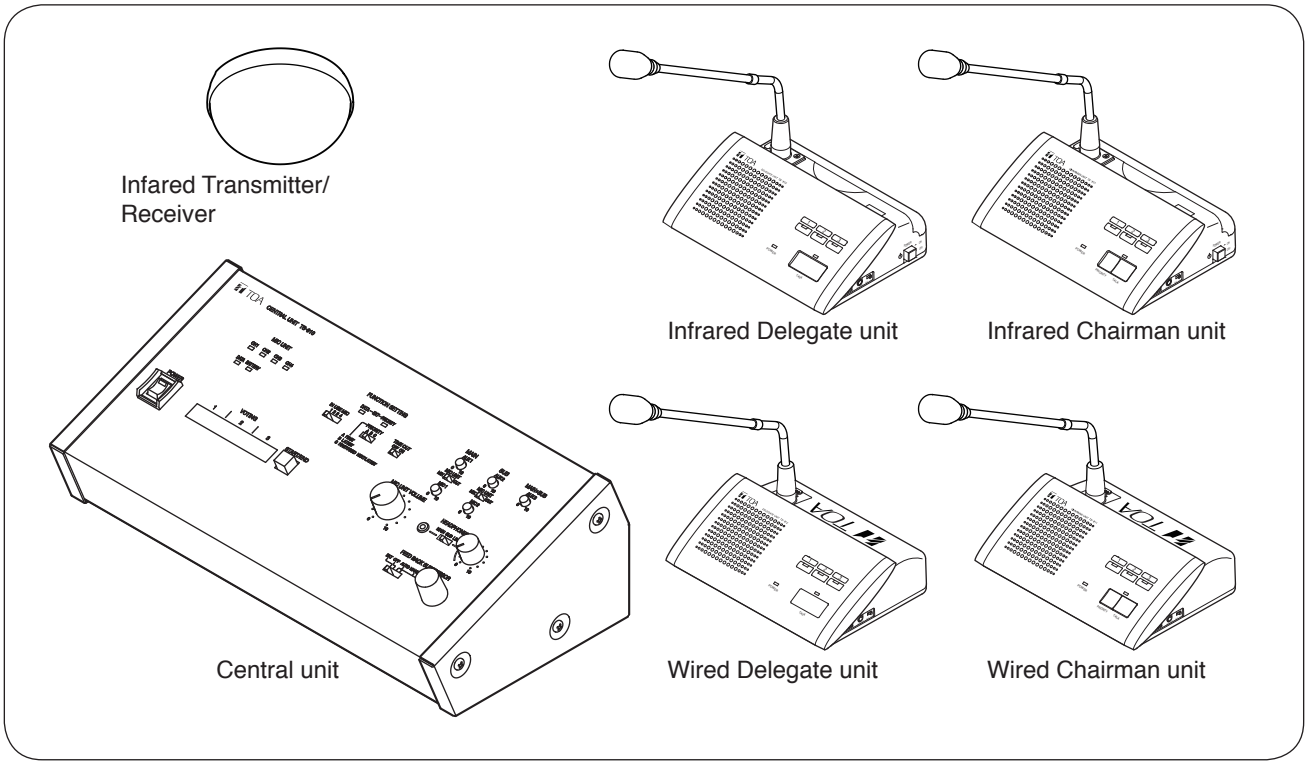
TOA

OPERATING INSTRUCTIONS

CONFERENCE SYSTEM TS-910 SERIES



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

TOA Corporation

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1. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this 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.

⚠ DANGER Indicates an imminently hazardous situation, which, if not avoided,will result in death or serious injury.

Applicable to Lithium-ion battery

- Should the following irregularity be found during use, immediately switch off the power, take the batteries out of the unit, and keep them away from fire. Failure to do so may cause a fire or explosion.
  - · If you find battery leakage, discoloration, deformation or damage.
  - · If you detect smoke or a strange smell coming out from the batteries.
- Do not deform, modify, nor solder the batteries. Doing so may damage the battery's safety or protector mechanism, causing the batteries to fire, leak, or explode.
- Never short the positive and negative terminals with a wire or other metallic objects. Also, avoid carrying or keeping the batteries with metallic objects such as necklaces or hair pins. Doing so may cause the batteries to fire, explode, leak, or heat.
- Never heat the batteries nor throw them into a fire. Doing so may damage the battery's gas relief valve or safety mechanism, causing the batteries to fire or explode.
- Do not dip the batteries into water nor wet the battery terminals. This may corrode the batteries, possibly causing them to fire, explode, leak, or heat.
- Note correct polarity (positive and negative orientation) when inserting the batteries into a battery charger. Doing otherwise may cause them to fire, explode, leak, or heat.
- Do not use, keep, nor leave the batteries near fire or in locations where the temperature rises above 60°C such as in a sun-heated car. Dosing so may damage the battery's safety or protector mechanism, causing the batteries to fire, explode, leak, or heat.
- Be sure to use the BC-900 charger when recharging the batteries. Using other battery charger may cause them to fire, explode, leak, or heat.
- Use the batteries only with the equipment specified. Failure to do so may cause the batteries to fire, explode, leak, or heat.
- Do not drop the batteries nor give them a shock. Doing so may damage the battery's safety or protector mechanism, causing the batteries to fire, explode, leak, or heat.
- There is a fear of loosing one's eyesight if a battery leakage gets in one's eyes. Wash it away with clean water and consult a doctor immediately. If a battery leakage stains one's skin or clothes, wash it away with clean water as there is a fear of impairing the skin.

⚠ WARNING

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

Applicable to Central unit, Conference unit, Expansion unit, Battery charger, and AC adapter

- 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.
- Do not insert nor drop metallic objects or flammable materials inside the unit, as this may result in fire or electric shock.

Applicable to Central unit, Infrared conference unit, Expansion unit, Battery charger, and AC adapter

- Do not touch a plug during thunder and lightning, as this may result in electric shock.

Applicable to Battery charger and Lithium-ion battery

- Stop charging if the batteries are not fully charged within 5 hours.
  Continuously charging over 5 hours may cause the batteries to fire, explode, leak, or heat.

Applicable to Central unit, Infrared conference unit, and Conference unit

- To prevent possible hearing damage, do not listen at high volume levels for long periods

⚠ CAUTION

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

Applicable to Central unit, Conference unit, Expansion unit, Battery charger, and AC adapter

- Do not place heavy objects on the unit as this may cause it to fall or break which may result in personal injury and/or property damage. In addition, the object itself may fall off and cause injury and/or damage.

Applicable to Central unit, Infrared conference unit, Expansion unit, Battery charger, and AC adapter

- If dust accumulates on the power supply plug or in the wall AC outlet, a fire may result. Clean it periodically. In addition, insert the plug in the wall outlet securely.
- 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.

Applicable to Central unit, Infrared conference unit, Expansion unit, and Battery charger

- Use the dedicated AC adapter for the unit. Note that the use of other adapter may cause a fire.

Applicable to Central unit and Conference unit

- Make sure that the volume control is set to minimum position before power is switched on. Loud noise produced at high volume when power is switched on can impair hearing.

Applicable to Infrared conference unit

- When the unit is not in use for 10 days or more, be sure to take the battery out of the unit because battery leakage may cause a fire, personal injury, or contamination of environment.

Applicable to Battery charger

- Remove the power supply plug of charger from the AC outlet after charging completion, as doing otherwise may cause a fire.

Applicable to Lithium-ion battery

- When you discard batteries, please contact the local dealer from whom you bought.

Applicable to Central unit, Conference unit, Expansion unit, and Battery charger

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.

2. GENERAL DESCRIPTION

The TOA TS-910 Series conference system permits both its infrared wireless system unit and wired system unit via CAT-5 LAN cable connections to be used in combination.
The wired Chairman and Delegate units (collectively referred to as “Conference units”) are connected to the Central unit via the wired Expansion unit and Bridge unit.
The Infrared Conference units provide wireless communication via the Infrared Transmitter/Receiver unit connected to the Central unit. Since wiring to the individual conference units is not required, they can be easily installed in freely versatile configurations.
The Central unit is used to perform system function settings, status display, etc.

3. FEATURES

- The number of Conference units to be used can be freely selected depending on the number of participants. A total of up to 192 Conference units can be installed in a single system.
- Wired Conference units can be used in any combination with Infrared Conference units.
- A Simultaneous Speaker Number Restrictor function reduces the chance of chaos and confusion that can result from too many speakers trying to talk simultaneously.
- A Speech Priority Selector function permits selection of operating priority (first-in-first-out or last-in-first-out) when the speech key is pressed.
- If any microphones are not manually turned off after speaking, the system’s Mic-Off function automatically switches them off if not in use for approximately 30 seconds.
- A built-in Feedback Suppression Function (FBS) ensures more efficient reduction of acoustic feedback*. When Conference units are in use, their monitor speakers are automatically turned off, eliminating concerns about acoustic feedback.
- Depending on installation requirements, wired microphones, music playing equipment and other devices can be freely combined and used within the system.
- Recording equipment can be easily connected to the Central unit, making it ideal for preparing conference minutes.

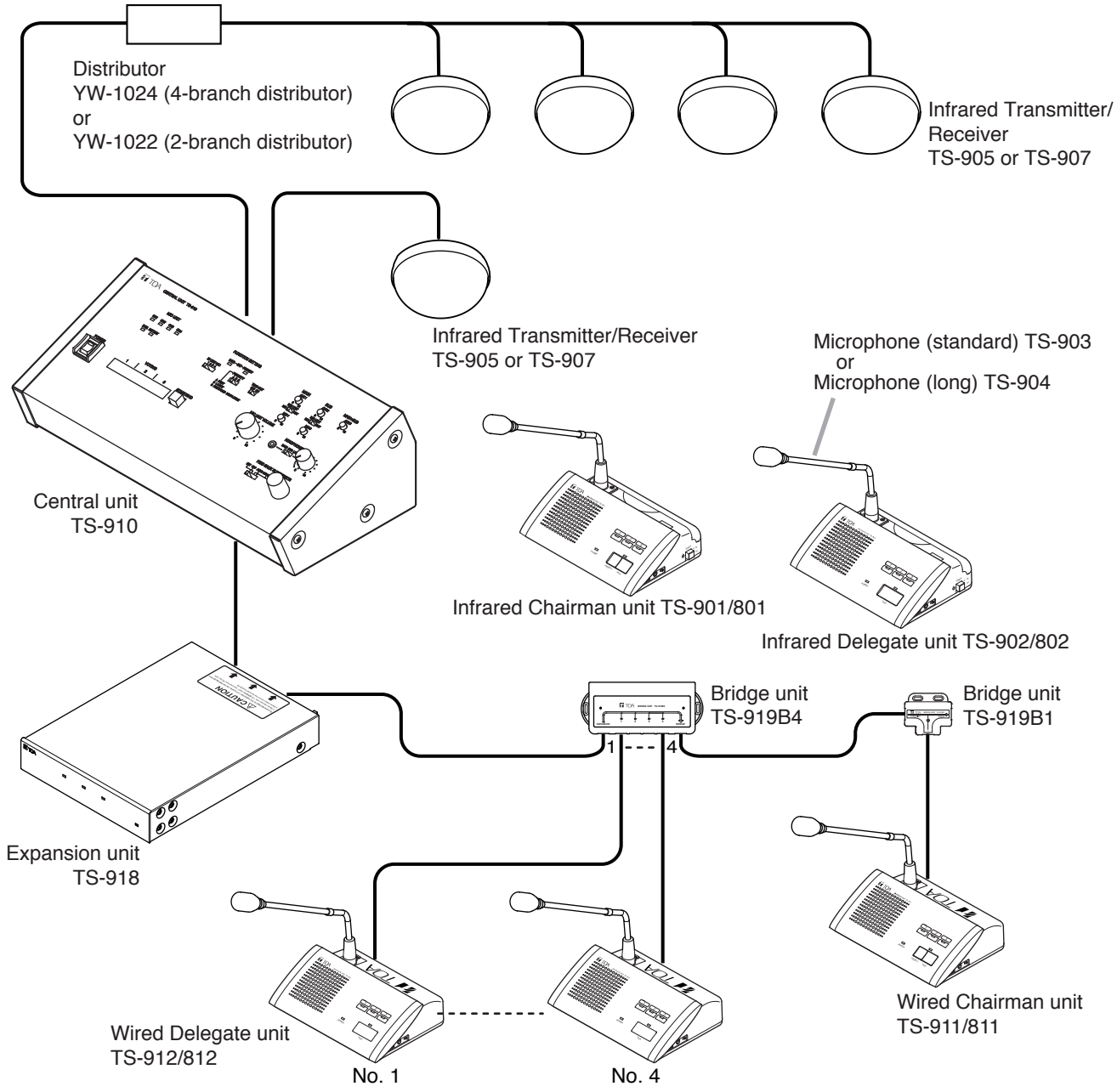
* Acoustic feedback: The squeal or howl of a sound loop created when speaker output is picked up by a microphone, amplified by an amplifier and further output from the speaker again.

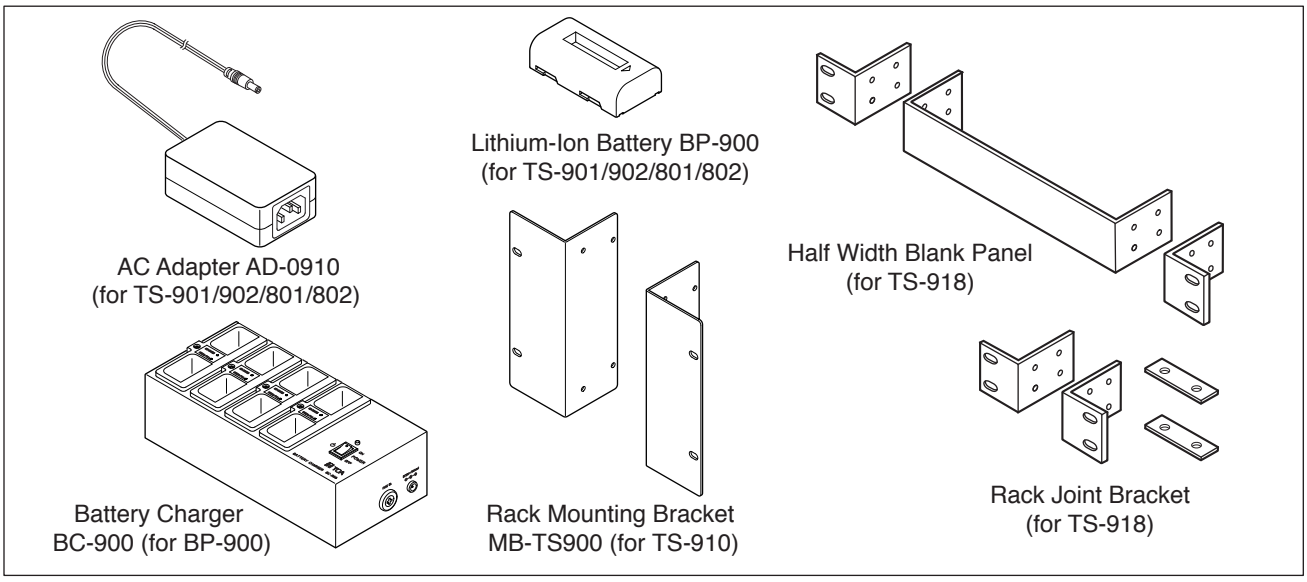
[Conference unit]
- Wired Conference units or Infrared Conference units can be freely selected depending on application or event requirements.
- Both 900 Series Conference units equipped with Voting and base/translation language selection functions and 800 Series units designed primarily for speaking and monitoring can be freely used. In the case of the 800 Series Conference units, they can monitor the base language only.
- Each 900 Series and 800 Series feature a selection of both Conference units.
- Chairman units feature a Priority Speech Key Operation function that allows the Chairman unit to take speech priority over the Delegate units with the simple press of a button.
- Conference unit microphones are attached via XLR connectors that permit easy detachment for more space-saving convenience in storage.
- Two types of Conference unit microphones are made available and freely interchangeable: Standard type and Long type.

