>
</tr>
<tr>
<td></td>
<td>Release time: 10 ms – 5 s</td>
</tr>
<tr>
<td></td>
<td>Gain: –∞ to +10 dB</td>
</tr>
<tr>
<td><strong>Delay</strong></td>
<td>Delay time: 0 – 682.6 ms (0.021 ms steps)</td>
</tr>
<tr>
<td><strong>Matrix</strong></td>
<td>12 x 8</td>
</tr>
<tr>
<td><strong>Crosspoint Gain</strong></td>
<td>–∞ to 0 dB (1 dB steps)</td>
</tr>
<tr>
<td><strong>Preset Memory</strong></td>
<td>16</td>
</tr>
<tr>
<td><strong>Auxiliary Function</strong></td>
<td>Protect function</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>RS-232C, D-sub connector (9 pins), Remote control module (option)</td>
</tr>
<tr>
<td><strong>Front Panel Section</strong></td>
<td>Preset memory selector key: 8</td>
</tr>
<tr>
<td></td>
<td>LCD screen, screen shift key (up/down/left/right), setting knob</td>
</tr>
<tr>
<td></td>
<td>Input level indicator: Dual color LED</td>
</tr>
<tr>
<td></td>
<td>Output level indicator: Dual color LED</td>
</tr>
<tr>
<td></td>
<td>Channel selector key: 12 (input channel selection)</td>
</tr>
<tr>
<td></td>
<td>8 (output channel selection)</td>
</tr>
<tr>
<td></td>
<td>Channel volume control: 1 (input channel selection)</td>
</tr>
<tr>
<td></td>
<td>1 (output channel selection)</td>
</tr>
<tr>
<td><strong>Rear Panel</strong></td>
<td>Input module slot: 6 (input/output module slot: 2)</td>
</tr>
<tr>
<td></td>
<td>Output module slot: 2</td>
</tr>
<tr>
<td></td>
<td>Remote control module slot: 1</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>+5 to +40 °C</td>
</tr>
<tr>
<td><strong>Finish</strong></td>
<td>Panel: Aluminum, hair-line finish, black</td>
</tr>
<tr>
<td></td>
<td>Others: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>482.6 (w) x 132.6 (h) x 320 (d) mm (excluding projection)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>6.9 kg</td>
</tr>
</tbody>
</table>

* 0 dB = 0.775 V

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

**Accessories**
- AC power cord (2 m) ............................................. 1
- Rack mounting bracket (preinstalled on the unit) .... 2
- Rack mounting screw (5 x 12) .................................. 4
- Module mounting screw (spare) ............................... 4
- Fiber washer for M5 ............................................. 4
- Blank panel (preinstalled on the module slot) .... 9
### 20.2. D-921F Microphone/Line Input Module (Optional)

<table>
<thead>
<tr>
<th>Input</th>
<th>2 channels, Mic/Line changeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic</td>
<td>−50/−36 dB*, 4.7 kΩ, electronically-balanced, equivalent to XLR-3-31 type</td>
</tr>
<tr>
<td>Line</td>
<td>−10/+4 dB*, 10 kΩ, electronically-balanced, equivalent to XLR-3-31 type</td>
</tr>
<tr>
<td>Phantom power supply (+15 V, can be used when set for the microphone)</td>
<td>Ground lift switch</td>
</tr>
<tr>
<td>A/D Converter</td>
<td>24 bits</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>48 kHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20 – 20,000 Hz, ±1 dB (+4 dB* input)</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>Over 100 dB (IHF-A weighted) (+4 dB* input)</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>Under 0.05% (+4 dB* input)</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>150 g</td>
</tr>
</tbody>
</table>

### 20.3. D-921E Microphone/Line Input Module (Optional)

<table>
<thead>
<tr>
<th>Input</th>
<th>2 channels, Mic/Line changeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic</td>
<td>−50/−36 dB*, 4.7 kΩ, electronically-balanced, 3-pin removable terminal block</td>
</tr>
<tr>
<td>Line</td>
<td>−10/+4 dB*, 10 kΩ, electronically-balanced, 3-pin removable terminal block</td>
</tr>
<tr>
<td>Phantom power supply (+15 V, can be used when set for the microphone)</td>
<td>Ground lift switch</td>
</tr>
<tr>
<td>A/D Converter</td>
<td>24 bits</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>48 kHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20 – 20,000 Hz, ±1 dB (+4 dB* input)</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>Over 100 dB (IHF-A weighted) (+4 dB* input)</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>Under 0.05% (+4 dB* input)</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>140 g</td>
</tr>
</tbody>
</table>

