

PATLITE®

V95100117

MP3 File Playback Circuit Board

Signal Voice

User's Manual
[TYPE FV-127JP]

PATLITE Corporation

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Introduction

Thank you for purchasing our Patlite Signal Voice MP3 Playback Circuit Board. Prior to installation, please read through this manual for proper installation and precautionary steps. In addition, please store this manual for future reference when performing maintenance, repairs or inspections.
After reviewing this manual, if there are any inquiries, please direct them to your PATLITE Sales Representative.

- Markings in this book

The bit rate of 64 kbit/s is given as the standard rate for the MP3 file. When the bit rates differ, reproduction time differs. Optional SDV-128P should be used for the SD card. Using other SD cards is not guaranteed.

(☞ Refer to page 38 [(1) SD card (MP3 voice messages")])

Format the SD card using the FAT16 protocol. The SD card cannot be recognized if it is formatted in any form other than FAT16.

- Copyrights

Work that was recorded or copied from music CDs or other media used in public places may infringe upon copyrights and law enforcement may be imposed. When using a work that was recorded or copied from music CDs or other media, be sure to obtain permission from the author.

Moreover, the copyright of the sound and music data which PATLITE Corporation distributes or sells belongs to our company. In addition, copyrights of audio/music data distributed or sold by PATLITE Corporation belongs to PATLITE. It is strictly prohibited to copy/reprint whole or partial contents of audio/music data belonging to PATLITE Corporation, or to transfer/sell such material on computer networks etc. without the permission of the rightful holder.

- Windows® is a registered trademark of Microsoft Corporation of America, Japan and other countries.
- The PATLITE Corporation is a member of the SD Card Association.

1. Product Summary

This product is a small sized MP3 file reproduction board which can also be used for factory automation (FA). Since MP3 is used as compressed data, it is possible to reproduce a high-quality sound voice message for an extended period of time. Moreover, the registered voice message can be rewritten freely. (A maximum of 127 messages can be registered)

- High Quality Sound/Long Playback Time

The maximum voice message playback is a maximum of about 8 minutes.

Moreover, extended reproduction for a maximum of about 240 minutes can be done by using the optional SD card.

- Voice Message Rewrite - Export Function

A voice message can be rewritten freely using the SD card.

The voice messages registered to this product can be read to the SD card.

- Noise Reduction

Malfunction due to noise can be suppressed by the setup of input noise filters.

The noise reduction pin can reduce the effect of noise according to the environment.



- Replay According to Application

Five different modes can be selected for different playback modes.

With the control of an external signal, three levels of noise reduction can be made.

2. Safety Precautions

In order to prevent any damage to the user and other personnel or to assets, note the following:
The warning indications are divided into the following classes according to the degree of danger or damage incurred when the warning is not taken into consideration and the product is not correctly used.

 Warning	Indicates an immediately dangerous condition: failure to follow the instructions may lead to death or serious injury.
 Caution	Indicates a potentially dangerous condition: failure to follow the instructions may lead from slight to medium injury or to property or physical damage.

For safe application, observe the following:

Warning

- Ensure the power is in the correct tolerance for voltage supply. Failure to do so may result in malfunction or fire.
- Do not modify or disassemble the product. Failure to do so may result in malfunction or fire.
- During operation, the parts get hot, so do not touch the product and keep flammable things away. Failure to do so may result in serious burns or fire.

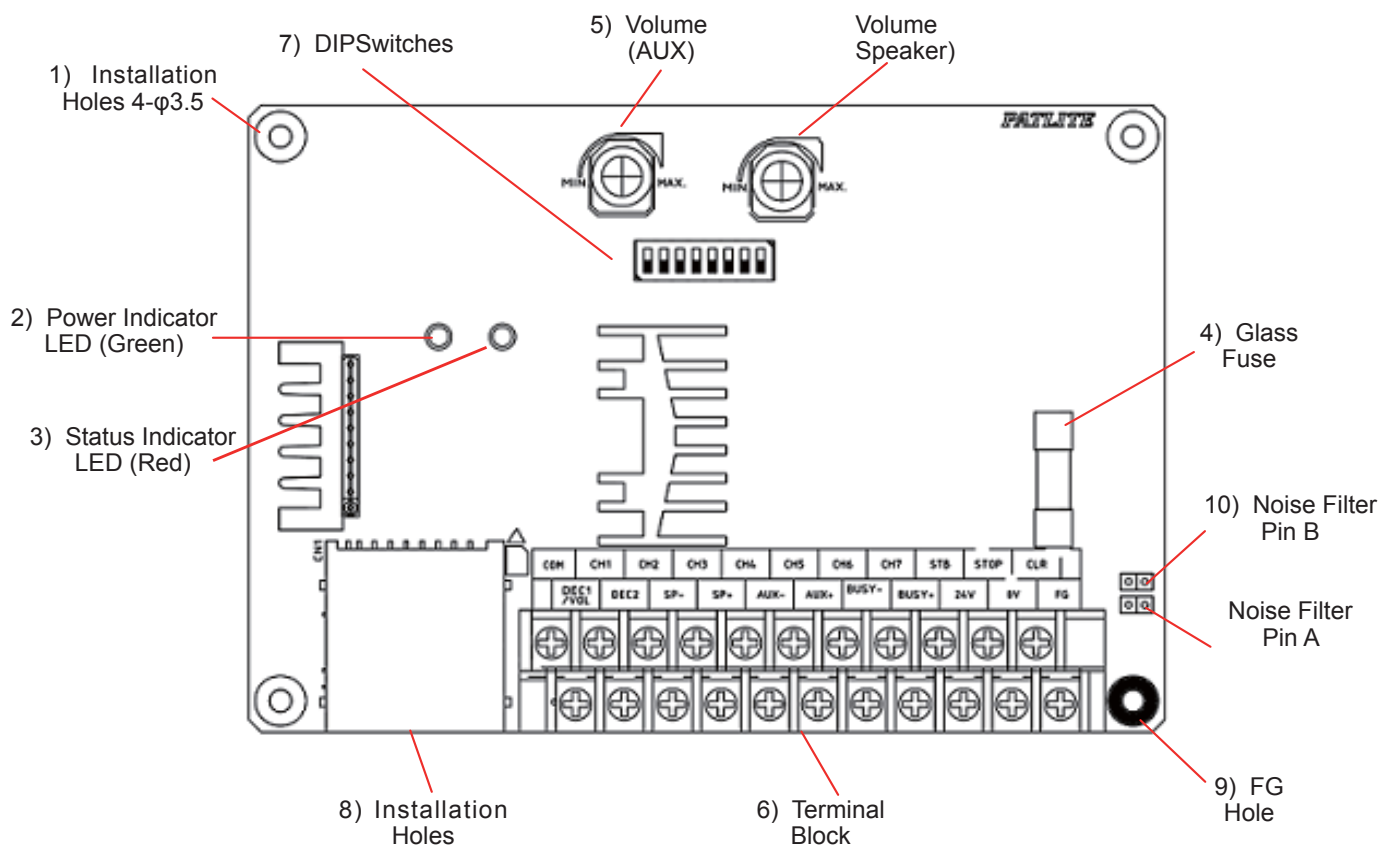
Caution

- Before handling this product, be sure to discharge any static electricity by touching other metal parts to discharge static electricity. Moreover, don't touch the parts or printed circuit board pattern that is not specified.
- The parts on a board may be destroyed by static electricity, or the part leads may cause injury. This product incorporates a circuit board for exclusive use. Protect the board from conductive foreign substances, such as water and dust.
- Don't allow tools etc. to contact with the board. The possibility of short-circuiting and part damage may occur.
- Make sure the power is off before wiring and mounting. The danger of burning the internal circuitry by short-circuiting may occur.
- Don't install the product in a location where vibrations exceed the specifications. Possible product damage or falling may occur.
- This product is not guaranteed from failure produced by transportation, handling, natural disasters, etc. or the disassembly and modification contrary to warnings and notes. Moreover, please avoid the use of this product outside the contents written in this book.

Please

- For safety purposes, be sure to carry out daily inspections and to perform preventative maintenance which can avoid down-time and possible failure.
- Don't control message reproduction by controlling the power source. Possible malfunction may occur.
- Don't use in a location with corrosive gas present. Possible malfunction may occur.
- Use this product only in environmental conditions indicated in this manual. Possible malfunction may occur in another environment.

3. Part Names and Function



1. Installation Holes 4-φ3.5
Use the installation holes when mounting. (Refer to pg. 9 [4. Installation])
2. Power Indicator LED (Green)
The LED light turns on when power is applied.
3. Status Condition Indicator LED (Red)
See the table below for the flashing or non-flashing indication depending on the function:

LED Status	Operation
Off	During standby or audio message playback.
On	When transferring voice message When exporting voice message
Flashing	Error during playback (Refer to pg. 38 [9. Error Table])

4. Glass Fuse
Fuse to protect from overcurrent or overvoltage. Refer to the specifications below when replacing:
Glass Fuse: φ5.2×20 Rated Current: 1.0A Standard Fusion Type
Replacement Part: Nippon Seisen Co., Ltd. FBM 250V 1A / Fujitsu Electric FGMB 250V

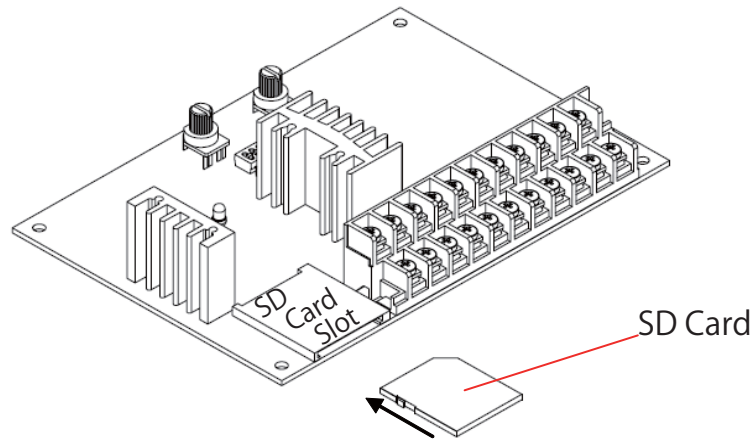
Caution

Before replacing the fuse, disconnect the power source. The possibility of circuitry shorting or electrocution may occur.

5. Volume (Speaker, AUX)
Volume adjustment for the Speaker and AUX output is possible.
(☞ Refer to pg. 20 [6-1 Volume Adjustment])
6. Terminal Bus
Wiring terminal for individual Inputs and Outputs. (☞ Refer to pg. 10 [5. Wiring])
7. DIP Switches (Sets Functions)
Sets functions for playback mode, SD card operation, etc.
(☞ Refer to pg. 22 [7. Mode Switch Settings])
8. SD Card Slot
Used for voice message rewriting, voice message exporting and SD card permanent installation.
(☞ Refer to pg. 31 [7-3. SD Card Operation])
[SD Card Slot Insertion]

When inserting, please push the SD Card in until a click is heard, and insert the SD Card as indicated in the diagram below.

To remove the SD Card, push in until a click is heard and release.



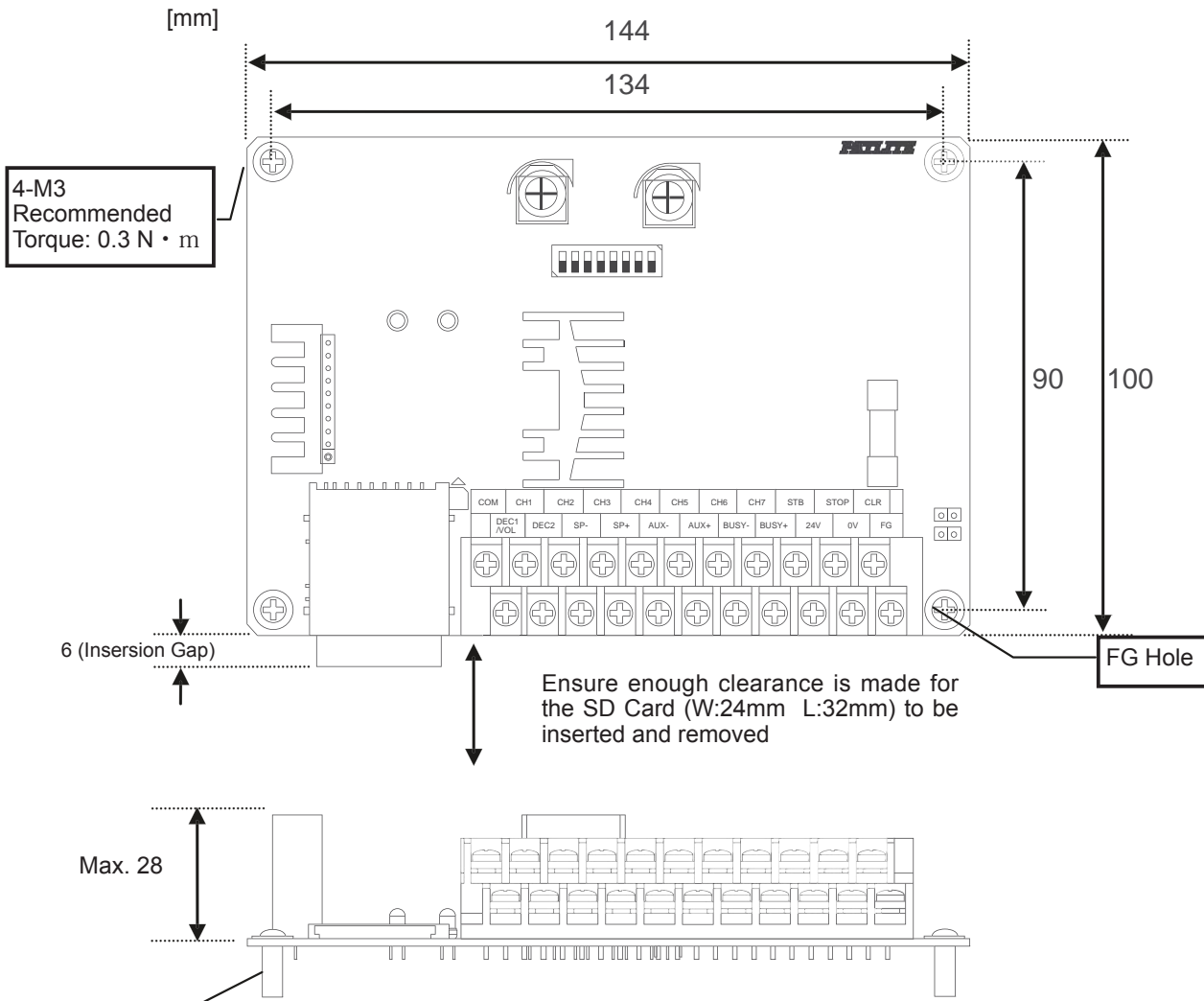
Caution

When you insert an SD card into the SD card slot, be careful of the direction. Also, don't push in SD card by force. Possible damage of the product and SD card may occur.

