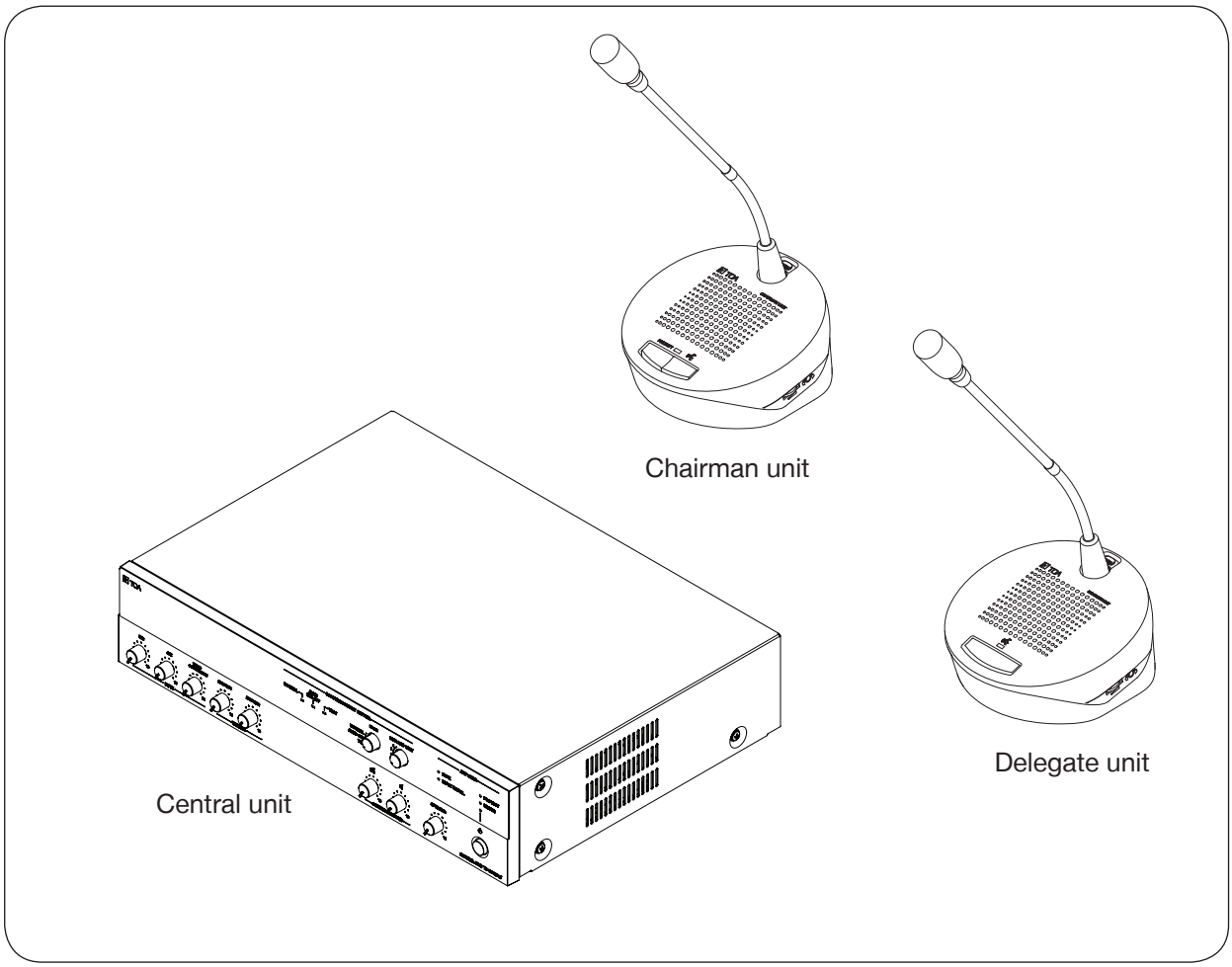
TOA

OPERATING INSTRUCTIONS

CONFERENCE SYSTEM TS-790 SERIES

TS-7912DW-EB (CENTRAL UNIT)
TS-791L-EB (CHAIRMAN UNIT WITH LONG MICROPHONE)
TS-792L-EB (DELEGATE UNIT WITH LONG MICROPHONE)
YR-790-3-EB (3m EXTENSION CORD)
YR-790-10-EB (10m EXTENSION CORD)



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 cautions regarding safety.
- After reading, keep this manual for future reference.

Safety Symbol and Message Conventions

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

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

When Installing the Unit

Applicable to Central unit, Conference unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down and causing personal injury and/or property damage.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- Since the unit is designed for indoor use, do not install it outdoors. If installed outdoors, the aging of parts causes the unit to fall off, resulting in personal injury. Also, when it gets wet with rain, there is a danger of electric shock
- The terminals marked with the symbol ϟ are hazardous live. The external wiring to these terminals requires installation by an instructed person.
- Be sure to ground to the safety ground (earth) terminal to avoid electric shock. Never ground to a gas pipe as a catastrophic disaster may result.

When the Unit is in use

Applicable to Central unit, Conference unit

- 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 qualified service personnel.
- 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 in the ventilation slots of the unit's cover as this may result in fire or electric shock.



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

Applicable to Central unit

- Do not touch a power supply plug during thunder and lightning, as this may result in electric shock.
- The apparatus shall be connected to a mains socket outlet with a protective earthing connection.
- The socket-outlet shall be installed near the equipment and the plug (disconnecting device) shall be easily accessible.

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

When Installing the Unit

Applicable to Central unit, Conference unit

- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.

Applicable to Central unit

- Be sure to follow the instructions below when rack-mounting the unit. Failure to do so may cause a fire or personal injury.
  · Install the equipment rack on a stable, hard floor. Fix it with anchor bolts or take other arrangements to prevent it from falling down.
  · When connecting the unit's power cord to an AC outlet, use the AC outlet with current capacity allowable to the unit.
  · Rack-mounting screws are not supplied with the optional MB-25B Rack mounting bracket. Prepare them that are appropriate for the equipment rack.
- Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire. Also, periodically clean the ventilation slots of dust.
- To avoid electric shocks, be sure to switch off the unit's power when connecting speakers.

When the Unit is in use

Applicable to Central unit, Conference unit

- 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.
- 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 Central unit

- 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.
- Do not operate the unit for an extended period of time with the sound distorting. Doing so may cause the connected speakers to heat, resulting in a fire.
- Contact your TOA dealer as to the cleaning. If dust is allowed to accumulate in the unit over along period of time, a fire or damage to the unitmay result.

Warning: Operation of this equipment in a residential environment could cause radio interference.

2. GENERAL DESCRIPTION

The TS-790 Series conference system is designed for quick and easy installation and storage.
The system can be installed by merely connecting conference units* to the central unit. Up to 64 Conference units can be connected to the Central unit of each system.

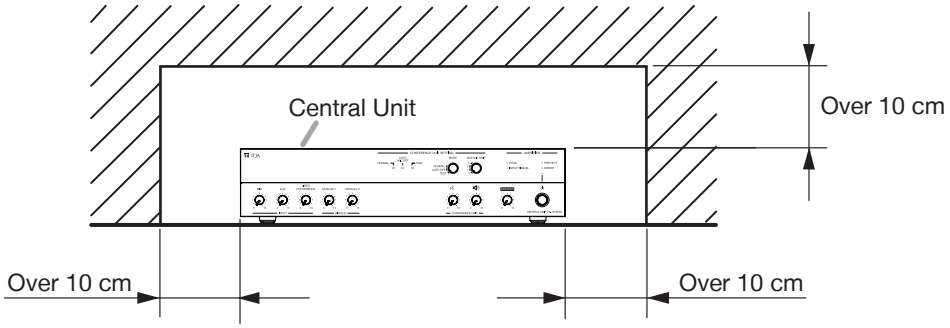
* Collective name of the following 2 models: TS-791L-EB Chairman unit with long microphone and TS-792L-EB Delegate unit with long microphone.