(Wired Conference unit features)
- Connections between wired Conference units and the Expansion unit (or Bridge unit) can be made using a single CAT-5 LAN cable, facilitating installation and construction work.
- A total of up to 24 Conference units can be connected per TS-918 Expansion unit.
- Up to 8 TS-918 Expansion units can be installed.
- Two types of Bridge units are available: single-Conference unit connection type and 4-Conference unit connection type, either of which is freely selectable depending on installation conditions.

(Infrared Conference unit features)
- Infrared signal communication eliminates worries about radio interference and eavesdropping, making it possible to use the system simultaneously in adjacent rooms.
- Units can be powered by either line AC or rechargeable lithium-ion batteries.
- Up to 16 TS-905 Infrared Transmitter/Receiver units, or up to 12 TS-907 units can be installed in a single system. (If both models are combined in the same system, a total of up to 12 units can be installed.)

4. SYSTEM EQUIPMENT CONFIGURATION

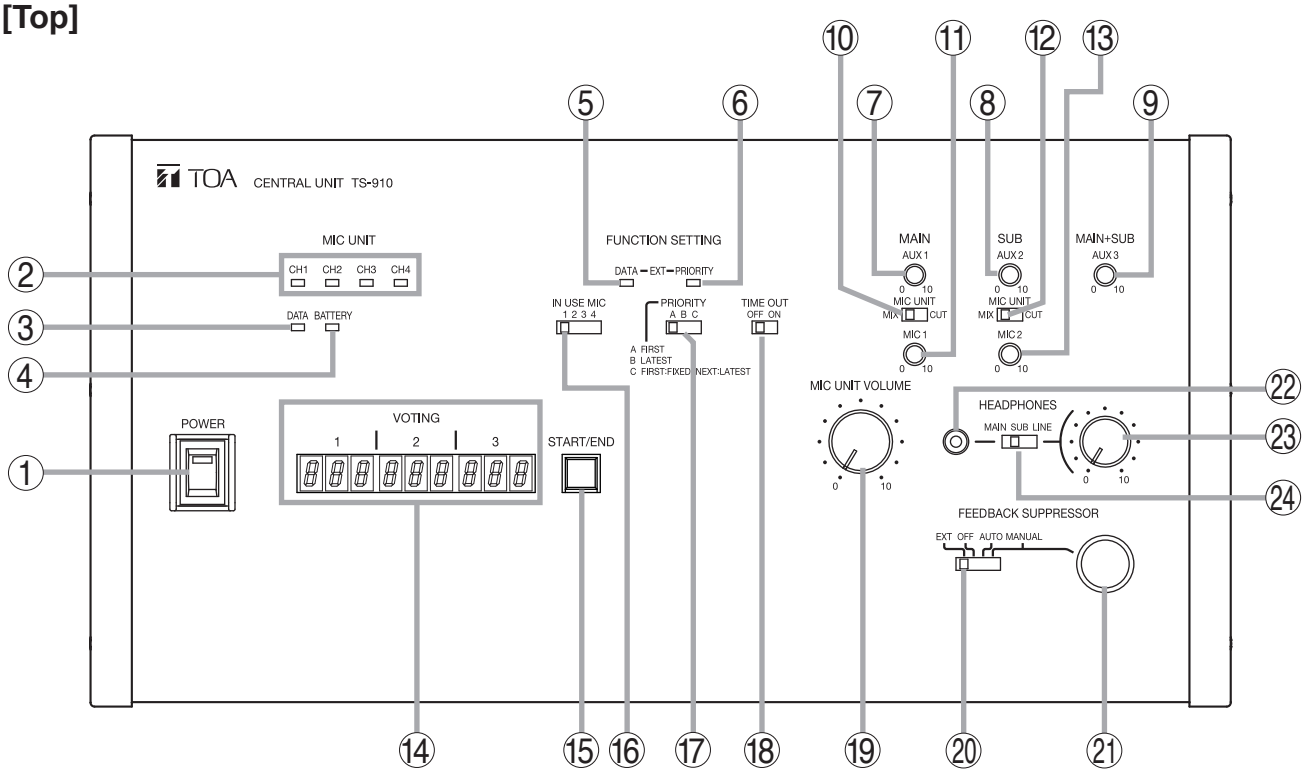




5. NOMENCLATURE AND FUNCTIONS

5.1. Central Unit TS-910

[Top]



1. Power switch
Setting this switch to the ON position causes the Power indicator to light.

2. Audio signal receiving indicators
Light up when audio signals are received from Conference units. Audio signals are transmitted or received through 4 channels. The number of channels to be used can be set with the Simultaneous Speaker No. Setting switch (16). These indicators light in the same number as that of the Conference units currently being used for speech. (Which indicator will light is not specified.)

3. Data signal receiving indicator
Lights when control data is received from the Conference unit.

4. Battery indicator
Flashes when the lithium-ion battery of the Infrared Conference unit nears complete discharge. (In this event, the Microphone In-Use indicator and the Speech indicator on the corresponding unit also flash.)
Note
Be sure to immediately replace the lithium-ion battery of the corresponding unit with the fully-charged one if this indicator begins to flash.

5. External control communication indicator
Remains lit during communications with a computer (PC) or operation panel connected to the rear-mounted External Control terminal.

6. External control priority indicator
Either lights or flashes when a PC or operation panel connected to the rear-mounted External Control terminal performs priority operation. In this event, three function setting switches (16), (17), and (18) cannot be used.

7. AUX 1 input volume control
Adjusts the input signal level of the AUX 1 Input Terminal located on the rear panel. Speech input to the AUX 1 terminal is output to the base language channel*1.

8. AUX 2 input volume control
Adjusts the input signal level of the AUX 2 Input Terminal located on the rear panel. Speech input to the AUX 2 terminal is output to the translation language channel*2.

9. AUX 3 input volume control
Adjusts the input signal level of the AUX 3 Input Terminal located on the rear panel. Speech input to the AUX 3 terminal is output to both the base language*1 and translation language*2 channels.

10. Microphone Mix/Cut switch (for the base language channel)

MIX: Speech input from the Conference units, and AUX 1 and MIC 1 input signals are output to the base language channel*1, and recording and line outputs.

CUT: Speech input from the Conference units is not output to the base language channel*1. The AUX 1 and MIC 1 input signals are not delivered to the recording and line outputs.

Note

This switch is factory-preset to the MIX position.

11. MIC 1 input volume control

Adjusts the input level of the MIC 1 Input Terminal on the rear panel. Signals input to the MIC 1 terminal are output to the base language channel*1.

12. Microphone Mix/Cut switch (for the translation language channel)

MIX: Speech input from the Conference units is output to the translation language channel*2.

CUT: Speech input from the Conference units is not output to the translation language channel*2.

Note

This switch is factory-preset to the MIX position.

13. MIC 2 input volume control

Adjusts the input level of the MIC 2 Input Terminal on the rear panel. Signals input to the MIC 2 terminal are output to the translation language channel*2.

14. Voting result display

Computes the number of votes cast by individual Conference units for categories 1 – 3 and displays the result after voting completion.

15. Voting start/end button

Holding down this button for 1 second or more permits the Central unit to accept voting. To terminate voting, hold down the button again for 1 second or more. If this button is held down for 1 second or more once again, the Voting Result Display (14) is turned off. (Refer to p. 30.)

This button is also used to confirm installation conditions for the Infrared Transmitter/Receiver unit, the Conference unit. (Refer to the separate Installation manual.)

16. Simultaneous speaker No. setting switch

Used to set the number of Conference units that can be simultaneously operated. The indications [1], [2], [3], and [4] represent the number of simultaneously operable units. (Refer to p. 24.)

Note

This switch is factory-preset to the [1] position.

17. Speech priority selector switch

Determines the priority mode when the Talk key of the Conference unit is pressed. (Refer to p. 24.)

A: First-in-first-out priority

B: Last-in-first-out priority

C: Priority fixed for the first unit, and last-in-first-out priority for all other subsequent units.

Note

This switch is factory-preset to the [A] position.

18. Mic-off setting switch

Automatically turns off Conference unit microphones 30 seconds after speech is completed if the user should neglect to turn off the microphone. (Refer to p. 25.)

Note

This switch is factory-preset to the OFF position.

19. Speech volume control

Adjusts the microphone volume of the Conference unit.

20. FBS (Feedback Suppressor) Switch

Use to set FBS operation.

EXT: Select when using an external graphic equalizer. (Refer to p. 32.)

OFF: Select when not using the FBS function.

AUTO: Select to suppress acoustic feedback by automatically searching for a frequency generating acoustic feedback. (Refer to p. 31.)

MANUAL: Select to manually search for a feedback-generating frequency. (Refer to p. 32.)

21. FBS (Feedback Suppressor) control

Rotate to search for a frequency generating acoustic feedback when the FBS switch (20) is set to “MANUAL.”

For details, refer to p. 32.

22. Headphone jack (Mini-jack)

Connects to headphones.

23. Headphone volume control

Adjusts the sound volume of the headphones.

24. Headphone channel selector switch

Used to choose the output to be monitored by the connected headphones from the following three sources: Base language (MAIN), Translation language (SUB), and Line (LINE) channels.

Note

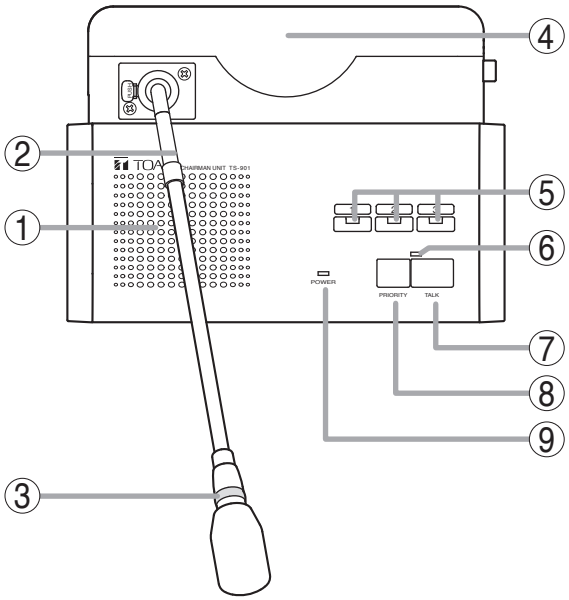
This switch is factory-preset to the MAIN position.

*1 Base Language: Mixed audio signals from the AUX 1 input, MIC 1 input, and in-use Conference units.

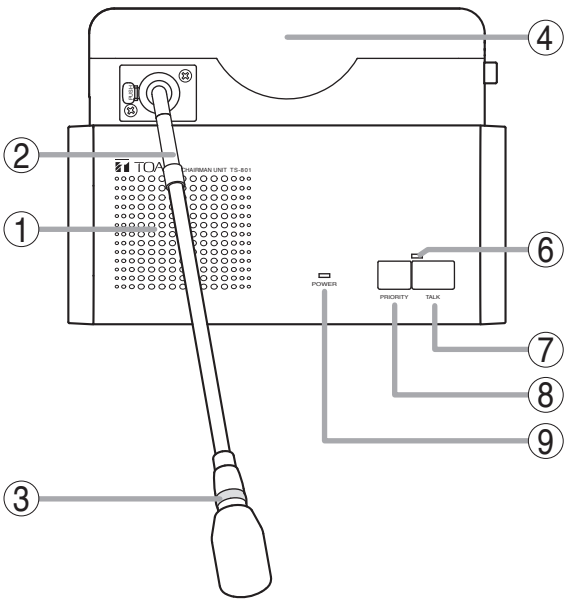
*2 Translation Language: Mixed audio signals from the AUX 2 input, MIC 2 input, and in-use Conference units.

5.2. Infrared Chairman Units TS-901 and TS-801

[TS-901 Top]



[TS-801 Top]



Note: No microphone is supplied with the TS-901/801.

1. Monitor speaker

Speech signals from other Conference units and other audio signals from the Central unit are output from this speaker. (Refer to the table below.)

Model	Output signal
TS-901	Base language or Translation language **Note:** Switchable by the Monitor selector switch (17).
TS-801	Base language

Use the right-side Monitor Volume Control (16) to adjust the volume. No sound is output from the speaker of the unit in use while speaking.

2. Microphone

Use either the TS-903 (Standard) or TS-904 (Long) dedicated microphone.

3. Microphone in-use indicator

Lights when the microphone is turned on (for speech) and flashes when the battery level is low.

4. Infrared emitter/detector

The device used to transmit and receive infrared communication signals is built inside this panel.

Note

Never place any object that could block infrared signal access to this part of the unit, as this would prevent the unit from transmitting or receiving its required infrared signal.

5. Voting keys (TS-901 only)

Use these keys to start, end, and cast voting. The voting status indicator is provided on each key.

6. Speech indicator

Remains lit while the microphone is in use (during speech). The indicator flashes when the unit is out of the communications service area.

7. Talk key

When this key is pressed, both the Microphone In-Use indicator (3) and the Speech indicator (6) light, and the microphone turns on. Pressing this key again turns off both indicators and the microphone.

8. Priority speech key

Gives speaking priority to the current speaker. When this key is used for speech, no other delegate units can be used. Also, only the current speech made with the Priority speech key is output at the Central Unit's recording and line outputs.

The key has 2 different operating modes, PTT and ALT, which can be selected with the Priority speech key operation setting switch (14).

- When PTT mode is selected, the microphone only turns on while the key is pressed, during which time the Speech (6) and Microphone in-use (3) indicators remain lit.
- When ALT mode is selected, pressing the key turns on the microphone and causes the Speech (6) and Microphone in-use (3) indicators to light. Pressing the key again turns off the microphone and these indicators.

If Chime is set to sound, a chime tone sounds when the key is pressed. For the chime setting, use the Priority chime mute switch (12).

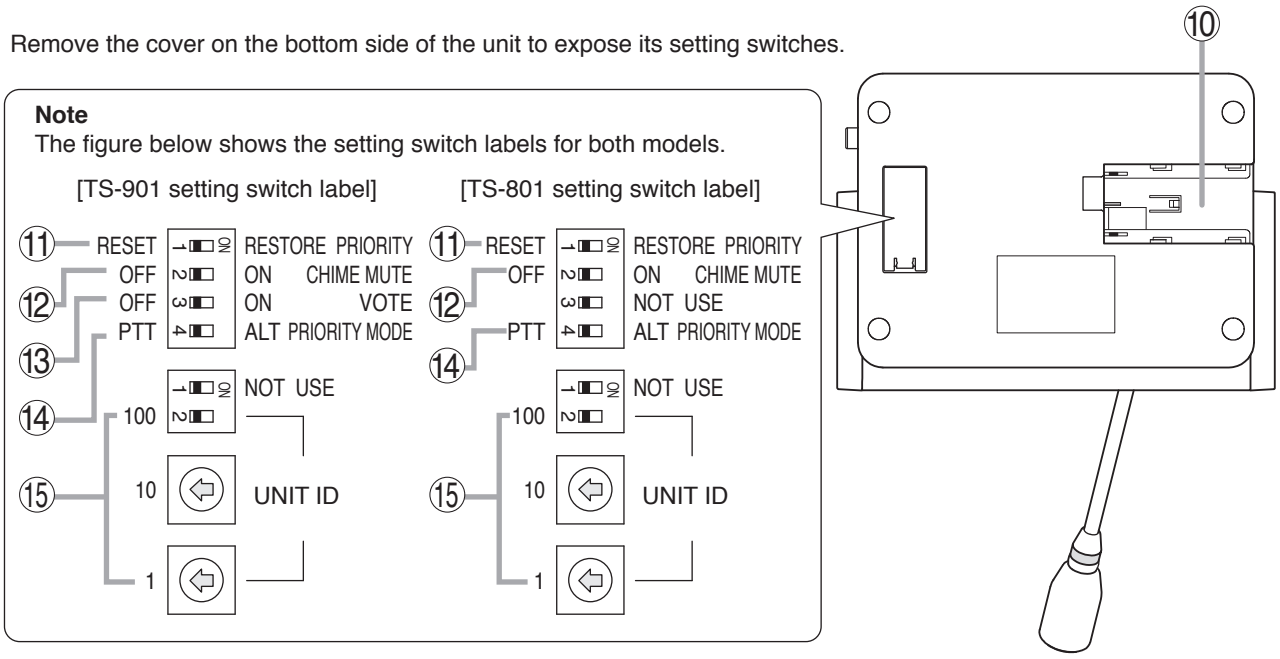
9. Power indicator

Lights when the power is switched ON.