9. FG Hole (Frame Ground Hole)
In some cases, the earth grounding reduces noise.
The Terminal bus is connected to the FG Hole.
10. Noise Filter Pin (A , B)
Depending on the pin setting, incoming noise can be reduced.
Both pins are connected upon shipment, but by removing any of them may increase noise susceptibility.
Therefore, set the pins in accordance to the operating environment.
(☞ Refer to pg. 13 [② FG Terminal Wiring/Noise Reduction Pin])

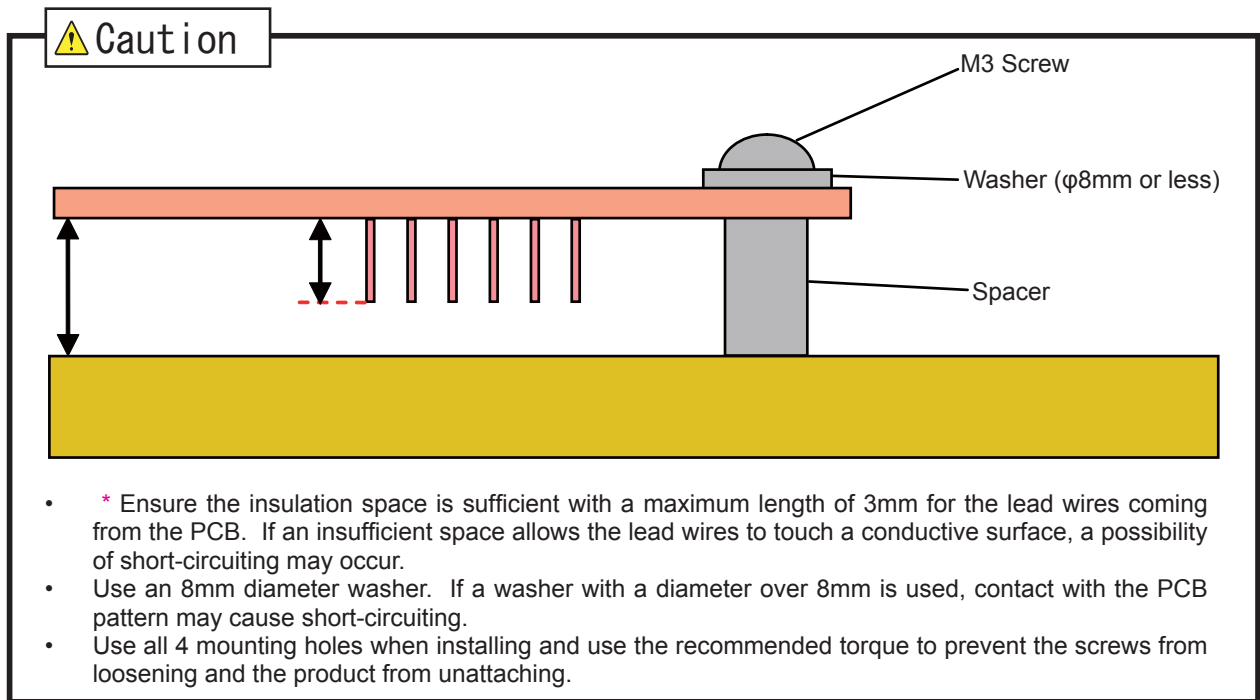
4. Installation

Use M3 screws and PCB spacers (not included) when installing the PC Board.



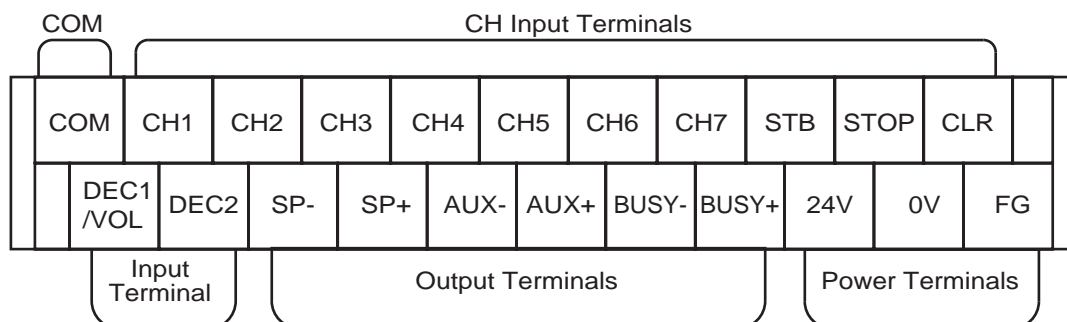
* Recommended Spacer Size: 10mm
(Use metal spacer when grounding via the FG Hole)

For dimensions (Refer to pg. 38 [Outer Dimensions])



5. Wiring

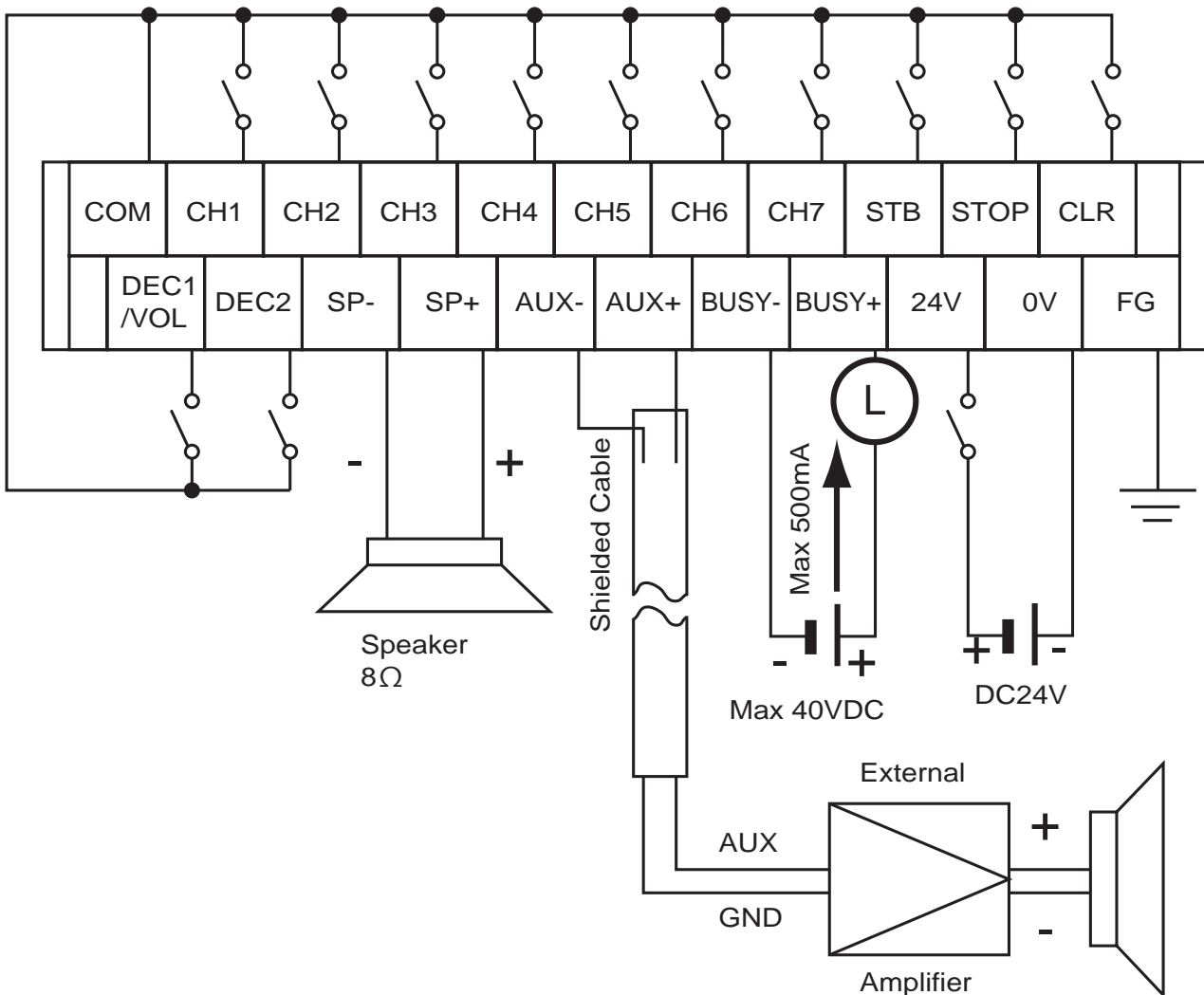
5-1. Terminal Wiring and Names



Name	Function
COM	Common connection for input terminals
CH1-7	Channel selection terminal for audio messages. Short to COM for the selected channel to playback message. Two input modes "binary" and "bit" can be selected. (☞ Refer to pg. 23 [7-1. Channel (CH) Terminal Input])
STB	When in the Binary Mode, STB is used during playback. (Not applicable for the "Hold Playback" mode) (☞ Refer to pg. 30 [(E) Hold Playback])
STOP	Stops the message during playback.
CLR	When used during the "memory playback" mode, the audio playback message is erased. For other modes, the function is the same as the "STOP" mode.
DEC1/VOL, DEC2	Depending on the input status, the speaker volume or AUX volume decreases. (☞ Refer to pg. 21 [6-2. Reduction Function])
SP-, SP+	Speaker Terminal Connection (Note Polarity). (☞ Refer to pg. 14 [③ Speaker Output Terminal Wiring])
AUX-, AUX+	Amplifier Terminal Connection (Note Polarity). (☞ Refer to pg. 15 [④ AUX Output Terminal Wiring])
BUSY-, BUSY+	Output is produced during message playback (Note Polarity). (☞ Refer to pg. 17 [⑤ BUSY Output Terminal Wiring])
24V,0V	Power Input Terminal. Connect DC24V only. (Note Polarity) (☞ Refer to pg. 12 [① Power Input Terminal Wiring])
FG	When connecting to earth ground (FG), under certain environments can reduce the effect of noise. The FG is connected internally.

5-2. Wiring

Wiring Example



Caution

Do not connect the input connections to the power supply. Possible malfunction may occur

When handling this product, please do so after discharging static electricity from on the body. Discharge the static electricity by touching other metal parts. In addition, do not touch parts in areas not specified in this manual. Possible static electricity may destroy parts or the wire leads on the underside of the board may cause injury.

Be sure to turn off the power before connecting wires. Possible short circuiting or burning-out of the internal circuitry may occur.

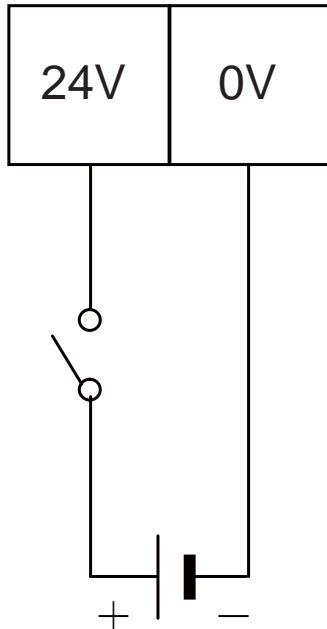
Please

Ensure wiring is properly performed before connecting power.

To prevent noise, make wire connections short and use shielded wiring. If installed where high voltage wiring is nearby, inductive noise may cause malfunctioning.

5-2-1 Power Input Terminal Wiring

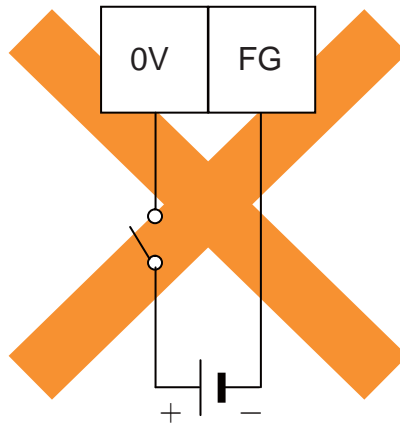
Connect DC24V.



Current Consumption	For Maximum Load: About 520mA
Inrush Current	9A

Caution

- Ensure wiring is properly performed before connecting power. If voltage is applied between 0V and FG, it will cause a short circuit, and the power source will be destroyed.



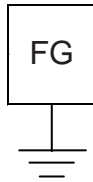
Please

- Ensure voltage polarity is correct.
- When used in a state where it is connected to the power source, please include a switch in which the power source can be easily cut for safety.
- When using non-voltage contacts, such as a relay switch for power source wiring, please select in consideration of the rush current. If capacity is insufficient, it will cause welding of the contacts and malfunction.
- Use the rated voltage supply when located in a quiet location to avoid white noise.