3. FEATURES

- Conference speech can be amplified by simply connecting the Chairman and Delegate units to the Central unit.
- Up to 64 conference units can be connected per Central unit (32 units per line x 2 lines).
- Optional 3-meter and 10-meter extension cables allow wiring suitable to local installation conditions.
- Conference units come with gooseneck microphone as a standard accessory.
- Because the microphone for all the conference units are detachable, all units can be stored without taking up much space.
- Test function allows easy confirmation of connections between conference units.
- The number of simultaneously operable Delegate units can be limited using the delegate unit restriction function. (Can be set to 0, 1, 2 or 4 units.)
- The Mic auto-off function automatically turns off the microphone of conference unit after approximately 30 seconds, even if the user forgets to turn off the microphone after speaking.
- Conference contents can be recorded using an external recording equipment.
- The central unit with built-in 120W power amplifier and switchable speaker output impedance either to low or high ("4 Ω" or "100 V line").
- Each operation of conference units and power amplifier has its own power supply. If the power supply of power amplifier should fail, this won't affect the operation of conference unit.
- Connecting a PC to the Central unit via a USB cable allows it to be used as both a microphone and a speaker when using the Web Conference application.
- Module slots provided for mounting up to 2 units of WTU-M9800-EB wireless tuner module.
  The WTU-M9800-EB wireless tuner module is used with 5000 series wireless microphones.

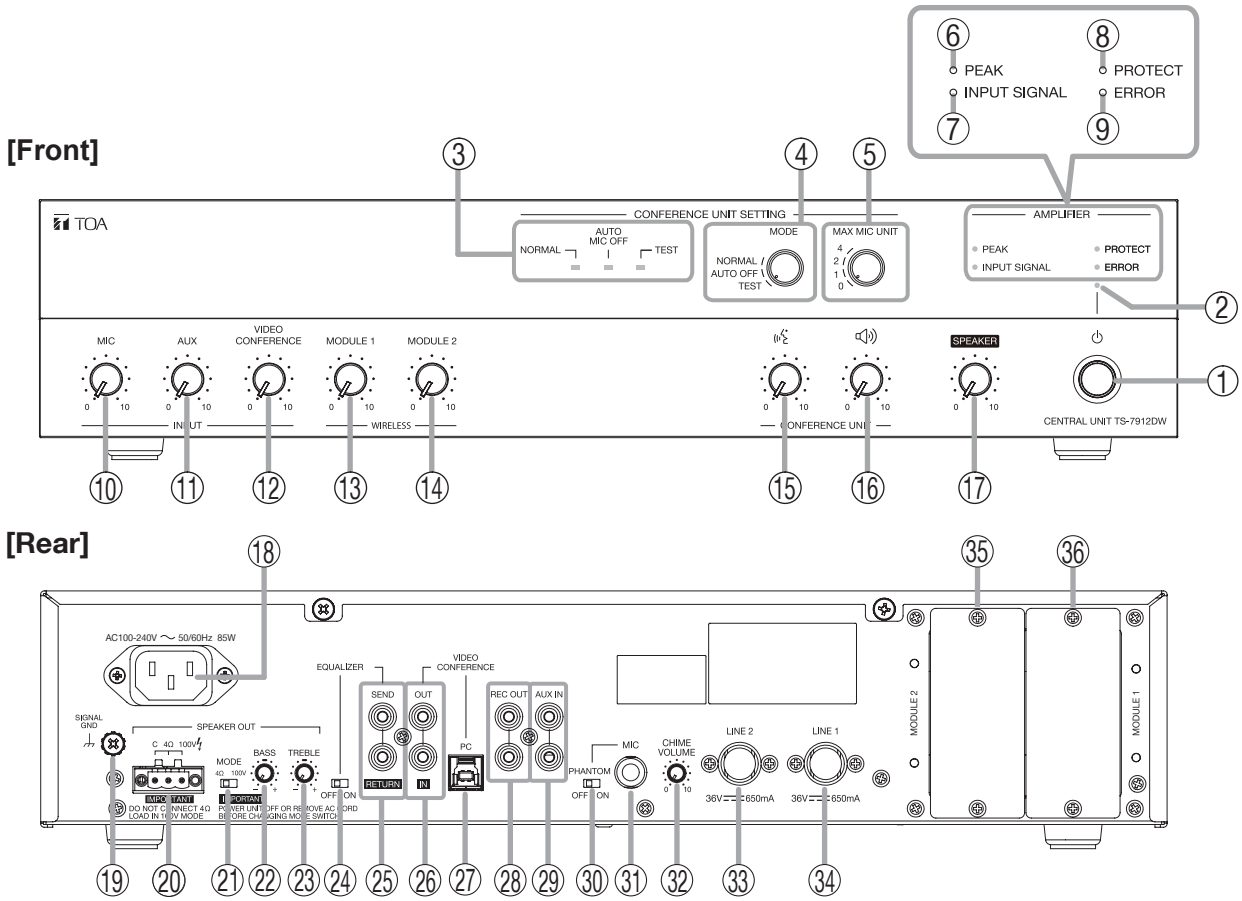
4. INSTALLATION PRECAUTIONS

- The supplied power supply cord is designed for exclusive use with the unit. Never use it with other equipment.
- Install the unit in a well-ventilated environment so that temperature inside the unit will not rise.
- When installing the Central unit on the desk, keep the unit over 10 cm away from objects that may obstruct air flow as shown below.
- When installing the Central unit in an equipment rack, mount perforated panels. See "IF MOUNTING THE CENTRAL UNIT IN AN EQUIPMENT RACK" on p. 23.



5. NOMENCLATURE AND FUNCTIONS

5.1. Central Unit TS-7912DW-EB



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

2. Power indicator (Green)
Lights when the power is switched on and goes off when it is switched off.

3. Conference mode indicators (Green x 2, Red x 1)
The indicator corresponding to the selected by conference mode selector rotary switch (4) lights.

4. Conference mode selector switch
Used to select one of the following three conference modes:
- NORMAL (factory default setting)
- AUTO OFF
- TEST

Note
Refer to "Conference Mode Setting" on p. 12 for details regarding each conference mode.

5. In-use delegate unit number selector switch
Used to set the number of delegate units that can be simultaneously operated. The indications [0], [1], [2], and [4] represent the number of simultaneously operable units.

Note
This switch is factory-preset to the [4] position.

6. Peak indicator (Red)
Lights when output signal from the speaker output terminal (20) reaches the peak level, this indicates that sound is distorted.In such case, adjust each input volume control or speaker volume control (17) to reduce output level.

7. Input indicator (Green)
Lights to indicate presence of an input signal.

8. Protect indicator (Red)
Lights while the internal protection circuit is operating.

9. Error indicator (Red)

Lights when the power amplifier module's internal abnormality has occurred.

Note

Contact the TOA dealer where the unit was purchased.

10. Volume control for MIC

Adjusts the input level of the MIC input terminal (31) located on the rear panel.

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

11. Volume control for AUX

Adjusts the input level of the AUX input terminal (29) located on the rear panel.

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

12. VIDEO CONFERENCE volume control

Adjusts the input level of the video conference input terminal (26) (27) located on the rear panel.

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

13. MODULE 1 volume control

Adjusts the input level of the wireless module 1 slot (36) located on the rear panel.

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

14. MODULE 2 volume control

Adjusts the input level of the wireless module 2 slot (35) located on the rear panel.

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

15. Speech volume control ( )

Adjusts the microphone volume of the conference unit.

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

16. Monitor speaker volume control ( )

Adjusts the output volume of the monitor speaker and left & right-side earphone output on the conference unit.

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

17. SPEAKER volume control

Adjusts the output volume of the speaker output terminal (20)

Rotate the knob clockwise to increase the volume value and counterclockwise to decrease it.

18. AC inlet

Connect the supplied power cord to this receptacle.

⚠ WARNING

Be sure to use the supplied power cord. Using any other power cord may cause electric shock.

* 0 dB = 1 V

19. Functional ground terminal

Noise may be generated when external equipment is connected to the unit. In this case, connect this terminal to the functional ground terminal of the external equipment, and the noise may be reduced.

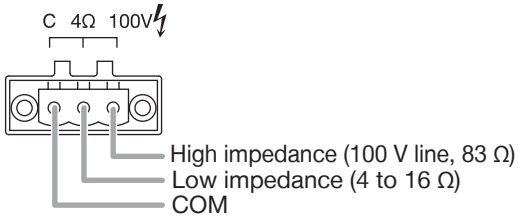
Note

This ground is not for protective ground.

20. Speaker output terminal

Removable terminal block (5.00 mm, 3 pins), 120W rated output.

Terminal for connecting speaker.



Notes

- Never use the low impedance and high impedance terminals simultaneously. Doing so may cause damage to the unit or the peripheral equipment.
- Never make connection to 4Ω terminal when the Impedance setting switch (21) is set to 100 V.