This indicator also flashes when the battery level is low or the unit is outside the communications service area.

[Bottom]

Remove the cover on the bottom side of the unit to expose its setting switches.



10. Lithium-ion battery compartment

Install only a dedicated BP-900 Lithium-Ion Battery in this compartment.

11. Priority operation setting switch

Following completion of a priority speech, this switch is used to reset the operating status of Conference units whose operations were interrupted by the depression of a Priority Speech key (8).

Set the switch to RESTORE in order to resume the mode in operation prior to initiation of the priority speech, and to RESET when resumption is not desired.

Note

This switch is factory-preset to the RESET position.

12. Priority chime mute switch

Disables the chime that sounds when the Priority Speech key is pressed.

Set this switch to OFF when sound output is desired, and to ON when no sound is desired.

Note

This switch is factory-preset to the OFF position.

13. Voting activation switch (TS-901 only)

Determines whether or not to start and terminate voting from the Chairman unit.

Set the switch to ON to enable voting, or to OFF to disable voting.

Note

This switch is factory-preset to the OFF position.

14. Priority speech key operation setting switch

Use to set the Priority speech key operation mode.

PTT: Speech only possible while the Priority speech key is being pressed.

ALT: Speech enabled when the Priority speech key is pressed, and disabled when the key is pressed again.

Note

The switch is factory-preset to PTT.

15. Unit address number setting switch

Set the unit address number (001 – 192), taking care to ensure that the same number is not duplicated in the system.

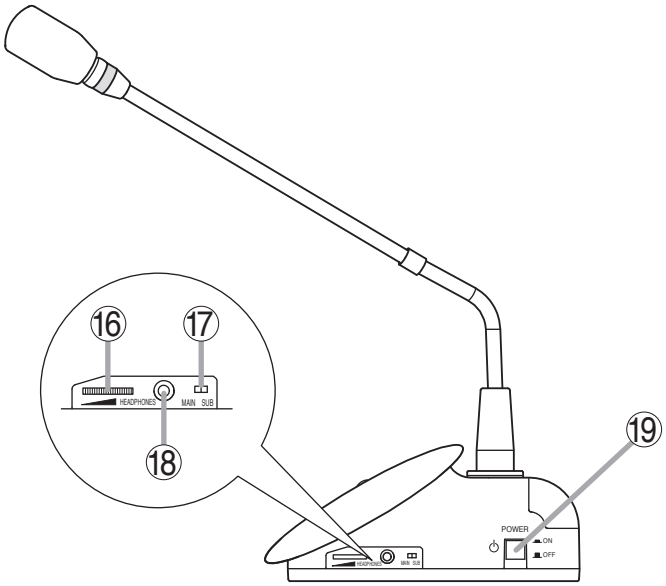
If the number [000] is assigned to a unit, the user of that unit cannot speak. However, the unit can be used for monitoring.

Set a numeral for the ones place and tens place. Set this switch to OFF to set the hundreds place to “0” and to ON to set it to “1.”

Note

This number is factory-preset to [000].

[Right side]



16. Monitor volume control
Adjusts the output volume of the monitor speaker and right-side headphone output.

17. Monitor selector switch (TS-901 only)
Selects either Base Language or Translation Language for the source to be output to the monitor speaker and headphones.

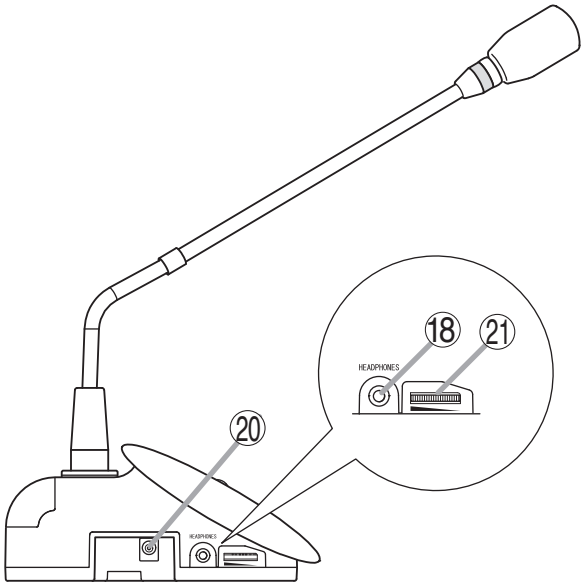
18. Headphone jack
Connect headphones to this jack (mini-jack).
Connecting the headphone cuts off the output from the monitor speaker. (Refer to the table below.)

Model	Output signal
TS-901	Base language or Translation language **Note:** Switchable by the Monitor selector switch (17).
TS-801	Base language

Note
A headphone jack is located on both the left and right side panels.

19. Power switch
Press this switch to switch on the power.
To switch off the power, press this switch again.

[Left side]

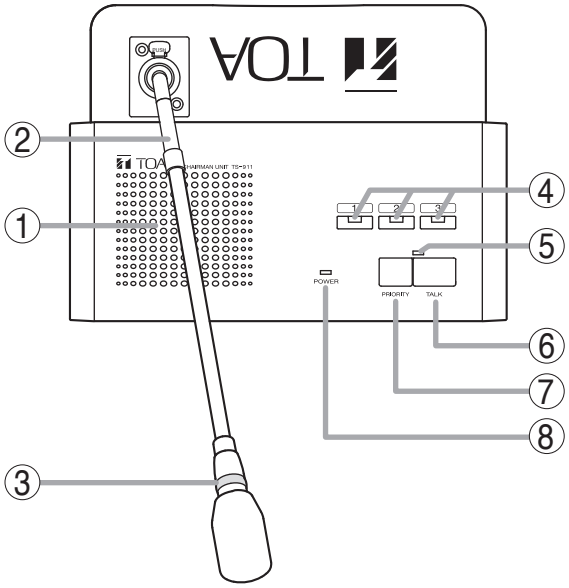


20. DC inlet
Connect the dedicated AD-0910 AC Adapter to this terminal.

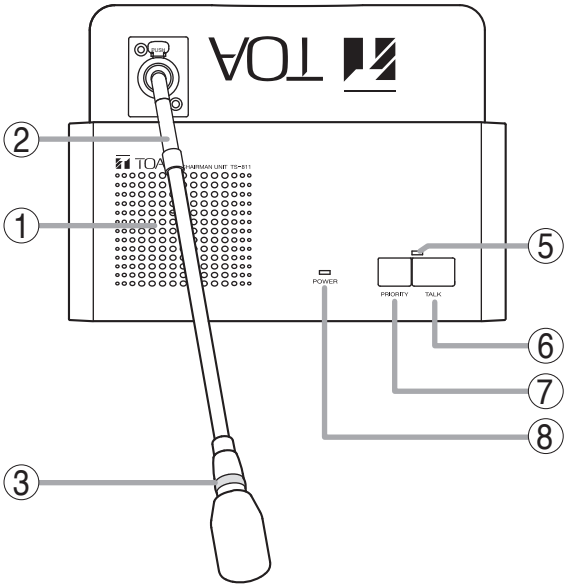
21. Headphone volume control
Adjusts the output volume of the left-side headphone output.

5.3. Wired Chairman Units TS-911 and TS-811

[TS-911 Top]



[TS-811 Top]



Note: No microphone is supplied with the TS-911/811.

1. Monitor speaker
Speech signals from other Conference units and other audio signals from the Central unit are output from this speaker. (Refer to the table below.)

Model	Output signal
TS-911	Base language or Translation language **Note:** Switchable by the Monitor selector switch (16).
TS-811	Base language

Use the right-side Monitor Volume Control (14) to adjust the volume. No sound is output from the speaker of the unit in use while speaking.

2. Microphone
Use either the TS-903 (Standard) or TS-904 (Long) dedicated microphone.

3. Microphone in-use indicator
Lights when the microphone is turned on (for speech).

4. Voting keys (TS-911 only)
Use these keys to start, end, and cast voting. The voting status indicator is provided above each key.

5. Speech indicator
Remains lit while the microphone is in use (during speech). The indicator flashes when the unit is out of the communications service area.

6. Talk key
When this key is pressed, both the Microphone In-Use indicator (3) and the Speech indicator (5) light, and the microphone turns on. Pressing this key again turns off both indicators and the microphone.

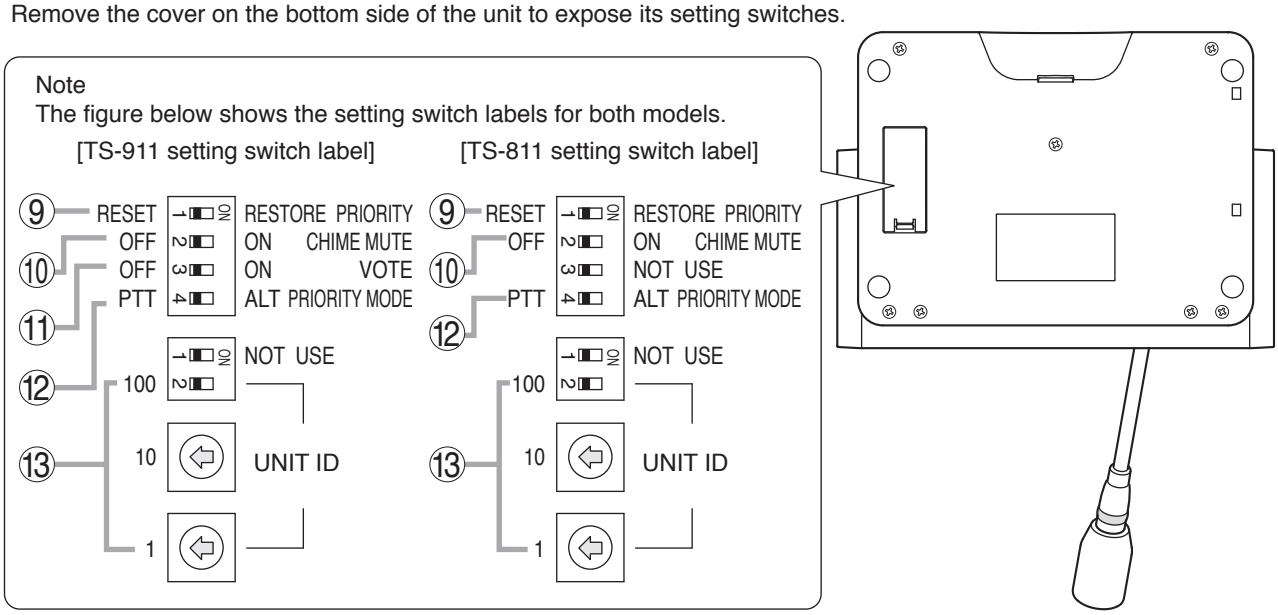
7. Priority speech key
Gives speaking priority to the current speaker. When this key is used for speech, no other delegate units can be used. Also, only the current speech made with the Priority speech key is output at the Central Unit's recording and line outputs.
The key has 2 different operating modes, PTT and ALT, which can be selected with the Priority speech key operation setting switch (12).
- When PTT mode is selected, the microphone only turns on while the key is pressed, during which time the Speech (5) and Microphone in-use (3) indicators remain lit.
- When ALT mode is selected, pressing the key turns on the microphone and causes the Speech (5) and Microphone in-use (3) indicators to light. Pressing the key again turns off the microphone and these indicators.

If Chime is set to sound, a chime tone sounds when the key is pressed. For the chime setting, use the Priority chime mute switch (10).

8. Power indicator
Lights when power is supplied from the TS-910 Central unit via the TS-918 Expansion unit.

[Bottom]

Remove the cover on the bottom side of the unit to expose its setting switches.



9. Priority operation setting switch

Following completion of a priority speech, this switch is used to reset the operating status of Conference units whose operations were interrupted by the depression of a Priority Speech key (7).

Set the switch to RESTORE in order to resume the mode in operation prior to initiation of the priority speech, and to RESET when resumption is not desired.

Note

This switch is factory-preset to the RESET position.

10. Priority chime mute switch

Disables the chime that sounds when the Priority Speech key is pressed.

Set this switch to OFF when sound output is desired, and to ON when no sound is desired.

Note

This switch is factory-preset to the OFF position.

11. Voting activation switch (TS-911 only)

Determines whether or not to start and terminate voting from the Chairman unit.

Set the switch to ON to enable voting, or to OFF to disable voting.

Note

This switch is factory-preset to the OFF position.

12. Priority speech key operation setting switch

Use to set the Priority speech key operation mode.

PTT: Speech only possible while the Priority speech key is being pressed.

ALT: Speech enabled when the Priority speech key is pressed, and disabled when the key is pressed again.

Note

The switch is factory-preset to PTT.

13. Unit address number setting switch

Set the unit address number (001 – 192), taking care to ensure that the same number is not duplicated in the system.

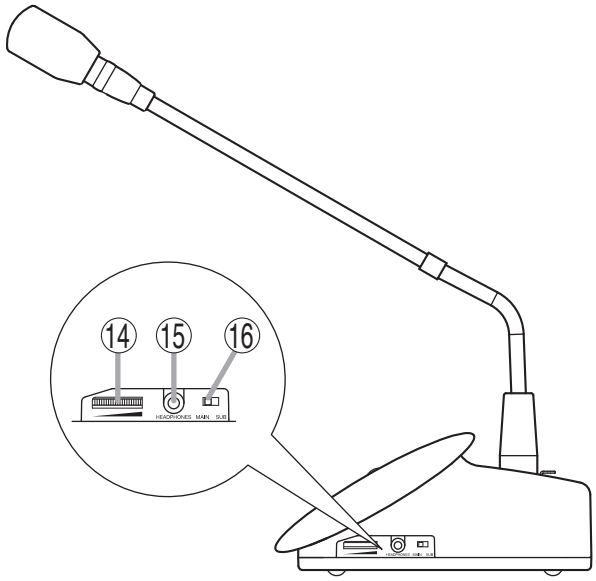
If the number [000] is assigned to a unit, the user of that unit cannot speak. However, the unit can be used for monitoring.

Set a numeral for the ones place and tens place. Set this switch to OFF to set the hundreds place to “0” and to ON to set it to “1.”

Note

This number is factory-preset to [000].

[Right side]



14. Monitor volume control
Adjusts the output volume of the monitor speaker and right-side headphone output.

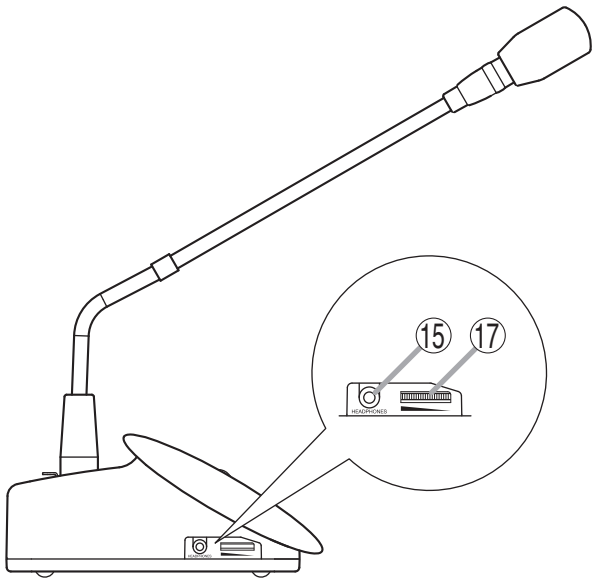
15. Headphone jack
Connect headphones to this jack (mini-jack).
Connecting the headphone cuts off the output from the monitor speaker. (Refer to the table below.)

Model	Output signal
TS-911	Base language or Translation language **Note:** Switchable by the Monitor selector switch (16).
TS-811	Base language

Note
A headphone jack is located on both the left and right side panels.