5-2-2 FG Terminal Wiring / Noise Reduction Pin

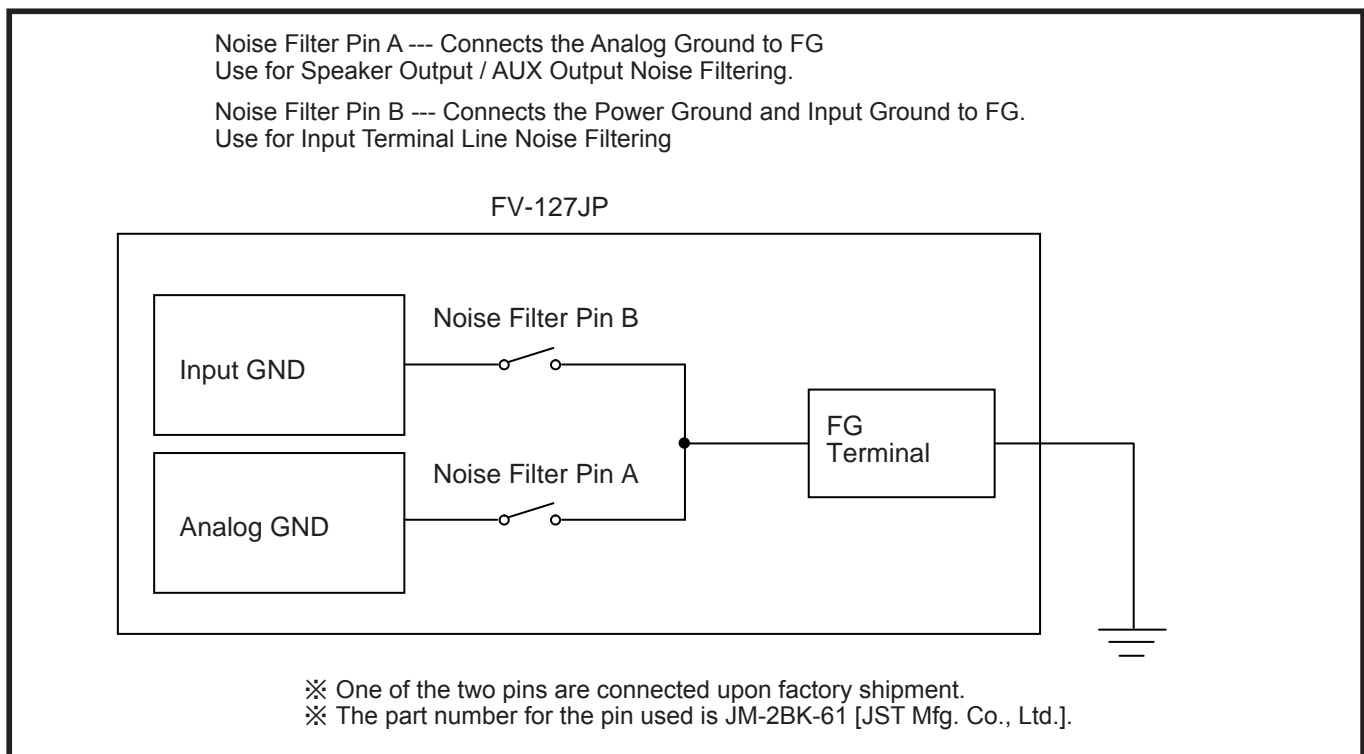
When the FG terminal is connected to earth ground, depending on the environment, the noise generated can be reduced.

The FG hole is connected internally to the circuitry.

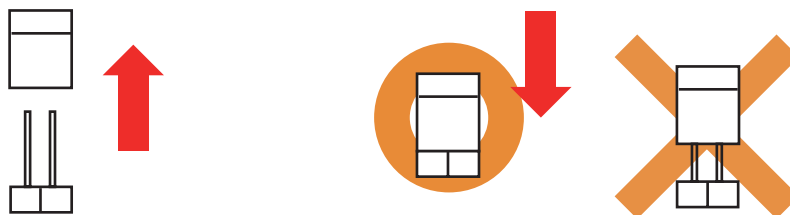


Even with the FG Terminal connected to earth ground, in some cases when there is no change in noise reduction, try changing the pin positions. Depending on the work environment, noise can be reduced by changing the pin conditions.

Both pins are inserted at time of shipment, but depending on environment, both pins may not be necessary for noise reduction.

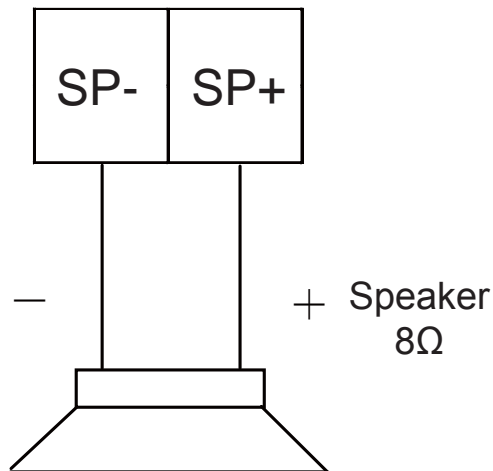


Pull the pin in an upward direction as depicted in the drawing below when removing.
When inserting the pin, ensure it is pushed all the way down as illustrated below.



5-2-3 Speaker Output Terminal Wiring

Connect the speaker. (Note Polarity)



Regarding Compatible Speakers

- The optional SPW-5E (5W) speaker is available (Sold Separately)
(☞ Refer to pg. 38 [④ Horn Type Speaker])
- When installing a speaker for a customer, please follow the guidelines of the following specifications.
The speaker output can be changed with the setup for the output.
The speaker output can be changed with a DIP switch.
(☞ Refer to pg. 36 [7-5. Speaker Output])

When the speaker is set for 4W	Speaker Impedance: 8Ω Rated Input: 4W or more
When the speaker is set for 2W	Speaker Impedance: 8Ω Rated Input: 2W or more

Caution

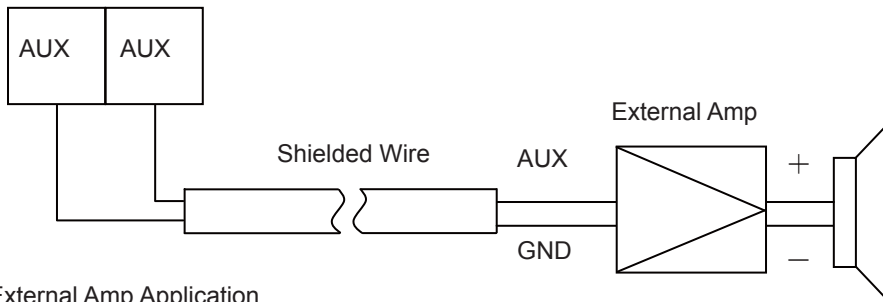
- The speaker ratings should meet the specifications. Exceeding the limits may cause product and speaker damage.

Please

- If the polarity of a speaker is mistaken, volume may drop.
- For the measure against noise, shorten wires as much as possible and use shielded wire. Also, if a high-voltage line is nearby, it is easy to receive an inductive noise, which may cause malfunction, in response to the influence of noise.

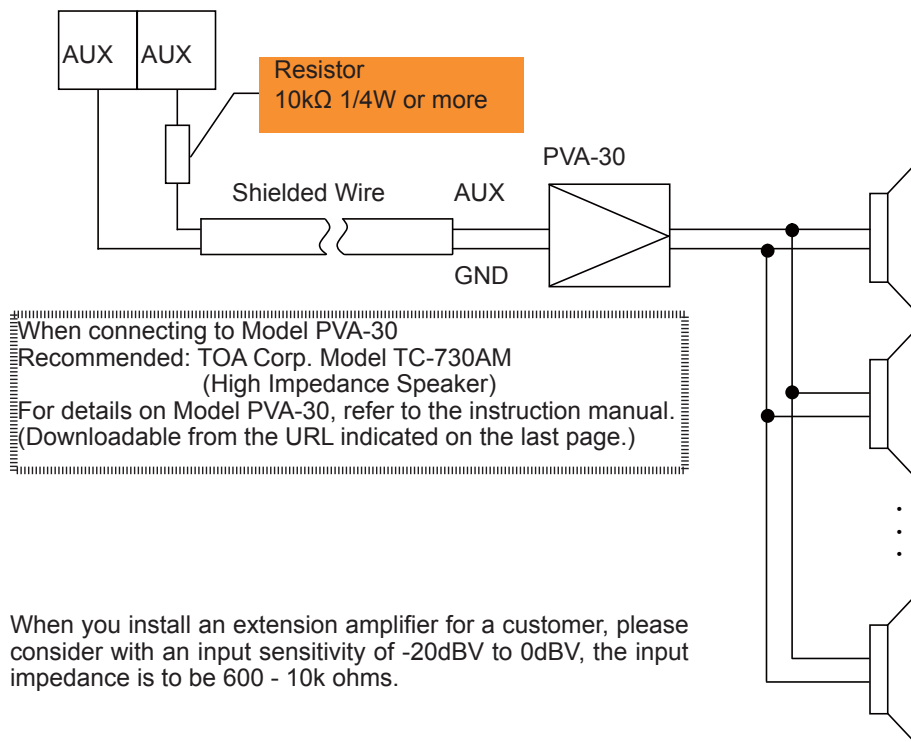
5-2-4 AUX Output Terminal Wiring

Connect the external amplifier.



External Amp Application
 The optional PVA-30 (30W) is available (Sold Separately)
 (Refer to pg. 38 [5 External Amplifier])

- When connecting the Model PVA-30, insert a 10kΩ, 1/4W resistor as indicated in the drawing below:



⚠ Caution

- When connecting the PVA-30 model, if a resistor is not connected, the amp will reach its maximum output level and possible damage to the amp may occur.
- Use an amplifier which matches the specifications. If not, possible damage to the amp or product may occur.

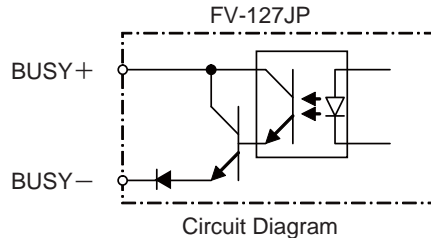
Please

- To reduce noise, use shielded cable and make wiring as short as possible. Also, avoid close vicinity to high tension wires, induction noise radiated from the wires may cause malfunction.
- If the external amplifier is left connected, whenever the power turns on, a popping noise will occur.

5-2-5 BUSY Output Terminal Wiring

The "BUSY" output is sent while a message is in playback. Any external devices, such as a signal tower or rotating light, can be connected and operate during a message playback.
(An external power source is necessary for devices which have no internal power source for operation.)

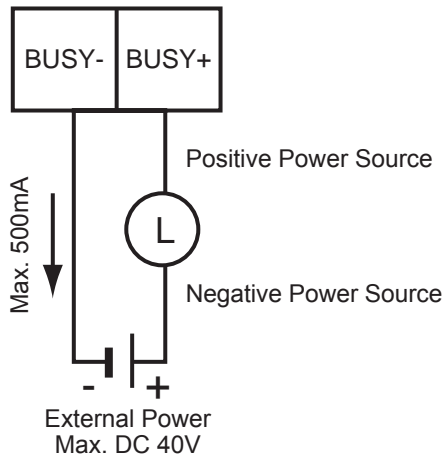
The maximum voltage for connecting to the BUSY output is DC 40V.
The maximum current for connecting to the BUSY output is DC 500mA.



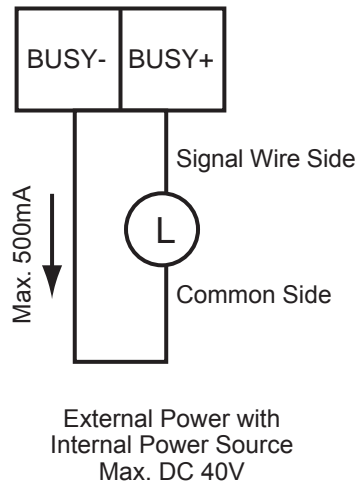
Connection Examples:

When connecting our rotating lamps, signal towers, etc., please use the following examples.