Tip

To change impedance between high and low, use the Impedance setting switch (21).

21. Impedance setting switch

Changes the speaker output impedance either to low or high.
100 V: High impedance
4 Ω: Low impedance

Notes

- This switch is factory-preset to the 4Ω position.
- Make sure that the power unit is switched OFF before changing this switch setting. Change cannot be performed when the power is ON. The impedance remains as it is even if you change the switch setting when the power is ON.
- However, the impedance will change when you turn the power ON again after turning the power unit OFF or disconnecting to the AC power supply.

22. Bass control

Adjusts the tone of the speaker output terminal (21)
Rotate the knob clockwise to boost the bass and counterclockwise to cut it.
Setting the knob at the center makes the frequency characteristic flat.

23. Treble control

Adjusts the tone of the speaker output terminal (20).
Rotate the knob clockwise to boost the treble and counterclockwise to cut it.
Setting the knob at the center makes the frequency characteristic flat.

24. Equalizer insertion switch

Set to the ON position when using the equalizer.

Note

This switch is factory-preset to the OFF position.

25. Equalizer connection terminals

RCA pin jack x 2, -10 dB*, 10 kΩ, unbalanced.
Connect to an external processor, such as a feedback suppressor (FBS).

[When connected to an external processor]
When an external processor is connected to these SEND and RETURN terminals, set the equalizer insertion switch (24) to ON position.

[When not connected to an external processor]
When no external processor is connected to these SEND and RETURN terminals, set the equalizer insertion switch (24) to OFF position.

26. Video conference system connection terminals (RCA jack)

RCA pin jack x 2, -10 dB*, 10 kΩ, unbalanced.
Connect to external devices such as a video conference system. Mix-minus function eliminates unit-generated signals from the output.

27. Video conference system connection terminals (USB port)

USB audio type-B port
Use the supplied USB cable to connect a PC to this port. The Web conference application allows the Central Unit to be used as both a microphone and a speaker when connected to a PC.

28. Recording output terminals

RCA pin jack x 2, -10 dB*, 10 kΩ, unbalanced.
Connect to external recording devices. An external PA amplifier or other public address device can also be connected.

29. AUX input terminals

RCA pin jack x 2, -20 dB*, 10 kΩ, unbalanced.
Input the output signal of external equipments.

30. Phantom switch

Set whether or not to supply phantom power to the microphones connected to MIC input terminal (31).
Be sure to select OFF when using the microphone that can not operated on phantom power. Phantom power is a 24 V DC.

Note

This switch is factory-preset to the OFF position.

31. MIC input terminal

Phone jack, -60 dB* (unbalanced) / -41 dB* (balanced), 600Ω. Connects to a wired microphone.

32. Priority chime volume control

Adjusts the output volume of the chime tone that sounds when the Priority speech button on the Chairman unit is pressed.

33. LINE 2 connection terminal

Connects to the conference unit. Up to 32 conference units can be connected per line.

34. LINE 1 connection terminal

Connects to the conference unit. Up to 32 conference units can be connected per line.

35. Module slot 2

Insert the wireless tuner module WTU-M9800-EB.

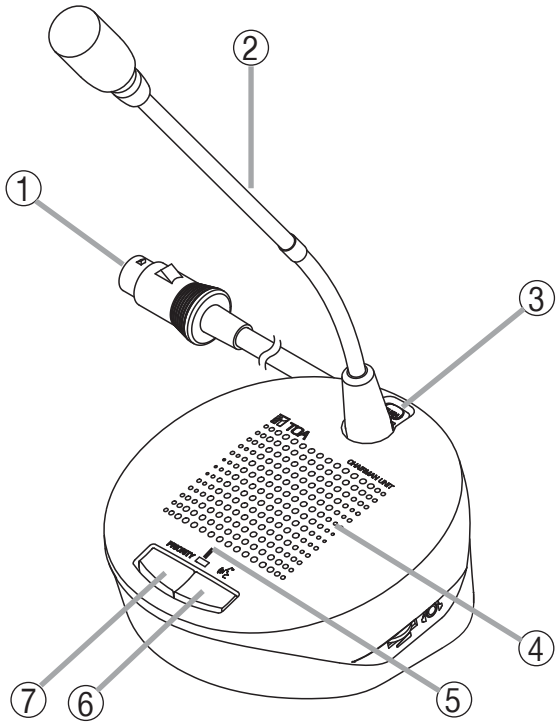
36. Module slot 1

Insert the wireless tuner module WTU-M9800-EB.

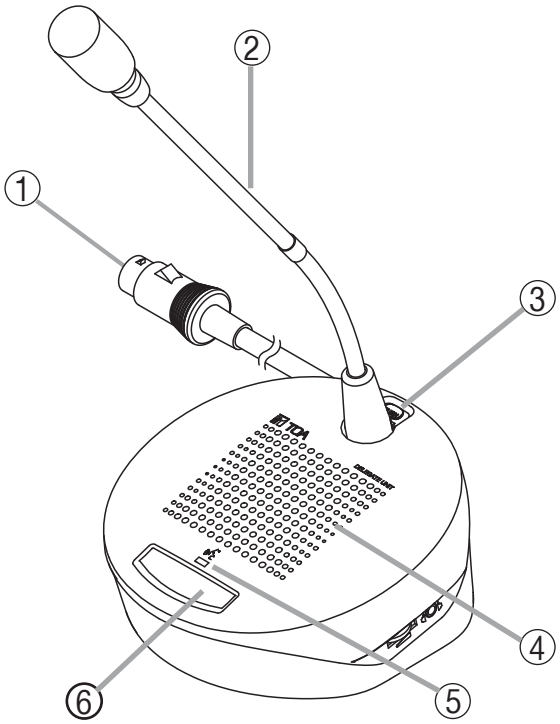
* 0 dB = 1 V

5.2. Chairman Unit with Long Microphone TS-791L-EB and Delegate Unit with Long Microphone TS-792L-EB

[TS-791L-EB Isometric]

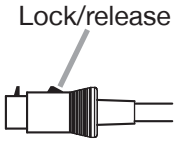


[TS-792L-EB Isometric]



1. Line connection cord
Connect this cord to the Line Connection terminal of the Central unit or the next preceding linked conference unit.

Tip
Press the plug's lock/release button when connecting or removing the cord.



2. Microphone unit
Standard accessory microphone unit.

Tip
Connects accessory microphone unit to the microphone connection connector (3).

3. Microphone connection connector
Connects to the accessory microphone unit.

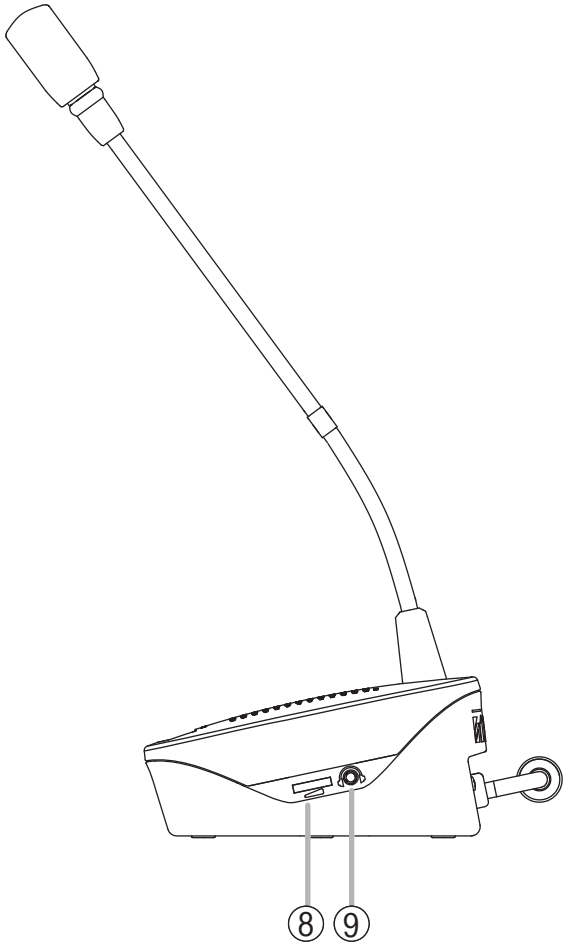
4. Monitor speaker
Output other speaker's voices. Adjust the volume with the Central unit's Conference unit volume control. The built-in speaker is temporarily disabled while speech is made using this unit.