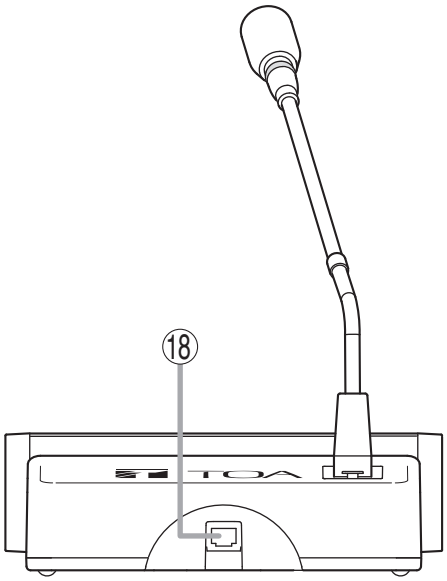
16. Monitor selector switch (TS-911 only)
Selects either Base Language or Translation Language for the source to be output to the monitor speaker and headphone.

[Left side]



17. Headphone volume control
Adjusts the output volume of the left-side headphone output.

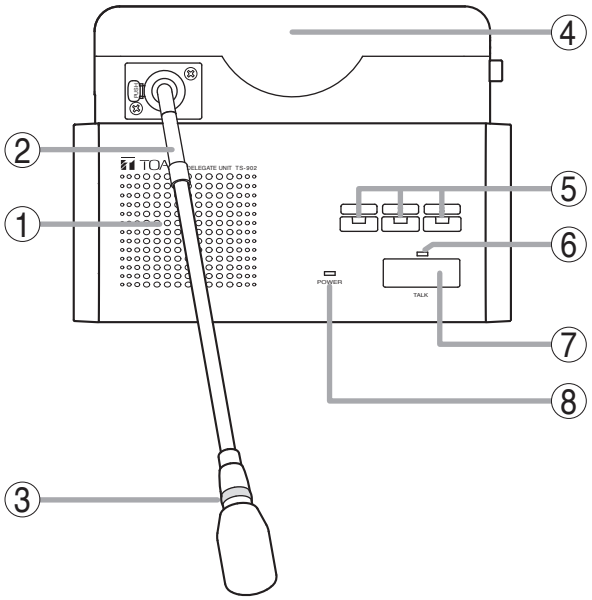
[Rear]



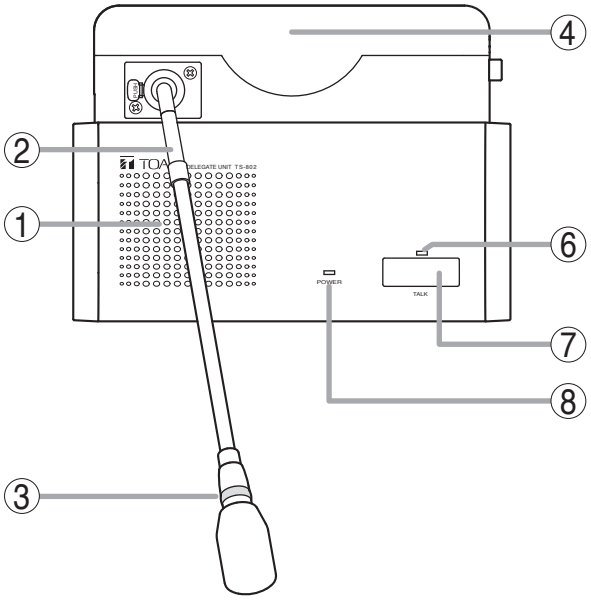
18. Communication cable connection terminal
Connects to the TS-919B4 or TS-919B1 Bridge unit with a CAT-5 LAN cable.

5.4. Infrared Delegate Units TS-902 and TS-802

[TS-902 Top]



[TS-802 Top]



Note: No microphone is supplied with the TS-902/802.

1. Monitor speaker
Speech signals from other Conference units and other audio signals from the Central unit are output from this speaker. (Refer to the table below.)

Model	Output signal
TS-902	Base language or Translation language **Note:** Switchable by the Monitor selector switch (12).
TS-802	Base language

Use the right-side Monitor Volume Control (11) to adjust the volume. No sound is output from the speaker of the unit in use while speaking.

2. Microphone
Use either the TS-903 (Standard) or TS-904 (Long) dedicated microphone.

3. Microphone in-use indicator
Lights when the microphone is turned on (for speech) and flashes when the battery level is low.

4. Infrared emitter/detector
The device used to transmit and receive infrared communication signals is built inside this panel.

Note
Never place any object that could block infrared

signal access to this part of the unit, as this would prevent the unit from transmitting or receiving its required infrared signal.

5. Voting keys (TS-902 only)
Use these keys to start, end, and cast voting. The voting status indicator is provided on each key.

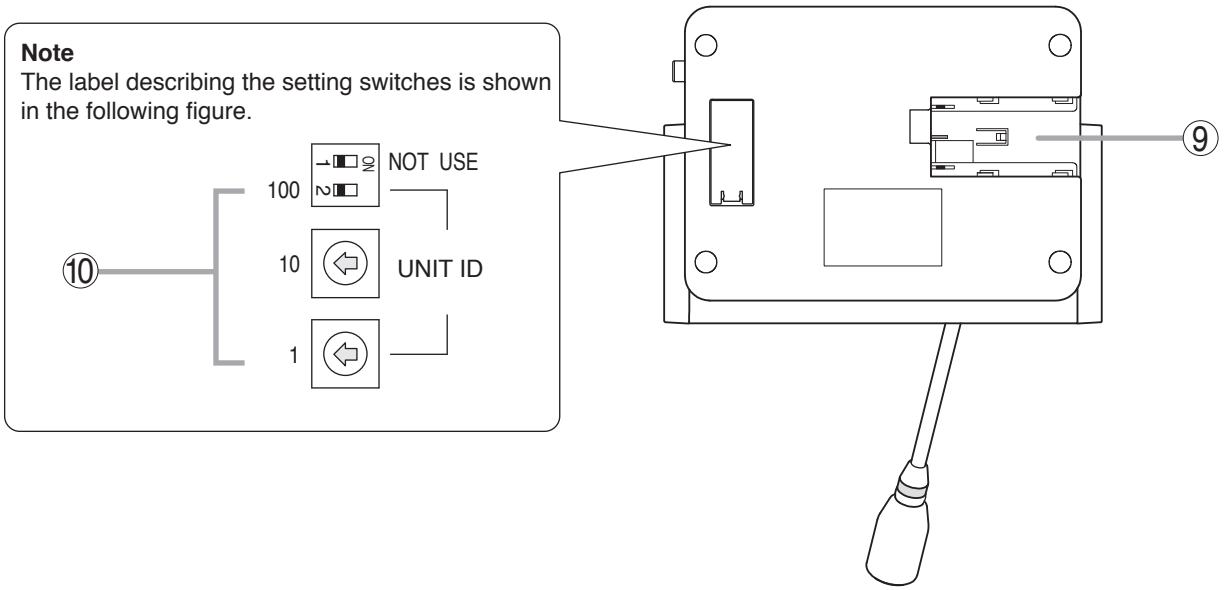
6. Speech indicator
Remains lit while the microphone is in use (during speech). The indicator flashes when the unit is out of the communications service area.

7. Talk key
When this key is pressed, both the Microphone In-Use indicator (3) and the Speech indicator (6) light, and the microphone turns on. Pressing this key again turns off both indicators and the microphone.

8. Power indicator
Lights when the power is switched ON.
This indicator also flashes when the battery level is low or the unit is outside the communications service area.

[Bottom]

Remove the cover on the bottom side of the unit to expose its setting switches.

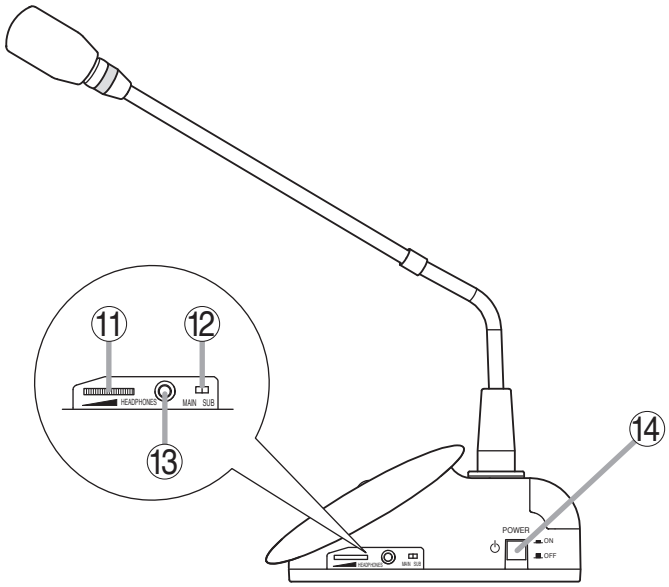


9. Lithium-ion battery compartment
Install only a dedicated BP-900 Lithium-Ion Battery in this compartment.

10. Unit address number setting switch
Set the unit address number (001 – 192), taking care to ensure that the same number is not duplicated in the system.
If the number [000] is assigned to a unit, the user of that unit cannot speak. However, the unit can be used for monitoring.
Set a numeral for the ones place and tens place. Set this switch to OFF to set the hundreds place to “0” and to ON to set it to “1.”

Note
This number is factory-preset to [000].

[Right side]



11. Monitor volume control
Adjusts the output volume of the monitor speaker and right-side headphone output.

12. Monitor selector switch (TS-902 only)
Selects either Base Language or Translation Language for the source to be output to the monitor speaker and headphone.

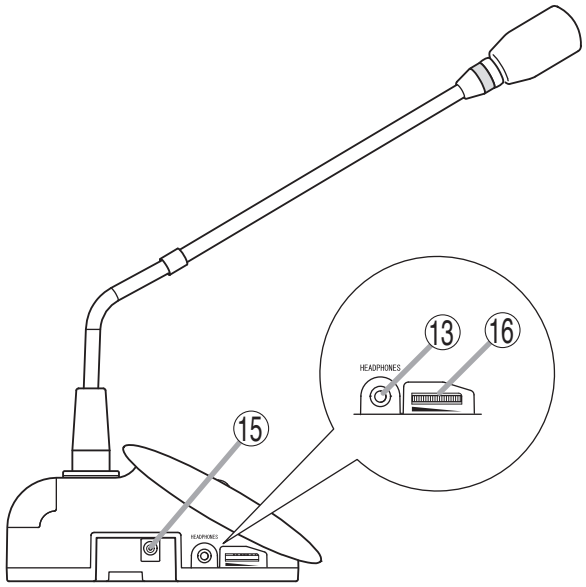
13. Headphone jack
Connect headphones to this jack (mini-jack).
Connecting the headphone cuts off the output from the monitor speaker. (Refer to the table below.)

Model	Output signal
TS-902	Base language or Translation language **Note:** Switchable by the Monitor selector switch (12).
TS-802	Base language

Note
A headphone jack is located on both the left and right side panels.

14. Power switch
Press this switch to switch on the power.
To switch off the power, press this switch again.

[Left side]

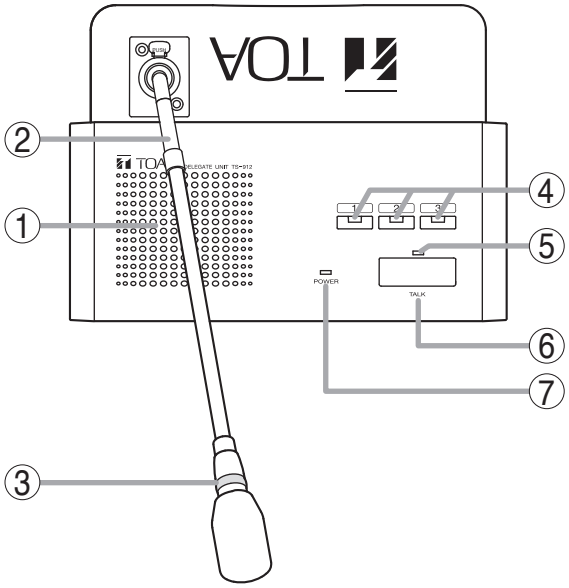


15. DC inlet
Connect the dedicated AD-0910 AC Adapter to this terminal.

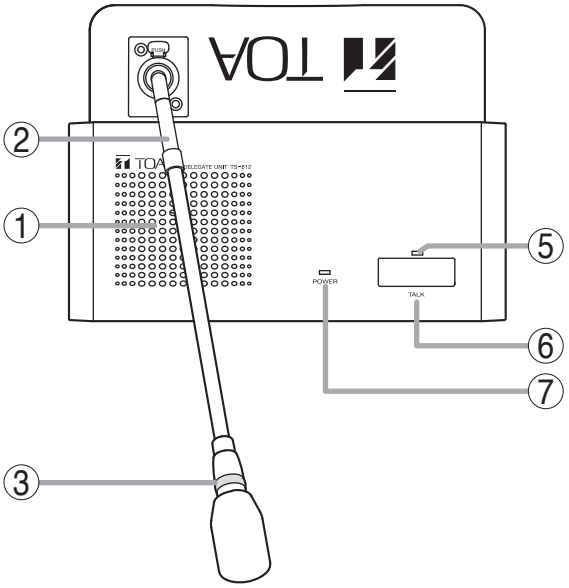
16. Headphone volume control
Adjusts the output volume of the left-side headphone output.

5.5. Wired Delegate Units TS-912 and TS-812

[TS-912 Top]



[TS-812 Top]



Note: No microphone is supplied with the TS-912/812.

1. Monitor speaker

Speech signals from other Conference units and other audio signals from the Central unit are output from this speaker. (Refer to the table below.)

Model	Output signal
TS-912	Base language or Translation language **Note:** Switchable by the Monitor selector switch (11).
TS-812	Base language

Use the right-side Monitor Volume Control (9) to adjust the volume. No sound is output from the speaker of the unit in use while speaking.

2. Microphone

Use either the TS-903 (Standard) or TS-904 (Long) dedicated microphone.

3. Microphone in-use indicator

Lights when the microphone is turned on (for speech).

4. Voting keys (TS-912 only)

Use these keys to start, end, and cast voting. The voting status indicator is provided on each key.

5. Speech indicator

Remains lit while the microphone is in use (during speech). The indicator flashes when the unit is out of the communications service area.

6. Talk key

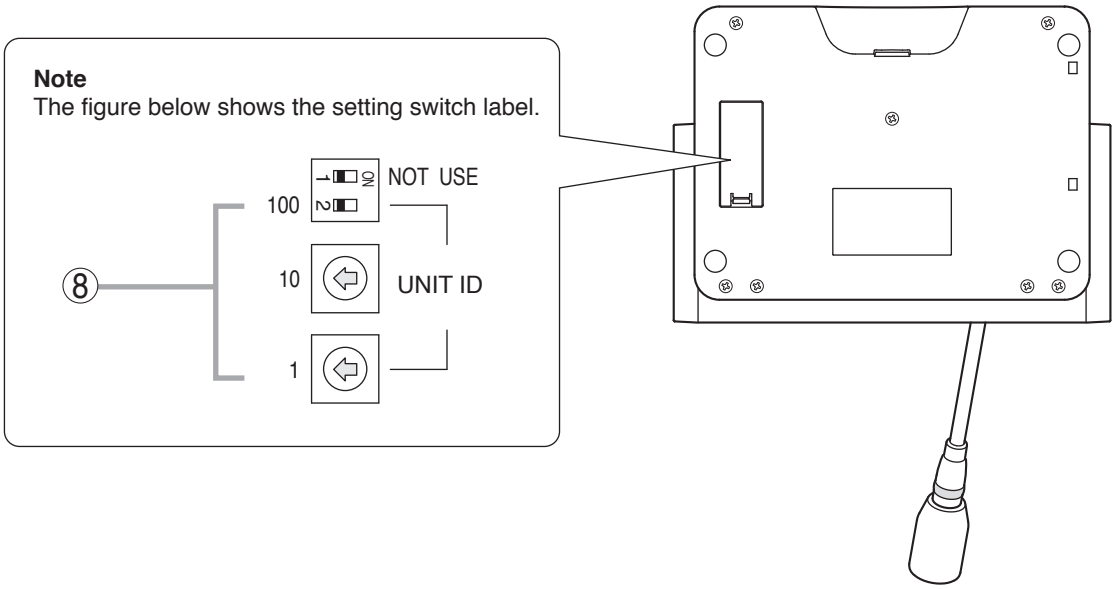
When this key is pressed, both the Microphone In-Use indicator (3) and the Speech indicator (5) light, and the microphone turns on. Pressing this key again turns off both indicators and the microphone.