External Device Connection with Voltage Source



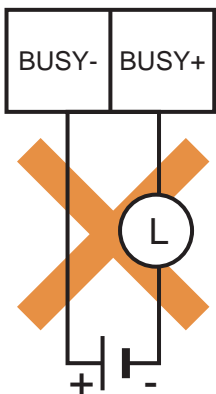
External Device Connection with Signal Control



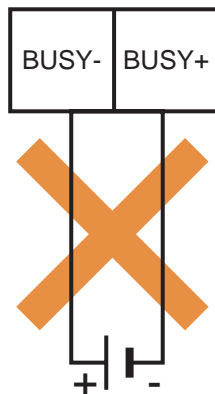
Incorrect Connection Examples:

The following illustrations show examples of how not to connect the BUSY output terminals:

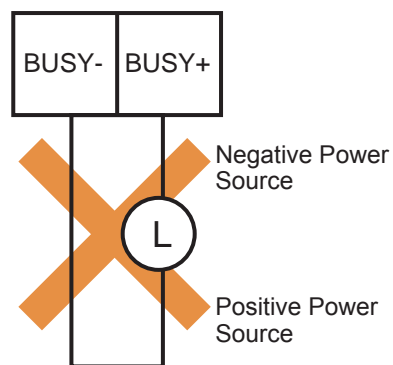
Incorrect Power Connection 1



Incorrect Connection 2 (Direct Power Connection)



Incorrect Connection 3 (No Power Connection)

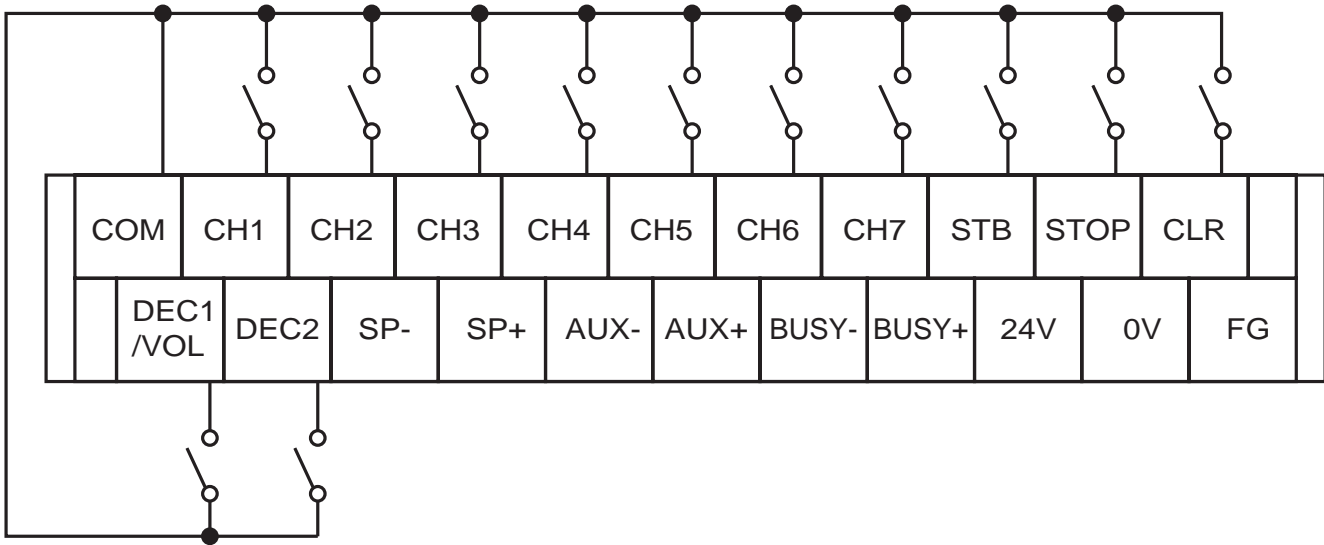


⚠ Caution

Power inputs outside DC40V or AC supplies connected will cause damage to internal circuitry.
Currents above 500mA will cause damage to internal circuitry.
Incorrect connections like the two examples above will cause damage to internal circuitry.
If inrush current exceeds 5A, damage to internal circuitry will occur.

5-2-6 Input Terminal Wiring

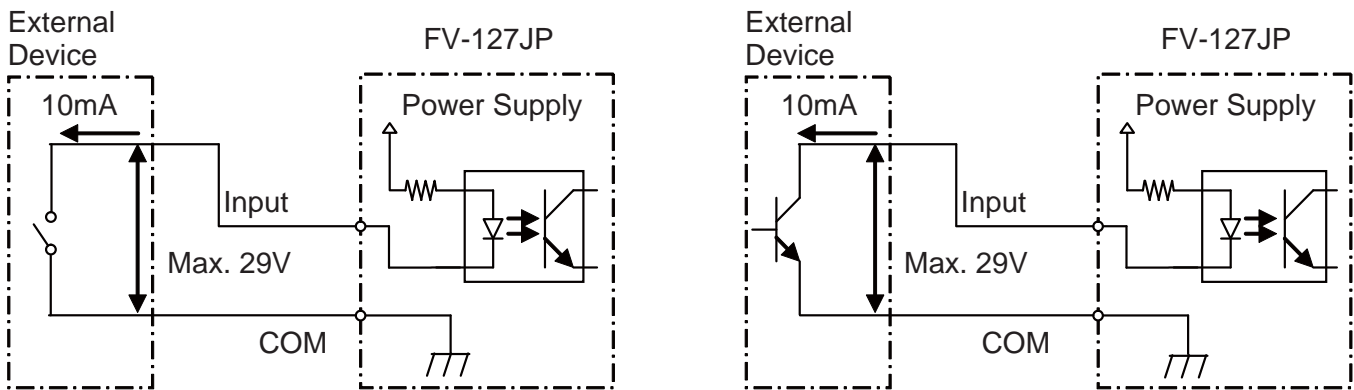
Connect each terminal through the COM terminal when wiring.



Use relays, switches or other non-voltage contacts or NPN open collector circuitry for operation.

Contact Capacity

Use the following table below to determine the capacity for external connections.



Voltage Capacity	15mA or more
Withstanding Voltage	DC35V or less
Leakage Current	0.1mA or less
"ON" Voltage (V_{sat})	1V or less

⚠ Caution

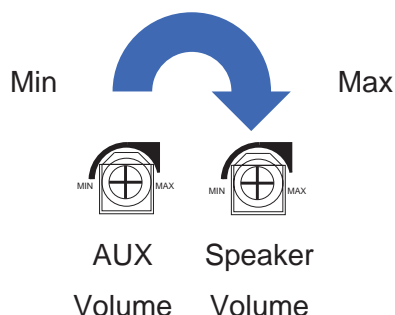
Do not connect any inputs to the power or output connections. Possible product failure may occur. Contact capacity should always be fuse protected. Possible damage to contacts may occur.

6. Volume Adjustment

6-1. Volume Adjustment

Volume adjustment for the Speaker and AUX output is possible.

- Volume adjustment can be lightly done with a finger, but please use a minus driver with a thickness of 1.0mm or less
- ※ Depending on the environment, the sound may still be heard with the volume turned down all the way.



⚠ Caution

Lightly turn the volume. Any force above 0.1N-m may cause damage to the volume control.

6-2. Reduction Function

The speaker and AUX output sound level can be adjusted in accordance to the input condition of DEC1/VOL and DEC2.

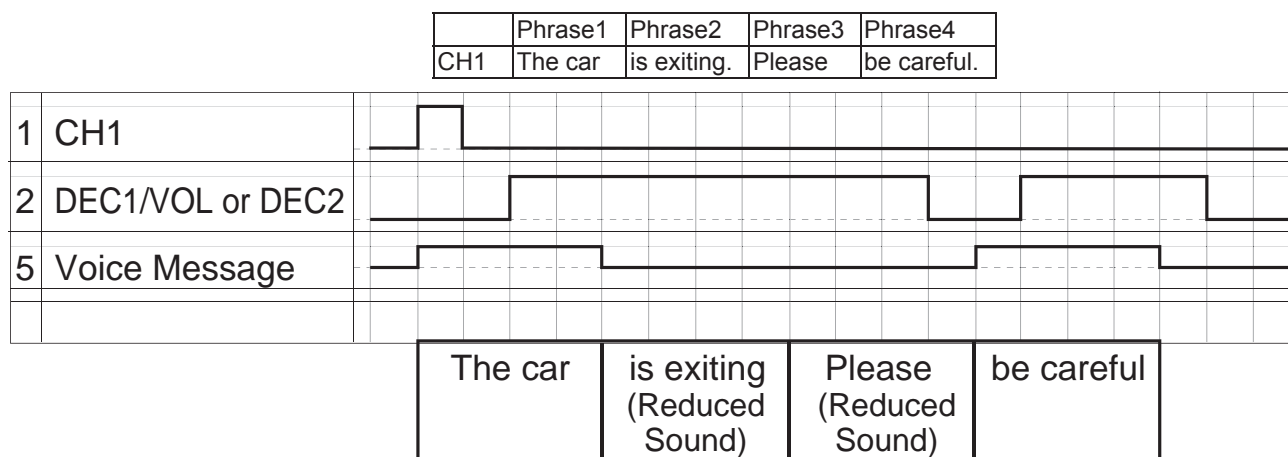
The speaker and AUX inputs cannot be controlled separately for this function.

- The reduction level is indicated in the table below:

DEC1/VOL	DEC2	Reduction Level
Open	Open	No Reduction
Short to COM	Open	-10dB
Open	Short to COM	-20dB
Short to COM	Short to COM	-30dB

The noise reduction input reduces the level for all the phrases (See pulse train below)
Refer to the PATLITE phrase list editor on the CD included with the product.

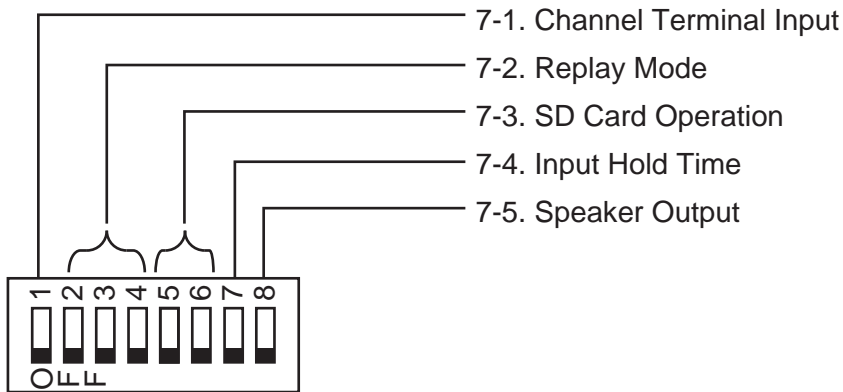
[Pulse Train]



7. Mode Switch Settings

Set each switch for individual settings.

※ The settings don't take effect until after the sound board is rebooted by replugging in the power supply.



Please

Ensure the switches are in their full on or off position in accordance to the diagram below.

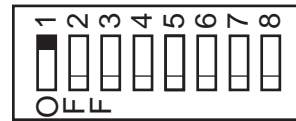
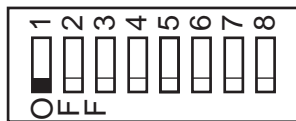
The diagram shows two switch panels. The left panel is marked with a large orange circle 'O' and shows all 8 switches in the 'off' position (the top half is white). The right panel is marked with a large orange 'X' and shows switches 1, 2, 3, 4, 6, 7, and 8 in the 'off' position, while switch 5 is in the 'on' position (the top half is black).

7-1. Channel (CH) Terminal Input

The CH Terminal input can be set for either Binary Input or Bit Input in reference to the diagram below.

Binary Input

Bit Input



Factory Settings

Binary Input

When terminals CH1 to CH7 are shorted to COM, if terminal STB and terminal COM are short-circuited, the voice message will be played back.

(The hold playback mode is excluded)

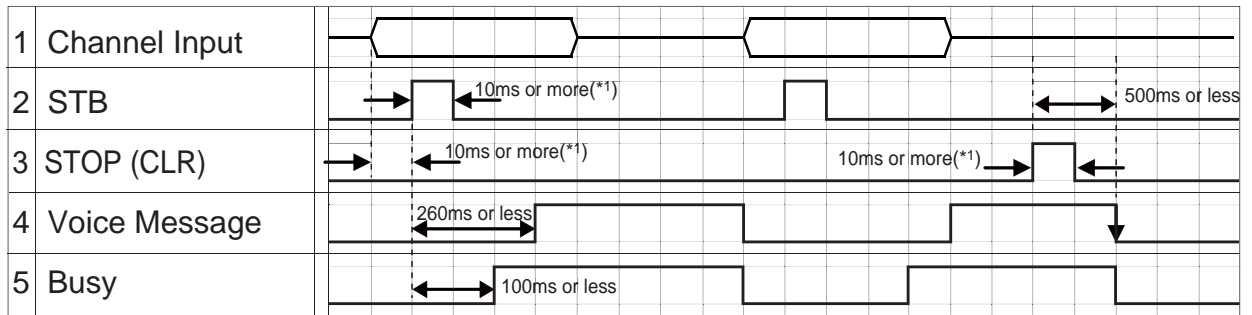
☞ Refer to pg. 30 [(E) Hold Playback]

For inputs relating to the playback message and channel input,

☞ Refer to pg. 38 [10. Binary Input Table].

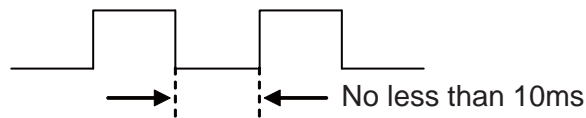
A maximum of 127 messages can be reproduced.

[Pulse Train]



The timing chart above indicates a message stopped during playback.

- The timing duration between the input on and off can be no less than 10ms (※).



- When the message starts playback, this is the case when no silence is added at the head of the message.

The STB terminal is not operable in the binary/hold playback mode.

(☞ Refer to pg. 30 [(E) Hold Playback])

For pulse train details, refer to the individual playback modes.

(☞ Refer to pg. 25 [7-2. Playback Modes])

The input delay time is set for 10ms. The input delay can be set for 50ms, for a 50ms delay.

Bit Input

When terminals CH1 to CH7 are shorted to the COM terminal, the voice message will playback. The terminals CH1 to CH7 corresponds to voice messages No.1 to 7, respectively.

Do not use the STB terminal.

A maximum of seven messages can be played back.

When two inputs or more are selected at the same time, the channel is selected in order of precedence.

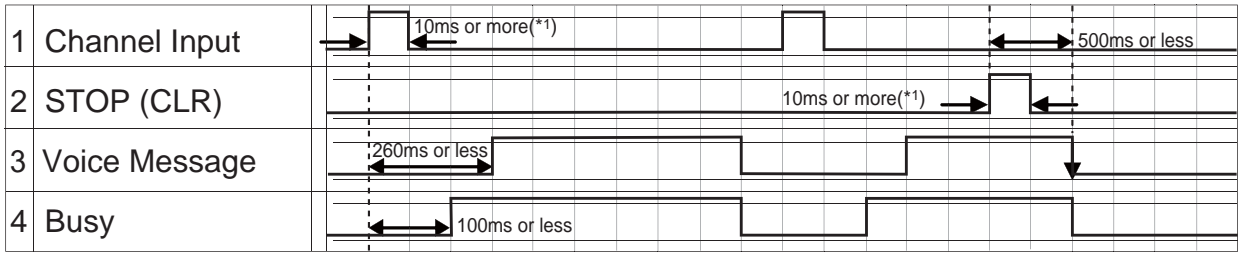
In memory playback mode, the memory is selected in order of the channel with the highest priority level.