5. Microphone in-use indicator
Lights when the microphone is on.

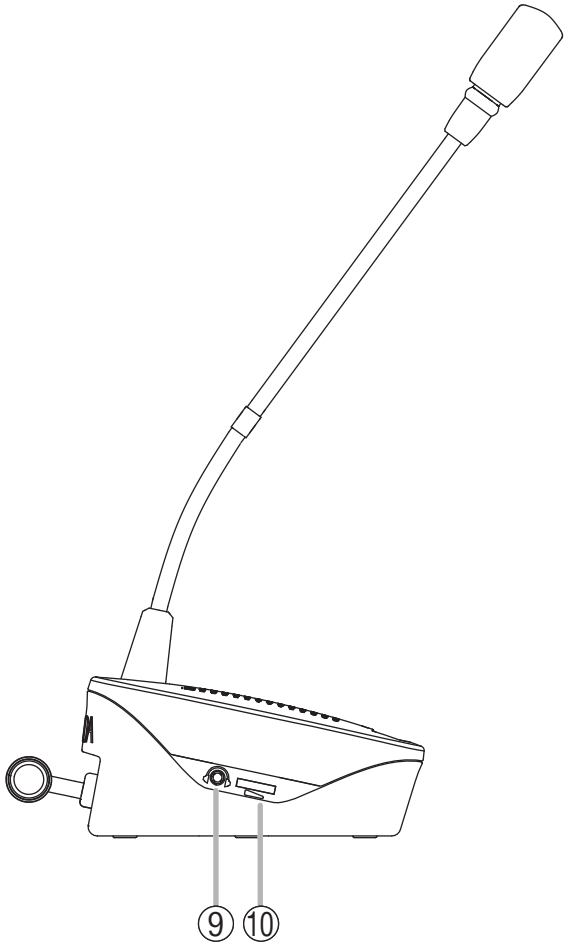
6. Speech button ( )
Press this button to speak. The microphone in-use indicator lights. Press this button again to turn off the microphone. The microphone in-use indicator goes off.

7. Priority button
While this button is pressed, the microphone in-use indicator remains lit, allowing priority speech to go through. In this case, no other delegate units can be used. Pressing this button causes a single tone chime to sound at the remaining conference units.

[TS-791L-EB/TS-792L-EB Right Side]



[TS-791L-EB/TS-792L-EB Left Side]

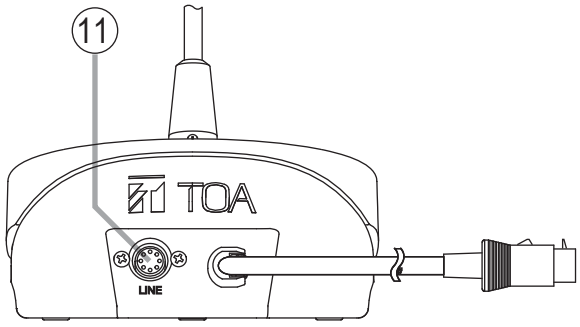


8. Speaker and headphones volume control
Simultaneously adjusts the sound output volume of the built-in speaker and the headphones connected to the adjacent Recording/Headphones output terminal (9).

9. Recording/Headphones output terminals
Connect to recording equipment or headphones. No sound is output from the monitor speaker (4) while either or both terminals are in use.

10. Headphones volume control
Adjusts the sound output volume of the headphones connected to the adjacent Recording/Headphones output terminal (9).

[TS-791L-EB/TS-792L-EB Rear]



11. Line connection terminal
Connect the next linked conference unit's line connection cord to this terminal.

6. SETTINGS

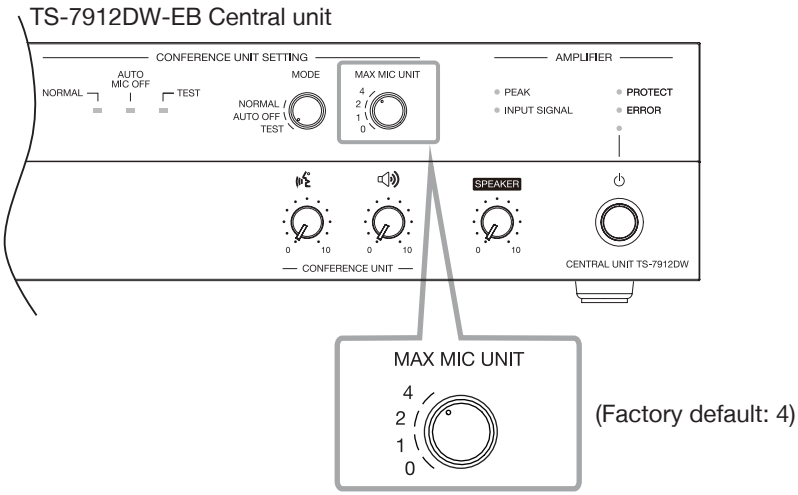
The following settings can be performed with the Selector switch on the Central unit's front panel.

[Setting Items]
- Delegate unit restriction function
- Conference mode setting

6.1. Delegate Unit Restriction Function

Using the Central unit's in-use delegate unit number selector switch (MAX MIC UNIT) , set the number of simultaneously-usable delegate units.

6.1.1. Setting procedure



(Factory default: 4)

[When delegate units are allowed to speak] (General conference style)

Select the number of simultaneously-usable delegate units using by setting the In-use delegate unit number selector switch (MAX MIC UNIT) to the [1], [2], [4] position.

[When no delegate units are allowed to speak]

Set the In-use delegate unit number selector switch (MAX MIC UNIT) to the [0] position.

6.1.2. Conference unit operation

[Chairman unit]

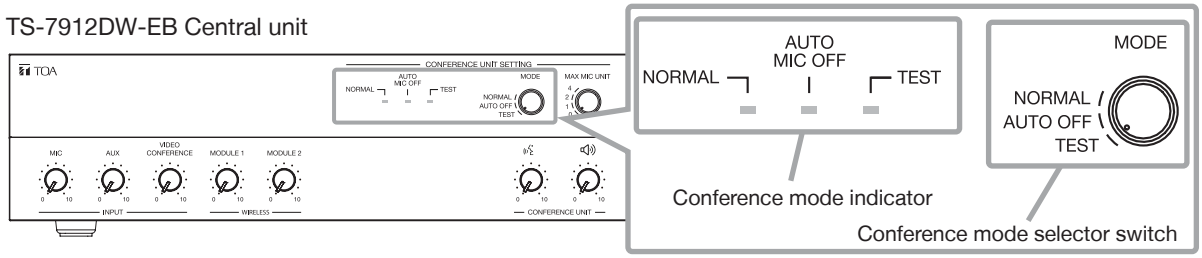
Chairman units can speak at any time regardless of the setting of the Delegate Unit Restriction function.

[Delegate unit]

Up to the set number of Delegate units can speak simultaneously.
When the full set number of Delegate units are in use (their microphones have been turned on), no microphones of other Delegate units can be turned on, even if their Speech buttons are pressed.

6.2. Conference Mode Setting

Set the Conference unit's conference mode. The conference mode changes each time the Conference mode selector switch is changed position and the indicator for the selected Conference mode lights.



Conference mode	Description
NORMAL (Factory default setting)	• Permits speaking to start when press the Speech button of Conference unit once, press the Speech button again after speech completion . • When the Speech button is pressed, If its Delegate unit exceeds the preset of number of simultaneously-usable delegate units, that unit cannot be used for speaking. • The Chairman unit can start speaking at any time
AUTO OFF	• Permits speaking to start when press the Speech button of Conference unit once, press the Speech button again after speech completion . By this mode setting, If a speaker forgets to turn it off after use, the Conference unit's microphone automatically turns off after 30-second break in speech. • When the Speech button is pressed, If its Delegate unit exceeds the preset of number of simultaneously-usable delegate units, that unit cannot be used for speaking. • The Chairman unit can start speaking at any time. **Notes** • For conferences in which long breaks in speech are expected, set conference mode selector switch to the NORMAL position. • In areas with high levels of background noise, the Central unit may mistake the noise to be speech and the automatic mic-off function will not operate correctly. In such cases, this function should be disabled by placing the conference mode selector switch to the NORMAL position.
TEST	• The test function is especially useful to check operation of all connected conference units. This function allows the microphones of all connected conference units to turn on. In this event, no sound is output from their monitor speaker, but audio signal are output from other output terminal. • All conference units can speak without operating the Speech button regardless of the In-use delegate unit number selector switch (MAX MIC UNIT) setting. **Tip** After test completion, be sure to set this switch to AUTO OFF or NORMAL position.