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

### 20.4. D-922F Microphone/Line Input Module (Optional)

<table>
<thead>
<tr>
<th>Input</th>
<th>2 channels, −50/−36/−10/+4 dB* (Selectable with the DIP switch), 4.7 kΩ, electronically-balanced, equivalent to XLR-3-31 type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phantom power supply (+15 V, can be set with the DIP switch)</td>
<td>Ground lift switch (can be set with the DIP switch)</td>
</tr>
<tr>
<td>A/D Converter</td>
<td>20 bits</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>48 kHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20 – 20,000 Hz, ±1 dB (+4 dB* input)</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>Over 85 dB (IHF-A weighted) (+4 dB* input)</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>Under 0.2% (+4 dB* input)</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>135 g</td>
</tr>
</tbody>
</table>

* 0 dB = 0.775 V

**Note:** The design and specifications are subject to change without notice for improvement.
20.5. D-922E Microphone/Line Input Module (Optional)

<table>
<thead>
<tr>
<th>Input</th>
<th>2 channels, –50/–36/–10/+4 dB* (Selectable with the DIP switch), 4.7 kΩ, electronically-balanced, 3-pin removable terminal block</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phantom power supply (+15 V, can be set with the DIP switch) Ground lift switch (can be set with the DIP switch)</td>
</tr>
<tr>
<td>A/D Converter</td>
<td>20 bits</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>48 kHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20 – 20,000 Hz, ±1 dB (+4 dB* input)</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>Over 85 dB (IHF-A weighted) (+4 dB* input)</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>Under 0.2% (+4 dB* input)</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>125 g</td>
</tr>
</tbody>
</table>

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

20.6. D-936R Stereo Input Module (Optional)

<table>
<thead>
<tr>
<th>Input</th>
<th>4 stereo inputs (Selection of 1 stereo or mixing or all 4 stereo inputs) –10 dB*, 10 kΩ, RCA pin jack</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/D Converter</td>
<td>24 bits</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>48 kHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20 – 20,000 Hz, ±1 dB (+4 dB* input)</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>Over 100 dB (IHF-A weighted)</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>Under 0.05%</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>145 g</td>
</tr>
</tbody>
</table>

20.7. D-923AE Digital Input Module (Optional)

<table>
<thead>
<tr>
<th>Input</th>
<th>2 channels, 2.0 – 7.0 V (p-p), 110 Ω, equivalent to XLR-3-31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable Format</td>
<td>AES/EBU (2 channel multiplexed)</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>32 – 48 kHz</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>130 g</td>
</tr>
</tbody>
</table>

20.8. D-937SP Digital Input Module (Optional)

<table>
<thead>
<tr>
<th>Input</th>
<th>Stereo 1 channel (Selectable one of 4 inputs) 0.5 V (p-p), 75 Ω, Coaxial RCA pin jack x 2 Square optical connector x 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable Format</td>
<td>S/PDIF (2 channel multiplexed)</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>32 – 48 kHz</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>130 g</td>
</tr>
</tbody>
</table>

* 0 dB = 0.775 V

**Note:** The design and specifications are subject to change without notice for improvement.
20.9. D-971M Line Output Module (Optional)

| Output | 4 channels, +4 dB*, adaptable load of over 600 Ω, electronically-balanced, equivalent to XLR-3-32 type |
| D/A Converter | 24 bits |
| Sampling Frequency | 48 kHz |
| Frequency Response | 20 – 20,000 Hz, ±1 dB |
| Dynamic Range | Over 100 dB (IHF-A weighted) |
| Total Harmonic Distortion | Under 0.05% |
| Finish | Panel: Pre-coated steel plate, black (30% glossy) |
| Dimensions | 35 (w) x 119.5 (h) x 178.4 (d) mm |
| Weight | 165 g |