(☞ Refer to pg. 27 [(B) Memory Playback])

Input Priority Sequence

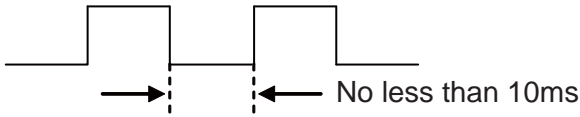
CLR > STOP > CH7 > CH6 > CH5 > CH4 > CH3 > CH2 > CH1

[Pulse Train]



The timing chart above indicates a message stopped during playback.

- The timing duration between the input on and off can be no less than 10ms (※).



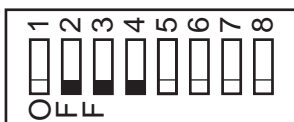
- When the message starts playback, this is the case when no silence is added at the head of the message. For pulse train details, refer to the individual playback modes. (Refer to pg. 25 [7-2. Playback Modes])

The input delay time is set for 10ms. The input delay can be set for 50ms, for a 50ms delay.

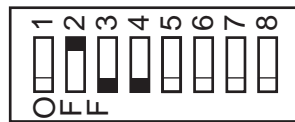
7-2. Playback Modes

Settings for the following (A through E) playback modes are indicated below:

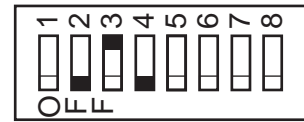
(A) Normal Playback



(B) Memory Playback

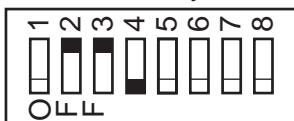


(C) Input Priority Playback

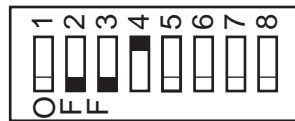


(D) Top Priority

Channel Playback



(E) Hold Playback



※ Settings made outside those indicated above will cause inoperability.

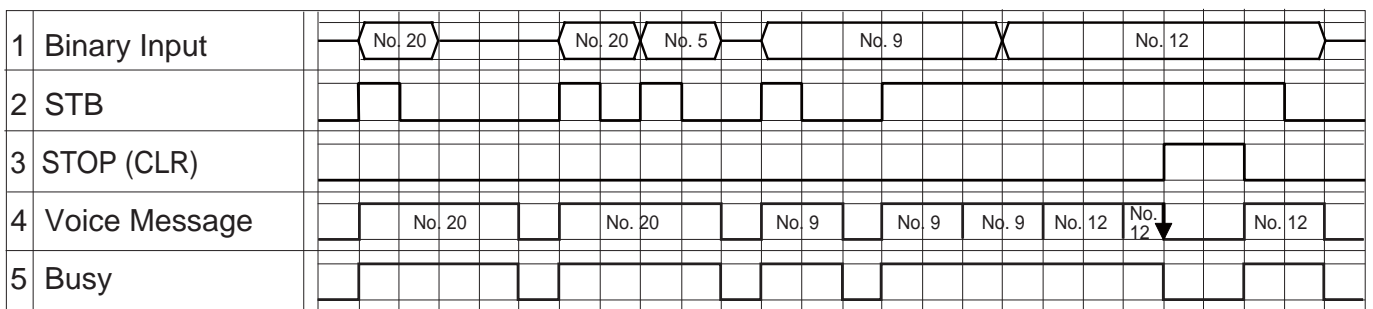
(A) Normal Playback

The message is played back in conjunction with the input. With a oneshot input, play back the message only once and repeat it with the input held on.

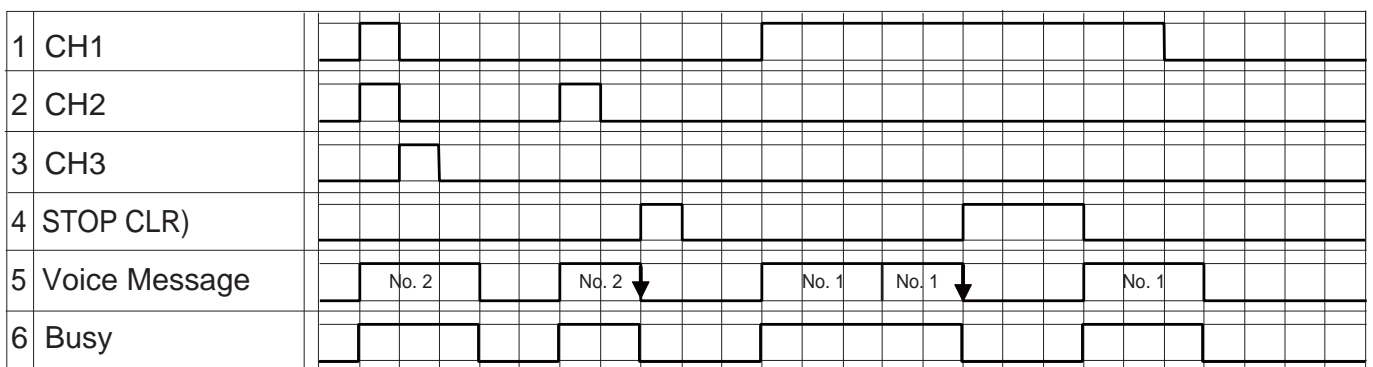
The input becomes invalid when the message is in playback

Stop the voice message during playback by shorting the CLR terminal or STOP terminal to the COM terminal.

【Pulse Train for Binary Input】



【Pulse Train for Bit Input】



- ⑳ . . . Displays playback of voice message No.20
- . . . Displays the voice message being played back was stopped.

(B) Memory Playback

A maximum of 23 voice messages can be stored in memory in order of priority. When the playback voice message ends, the next message in memory will be played. Inputs that exceed the maximum memory becomes invalid.

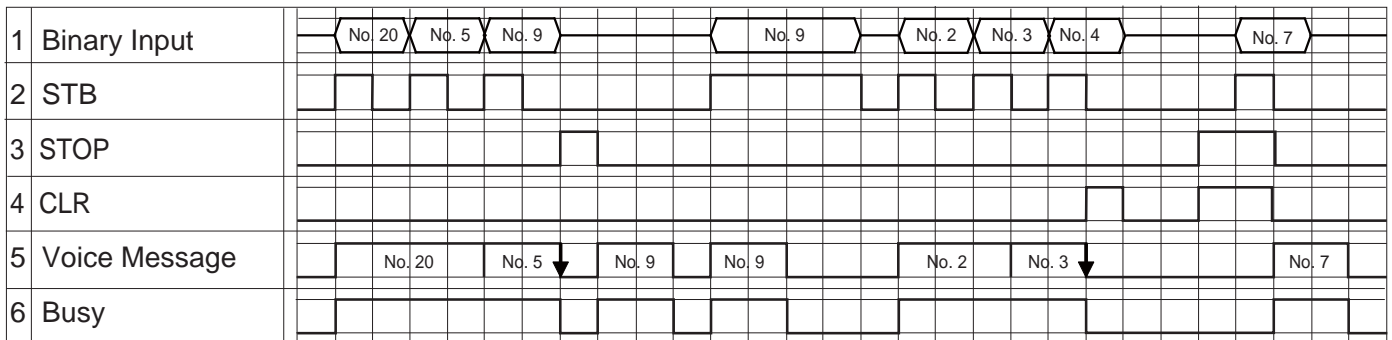
Stop the voice message during playback by shorting the STOP terminal to the COM terminal to playback the next voice message in memory

Stop the voice message during playback by connecting the CLR terminal to COM to delete all voice messages contained in the memory.

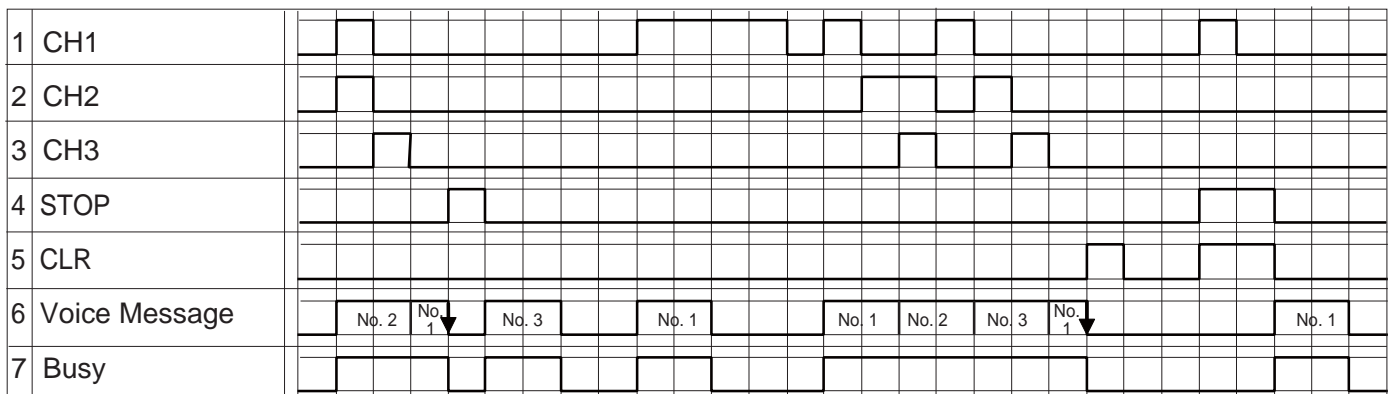
Even when holding the input on, the voice message playback ends after completion.

Even while holding the CLR or STOP input on, the voice message in memory can be paused. After releasing the held-down input, the next voice message in the memory will be played back.

【Pulse Train for Binary Input】



【Pulse Train for Bit Input】



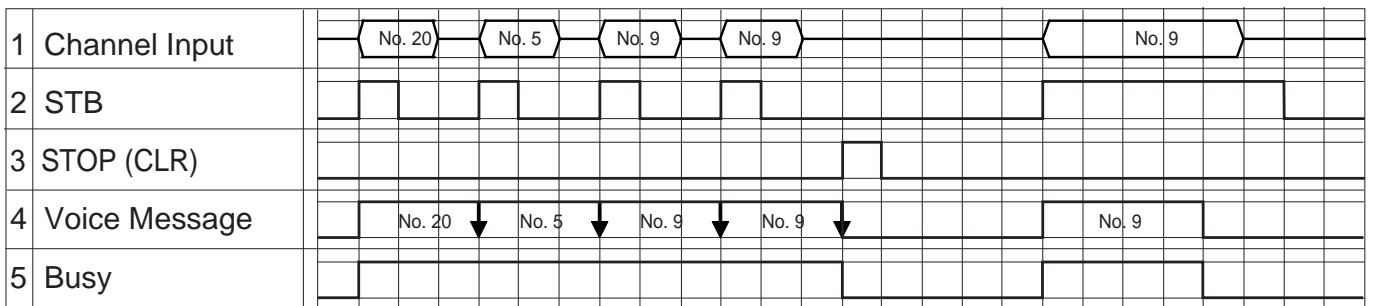
- ⑳ . . . Displays playback of voice message No.20
- . . . Displays the voice message being played back was stopped.

(C) Input Priority Playback

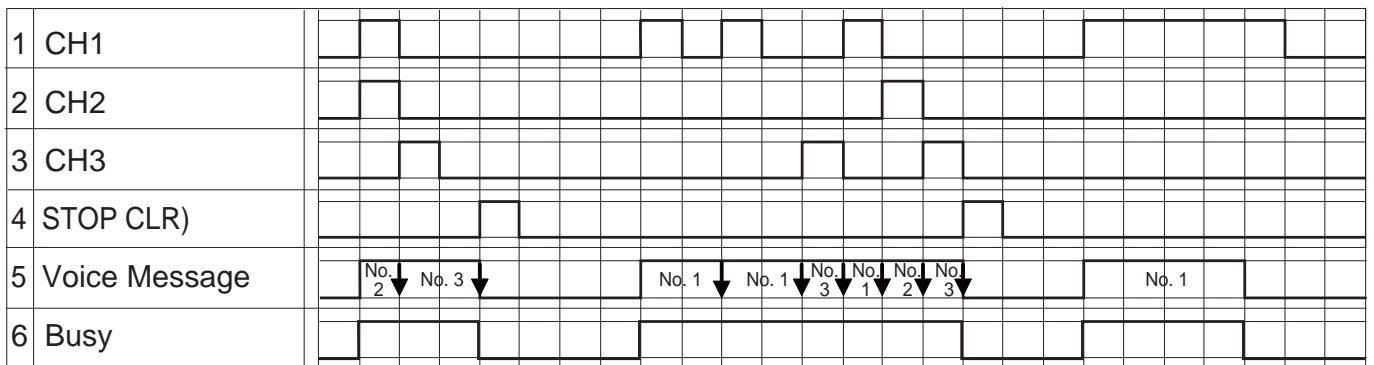
If the next voice message input is turned on while the current message is in playback, the next message will be played back and the current message will playback after the input is turned on.

The voice message being played back can be stopped by shorting the input to the CLR or STOP terminal. Even when holding the input on, the voice message playback ends after completion.