7. OPERATING CHAIRMAN AND DELEGATE UNITS

This section explains how to operate Conference units in a conference.
Be sure to set the conference mode selector switch of the Central unit set to AUTO OFF or NORMAL position before use (see p.12).

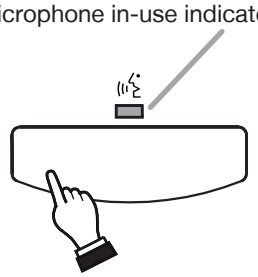
7.1. Making Speech

Step 1. Press the Speech button once.
The microphone in-use indicator lights, and the microphone turns on.

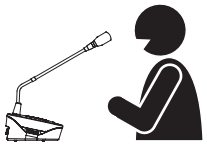
Notes
- No sound is output from the monitor speaker of the operated unit while the Microphone in-use indicator remains lit. However, audio signal is output from the Recording/ Headphone output terminal.
- While the Chairman unit is in priority speech mode (see p.14), other unit's microphones do not turn on even if their Speech buttons are pressed.
- The microphones of some Delegate units may not turn on even if their Speech buttons are pressed, depending on the setting of the Delegate Unit Restriction Function (see p.11).

[Example: Delegate unit]

Microphone in-use indicator: Lights

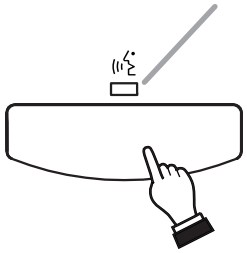


Step 2. Speak into the microphone.



Step 3. Press the Speech button again after speech completion.
The Microphone in-use indicator extinguishes and sound is audible from the operated unit's speaker.

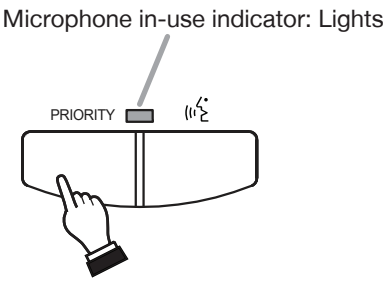
Microphone in-use indicator: Extinguishes



7.2. Making Priority Speech (Chairman unit only)

Holding down the Priority button on the Chairman unit gives that unit speech priority and allows it to interrupt other conference units.

Step 1. Press the Priority button.
The microphone in-use indicator lights, and the microphone turns on. At the same time, a single tone chime sounds at the remaining conference units.

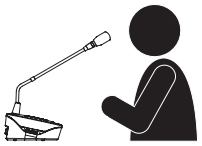


Note
No sound is output from the monitor speaker of the operated unit while the Microphone in-use indicator remains lit. However, audio signal is output from the Recording/Headphone output terminal.

Step 2. Speak while holding down the Priority button.
No delegate units can be used while the Priority button is pressed.
If 2 or more chairman units exist, when other chairman unit's Priority button is pressed during priority speech, this latest button-operated unit takes precedence over other conference units.



Step 3. The microphone in-use indicator goes off, turning on the built-in speaker.



Note
Any previous speech that has been interrupted by the priority speech is not restored even after priority speech completion. Press the Speech button again, and make a speech after microphone in-use indicator lights.

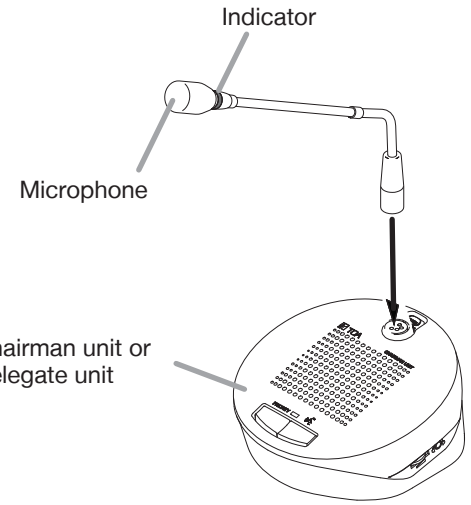
Note
In the system employing 2 or 3 chairman units, even while 1 unit is making priority speech, other chairman unit(s) can also make priority speech by pressing the Priority button although a single-tone chime is not sounded.

8. BASIC SYSTEM INSTALLATION

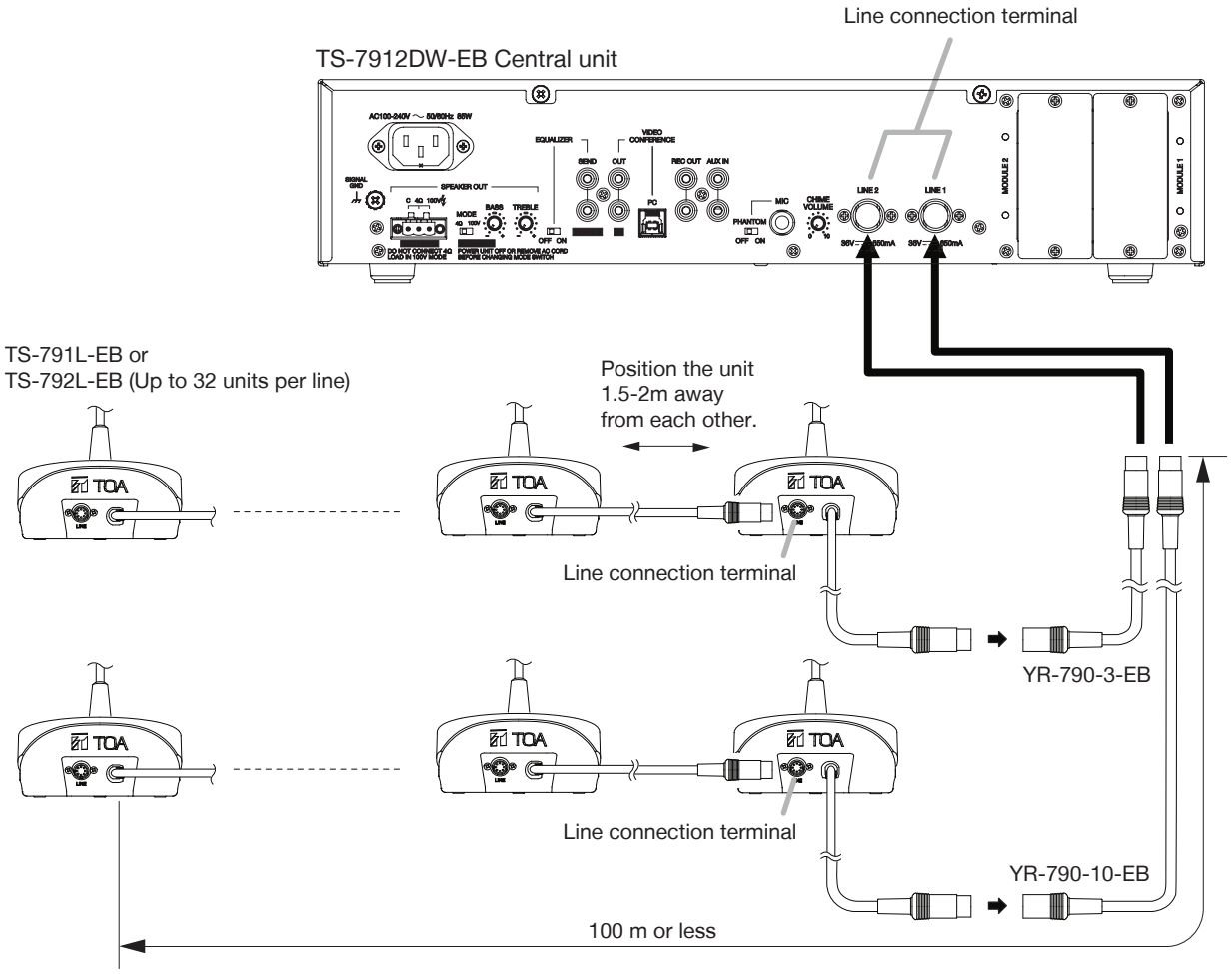
This section explains how to install and adjust a basic system comprised of 1 Central Unit, Chairman and Delegate units.