7. Power indicator

Lights when power is supplied from the TS-910 Central unit via the TS-918 Expansion unit.

[Bottom]

Remove the cover on the bottom side of the unit to expose its setting switches.



8. Unit address number setting switch

Set the unit address number (001 – 192), taking care to ensure that the same number is not duplicated in the system.

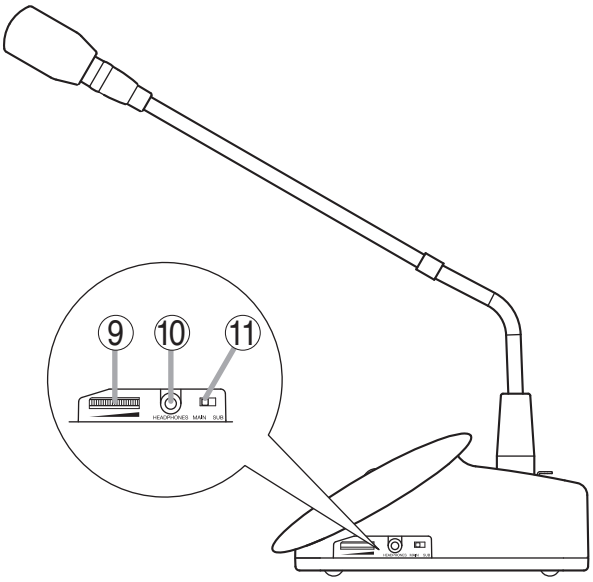
If the number [000] is assigned to a unit, the user of that unit cannot speak. However, the unit can be used for monitoring.

Set a numeral for the ones place and tens place. Set this switch to OFF to set the hundreds place to “0” and to ON to set it to “1.”

Note

This number is factory-preset to [000].

[Right side]



9. Monitor volume control

Adjusts the output volume of the monitor speaker and right-side headphone output.

10. Headphone jack

Connect headphones to this jack (mini-jack).

Connecting the headphone cuts off the output from the monitor speaker. (Refer to the table below.)

Model	Output signal
TS-912	Base language or Translation language **Note:** Switchable by the Monitor selector switch (11).
TS-812	Base language

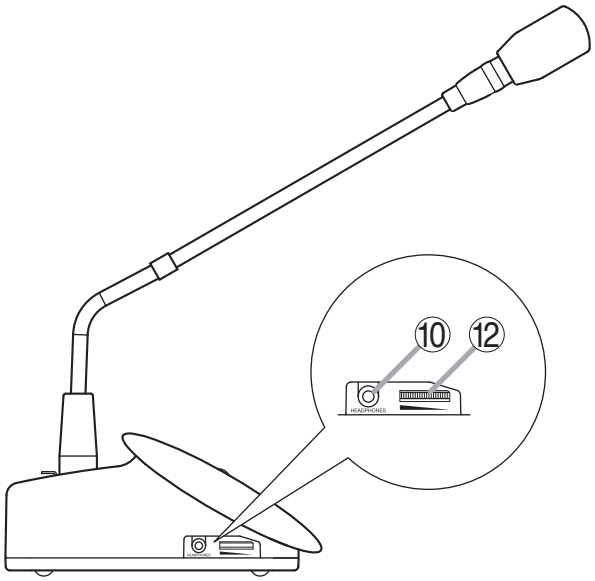
Note

A headphone jack is located on both the left and right side panels.

11. Monitor selector switch (TS-912 only)

Selects either Base Language or Translation Language for the source to be output to the monitor speaker and headphone.

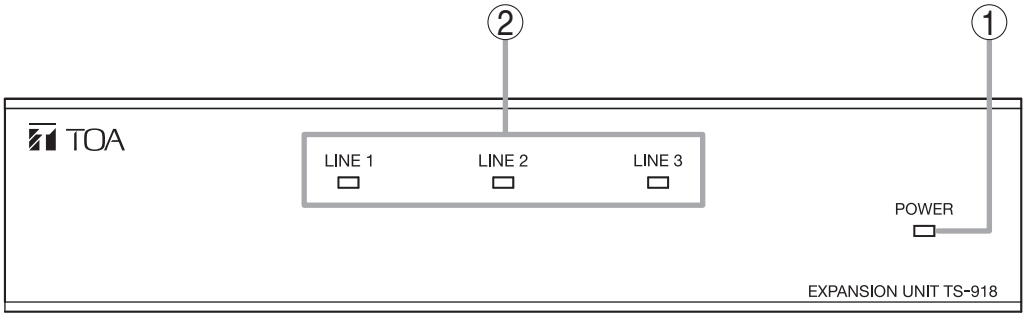
[Left side]



12. Headphone volume control
Adjusts the output volume of the left-side headphone output.

5.6. Expansion Unit TS-918

[Front]

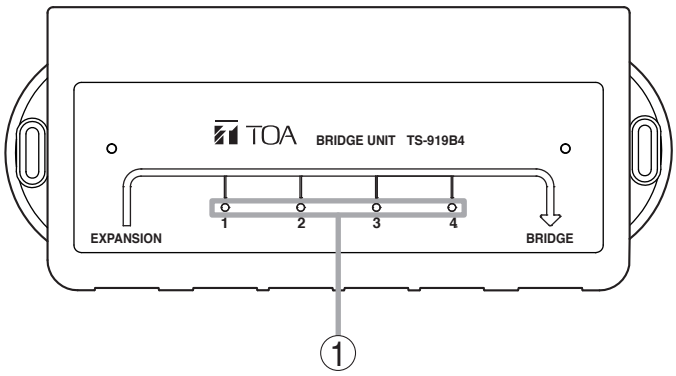


1. Power indicator
Lights when connecting the supplied AC adapter to the DC inlet on the rear panel.

2. Connection status indicators
The corresponding LINE indicator lights when the TS-919B4 or TS-919B1 Bridge unit is connected to the Bridge unit connection terminal on the rear panel and power is supplied to it.

5.7. Bridge Unit (4-Conference unit connection type) TS-919B4

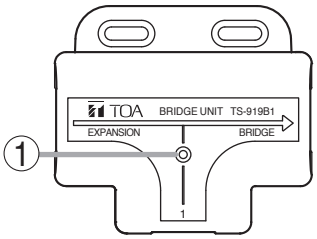
[Front]



1. Connection status indicators
The corresponding LINE indicator lights when the Wired Conference unit is connected to the Conference unit connection terminal on the bottom side and power is supplied to it.

5.8. Bridge Unit (1-Conference unit connection type) TS-919B1

[Front]



1. Connection status indicator
Lights when the Wired Conference unit is connected to the Conference unit connection terminal on the bottom side and power is supplied to it.

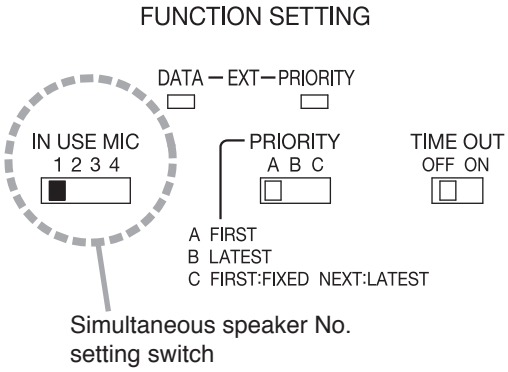
6. FUNCTION SETTINGS

6.1. Setting the Maximum Number of Simultaneous Speakers

Using the Simultaneous Speaker No. Setting switch on the TS-910 Central Unit, set the maximum total number of Conference units that can simultaneously initiate speech.

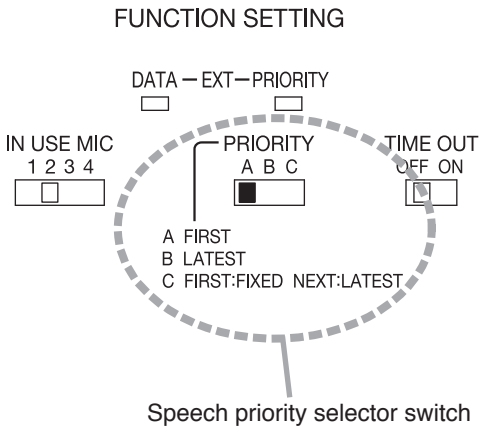
Set the switch to [1], [2], [3], or [4] depending on the type of the conference. These numbers indicate the number of units that can simultaneously initiate speech. (This switch is factory-preset to the [1] position.)

Note
When the Talk key is pressed at a unit exceeding the set maximum number, how the corresponding unit operates can be determined in the speech priority settings referred to in the next section.



6.2. Speech Priority Settings

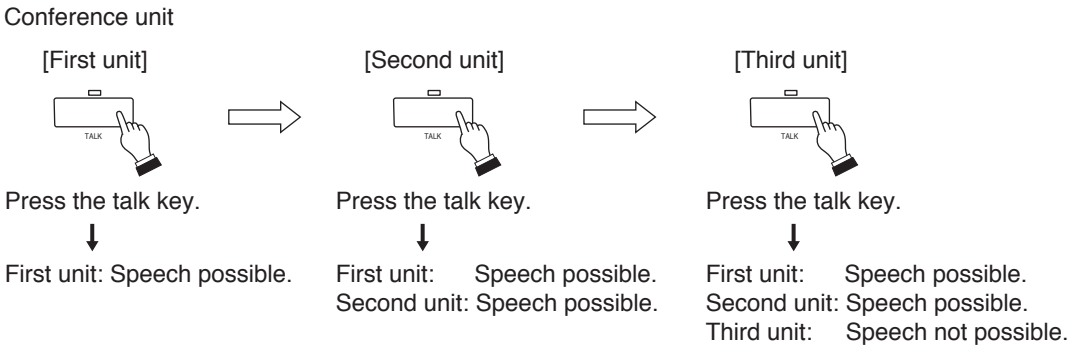
Operation following the depression of the Talk key on a Conference unit, when the maximum number of speakers that can be simultaneously initiated is reached, can be selected with the Speech Priority Selector switch on the TS-910 Central unit.



6.2.1. Mode A: First-in/first-out priority (factory-preset switch position)

Speech is initiated on a first-come/first-served basis. When the maximum number of speakers is reached, subsequent speech requests cannot be accepted, even if the Talk key is pressed.

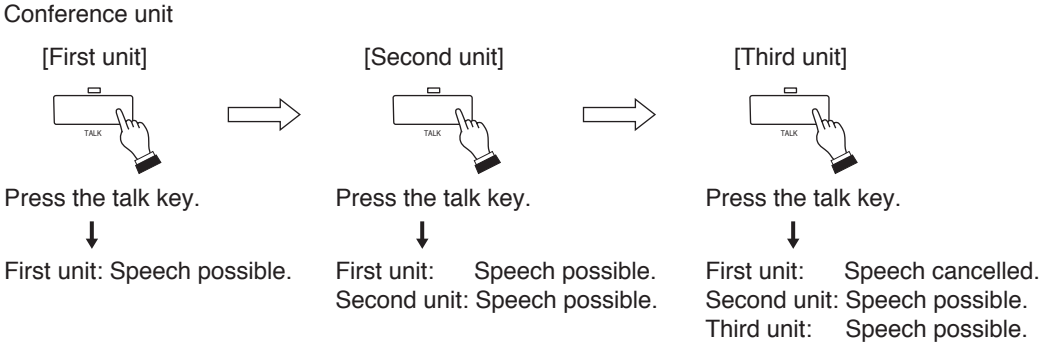
• Example showing the number of simultaneous speakers set to [2].



6.2.2. Mode B: Last-in/first-out priority

When the maximum number of simultaneous speakers is reached, input from the most recent subsequent Talk key-pressed Conference unit takes precedence, thus rendering earlier speaking units inoperable.

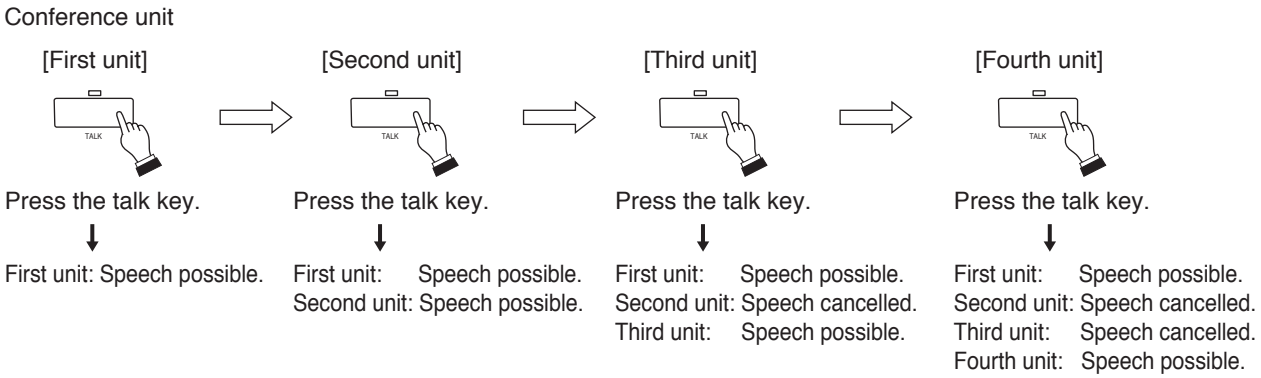
• Example showing the number of simultaneous speakers set to [2].



6.2.3. Mode C: Priority fixed for first-enabled unit, and last-in/first-out priority for all subsequent units

The first-enabled Conference unit is given fixed speech priority until its Talk key is pressed again.
All subsequent Talk key-pressed units are given last-in/first-out priority, as in Mode B.

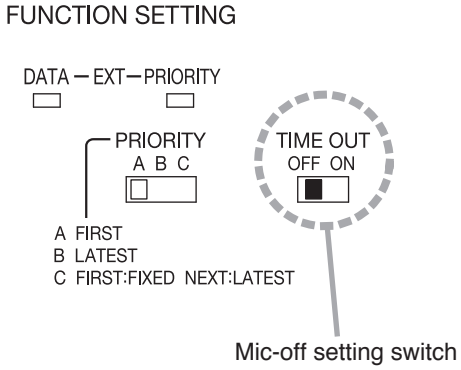
• Example showing the number of simultaneous speakers set to [2].



6.3. Mic-Off Function

This function automatically turns off the microphone if the user neglects to turn it off following speech completion.

This function is enabled when the Mic-Off Setting switch on the TS-910 Central Unit is set to the ON position.
The microphone automatically turns off if a duration of silence lasts for about 30 seconds.
It is recommended that the Mic-Off switch be set to the OFF position when not specifically using this function. (The Mic-Off switch is factory-preset to the OFF position.)

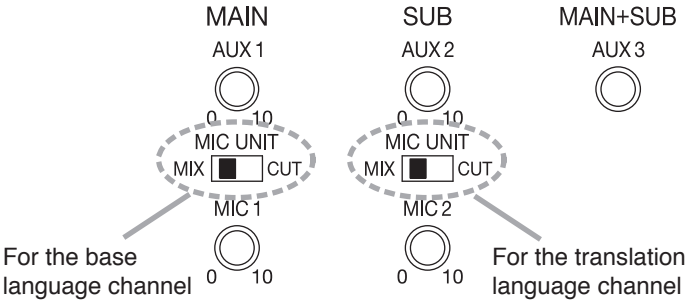


Notes

- When the Mic-Off switch is set to the ON position, the microphone automatically turns off if there is a silent interval of about 30 seconds, even though a speech may be in progress. In conferences, where long pauses during speeches can be experienced, set the switch to the OFF position.
- The Mic-Off function may not be operated correctly in high-noise areas.

7. MICROPHONE MIX/CUT SWITCH SETTINGS

Whether to output voice signals from Conference units to the base or translation language channel can be determined by setting the Microphone Mix/Cut switch on the TS-910 Central unit.
Outputs for individual inputs (MIC 1 – 2, and AUX 1 – 3) to the Central Unit also change depending on the switch setting.