【Pulse Train for Binary Input】



【Pulse Train for Bit Input】



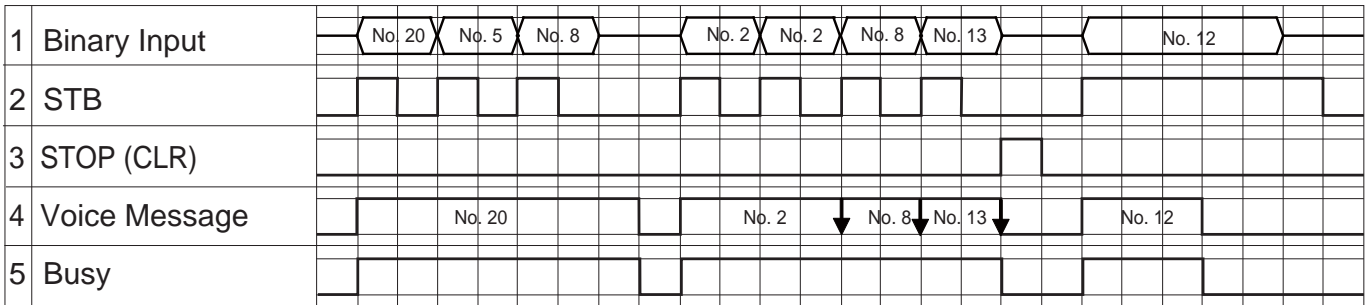
- ⑳ . . . Displays playback of voice message No.20
- . . . Displays the voice message being played back was stopped.

(D) Top Priority Channel Playback

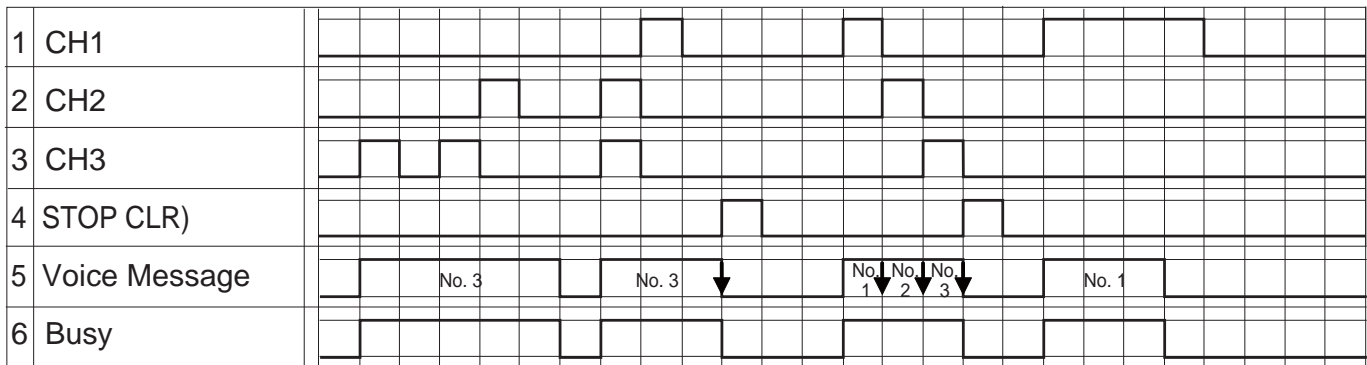
While the message is in playback, if a message of a higher number is entered, the current message will stop and the message with the higher number will be played. The previous voice message will playback after the input is turned on.

The voice message being played back can be stopped by shorting the input to the CLR or STOP terminal. Even when holding the input on, the voice message playback ends after completion.

【Pulse Train for Binary Input】



【Pulse Train for Bit Input】



- ⑳ · · · Displays playback of voice message No.20
- · · Displays the voice message being played back was stopped.

(E) Hold Playback

While the input is held on, the voice message playback is possible.
When the input is released, the voice message playback stops.

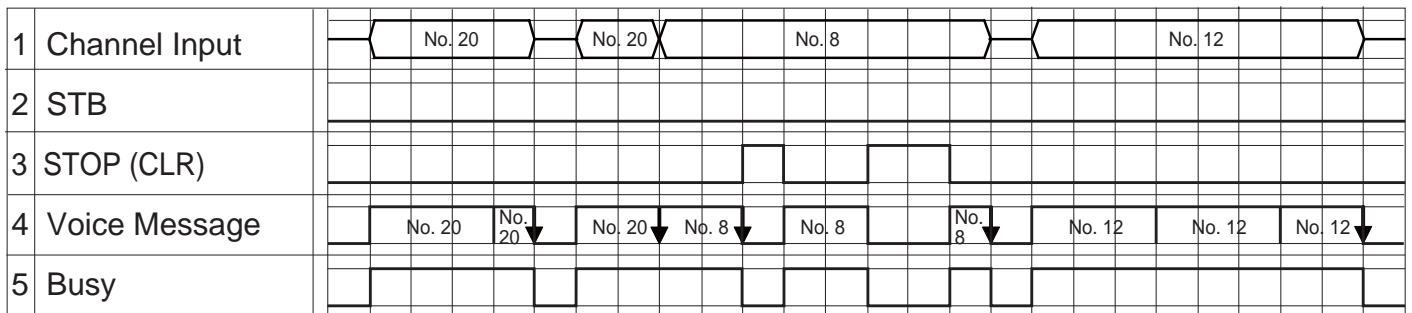
In this mode, the STB does not operate for the Binary Input Mode. Shorting the CH terminal wire to the COM terminal will play back the message.

The playback will play repeatedly as long as the input is held on.

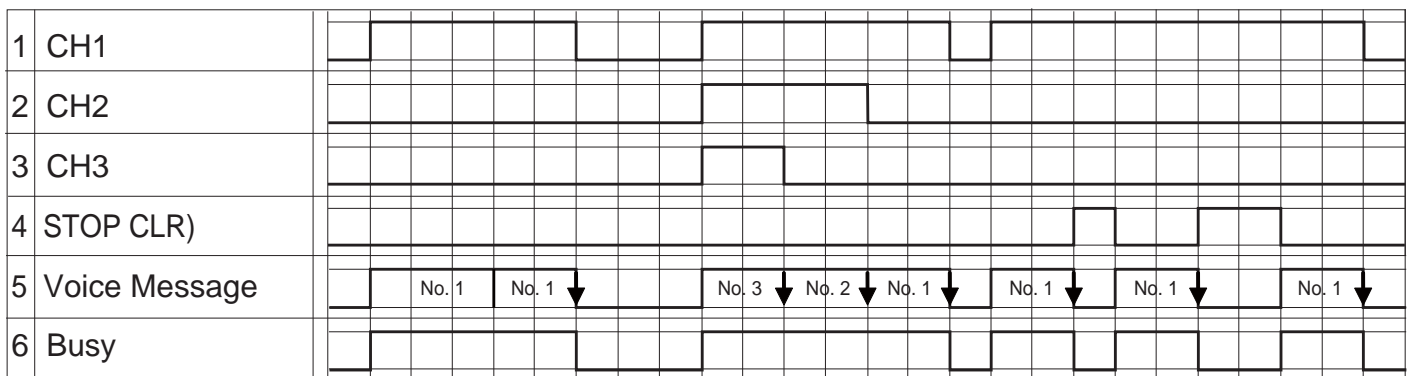
In this mode, the One-shot input will not operate.

The message playback can be stopped by shorting the CLR or STOP terminals.

【Pulse Train for Binary Input】



【Pulse Train for Bit Input】



- ⑳ . . . Displays playback of voice message No.20
- . . . Displays the voice message being played back was stopped.

For the Binary Input mode, hold the CH terminal for 10ms or less (✗).

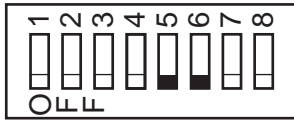
If the input is not held within 10ms, another message will start playback (✗).

The input delay time is set for 10ms. The input delay can be set for 50ms, for a 50ms delay.

7-3. SD Card Operation

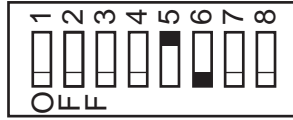
When the SD Card is inserted, the settings for the following (A through D) playback modes are indicated below:

(a) Normal Playback

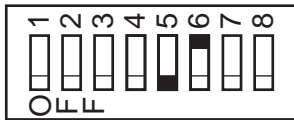


Factory Settings

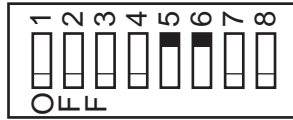
(b) Write Mode



(c) Export Mode



(d) Permanent SD Card



Please

Please use the optional SD Card model SDV-128P (sold separately).
 (Refer to pg. 38 [① SD Card (MP3 Voice Message Upload)])
 Use with other SD cards is not guaranteed.
 When formatting the SD card, use the FAT16 format. Anything other than the FAT16 format will not recognize the SD card.

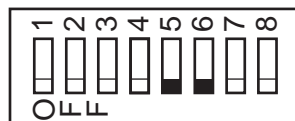
【SD Card Formatting】

On the personal computer, open the “My Computer” icon to display the available drives and right-click the drive indicating the SD card, then choose “format”.
 Select the formatting type for FAT16 or FAT and proceed to format the SD card.
 When formatting the card, all current data on the SD card will be erased.

(a) Normal Mode

When DIP switches 5 and 6 are in the 'OFF' position, the downloaded voice message can be played back from the internal memory.

(a) Normal Playback

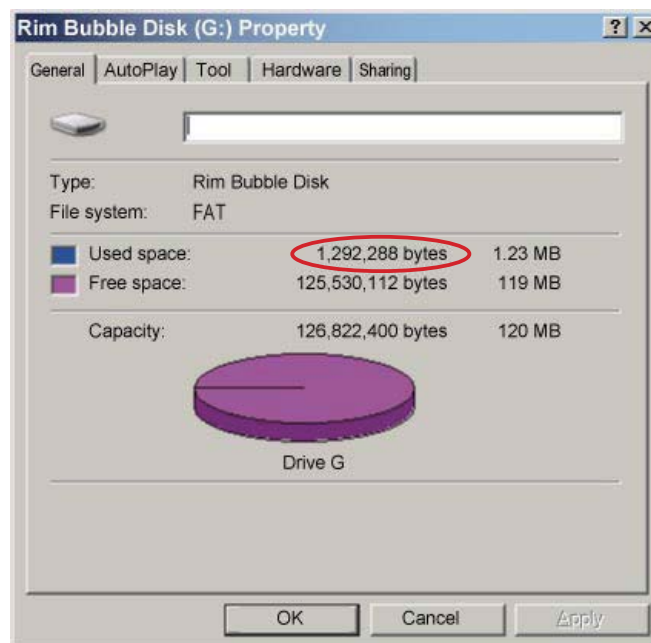


- Even with the SD card inserted, no effect in operation will occur.

(b) Write Mode

The voice message in the internal memory can be overwritten.

- To write voice messages into the memory, the following items are necessary:
PATLITE SD Card (Model SDV-128P)
(Refer to pg. 38 [① SD Card (Insert MP3 Voice Message)])
Refer to the PATLITE Playlist Editor Help (included on CD) for the method to create message data.
PATLITE Playlist Editor (Included as accessory on CD) ※
The FV-WIN can also be used (sold separately).
(Refer to pg. 38 [③ Voice Rewriting Tool & 2000 Standard Messages])
Personal Computer (Supported OS: Windows(R)2000,Windows(R)XP,Windows(R)Vista)
SD Card reader/writer
- The internal memory capacity of this product is 4,360,191 bytes.
Please keep the data volume (Voice Message Data and Playlist File) within the range of 4,360,191 bytes or less.
The data volume of the SD card can be checked by looking at the property of the SD card drive from the “My Computer” icon.

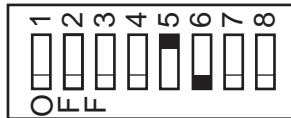


- Voice messages are included in the accessory CD upon factory shipment.
- Message playback cannot be performed in the rewrite mode.

【Procedure for transferring voice message data】

1. Turn the power off.
 2. Set DIP switch 5 to "ON" and DIP switch 6 to 'OFF' to set the writing mode.
 3. Insert the SD card with the saved data to write into the SD card slot.
- For the procedure on how to make data, refer to the PATLITE Playlist Editor Help (included on CD) for the method to create message data.

(b) Write Mode



4. Upon reapplying the power, the data transfer will commence.
 - While data is being transferred, the red LED indicator will turn on.
→If an error occurs, the red LED indicator will blink,
☞ Refer to pg. 38 [9. Error Table] for troubleshooting guidelines.
 - Data writing should take a maximum of 180 seconds to complete.
 - If the power is turned off during the data transfer, the data will not be completed and possible data corruption may occur. If this happens, repeat from step three to rewrite the data.
5. When data transfer is completed, the green LED indicator will turn on.
Turn the power off and remove the SD card.
6. Set DIP switch 5 to the 'OFF' position to set for the normal mode.
Upon reapplying the power, the transferred data will be ready to play back.
7. Verify the data was correctly transferred by playing back the voice messages.
 - If the voice message does not playback properly:
Format the SD card for FAT16 before generating the data.
(☞ Refer to pg. 31 [【SD Card Formatting】])

(c) Export Mode

The voice messages located in the internal memory can be read into the SD card.
With the read data, the collection reorganization can be performed.

- With the read data, the voice message can be reread for this product.
- Even with the data read, the internal data can remain intact.
- With the read data mode, messages cannot be played back.

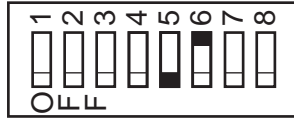
Important

Before exporting data from the internal memory to the SD card, ensure no volatile memory is stored on the SD card. Data on the SD card will be overwritten.

【Voice Message Exporting Procedure】

1. Disconnect the power source.
2. Set DIP switch 5 in the “OFF” position and set DIP switch 6 in the “ON” position for the exporting mode.