8.1. Connecting the Chairman and Delegate units to the Central unit

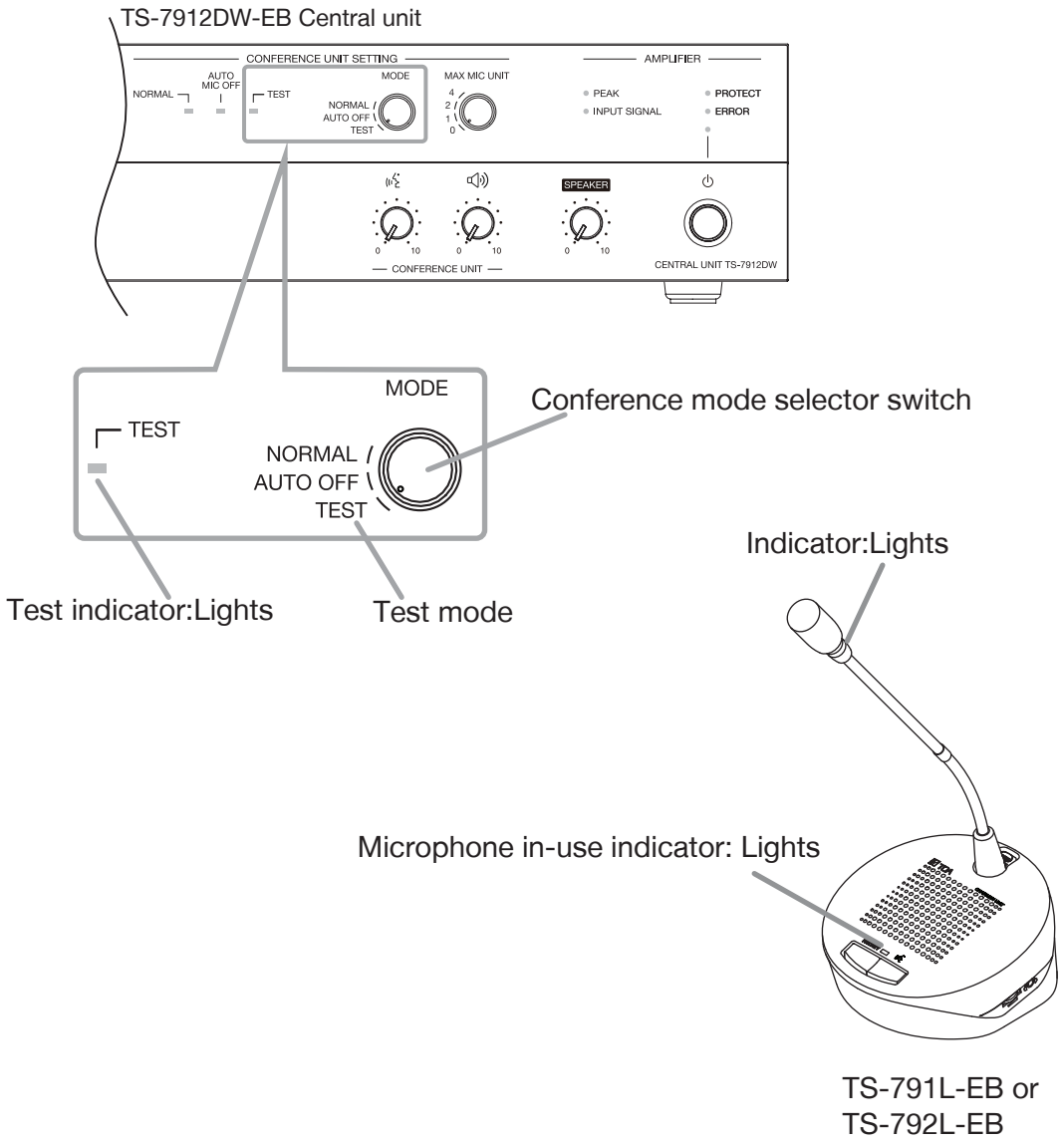
Step 1. Connect the accessory Microphone unit to the TS-791L-EB Chairman unit and TS-792L-EB Delegate unit.



Step 2. Connect the Chairman unit and Delegate unit to the Central unit.
When installing, keep conference units 1.5 — 2 m away from each other. If distances exceed 2 m, use YR-790-3-EB (3 m) or YR-790-10-EB (10 m) extension cords.
Up to 32 conference units can be connected per line (line 1 and 2) of the central unit.
Ensure that the total length of connection cables between the Central unit and the last conference unit is less than 100 m.



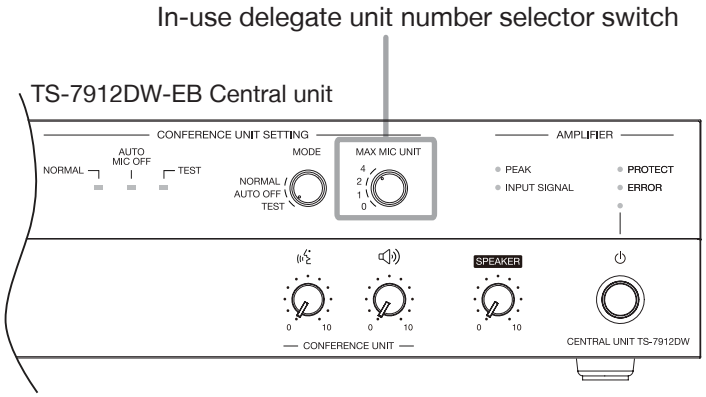
Step 3. Set the conference mode selector switch on the front panel of the Central unit to TEST mode. The Test indicator lights together with the conference unit's Microphone in-use indicator and the indicator on the microphone.
Note that as the number of connected conference units increases, several seconds may elapse before the indicators light.
When all indicators for the installed conference units light, this completes connection confirmation. In this event, if the indicators of a certain conference unit do not light, check the connections of the microphone and those between the Central unit and conference units.



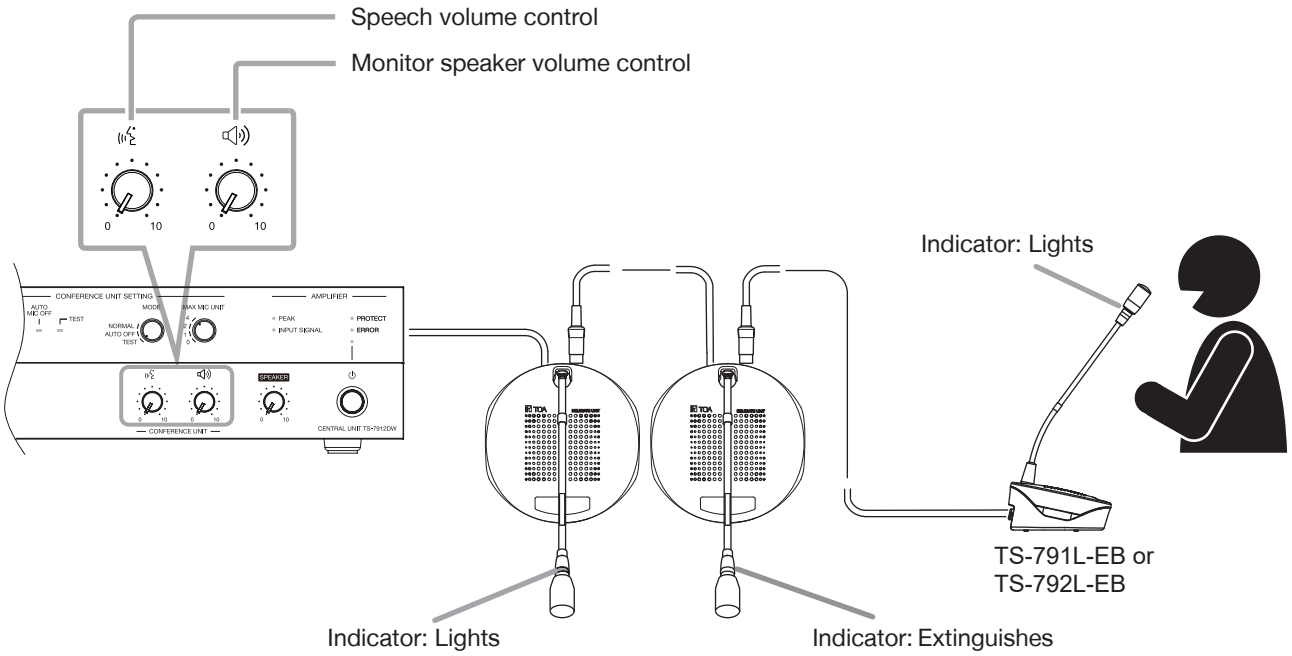
Step 4. Set the conference mode selector switch on the front panel of the Central unit back to NORMAL or AUTO OFF mode position. (Test mode off)
Note that as the number of connected conference units increases, several seconds may elapse before the indicators go off.