[Switch Setting Relationship of Input to Base/Translation Language Channel]

- Speech output from Conference units depends on the switch setting. When the MAIN switch is set to the MIX position, speech is output to the base language channel. When the SUB switch is set to the MIX position, speech is output to the translation language channel.
- Inputs to the MIC 1 and AUX 1 terminals are output to the base language channel, except during priority speech from the Chairman unit, regardless of the switch setting.
- Inputs to the MIC 2 and AUX 2 terminals are output to the translation language channel, except during priority speech from the Chairman unit, regardless of the switch setting.
- Inputs to the AUX 3 terminal are always relayed to both the base and translation language channels regardless of the switch setting.

[Input/Output Relationship to Switch Settings]

Microphone Mix/Cut switch		Input	Output			
			Monitor speaker on the Conference unit Headphones* on the Central unit		Central unit	
MAIN	SUB		Base language	Translation language	Line output Headphone*	Recording output
MIX	MIX	Conference unit	✓	✓	✓	✓
		MIC 1	✓	—	✓	✓
		AUX 1				
		MIC 2	—	✓	—	—
		AUX 2				
		AUX 3	✓	✓	△	✓
MIX	CUT	Conference unit	✓	—	✓	✓
		MIC 1	✓	—	✓	✓
		AUX 1				
		MIC 2	—	✓	—	—
		AUX 2				
		AUX 3	✓	✓	△	✓
CUT	MIX	Conference unit	—	✓	✓	✓
		MIC 1	✓	—	—	—
		AUX 1				
		MIC 2	—	✓	—	—
		AUX 2				
		AUX 3	✓	✓	△	✓
CUT	CUT	Conference unit	—	—	✓	✓
		MIC 1	✓	—	—	—
		AUX 1				
		MIC 2	—	✓	—	—
		AUX 2				
		AUX 3	✓	✓	△	✓

✓ : Indicates that individual inputs are output.
— : Indicates that individual inputs are not output.
△ : Indicates that output can be determined by the setting of the AUX 3 Output Mix/Cut switch (located on the TS-910's rear panel).

* Select output from MAIN (base language), SUB (translation language), and LINE (line output) sources using the Headphone Channel Selector switch.

8. OPERATION

8.1. Initiating Speech

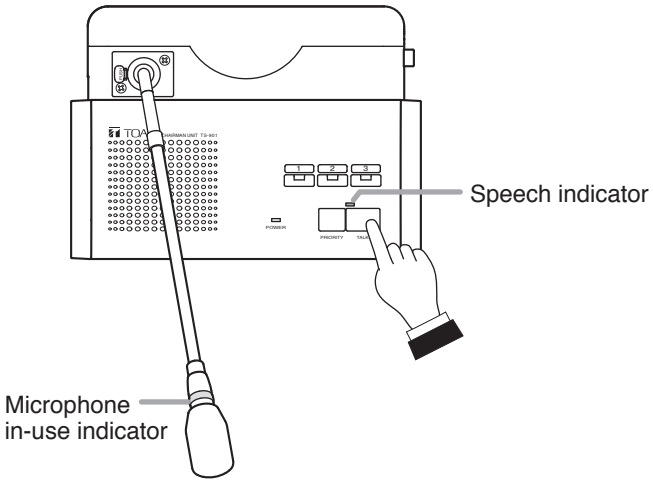
Step 1. Press the Talk key on the Conference unit.
The Speech indicator and Microphone In-Use indicator light, placing the unit in speech mode.
No sound is output from the monitor speaker while both indicators are continuously lit.

Note
The unit cannot be used for speech if the indicators do not light.

Step 2. Speak into the microphone.

Step 3. Press the Talk key again after speech completion.
The indicators go out, and sound can be output from the monitor speaker.

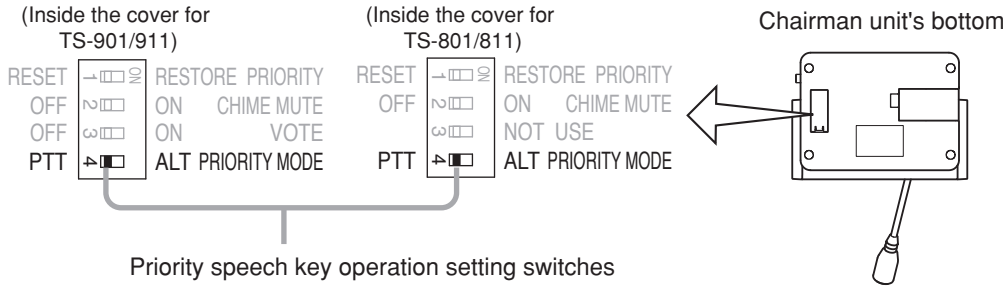
Note
When the user forgets to turn off the microphone, the Mic-Off function automatically turns off the microphone approximately 30 seconds after speech completion. (Refer to p. 25.)



The figure shows the TS-901.

8.2. Initiating Priority Speech (TS-901, TS-801, TS-911, and TS-811 only)

The Chairman unit features the function that allows its speech to take precedence over that of the Delegate unit. The Chairman unit's speech is prior to the AUX 1, AUX 2, AUX 3, MIC 1, and MIC 2 inputs.
The priority speech method can be determined by the Priority speech key operation setting switch built in the Chairman unit's bottom.

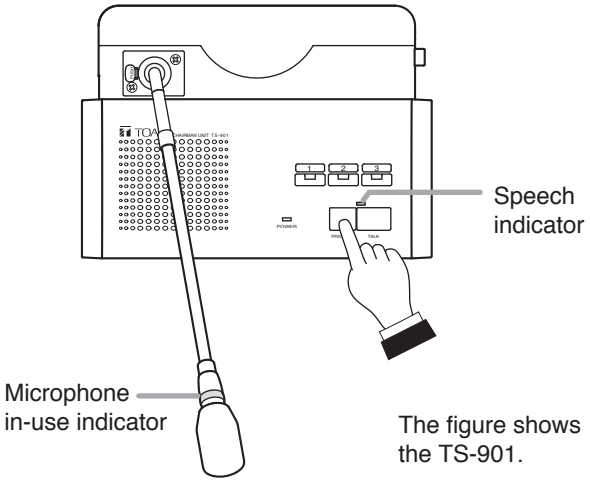


8.2.1. When the Priority Speech key is set to PTT type (Factory-preset)

Step 1. Speak while holding down the Priority Speech key. Both the Speech indicator and the Microphone In-Use indicator light, placing the unit in priority speech mode. No sound is output from the monitor speaker while both indicators are continuously lit. A chime tone* sounds at other units, preventing them from being used for speaking.

* The chime tone can be enabled or disabled using the Priority Chime Mute switch located on the bottom side of the unit.
ON: No chime sounds.
OFF: Chime sounds. (Factory-preset position)

Note
When two or more Chairman units are used in a system, a priority speech currently in progress from one unit can be interrupted by pressing the Priority Speech key of another Chairman unit, allowing the latter unit to go through. (Last-in-first-out priority)

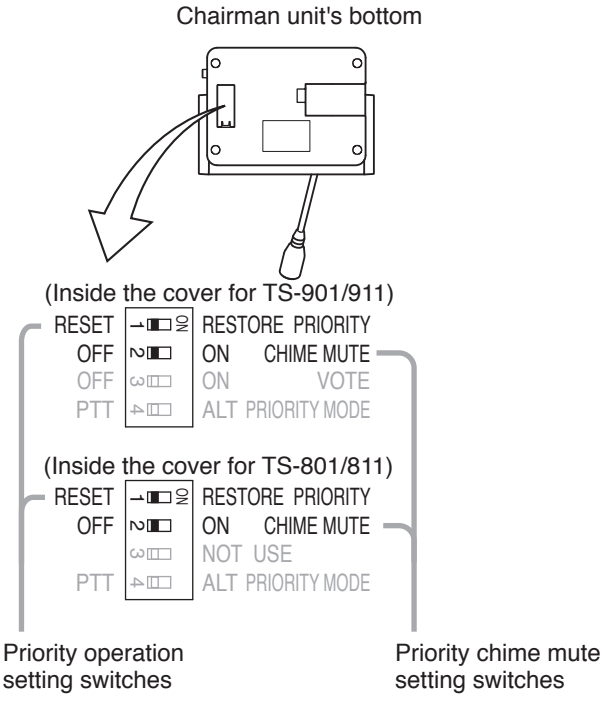


Step 2. Release the Priority Speech key after speech completion.
Both indicators go out, and sound can be output from the monitor speaker.

Note
After the priority speech is completed, the other interrupted unit resumes operation as predetermined by the setting of the Interrupted Priority Operation Setting switch located on the bottom side of the unit.

RESTORE: Resumes the unit's mode prior to being interrupted by the priority speech.
RESET: Resets all units currently being used for speech (Factory-preset position).
When an interrupted party wishes to continue to speak, the Speech key must again be pressed.

Note
The Chairman unit that initiated the priority speech automatically returns to its original mode following priority speech completion, regardless of its priority Operation Setting switch setting.

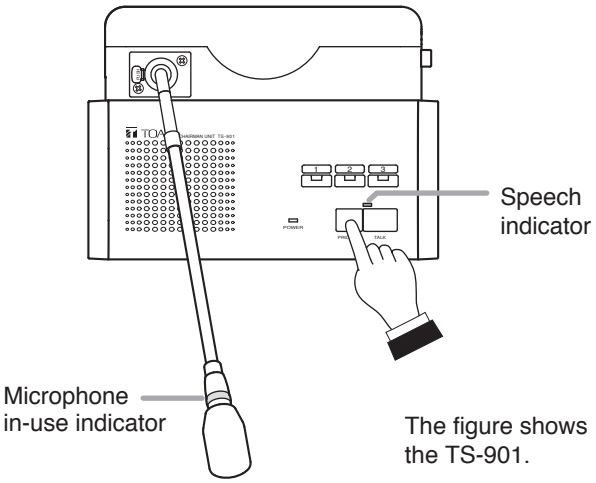


8.2.2. When the Priority Speech key is set to ALT type

Step 1. Press the Priority Speech key.
Both the Speech indicator and the Microphone In-Use indicator light, placing the unit in priority speech mode. No sound is output from the monitor speaker while both indicators are continuously lit. A chime tone* sounds at other units, preventing them from being used for speaking.

* The chime tone can be enabled or disabled using the Priority Chime Mute switch located on the bottom side of the unit.
ON: No chime sounds.
OFF: Chime sounds. (Factory-preset position)

Note
When two or more Chairman units are used in a system, a priority speech currently in progress from one unit can be interrupted by pressing the Priority Speech key of another Chairman unit, allowing the latter unit to go through. (Last-in-first-out priority)



The figure shows the TS-901.

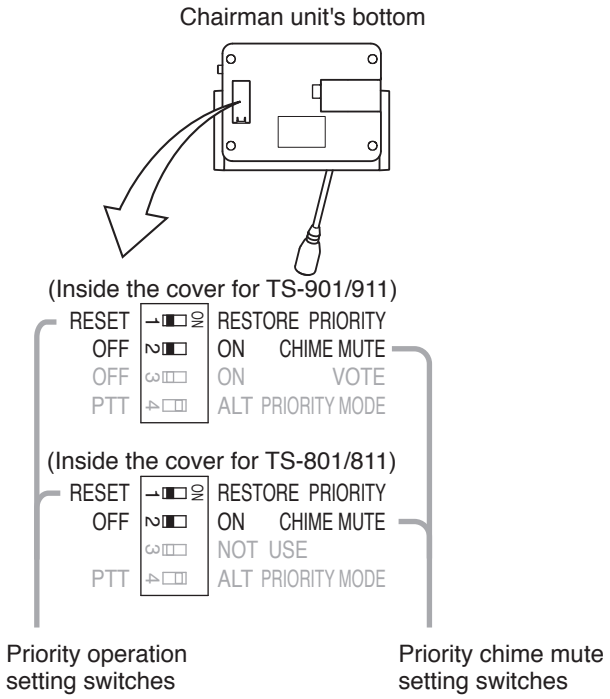
Step 2. Speak into the microphone.

Step 3. Press the Priority Speech key again after speech completion.
Both indicators go out, and sound can be output from the monitor speaker.

Note
After the priority speech is completed, the other interrupted unit resumes operation as predetermined by the setting of the Interrupted Priority Operation Setting switch located on the bottom side of the unit.

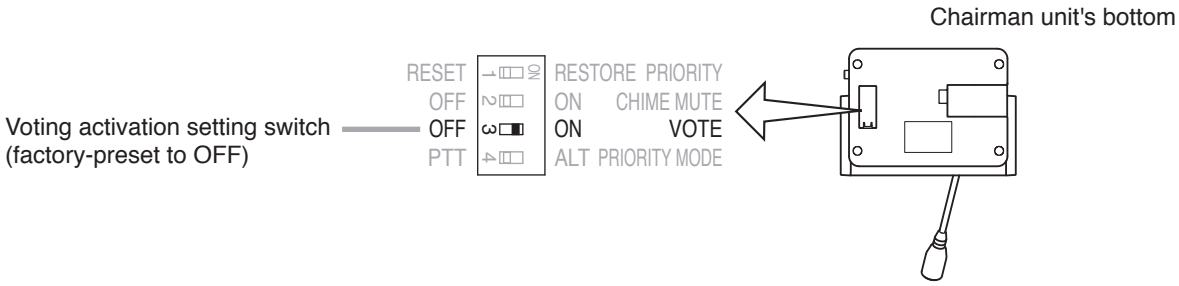
RESTORE: Resumes the unit's mode prior to being interrupted by the priority speech.
RESET: Resets all units currently being used for speech (Factory-preset position).
When an interrupted party wishes to continue to speak, the Speech key must again be pressed.

Note
The Chairman unit that initiated the priority speech automatically returns to its original mode following priority speech completion, regardless of its priority Operation Setting switch setting.

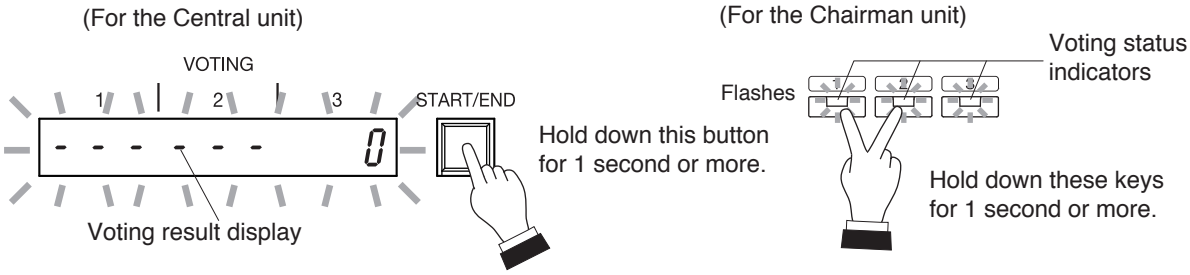


8.3. Voting (TS-901, TS-911, TS-902, and TS-912 only)

Voting can be started and terminated from the Central unit or the Chairman unit.
To perform this operation from the Chairman unit, set the Voting activation setting switch to ON as shown in the figure.

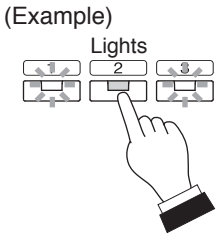


Step 1. Place the system in voting mode.
On the Central unit, hold down the Voting Start/End button for 1 second or more. On the Chairman Unit, simultaneously press Voting keys [1] and [2] for 1 second or more.



The Voting Result display (1 – 3) on the Central unit, and the Voting Status indicators on the Conference units flash, enabling voting.
(In this event, the Voting Result Display shows [--- --- 0].)
Only a priority speech can be initiated by way of the Chairman unit's priority speech key during voting operation, and the currently used microphones of all other units are turned off.

Step 2. Vote.
Press the desired Voting key on the Conference unit, and the corresponding Voting Status indicator lights.
(Other Voting Status indicators remain flashing.)
The totaled number of votes polled with the press of the vote keys is instantly displayed on the Central unit's voting result display.