20.10. D-971E Line Output Module (Optional)

| 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 – 20,000 Hz, ±1 dB |
| Dynamic Range | Over 100 dB (IHF-A weighted) |
| Total Harmonic Distortion | Under 0.05% |
| Finish | Panel: Pre-coated steel plate, black (30% glossy) |
| Dimensions | 35 (w) x 119.5 (h) x 178.4 (d) mm |
| Weight | 140 g |

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

20.11. D-971R Line Output Module (Optional)

| Output | 4 channels (2 outputs for each channel), –10 dB*, adaptable load of over 600 Ω, RCA pin jack |
| D/A Converter | 24 bits |
| Sampling Frequency | 48 kHz |
| Frequency Response | 20 – 20,000 Hz, ±1 dB |
| Dynamic Range | Over 100 dB (IHF-A weighted) |
| Total Harmonic Distortion | Under 0.05% |
| Finish | Panel: Pre-coated steel plate, black (30% glossy) |
| Dimensions | 35 (w) x 119.5 (h) x 178.4 (d) mm |
| Weight | 150 g |

20.12. D-972AE Digital Output Module (Optional)

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

• Accessories
  Ferrite clamp ............................................................................. 2

* 0 dB = 0.775 V

Note: The design and specifications are subject to change without notice for improvement.
20.13. D-961SP Digital Output Module (Optional)

<table>
<thead>
<tr>
<th>Output</th>
<th>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</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable Format</td>
<td>S/PDIF (2 channel multiplexed)</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>48 kHz</td>
</tr>
<tr>
<td>Finish</td>
<td>Panel: Pre-coated steel plate, black (30% glossy)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>35 (w) x 119.5 (h) x 178.4 (d) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>130 g</td>
</tr>
</tbody>
</table>


| Contact Input | COM + Terminals 1 – 8: Open voltage: 5 V DC, short-circuit: 5 mA, 10-pin removable terminal block |
| 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 removable terminal block |
| Finish | Panel: Pre-coated steel plate, black (30% glossy) |
| Dimensions | 35 (w) x 119.5 (h) x 178.4 (d) mm |
| Weight | 125 g |

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

- **Accessories**
  - 10-pin removable terminal plug (preinstalled on the unit) ........ 2
### 20.15. D-983 Remote Control Module (Optional)

<table>
<thead>
<tr>
<th>Control</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Input</td>
<td>Contact Input COM + Terminals 1 – 24: Open voltage 5 V DC, short-circuit current 5 mA, RJ45 connector x 4.</td>
</tr>
<tr>
<td>Preset Memory Selection</td>
<td>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.</td>
</tr>
<tr>
<td>Volume Control</td>
<td>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.</td>
</tr>
<tr>
<td>Channel</td>
<td>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.</td>
</tr>
<tr>
<td>Stereo Selection</td>
<td>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.</td>
</tr>
<tr>
<td>Contact Output</td>
<td>Contact Output COM + Terminals 1 – 16: No-voltage make contact, contact capacity: 24 V DC, 100 mA, RJ45 connector x 4.</td>
</tr>
</tbody>
</table>

#### 20.13. D-984VC VCA Control Module (Optional)

<table>
<thead>
<tr>
<th>Control</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCA Control Input</td>
<td>+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</td>
</tr>
<tr>
<td>Contact Input</td>
<td>Contact Input COM + Terminals 1 – 8: Open voltage 5 V DC, short-circuit current 5 mA, RJ45 connector x 2.</td>
</tr>
<tr>
<td>Preset Memory Selection</td>
<td>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.</td>
</tr>
<tr>
<td>Volume Control</td>
<td>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.</td>
</tr>
<tr>
<td>Channel</td>
<td>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.</td>
</tr>
<tr>
<td>Stereo Selection</td>
<td>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.</td>
</tr>
<tr>
<td>Contact Output</td>
<td>Contact Output COM + Terminals 1 – 8: No-voltage make contact, contact capacity: 24 V DC, 100 mA, RJ45 connector x 2.</td>
</tr>
</tbody>
</table>

#### Note:

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

URL: [http://www.toa.jp/](http://www.toa.jp/)