8.2. Setting functions and adjusting Chairman/Delegate units sound output volume

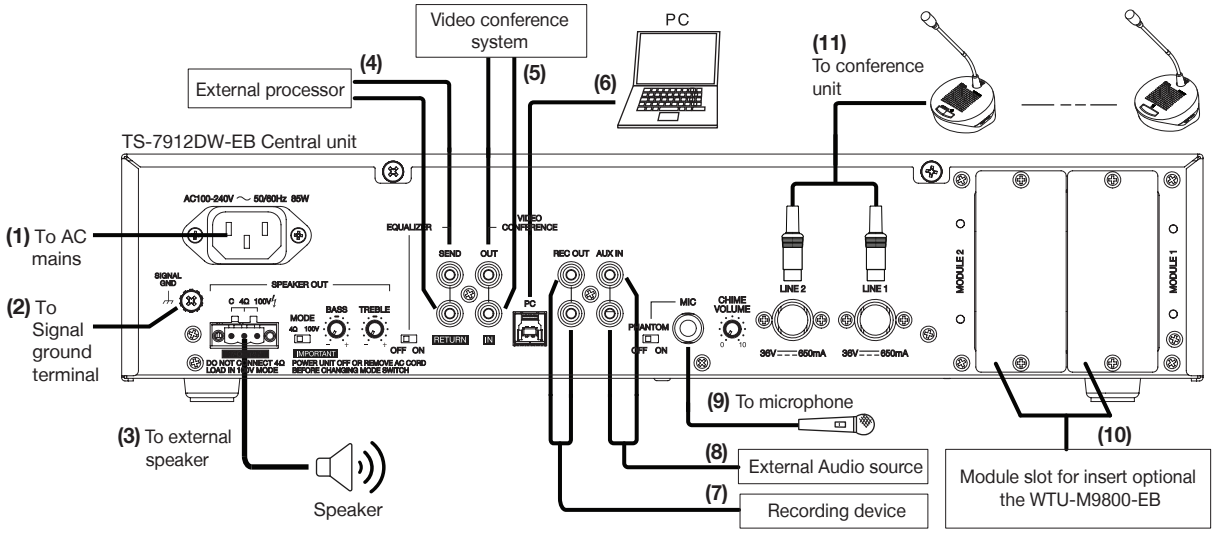
Step 5. Set the number of simultaneously operable Delegate units using the In-use delegate unit number selector switch on the front panel of the central unit. (Factory default: 4) . For details, refer to p.11.



Step 6. Adjust the sound volume of the Chairman/Delegate units.
Press the Speech button on both the Delegate unit in the number set in Step 5 and the Chairman unit to turn on their microphone. Speaking into the microphone, adjust the volume to an appropriate level using the Central unit's Speech volume control and Monitor speaker volume control.



9. CONNECTIONS



External cable wiring must be only carried out by qualified and trained personnel.

9.1. Power Supply Connection

(1) AC power cord connection

Use the supplied AC power cord.

9.2. Signal Ground Connection

(2) Signal Ground connection

When connection of an external device to the Central unit results in the generation of audible noise, connect this terminal to the Signal ground terminal of the external device. Noise output should be greatly reduced.

Note

This is not a protective ground connection.

9.3. Speaker Connection

(3) Speaker connection

Impedances indicate at the terminal represent the total impedance (load) of the speaker output terminal. Impedance can be switched from high impedance to low impedance. For cable wiring to the removable terminal block, refer to p. 19.

Notes

- Never make connection to both 4 Ω (low impedance) and 100 V line (high impedance) terminals simultaneously.
- Never make connection to 4 Ω terminal when the Impedance setting switch is set to 100 V.

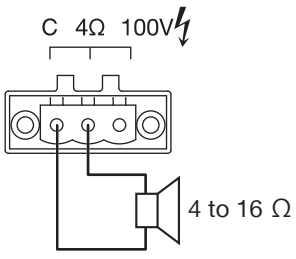
Tip

Recommended speaker cable is IV or HIV cable with thickness described below.

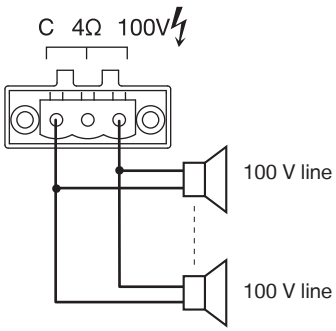
Solid copper cable: ø0.32 – 2.0 mm

Stranded copper cable: 0.05 – 3.3 mm2 (AWG 30 – 12)

[Low impedance terminal]



[High impedance terminal]



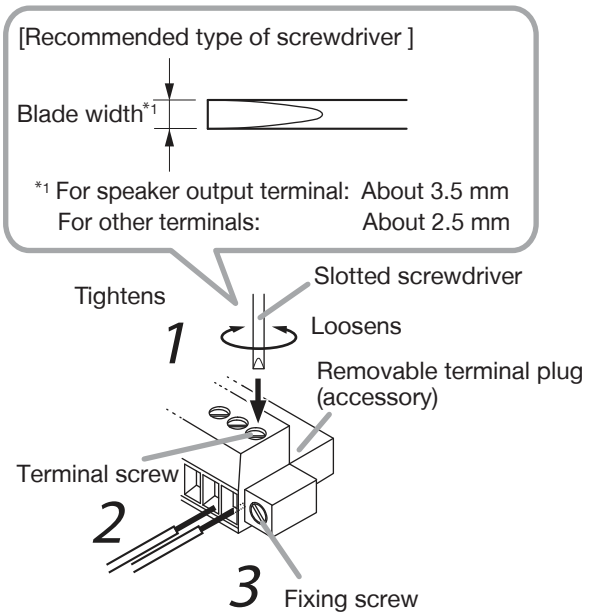
Combined impedance: 83Ω

9.4. Removable Terminal Plug Connection

Step 1. Wiring the supplied removable terminal plug.
1-1. Loosen the terminal screws to insert the wire.
1-2. Tighten the terminal screws.
Ensure that the wire does not break free when pulled. If the wire does pull free, repeat the connection procedure from the start.

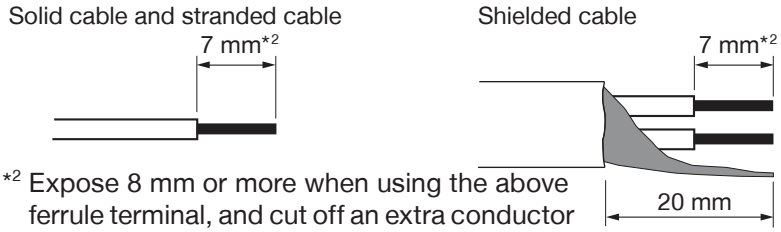
Step 2. Insert the wired terminal plug into the corresponding terminal block in the unit's rear panel.

Step 3. Only when the fixing screw is inserted, tighten the fixing screw.



Notes
- Do not reverse Steps 1 and 2 above. Poor contact may result if force is applied to the unit's internal circuit board pins while the terminal screws are being tightened.
- When detaching the terminal plug, pull it straight out. Pulling it out at an angle may cause the terminal plug or terminal block to break.

Tips
- Applicable cable size
  Conductor cross-section area: 0.05 – 3.3 mm^2
  AWG: AWG 30 – 12 or equivalent
- Cable sheath to trim



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

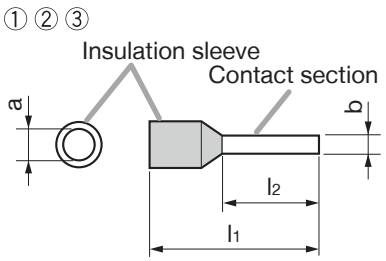
Note
Avoid soldering stranded or shielded cable, as contact resistance may increase when the cable is tightened and the solder is crushed, possibly resulting in an excessive rise in joint temperatures.