(c) Export Mode



3. Insert the SD card into the SD card slot.
4. Turn the power back on to reboot the product, and the data export will start. While data is being exported, the red LED will turn on.
→If the red LED starts to flash, an error occurred.
☞ Refer to pg. 38 [9. Error Table] for troubleshooting if this occurs.
 - Data export should take a maximum of 180 seconds
 - Do not disconnect power during data transfer or the data may become corrupted. If this happens, disconnect the power and perform the export again.
5. When exporting has been completed, the red LED will flash. Turn off the power, remove the SD card and reset the DIP switches to a playback mode.
6. Verify the data transfer to the SD card has been successful.

(d) Permanent SD Card Mode

Without the use of the internal memory, the voice message data is taken from the SD card for playback.

A maximum 240 minutes of playback is available with the optional SD card (SDV-128P).

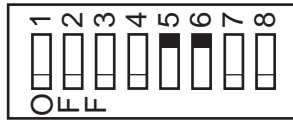
(☞ Refer to pg. 38 [① SD Card (MP3 Voice Message Upload)])

- Replay messages with the SD card inserted.
- The internal data remains intact.
- Only the data from the SD card can replay. The SD card in combination with the internal data won't play back messages.
- If the SD card is not inserted, no voice message will play back.

【Exclusive SD Card Mode Setup Procedure】

1. Disconnect the power source.
2. Set DIP switch 5 and DIP switch 6 in the “ON” position for the Permanent SD Card Mode.

(d) Permanent SD Card



3. Insert the SD card with the data stored into the SD card slot.
For the procedure on how to make data, refer to the PATLITE Playlist Editor Help (included on CD) for the method to create message data.
4. Turn the power back on to reboot the product, and the stored SD data will playback.
→If the red LED starts to flash, an error occurred.
☞ Refer to pg. 38 [9. Error Table] if an error occurs.
 - In case the voice message does not playback properly:
Reformat the SD card for FAT16 and recreate the data.
(☞ Refer to pg. 31 [【SD Card Formatting】])

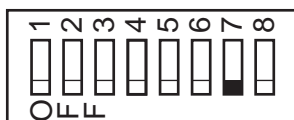
7-4. Input Hold Time

The input hold time for the input terminals can be set for either 10ms or 50ms.

When shorting the individual channel terminal wires to the common (COM), ensure the input is held for at least the duration set for the input hold time.

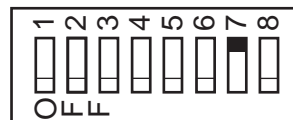
The factory setting is for 10ms, but in case the environment contains a lot of noise, by setting the Input Hold Time to 50ms, it might make it more difficult to receive the incoming noise.

10ms



Factory Settings

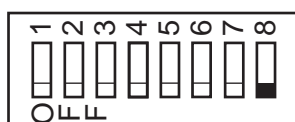
50ms



7-5. Speaker Output

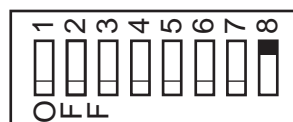
The speaker output can be set for either a 4W or 2W output.

4 Watt



Factory Settings

2 Watt



8. Playback Method

After performing steps [4. Installation] to [7. Mode Switch Settings], connect to the power source. The power indicator (green LED) light should turn on.

After setting the desired playback mode, the voice message should play back.

If the red status indicator LED flashes, an error has occurred.

☞ Refer to pg. 38 [9. Error Table] if this occurs.

- Refer to the table below for wiring and settings:

Setting Item	Reference	
Wiring Method	Pg. 10	5. Wiring
Adjusting Volume	Pg. 20	6. Volume Adjustment
Terminal CH Input and Setting	Pg. 23	7-1. Channel CH Terminal Input
Selecting Playback Mode	Pg. 25	7-2. Playback Mode
Setting SD Card Operation	Pg. 31	7-3. SD Card Operation
Setting Speaker Output	Pg. 36	7-5. Speaker Output

Please

Do not control the voice message playback by turning the power on and off.
Possible malfunction may occur

9. Error Table

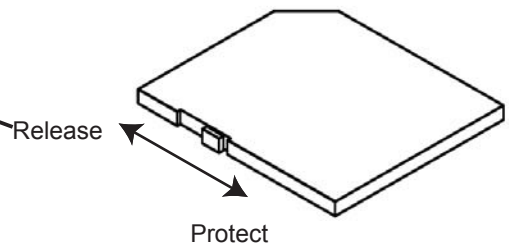
When the status indicator LED (red) flashes, an error has occurred. Refer to the following table for troubleshooting and its solution.

The Status Indicator LED flashes in accordance to the error, from one (1) to four (4) flashes.

Red LED Status Indicator Flashes	Error Name	Solution
Flashes 1Time	Playback Error	<ul style="list-style-type: none"> Voice Message data writing not completed. Rewrite the voice message data again. Possible MP3 file corrupted. Check whether the previous data can be played back on the personal computer.
Flashes 2 Times	SD Card Error	<ul style="list-style-type: none"> The SD card is not fully inserted or missing. Reinsert the SD card. The SD card has been formatted for something other than FAT16. Reformat the SD card for FAT16 and reload the message data. The write protection tab on the SD card is activated. Select the tab for "release" to allow writing. (Refer to the drawing below)
Flashes 3 Times	Data Error	<ul style="list-style-type: none"> Use the "Help" in the PATLITE playlist editor (included in the package) to verify the playback data is uncorrupted.
Flashes 4 Times	Internal Memory Error	<ul style="list-style-type: none"> Memory data has exceeded the allowable amount. Check the rewritten data.

If the items above do not solve the problem, refer to the last page for assistance from your PATLITE Sales Representative.

When the slide switch is in the position indicated in the drawing to the right, it is in the protect condition. Move the swith in the direction of the arrows to change from "Protect" to "Release"



10. Binary Input Table

Voice Message	Terminal CH	CH1	CH2	CH3	CH4	CH5	CH6	CH7	Voice Message	Terminal CH	CH1	CH2	CH3	CH4	CH5	CH6	CH7
No. 1		•							No. 65		•						•
No. 2			•						No. 66			•					•
No. 3		•	•						No. 67		•	•					•
No. 4				•					No. 68				•				•
No. 5		•		•					No. 69		•		•				•
No. 6			•	•					No. 70			•	•				•
No. 7		•	•	•					No. 71		•	•	•				•
No. 8					•				No. 72					•			•
No. 9		•			•				No. 73		•			•			•
No. 10			•		•				No. 74			•		•			•
No. 11		•	•		•				No. 75		•	•		•			•
No. 12				•	•				No. 76				•	•			•
No. 13		•		•	•				No. 77		•		•	•			•
No. 14			•	•	•				No. 78			•	•	•			•
No. 15		•	•	•	•				No. 79		•	•	•	•			•
No. 16						•			No. 80						•		•
No. 17		•				•			No. 81		•				•		•
No. 18			•			•			No. 82			•			•		•
No. 19		•	•			•			No. 83		•	•			•		•
No. 20				•		•			No. 84				•		•		•
No. 21		•		•		•			No. 85		•		•		•		•
No. 22			•	•		•			No. 86			•	•		•		•
No. 23		•	•	•		•			No. 87		•	•	•		•		•
No. 24					•	•			No. 88					•	•		•
No. 25		•			•	•			No. 89		•			•	•		•
No. 26			•		•	•			No. 90			•		•	•		•
No. 27		•	•		•	•			No. 91		•	•		•	•		•
No. 28				•	•	•			No. 92				•	•	•		•
No. 29		•		•	•	•			No. 93		•		•	•	•		•
No. 30			•	•	•	•			No. 94			•	•	•	•		•
No. 31		•	•	•	•	•			No. 95		•	•	•	•	•		•
No. 32							•		No. 96							•	•
No. 33		•					•		No. 97		•					•	•
No. 34			•				•		No. 98			•				•	•
No. 35		•	•				•		No. 99		•	•				•	•
No. 36				•			•		No. 100				•			•	•
No. 37		•		•			•		No. 101		•		•			•	•
No. 38			•	•			•		No. 102			•	•			•	•
No. 39		•	•	•			•		No. 103		•	•	•			•	•
No. 40					•		•		No. 104					•		•	•
No. 41		•			•		•		No. 105		•			•		•	•
No. 42			•		•		•		No. 106			•		•		•	•
No. 43		•	•		•		•		No. 107		•	•		•		•	•
No. 44				•	•		•		No. 108				•	•		•	•
No. 45		•		•	•		•		No. 109		•		•	•		•	•
No. 46			•	•	•		•		No. 110			•	•	•		•	•
No. 47		•	•	•	•		•		No. 111		•	•	•	•		•	•
No. 48						•	•		No. 112					•	•		•
No. 49		•			•	•	•		No. 113		•			•	•	•	•
No. 50			•		•	•			No. 114			•		•	•		•
No. 51		•	•			•	•		No. 115		•	•			•	•	•
No. 52				•		•	•		No. 116				•		•	•	•
No. 53		•		•		•	•		No. 117		•		•		•	•	•
No. 54			•	•		•	•		No. 118			•	•		•	•	•
No. 55		•	•	•		•	•		No. 119		•	•	•		•	•	•
No. 56					•	•	•		No. 120					•	•	•	•
No. 57		•			•	•	•		No. 121		•			•	•	•	•
No. 58			•		•	•	•		No. 122			•		•	•	•	•
No. 59		•	•		•	•	•		No. 123		•	•		•	•	•	•
No. 60				•	•	•	•		No. 124				•	•	•	•	•
No. 61		•		•	•	•	•		No. 125		•		•	•	•	•	•
No. 62			•	•	•	•	•		No. 126			•	•	•	•	•	•
No. 63		•	•	•	•	•	•		No. 127		•	•	•	•	•	•	•
No. 64							•		The "•" mark indicates a COM to channel (CH) terminal contact.								

11. Optional Sales Items

1. SD Card (MP3 Voice Message Upload)

Model SDV-128P- □□□

Maximum Replay Time: ab. 240 min.

Bit Rate: 64kbit/s

The empty boxes indicate the requested number of phrases registered for voice message data in 64 bit steps.

Number of phrases	Model Number
1 to 64	FV-CD-064
65 to 128	FV-CD-128
128 to 192	FV-CD-192
---	---
---	---
Maximum Number	FV-CD-xxx

※ Additional costs for special phrases are used for studio recording expenses.

- Requested voice messages are recorded on the SD card and shipped.
- A maximum of 16 phrases for each channel can be registered.
- Data can be converted and recorded from MD or cassette tapes.
However, data taken from CD's, etc need an author's permission (JASRAC certificate, etc) before recording.

Number of phrases	Model Number
1 to 64	FV-CD-064
65 to 128	FV-CD-128
128 to 192	FV-CD-192
---	---
---	---
Maximum Number	FV-CD-xxx

2. CD-ROM Message

Model FV-CD- □□□

- The empty boxes indicate the requested number of phrases registered for voice message data in 64 bit steps.

※ Additional costs for special phrases are used for studio recording expenses.

- With the SD card, new messages can be added here when needed. The voice message data will be in its MP3 format.

3. Voice Rewriting Tool & 2000 Standard Messages

Model FV-WIN

The FV-WIN voice message recorder tool can decrease the sound level according to the phrase.

- The FV-WIN voice message recorder can adjust for low-pitched sound (100Hz or less) and high-pitched sound (10kHz or more), but is not used for the FV-127JP product.
- About 2,000 standard MP3 messages are recorded on a CD.
(Compatible OS: Windows(R)ME Windows(R)2000 Windows(R)XP)

4. Horn Type Speaker

Model SPW-5E

Rated Impedance: 8Ω

Rated Input: 5W

With the products speaker output set for 4 Watts, a maximum of about 105dB can be established.(Information based on a sinusoidal 1kHz wave at -6dB)

5. External Amplifier

Model PVA-30

Rated Output: 30W

Rated Voltage: DC24V/AC100V/AC220V

Speaker Impedance: 4Ω, 8Ω, 16Ω, 21Ω (For High Impedance Connection), 330Ω(For High Impedance Connection)

When connected to an external amplifier, the speaker output can range from 4 Watts to a maximum of 30 Watts.