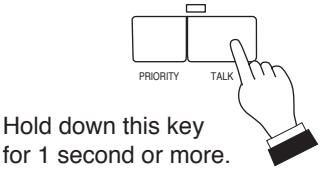
Tips

- To cancel voting
  Press the lit key (initially pressed for voting) again.
  All keys will flash, indicating that voting is cancelled.

- To change voting
  Press any flashing key (to use in voting).
  The first key pressed is cancelled, and the last key pressed is enabled and continuously lit.

Step 3. Terminate voting.
Again hold down the Voting Start/End button on the Central unit for 1 second or more or alternatively the Chairman unit's Talk key.
Voting operations from the Conference units are confirmed and Voting Status indicators [1] through [3] go out. The result of computed votes is displayed on Voting Result displays [1] through [3] on the Central unit.

(For the Chairman unit)



Hold down this key
for 1 second or more.

Note
If voting operation was activated by the Central unit, this operation cannot be terminated by the Chairman unit. However, if it was activated by the Chairman unit, it can be terminated by the Central unit as well.

Step 4. Clear the Voting Result display.
Press the Voting Start/End button on the Central unit for 1 second or more once again. The display contents are cleared from the Central unit's Voting Result display.

9. IF ACOUSTIC FEEDBACK OCCURS

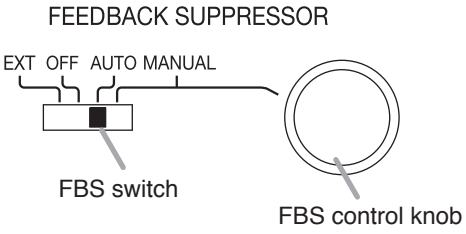
An annoying screeching sound may be produced when using a public address system. It is referred to as "Acoustic feedback*" that will occur at various frequencies depending on the surrounding environment.
The TS-910's built-in Feedback suppressor (FBS) function effectively suppresses acoustic feedback through simple operation (depresses the volume level at the feedback frequency). If the built-in FBS function cannot deal with the acoustic feedback, an external graphic equalizer (prepare separately) can be used for more effective feedback suppression.

Note
The following measures against acoustic feedback are effective for suppressing feedback only caused by the Conference unit, but not effective for the feedback caused by the external microphone.
If acoustic feedback stops by fully turning down the volume of the external microphone, you will find that the external microphone is the cause of the feedback.
In this case, decrease the external microphone's volume to a level that feedback does not occur or use the external microphone away from the speaker.

* It will occur when a feedback loop is formed in the process that sound from a speaker is picked up by a microphone, re-amplified, and output through the speaker.

9.1. Using the Built-in FBS function

To perform the FBS function, use the FBS switch and FBS control knob. When using the built-in FBS function, perform it in automatic operation mode first.

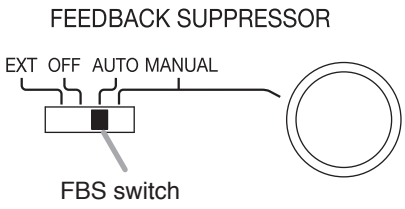


Note
If acoustic feedback cannot be suppressed with the built-in FBS function, widen the distance between the Chairman unit and Delegate units, reduce the output volume, or use an external graphic equalizer. (Refer to p. 32.)

9.1.1. Using in automatic operation mode (AUTO mode)

Set the Feedback suppressor switch to the AUTO position.

The FBS function automatically searches a frequency that will cause acoustic feedback and suppresses the feedback by decreasing the volume level at such frequency.



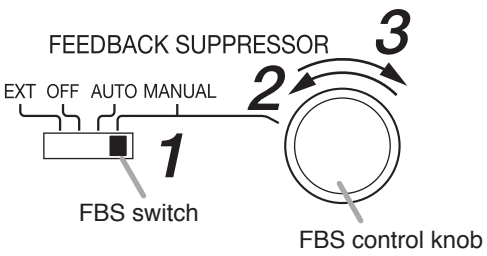
9.1.2. Using in manual operation mode (MANUAL mode)

If acoustic feedback does not stop even using the FBS function in automatic operation mode, follow the procedure below to search the frequency that caused feedback, then suppress the feedback.

Step 1. Set the Feedback suppressor switch to the MANUAL position.

Step 2. While gradually rotating the Feedback suppressor control knob counterclockwise until it stops, seek the feedback point.

If acoustic feedback point is found, stop rotating the knob and do not touch it any more.



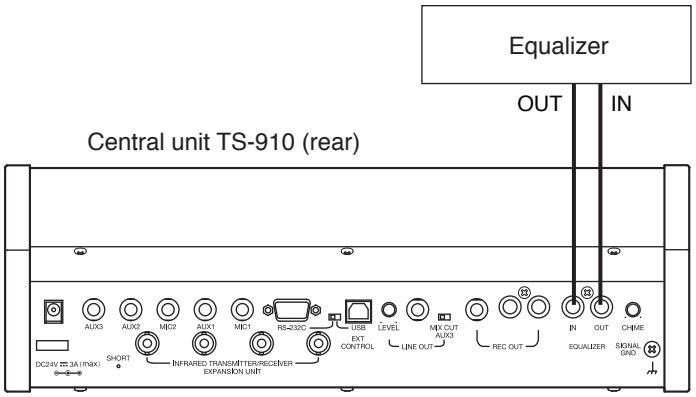
Note
Do not apply excessive force to the knob when it comes to a stop, as doing so may cause damage to the knob.

Step 3. If acoustic feedback does not stop even when the knob reaches the immovable position, seek the feedback point by gradually rotating the FBS control knob clockwise to its stop.
If acoustic feedback point is found, stop rotating the Knob and do not touch it any more.

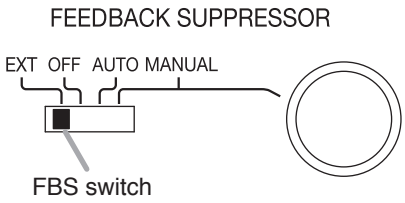
Note
When feedback occurs again, repeat Steps 2 and 3 to find the feedback point once again.

9.2. Using an External Graphic Equalizer

Step 1. Connect an external equalizer to the unit as shown below.



Step 2. Set the FBS switch to the EXT position.



Step 3. Take measures against acoustic feedback using the graphic equalizer.
For operation method of the graphic equalizer, read the instruction manual supplied with it.

10. IF A FAILURE IS DETECTED

10.1. Infrared Chairman Unit TS-901/801 and Infrared Delegate Unit TS-902/802

Symptom	Cause and Points to Check	Remedy
Cannot turn ON power.	(When using the lithium-ion battery) Battery not charged.	Batteries are not charged as shipped from the factory. Be sure to fully charge the battery before use. (Refer to the separate Installation manual.)
	(When using the AC adapter) Power cord or DC input plug not connected.	Connect the power cord (supplied with the AC adapter) and the DC input plug correctly. (Refer to the separate Installation manual.)
No sound output from the speaker or headphones.	Monitor Selector switch not correctly set. (TS-901/902 only)	Set the switch to the position where sound can be heard.
	Central unit's Microphone Mix/Cut switch not correctly set.	
	Monitor volume control not correctly adjusted.	Adjust the volume to an appropriate level.
	Headphone plug not fully inserted.	Insert the headphone plug fully into the jack.
Cannot initiate speech.	Central Unit's rear panel-mounted Short Circuit indicator remains lit.	Check the cable connected to the Central Unit's Infrared Transmitter/ Receiver unit I/O terminals.
	Live Status indicator on the Infrared Transmitter/Receiver unit remains dark.	
Cannot operate the Talk key.	Unit address numbers outside range of 001 – 192.	Set the unit address number within the range of 001 – 192. (Refer to the separate Installation manual.)
	Infrared emitter/detector exposed to direct sunlight or spotlight.	Reposition in a location not exposed to direct light. (Refer to the separate Installation manual.)
	Infrared Transmitter/Receiver units and Conference units not positioned to permit their infrared emitter/detector sections to be in sight of each other. TS-905 or TS-907 Infrared Transmitter/ Receiver units not correctly selected to match the ceiling height and installed so that all the Conference units are in the communications service area. (If both the Power and Speech indicators simultaneously flash, this indicates the unit is out of the communications service area.)	Install all the units so that they are in clear view of each other, and select and install the Infrared/ Transmitter/ Receiver units correctly for the ceiling height. (Refer to the separate Installation manual.)
	Cable between the Infrared Transmitter/ Receiver unit and the Central Unit not connected.	Connect the cable.
	Priority speech is in progress.	Operate the key after the priority speech is completed.

Symptom	Cause and Points to Check	Remedy
Indicator on the microphone goes out during speech.	Mic-Off function set to ON.	Disable the Mic-Off function if a long pause is made during speech.
Microphone indicator flashes.	Battery voltage has dropped below a marginal level.	Replace the battery with a fully charged one.
Chime does not sound when the Priority Speech key is pressed.	Central unit's rear panel-mounted Priority Chime volume control is set to the minimum volume position.	Adjust the volume control to an appropriate level.
	The Priority chime mute switch in the Chairman unit's bottom is set to ON.	Set the Priority chime mute switch to OFF.
Mic-Off function does not work.	High background noise level generated by such equipment as air conditioners.	In areas where the background noise level is high, the Mic-Off function may not work. Reposition in a low-noise location or turn off the Mic-Off function.
Battery can be used only for a short period of time.	Not fully charged.	Charging is completed within 5 hours. **Note:** Fully charged batteries can be used for up to 10 hours. (Refer to the separate Installation manual.)
	Battery is approaching the end of its life.	Use a brand-new battery. **Note:** Battery can be recharged almost 300 times.

10.2. Wired Chairman Unit TS-911/811 and Wired Delegate Unit TS-912/812

Symptom	Cause and Points to Check	Remedy
Cannot turn ON power.	Both the Central unit and the Expansion unit are not powered up.	Switch on the Central unit's power and power up the Expansion unit through the AC adapter.
	They are not connected properly.	Check all connections. (Refer to the separate Installation manual.)
No sound output from the speaker or headphone.	Monitor Selector switch not correctly set. (TS-911/912 only)	Set the switch to the position where sound can be heard.
	Central unit's Microphone Mix/Cut switch not correctly set.	
	Monitor volume control not correctly adjusted.	Adjust the volume to an appropriate level.
	Headphone plug not fully inserted.	Insert the headphone plug fully into the jack.
Cannot initiate speech.	Central Unit's rear panel-mounted Short Circuit indicator remains lit.	Check the cable connected to the Central Unit's Infrared Transmitter/ Receiver unit I/O terminals.
	Live Status indicator on the Infrared Transmitter/Receiver unit remains dark.	

Symptom	Cause and Points to Check	Remedy
Cannot operate the Talk key.	Unit address numbers outside range of 001 – 192.	Set the unit address number within the range of 001 – 192. (Refer to the separate Installation manual.)
	They are not connected properly.	Check all connections. (Refer to the separate Installation manual.)
	Priority speech is in progress.	Operate the key after the priority speech is completed.
Indicator on the microphone goes out during speech.	Mic-Off function set to ON.	Disable the Mic-Off function if a long pause is made during speech.
Chime does not sound when the Priority Speech key is pressed.	Central unit's rear panel-mounted Priority Chime volume control is set to the minimum volume position.	Adjust the volume control to an appropriate level.
	The Priority chime mute switch in the Chairman unit's bottom is set to ON.	Set the Priority chime mute switch to OFF.
Mic-Off function does not work.	High background noise level generated by such equipment as air conditioners.	In areas where the background noise level is high, the Mic-Off function may not work. Reposition in a low-noise location or turn off the Mic-Off function.

10.3. Central Unit TS-910

Symptom	Cause and Points to Check	Remedy
Cannot switch ON the power.	Power cord or DC plug not connected.	Correctly connect the power cord and DC plug supplied with the Central unit. (Refer to the separate Installation manual.)

10.4. Battery Charger BC-900

Symptom	Cause and Points to Check	Remedy
Power indicator (green) does not light even if the power switch is turned ON.	AC plug is not inserted into the wall AC outlet.	Insert the AC plug to the wall AC outlet.
	Fuse has blown.	The fuse must be replaced. For replacement, consult your TOA dealer.
Charging status indicator (red) does not light even if the lithium-ion battery is inserted into its receptacle.	Lithium-ion battery not correctly inserted into its receptacle.	Insert the lithium ion battery fully into its receptacle.
	Charging terminals are dirty.	Wipe the terminals with a dry cotton swab to clean them.
Short battery recharge duration.	Deterioration of the lithium-ion battery.	Replace with a brand-new BP-900 Lithium-Ion Battery.

11. SPECIFICATIONS

11.1. Central Unit TS-910

Power Source	100 – 240 V AC, 50/60 Hz (use of the supplied AC adapter)
Power Consumption	72 W
Current Consumption	Max. 3 A DC (when 24 V DC is supplied from the supplied AC adapter)
Current Frequency	Reception: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Transmission: Base language channel: 1.95 MHz Translation language channel: 2.25 MHz
Input	MIC 1 (Base Language): –60 dB*, 600 Ω, unbalanced, ø6.3 mm phone jack (2P) MIC 2 (Translation Language): –60 dB*, 600 Ω, unbalanced, ø6.3 mm phone jack (2P) AUX 1 (Base Language): –20 dB*, 10 kΩ, unbalanced, ø6.3 mm phone jack (2P) AUX 2 (Translation Language): –20 dB*, 10 kΩ, unbalanced, ø6.3 mm phone jack (2P) AUX 3 (Bass and Translation Language): –20 dB*, 10 kΩ, unbalanced, ø6.3 mm phone jack (2P)
Output	LINE: –20 dB*, 10 kΩ, unbalanced, ø6.3 mm phone jack (2P) REC: –20 dB*, 10 kΩ, unbalanced, ø6.3 mm phone jack (2P), RCA pin jack HEADPHONES: ø3.5 mm mini jack (3P: monaural)
External Equalizer	Input: –20 dB*, 10 kΩ, unbalanced, RCA pin jack Output: –20 dB*, 10 kΩ, unbalanced, RCA pin jack
Number of Connectable Chairman/Delegate Units	192 units
Number of Connectable Infrared Transmitter/Receiver Units	Up to 4 units (with the use of distributor, up to 16 units connectable when they are all TS-905, and up to 12 units when they are all TS-907, or TS-905 and TS-907 are used in combination)
Infrared Transmitter/Receiver I/O Terminal	BNC jack
Number of Connectable Expansion Units	4 units (Up to 8 units connectable when using a distributor)
LED Indicator	Voting result indicators 1 – 3 (7-segment LED, 3 digits), Audio signal receiving indicators 1 – 4 CH, Data signal receiving indicator, External control priority indicator, External control communication indicator, Battery indicator (Flashes in case of battery warning of Infrared Conference unit), Short-circuit indicator
External Control Terminal Connection	D-sub connector (9P, male)/USB-B selectable
Function Switch	Simultaneous speaker No. setting switch: 1/2/3/4 Mic-off setting switch: TIME OUT ON/OFF Speech priority selector switch: A/B/C (A: First-in-first-out priority, B: Last-in-first-out priority, C: Fixed for the first unit, and last-in-first-out for the subsequent units) FBS switch: External equalizer/OFF/Auto/Manual
Operating Temperature	0 to 40 ºC (32 to 104 ºF)
Operating Humidity	90 %RH or less (no condensation)
Finish	Panel: Surface-treated steel plate, gray metallic, paint, semi-gloss
Dimensions	359 (w) x 118.8 (h) x 138.2 (d) mm (14.13" x 4.68" x 5.44")
Weight	2.8 kg (6.17 lb)

* 0 dB = 1 V

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

• **Accessory**

AC adapter* (DC cord: 1.8 m or 5.91 ft, Detachable AC cord: 2 m or 6.56 ft) 1

* Not supplied with the TS-918 (KR). For the usable power supply cord and AC adapter, consult your nearest TOA dealer.