12. Before Requesting Service

Problem	Where to Check
No Sound Coming out of Speaker	<ul style="list-style-type: none"> • Make sure the rated voltage for the power supply terminal is correct. (Refer to pg. 12 [1. Power Input Terminal Wiring]) • Make sure the input wiring connections are correct. (Refer to pg. 19 [6. Input Terminal Wiring]) • Adjust the (Speaker) volume. (Refer to pg. 20 [6-1. Volume Adjustment]) • Check the proper wiring for the speaker output. (Refer to pg. 14 [3. Speaker Output Terminal Wiring]) • Check that the ratings for the speaker are correct. (Refer to pg. 14 [3. Speaker Output Terminal Wiring]) • Make sure the DIP switches are fully locked in their position. Reboot the product if any changes were made for the settings to take affect. (Refer to pg. 22 [7. Mode Switch Settings]) • Verify the SD card contents. When using the FV-WIN software, even when the text file is registered, sometimes the MP3 file is not registered, therefore will not playback. (Refer to PATLITE Phrase Editor Help (*) Menu)
The Status (Red) LED flashes	<ul style="list-style-type: none"> • (Refer to pg. 38 [9. Error Table])
A different message is being played back	<ul style="list-style-type: none"> • Make sure the input wiring connections are correct. (Refer to pg. 19 [6. Input Terminal Wiring]) • Make sure the DIP switches are fully locked in their position. Reboot the product if any changes were made for the settings to take affect. (Refer to pg. 22 [7. Mode Switch Settings]) • Make sure the input signals are correct. (Refer to pg. 23 [7-1. Channel (CH) Terminal Input] or, 38 [10. Binary Input Table]) • Make sure the contents in the SD card are correct. (Refer to PATLITE Playlist Editor Help(*) Menu)
No AUX signal output	<ul style="list-style-type: none"> • Check for proper wiring. (Refer to pg. 15 [4. AUX Output Terminal Wiring]) • Check the external amp for proper connections and polarity. (Refer to pg. 15 [4. AUX Output Terminal Wiring]) • Adjust the (AUX) volume. (Refer to pg. 20 [6-1. Volume Adjustment]) • Check that the input impedance of the external amp is correct. (Refer to pg. 15 [4. AUX Output Terminal Wiring])
No BUSY signal output	<ul style="list-style-type: none"> • Check that the outside voltage polarity and voltage level is correct. (Refer to pg. 17 [5. BUSY Output Terminal Wiring]) • Check for proper polarity. (Refer to pg. 17 [5. BUSY Output Terminal Wiring])
The sound is low (Speaker, AUX Output)	<ul style="list-style-type: none"> • Check that the DEC1/VOL, DEC2 reduction inputs are on or not. (Refer to pg. 21 [6-2. Reduction Function]) • Adjust the volume. (Refer to pg. 20 [6-1. Volume Adjustment]) • Check the proper settings for the speaker output. (Refer to pg. 36 [7-5. Speaker Output]) • Check that the ratings for the speaker are correct. (Refer to pg. 14 [3. Speaker Output Terminal Wiring]) • Check the sound level of the MP3 data and refer to the MP3 editing software document before editing.
Cannot rewrite the voice message	<ul style="list-style-type: none"> • Make sure the DIP switches are fully locked in their position. Reboot the product if any changes were made for the settings to take affect. (Refer to pg. 22 [7. Mode Switch Settings]) • Make sure the contents in the SD card are correct. (Refer to PATLITE Playlist Editor Help(*) • Make sure the data size did not exceed 3968KB. Make sure the format for the SD card is FAT16. Make sure the write protect to the SD card is disabled. (Refer to pg. 38 [9. Error Table])
Cannot export the voice message	<ul style="list-style-type: none"> • Make sure the DIP switches are fully locked in their position. Reboot the product if any changes were made for the settings to take affect. (Refer to pg. 22 [7. Mode Switch Settings]) • Make sure the format for the SD card is FAT16.
It does not operate even with the DIP switches set properly	<ul style="list-style-type: none"> • Make sure the DIP switches are fully locked in their position. Reboot the product if any changes were made for the settings to take affect. (Refer to pg. 22 [7. Mode Switch Settings])
The SD card is not being read	<ul style="list-style-type: none"> • Make sure the format for the SD card is FAT16. Make sure the write protect to the SD card is disabled. (Refer to pg. 38 [9. Error Table])

* Included with the CD

Even after proper connections and settings are performed, if the product does not operate properly, please see the information on the last page of this document to contact your PATLITE Sales Representative.

13. Specifications

13-1 Specifications	
General Specifications	
Model Name	FV-127JP
Rated Voltage	DC 24V
Voltage Range	DC 19 to 29V
Wiring Method	M3 Terminal Bus
Current Consumption	Maximum 15W (1*)
Operating Temperature Range	-10 to 50°C
Storage Temperature	-40 to 80°C
Relative Humidity	85% RH or less
Operating Environment	Built-in Type Only
Installation Method	4 Screw Tie-down
Vibration Resistance	45m/s ² (30Hz forward and back/Left and right for 2hrs., up and down for 4hrs.)
Mass	160g ±10%
Outer Dimensions	144×100×28 [mm] (Lead Wires and Mounting Posts not included)
Audible Specifications	
Replay Message Number	For Binary: 127 For Bit Input: 7
Audio File Format	MPEG1-Audio Layer: (MP3)
Bit Rate	32kbit/s:64kbit/s(Standard), 128kbit/s Fs=44.1kHz
Maximum PlaybackTime	On-board Memory (4,360,191 byte): About 8 min (Recorded with standard bit rate) External Memory (SD Card): With 128MB about 240 min. (Standard Bit Rate Recording)
On-board Memory Size	4,360,191byte
Audio Start-up Time	About 260ms (When sound mute not added at beginning and end of messages)
Audio Pause Time	Unless specified, 100ms sound mute added at beginning and end of messages
Compatible Memory Card	SD Card Recommended Part: SDV-128P (Sold Separate)
Card Format	FAT16
Audio Rewrite Capability	Possible with SD Card and Special Software (PATLITE Playlist Editor or FV-WIN)
Audio Replay Time	About 180 sec. (When changing the 4,360,191 byte on-board memory)
Input / Output Specifications	
Signal Input Section	CH1 , CH2 , CH3 , CH4 , CH5 , CH6 , CH7 , STB , CLR , STOP, DEC1/VOL, DEC2
Signal Input Priority	CLR Input > STOP Input > CH Input (Larger Channel takes Priority)
Sound Reduction Input	Speaker/AUX Output: Three Noise Reduction Levels of -10dB, -20dB, -30dB (1*)
Input Hold Time	More than 10ms or 50ms (Changeable Settings)
Signal Input Type	Non-voltage contact or NPN Open Collector
Speaker Output	8Ω compatible speaker of 4W or more, or 8Ω compatible speaker of 2W or more (Switchable Setting)
Maximum SoundPressure	Speaker Output at 4W: 105 dB; at 2W: 102dB (2*)
AUX Output	0dBV 600Ω (Adjustable with Volume Control or Sound Reduction Input)
BUSY Output	Maximum DC40V 500mA

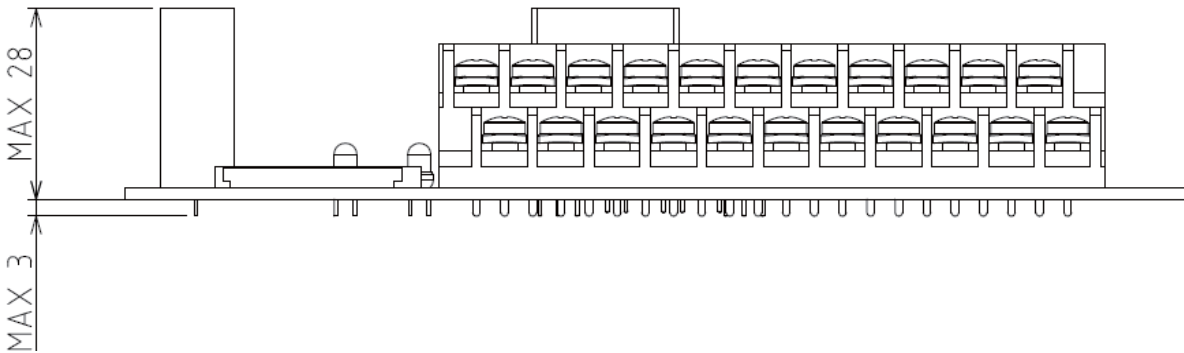
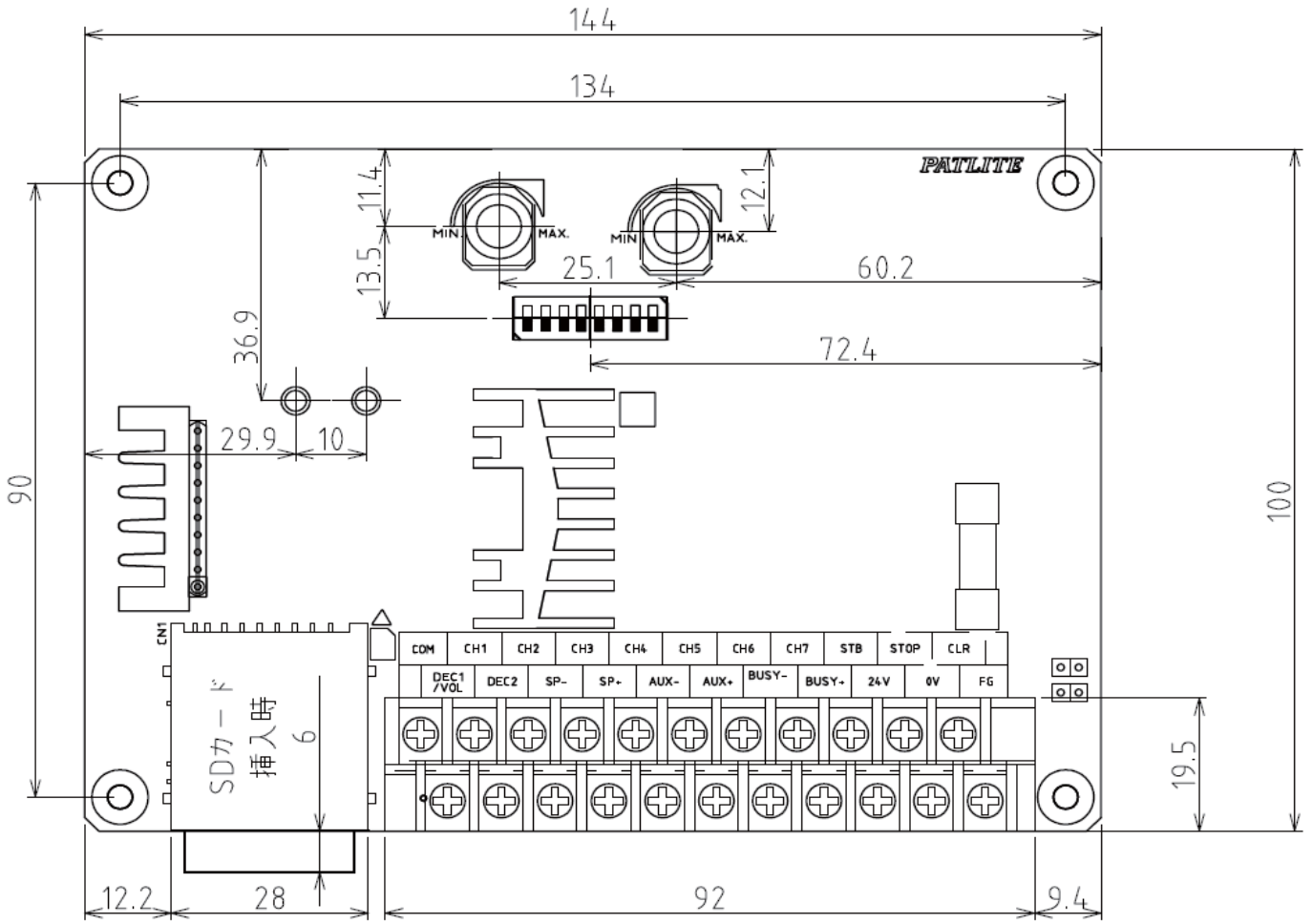
(1*) 1kHz Sine Wave Data Playback at -6dB

(2*) At 1m with 1kHz Sine Wave Data Playback and SPW-5E Speaker (Sold Separate)

This product complies with the RoHS directive (DIRECTIVE 2002/95/EC)

13-2 Outer Dimensions

[mm]



Product specifications may change without advanced notice.
 Due to changes, improvements, etc., contents of this manual may change without advanced notice.

14. Guarantee Provisions

The provisions of this guarantee are in contrast to the purchase of this product from PATLITE Co., Ltd. (henceforth, Our Company) to the customer concerning the contents of this guarantee.

Concerning the Product Guarantee

Provided the customer's use of this product is within the guidelines of this User's Manual, etc., in case of product failure during the term of the guarantee, the product will be repaired or replaced free of charge to the customer. The product guarantee only covers the part replacement related to the product failure.

Duration of Guarantee

This product guarantee is effective for twelve (12) months from the date of purchase by the customer. After the duration, any repairs or replacement will be at the expense of the customer. Any repairs or replacement of the product during the duration will be valid until the duration of the guarantee ends twelve (12) months from the date of purchase.

Concerning the Warranty Contents

The warranty is restricted to the repair or replacement of the product and does not include costs related to the investigation for customer's break-down, operation, transportation accessories or other costs not related to the warranty of this product.

Items Outside Warranty Limitations

The below mentioned or circumstances pertaining to, is not within the limitations of warranty

- Consumable parts, such as lamps, etc. burning out.
- Fire, earthquake, lightning, salt water, damage by storm, snow, flooding or other natural disasters or from abnormal voltages.
- Damage from black-outs or other power outages, severed power cables or the like causing failure by means of power outages.
- Improper installation of the product, improper connections, or malfunction during use by the customer for the installation of machinery, equipment, vehicles, ships, etc., which causes unusual movements or vibrations.
- Application outside the products specified environmental specifications or system requirements which causes damage or failure of the product.
- Application above the capacity of the product in an environment which results in damage or failure of the product.
- The customer's misuse of the product or the remodeling or repairing by customer causing damage or failure to product.
- Damage of product due to exchange or installation work which causes damage (i.e. Physical or static electricity which causes damage to electronic parts, etc.)
- Impact or dropping of product during shipment or transportation, etc.
- Improper use of the product by the customer which results in damage or failure of product.

Guarantee Disclaimer

Without exception, our company is not liable for the damage or loss of equipment, loss of property or the like, due to the failure of this product (including software), directly or indirectly, from damage or failure of the customer or third party's system or of the cost of repair (labor costs, travel expenses, restoration expenses) to the system of the customer or third party.

Limitation of Liability

- The limitation of liability for our company is limited to the service or replacement of parts related to product failure. In accordance, excluding the case of serious injury or human loss, the product or the use of it, directly or indirectly, resulting in any kind of damage, intentional or otherwise, is not the responsibility of our company. However, excluding the case of serious injury or human loss, even if there's a case where our company takes liability, the limit of our responsibility does not exceed beyond the price of the product purchased by the customer.
- Our company is not responsible for lost profit, damage or other loss of property due to the service response time for product repair or replacement.
- Our company will correct omissions or errors related to the publishing of this manual, or other printed material without liability. In addition, our company does not bear any liability from loss or damages occurred.

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