11.2. Infrared Chairman Unit TS-901, Infrared Delegate Unit TS-902

Model No.		TS-901	TS-902
Power Source		7.4 V DC (battery), 9 V DC (AC adapter) (supplied from BP-900 battery or AD-0910 AC adapter)	
Current Consumption		Max. 270 mA	
Infrared Emitter/Detector	Wavelength	870 nm (AM: Brightness modulation)	
	Modulation Method	Frequency modulation	
	Carrier Frequency	Transmission: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Base language channel: 1.95 MHz Translation language channel: 2.25 MHz	
	Acceptance Angle	Vertical: 90°, Horizontal: 120°	
	Emission Angle	Vertical: 90°, Horizontal: 120°	
	Covering Range	7 m or 22.97 ft (radius)	
Input		Microphone terminal: XLR-4-31 type (dedicated for connecting the optional TS-903 or TS-904)	
Output		Monitor speaker: 8 Ω, 0.2 W Headphones: ø3.5 mm mini jack (3P: monaural) x 2	
LED Indicator		Speech indicator (flashes when the unit is out of communications range), Voting status indicators 1 – 3, Power indicator (flashes when the unit is out of communications range or when the battery level is low)	
Battery Life		Approx. 10 hours (when the fully-charged BP-900 battery is used with "During speech" to "Standby" ratio of 1:2)	
Function		Monitor volume control Headphone volume control Priority speech function Voting function Monitor selector switch (MAIN/SUB)	Monitor volume control Headphone volume control Voting function Monitor selector switch (MAIN/SUB)
Operating Temperature		0 to 40 ºC (32 to 104 ºF)	
Operating Humidity		90 %RH or less (no condensation)	
Finish		Top Panel: ABS resin, gray metallic, paint, semi-gloss	
Dimensions		210 (w) x 68.6 (h) x 152 (d) mm (8.27" x 2.7" x 5.98")	
Weight		640 g (1.41 lb)	

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

11.3. Infrared Chairman Unit TS-801, Infrared Delegate Unit TS-802

Model No.		TS-801	TS-802
Power Source		7.4 V DC (battery), 9 V DC (AC adapter) (supplied from BP-900 battery or AD-0910 AC adapter)	
Current Consumption		Max. 270 mA	
Infrared Emitter/Detector	Wavelength	870 nm (AM: Brightness modulation)	
	Modulation Method	Frequency modulation	
	Carrier Frequency	Transmission: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Audio channel: 1.95 MHz	
	Acceptance Angle	Vertical: 90°, Horizontal: 120°	
	Emission Angle	Vertical: 90°, Horizontal: 120°	
	Covering Range	7 m or 22.97 ft (radius)	
Input		Microphone terminal: XLR-4-31 type (dedicated for connecting the optional TS-903 or TS-904)	
Output		Monitor speaker: 8 Ω, 0.2 W Headphones: ø3.5 mm mini jack (3P: monaural) x 2	
LED Indicator		Speech indicator (flashes when the unit is out of communications range), Power indicator (flashes when the unit is out of communications range or when the battery level is low)	
Function		Monitor volume control Headphone volume control Priority speech function	Monitor volume control Headphone volume control
Battery Life		Approx. 10 hours (when the fully-charged BP-900 battery is used with "During speech" to "Standby" ratio of 1:2)	
Operating Temperature		0 to 40 ºC (32 to 104 ºF)	
Operating Humidity		90 %RH or less (no condensation)	
Finish		Top Panel: ABS resin, gray metallic, paint, semi-gloss	
Dimensions		210 (w) x 68.6 (h) x 152 (d) mm (8.27" x 2.7" x 5.98")	
Weight		630 g (1.39 lb)	

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

11.4. Wired Chairman Unit TS-911, Wired Delegate Unit TS-912

Model No.	TS-911	TS-912
Power Source	24 V DC (supplied from the optional TS-918 Expansion unit)	
Current Consumption	Max. 60 mA	
Modulation Method	Frequency modulation	
Carrier Frequency	Transmission: Audio channel 1 7.35 MHz Audio channel 2 8.10 MHz Audio channel 3 8.55 MHz Audio channel 4 9.15 MHz Control channel 6.45 MHz Reception: Base language channel 1.95 MHz Translation language channel 2.25 MHz	
Input	Microphone terminal: XLR-4-31 type (dedicated for connecting the optional TS-903 or TS-904)	
Output	Monitor speaker: 8 Ω, 0.2 W Headphones: ø3.5 mm mini jack (3P: monaural) x 2	
Connection Terminal	RJ45 connector	
LED Indicator	Speech indicator (flashes at communication failure), Voting status indicators 1 – 3, Power indicator (flashes at communication failure)	
Function	Monitor volume control Headphone volume control Priority speech function Voting function Monitor selector switch (MAIN/SUB)	Monitor volume control Headphone volume control Voting function Monitor selector switch (MAIN/SUB)
Operating Temperature	0 to 40 ºC (32 to 104 ºF)	
Operating Humidity	90 %RH or less (no condensation)	
Finish	Top panel: ABS resin, gray metallic, paint, semi-gloss	
Dimensions	210 (w) x 68.6 (h) x 152 (d) mm (8.27" x 2.7" x 5.98")	
Weight	570 g (1.26 lb)	

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

11.5. Wired Chairman Unit TS-811, Wired Delegate Unit TS-812

Model No.	TS-811	TS-812
Power Source	24 V DC (supplied from the optional TS-918 Expansion unit)	
Current Consumption	Max. 60 mA	
Modulation Method	Frequency modulation	
Carrier Frequency	Transmission: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Audio channel: 1.95 MHz	
Input	Microphone terminal: XLR-4-31 type (dedicated for connecting the optional TS-903 or TS-904)	
Output	Monitor speaker: 8 Ω, 0.2 W Headphones: ø3.5 mm mini jack (3P: monaural) x 2	
Connection Terminal	RJ45 connector	
LED Indicator	Speech indicator (flashes at communication failure), Power indicator (flashes at communication failure)	
Function	Monitor volume control Headphone volume control Priority speech function	Monitor volume control Headphone volume control
Operating Temperature	0 to 40 ºC (32 to 104 ºF)	
Operating Humidity	90 %RH or less (no condensation)	
Finish	Top panel: ABS resin, gray metallic, paint, semi-gloss	
Dimensions	210 (w) x 68.6 (h) x 152 (d) mm (8.27" x 2.7" x 5.98")	
Weight	560 g (1.23 lb)	

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

11.6. Microphone (standard) TS-903, Microphone (long) TS-904

Model No.	TS-903	TS-904
Type	Electret condenser microphone	
Directivity	Unidirectional	
Rated Impedance	1.8 kΩ	
Rated Sensitivity	–37 dB (1 kHz, 0 dB = 1 V/Pa)	
LED Indicator	Speech indicator (ring type)	
Frequency Response	100 Hz – 13 kHz	
Output Connector	XLR-4-32 type	
Operating Temperature	0 to 40 ºC (32 to 104 ºF)	
Operating Humidity	90 %RH or less (no condensation)	
Finish	Gooseneck: Stainless steel, black Other: ABS resin, black	
Length	368 mm (1.21 ft)	518 mm (1.7 ft)
Weight	90 g (0.2 lb)	105 g (0.23 lb)
Applicable Unit (Option)	Chairman unit: TS-801, TS-811, TS-901, TS-911 Delegate unit: TS-802, TS-812, TS-902, TS-912	

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

11.7. Infrared Transmitter/Receiver TS-905, TS-907

Model No.		TS-905	TS-907
Power Source		24 V DC (supplied from the optional TS-910)	
Current Consumption		Max. 150 mA	Max. 180 mA
Infrared Emitter/Detector	Wavelength	870 nm (AM: Brightness modulation)	
	Modulation Method	Frequency modulation	
	Carrier Frequency	Transmission: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Base language channel: 1.95 MHz Translation language channel: 2.25 MHz	
	Acceptance Angle	Vertical: 150°(75°+75°), Horizontal: 360°	Vertical: 90°(45°+45°), Horizontal: 360°
	Emission Angle	Vertical: 150°(75°+75°), Horizontal: 360°	Vertical: 90°(45°+45°), Horizontal: 360°
	Communication Area	Approx. 6 – 7 m (19.69 – 22.97 ft) in radius from the point underneath the unit (Ceiling height: 2.5 – 4.5 m or 8.2 – 14.76 ft)	Approx. 6 m (19.69 ft) in radius from the point underneath the unit (Ceiling height: 5 – 7 m or 16.4 – 22.97 ft)
Connection Terminal		BNC jack	
LED Indicator		Power	
Operating Temperature		0 to 40 ºC (32 to 104 ºF)	
Operating Humidity		90 %RH or less (no condensation)	
Finish		Dome: PC resin, visible light cut filter Base: ABS resin, black	
Dimensions		ø120 x 71.3 (h) mm (ø4.72" x 2.81")	
Weight		230 g or 0.51 lb (unit only)	

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

• **Accessories**

Mounting bracket 1
Stand mounting bracket 1
Screw M3 x 6 3
U5/16 – NS5/8 thread adapter (except for TS-905 CE version) 1

11.8. Expansion Unit TS-918

Power Source	100 – 240 V AC, 50/60 Hz (use of the supplied AC adapter)
Power Consumption	74.4 W
Current Consumption	Max. 3.1 A DC (when 24 V DC is supplied from the supplied AC adapter)
Gain	Upstream: 16.5 dB Downstream: 12.5 dB
Connection Terminal	Central unit connection terminal: BNC jack Bridge unit connection terminal: RJ45 connector
LED Indicator	Connection status indicators (3 LEDs each on the front and rear panels), Power indicator
Number of Connectable Chairman/Delegate Units	Up to 24 units (when using 21 units of TS-919B1 or 6 units of TS-919B4, both optional Bridge units)
Operating Temperature	0 to 40 ºC (32 to 104 ºF)
Operating Humidity	90 %RH or less (no condensation)
Finish	Panel: Aluminum, black, 30 % gloss, melamine-baked paint Case: Pre-coated steel plate, black
Dimensions	210 (w) x 44 (h) x 296.5 (d) mm (8.27" x 1.73" x 11.67")
Weight	1.6 kg (3.53 lb)

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

• **Accessories**
AC adapter* (DC cord: 1.8 m or 5.91 ft, Detachable AC cord: 2 m or 6.56 ft) 1
BNC plug-to BNC plug cord (50 cm or 1.64 ft) 1

* Not supplied with the TS-918 (KR). For the usable power supply cord and AC adapter, consult your nearest TOA dealer.

11.9. Bridge Unit TS-919B1, TS-919B4

Model No.	TS-919B1	TS-919B4
Power Source	24 V DC (supplied from the optional TS-918 Expansion Unit)	
Current Consumption	Max. 16 mA	Max. 26 mA
Branching Loss	Upstream: 16.5 dB Downstream: 16 dB	Upstream: 17.5 dB Downstream: 16.5 dB
Insertion Loss	Upstream: 1 dB Downstream: 0.5 dB	Upstream: 3 dB Downstream: 2 dB
Connection Terminal	Communication cable connection terminal: RJ45 connector x 2 Conference unit connection terminal: RJ45 connector	Communication cable connection terminal: RJ45 connector x 2 Conference unit connection terminal: RJ45 connector x 4
LED Indicator	Connection status indicator	Connection status indicator x 4
Number of Connectable Chairman/Delegate Units	1 unit	4 units
Operating Temperature	0 to 40 ºC (32 to 104 ºF)	
Operating Humidity	90 %RH or less (no condensation)	
Finish	ABS resin, black	
Dimensions	68 (w) x 60.3 (h) x 24 (d) mm (2.68" x 2.37" x 0.94")	176.2 (w) x 75 (h) x 29.8 (d) mm (6.94" x 2.95" x 1.17")
Weight	40 g (1.41 oz)	160 g (0.35 lb)

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

11.10. Lithium-Ion Battery BP-900

Nominal Voltage	7.4 V DC
Nominal Capacity	1700 mAh
Operating Temperature	0 to 40 ºC (32 to 104 ºF)
Operating Humidity	90 %RH or less (no condensation)
Dimensions	71.6 (w) x 20.4 (h) x 37.6 (d) mm (2.82" x 0.8" x 1.48")
Weight	95 g (0.21 lb)

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

• **Accessory**
Terminal protection cover (pre-installed at the factory) 1

11.11. Battery Charger BC-900

Power Source	100 – 240 V AC, 50/60 Hz (use of the supplied AC adapter)
Current Consumption	Max. 5 A DC
Charging Time	Approx. 5 hours
Charging Capacity	8 BP-900 batteries (optional)
LED Indicator	Charging status (Green: Full charge, Red: On charge), Power indicator
Operating Temperature	0 to 40 ºC (32 to 104 ºF)
Operating Humidity	90 %RH or less (no condensation)
Finish	Case: Steel, black, paint Battery receptacles: PPO resin, black
Dimensions	240 (w) x 70 (h) x 115 (d) mm (9.45" x 2.76" x 4.53")
Weight	Unit: 1.2 kg (2.65 lb), AC adapter: 520 g (1.15 lb)

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

• **Accessory**
AC adapter (DC cord: 1.5 m or 4.92 ft, Detachable AC cord: 2 m or 6.56 ft) 1

11.12. AC Adapter AD-0910

Power Source	100 – 240 V AC, 50/60 Hz
Output	9 V DC, 1 A
Ripple Voltage	100 mV (p-p)
Current Consumption	400 mA AC, Input 100 V
Cord Length	1.8 m (5.91 ft)
Plug	RC6705, center "+"
Operating Temperature	0 to 40 ºC (32 to 104 ºF)
Operating Humidity	90 %RH or less (no condensation)
Finish	Case: PC/ABS alloy, black
Dimensions	47.4 (w) x 33 (h) x 86.5 (d) mm or 1.87" x 1.3" x 3.41" (excluding a power cord)
Weight	190 g (0.42 lb)

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

• **Accessory**
AC power cord (2 m or 6.56 ft) 1

11.13. Distributor YW-1022 (2-branch distributor), YW-1024 (4-branch distributor)

Model No.	YW-1022	YW-1024
Frequency Range	1.6 – 1000 MHz (excluding 50 – 70 MHz)	
Distribution Loss	4.5 dB ±3 dB (between the Mixing and each Distribution terminals)	8.5 dB ±3 dB (between the Mixing and each Distribution terminals)
Input/Output Impedance	75 Ω	
Coaxial Connector	Mixing terminal: BNC jack, power passing type (30 V DC or less, 2 A or less) Distribution 1 and 2 terminals: BNC jack, power passing type (30 V DC or less, 1 A or less)	Mixing terminal: BNC jack, power passing type (30 V DC or less, 2 A or less) Distribution 1 – 4 terminals: BNC jack, power passing type (30 V DC or less, 1 A or less)
Operating Temperature	–10 to +50 °C (14 to 122 ºF)	
Operating Humidity	90 %RH or less (no condensation)	
Finish	ABS resin, gray	
Dimensions	75 (w) x 122 (h) x 34 (d) mm (2.95" x 4.8" x 1.34")	
Weight	105 g (0.23 lb)	120 g (0.26 lb)

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

• **Accessories**
Wood screw 4.1 x 25 (for fixing the unit) 2

11.14. Rack Mounting Bracket MB-TS900

Finish	Surface-treated steel plate, gray metallic, paint, semi-gloss
Dimensions	65.5 (w) x 177 (h) x 61 (d) mm (2.58" x 6.97" x 2.4")
Weight	680 g (1.5 lb)

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

• **Accessories**
Rack mounting screw 5 x 12 4
Rack mounting washer (for M5) 4

11.15. Half Width Blank Panel MB-15B-BK

Finish	Surface-treated steel plate, black, paint, 30% gloss
Weight	330 g (0.73 lb)
Set Composition	Rack mounting bracket ..... 2, Blank bracket 1

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

• **Accessories**
Rack mounting screw 5 x 12 4
Fiber washer (for M5) 4
Tapping screw 3 x 14 12
Tapping screw 3 x 8 9
Machine screw M3 x 12 6

11.16. Rack Joint Bracket MB-15B-J

Finish	Rack mounting bracket: Surface-treated steel plate, black, paint, 30% gloss Coupler: Steel plate, nickel plating
Weight	120 g (0.26 lb)
Set Composition	Mounting bracket ..... 2, Coupler 2

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

• **Accessories**
Rack mounting screw 5 x 12 4
Fiber washer (for M5) 4
Tapping screw 3 x 14 8
Tapping screw 3 x 8 6
Machine screw M3 x 12 6
Machine screw M3 x 6 4

Traceability Information for Europe

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