- When connecting 2 cables or a shielded cable to a single terminal, use a ferrule terminal with an insulation sleeve to crimp the cables because such cable conductors could become loose.

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

Unit: mm

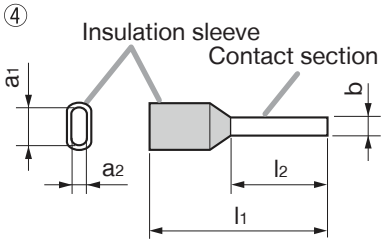
	Model Number	a	b	l_1	l_2
①	AI 0,34-8 TQ	2	0.8	12.5	8
②	AI 0,5-8 WH	2.5	1.1	14	8



(2) Recommended ferrule terminals for speaker cables (made by Phoenix Contact)

Unit: mm

	Model Number	a	a_1	a_2	b	l_1	l_2
③	AI 1,5-8 BK	3.4	—	—	1.8	14	8
④	AI-TWIN 2 x 1,5-8 BK	—	6.6	3.6	2.3	16	8



Crimping tool: CRIMPFOX 10S (made by Phoenix Contact)

9.5. External Device Connections and Settings

(4) External processor connection

In cases where feedback occurs a graphic equalizer or other external processor can be connected for use.
External processor output (SEND) specifications: –10 dB*, 10 kΩ, unbalanced, RCA pin jack
External processor input (RETURN) specifications: –10 dB*, 10 kΩ, unbalanced, RCA pin jack

Note

Set the Equalizer insertion switch to the ON position when using the equalizer or other external processor, If not used set to the OFF position.
This switch is factory-preset to the OFF position.

(5) Video conference system connection

Video conference systems can also be connected and used.
Video conference output (OUT) specifications: –10 dB*, 10 kΩ, unbalanced, RCA pin jack
Video conference input (IN) specifications: –10 dB*, 10 kΩ, unbalanced, RCA pin jack

(6) PC connection

Connect the PC to be used for Web conferencing to the USB port using the supplied USB cable.

(7) External recording device connection

The spoken contents of the conference can be recorded by connecting a recording device.
A mixer or other external power amplifier can be connected for use.
Recording output specifications: –10 dB*, 10 kΩ, unbalanced, RCA pin jack (monaural)

Note

The same sound output is directed to both left and right channels.

(8) External audio source connection

Connect a CD player or other similar equipment.
AUX input specifications: –20 dB*, 10 kΩ, unbalanced, RCA pin jack (monaural)

(9) Microphone connection

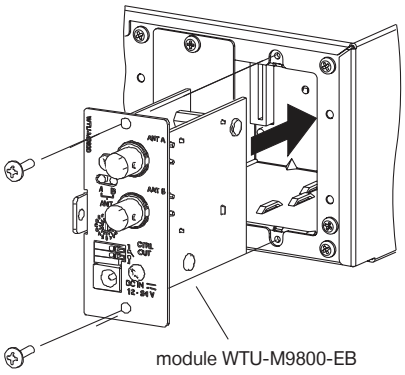
An external wired microphone can also be connected and used.
Microphone input specifications: -60 dB* (unbalanced) / -41 dB* (balanced), 600 Ω, phone jack

Note

Set the Phantom switch corresponding to the connected microphone whether or not to use the phantom power. This switch is factory-preset to the OFF position.
- Dynamic microphone: PHANTOM switch position is OFF
- Condenser microphone: PHANTOM switch position is ON

(10) Optional wireless tuner module WTU-M9800-EB connection

Step 1. Remove the blank panel covering the module slot on the rear panel of the equipment.
Step 2. Align the module board with the top and bottom guide rails, and press in.
Step 3. Using the screws supplied with the module, secure the module to the rear panel.



Notes

- Be sure to turn off the power of the Central unit before installing the module.
- Be sure to connect at least one receiving antenna (one each for Antenna A and B).
- Avoid touching parts and terminals on the module's circuit board when inserting or removing the module.

* 0 dB = 1 V

9.6. Conference Unit Connections

(11) Conference unit Connection

Connect Conference units to the Central unit. If distances between the Conference unit and the Central unit exceed 2m, use YR-790-3-EB (3m) or YR-790-10-EB (10m) extension cords.

Note

Do not insert or remove the connection cables to the Conference unit while the Central unit's power is ON. Doing so could lead to the Conference units's failures and noise sound occurs.

10. IF A FAILURE IS DETECTED

10.1. Central Unit TS-7912DW-EB

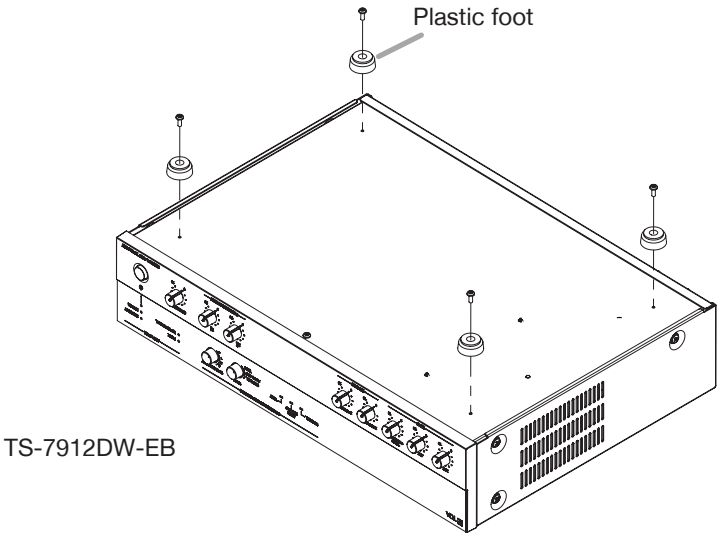
Symptom	Cause and points to check	Remedy
Cannot switch ON the power	Is the power cord not connected?	Correctly connect the power cord supplied with the Central unit
No conference sound output.	Is the external processor correctly connected? Sound cannot be output if not correctly connected.	Correctly connect the external processor. (See p. 20.)
No sound from the connection destination when the Web conference application is in use.	Is a speaker other than the TOA Central Unit selected in the Audio device settings of the Web conference application?	Select the TOA Central Unit as the speaker in the Audio device settings of the Web conference application.
No sound received at the connection destination when the Web conference application is in use.	Is a microphone unit other than the TOA Central Unit selected in the Web conference application's Audio Device settings?	Be sure that the TOA Central Unit is selected as the microphone in the Audio device settings.
No sound output from the connection external speaker.	Is the corresponding input volume control and Speaker volume control adjusted appropriately? When the Speaker volume control is set to the minimum position, no sound is output even if each input volume control is set to the maximum.	Set the volume control to an appropriate level.
	Does the ERROR indicator on front panel light?	The power amplifier module's internal abnormality has occurred. **Note** Contact the TOA dealer where the unit was purchased.
	Does the PROTECT indicator on front panel light? Check speakers and lines for short circuit. Check the Central unit for correct ventilation and overload. The current limiter and thermal protection activated to prevent a failure due to overheat.	Operation automatically returns to normal when the temperature decreases and connecting a correct load. **Note** Turn off this Central unit's Power switch. Correct the load, then turn on the power in the case of protection due to short circuit

10.2. Chairman Unit with Long Microphone TS-791L-EB and Delegate Unit with Long Microphone TS-792L-EB

Symptom	Cause and points to check	Remedy
Power not supplied.	Is power supplied to the Central	Turn ON the Central unit's power
	Connected correctly?	Check all connections. (See p. 18)
No output from either speaker or earphone.	Is the monitor volume control adjusted appropriately?	Set the volume control to an appropriate level. (See p. 10 and 17)
	Is the earphone plug fully inserted?	Ensure that the earphone plug is fully inserted and secure.
Unable to start speaking.	Connected correctly?	Check all connections. (See p. 18)
	Is the conference setting correctly set?	Use the conference setting best suited to the type of conference to be held. (Refer to "Delegate Unit Restriction Function" on p. 11 for details)
Mic auto-off function does not work.	Is the background noise level too high due to air conditioners or the like?	There may be cases in which the Mic auto-off function does not work in locations where the background noise level is high. Install the units in locations with a low noise level or disable the Mic auto-off function. (See p. 12.)
Chime does not sound when the Priority Speech button 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.

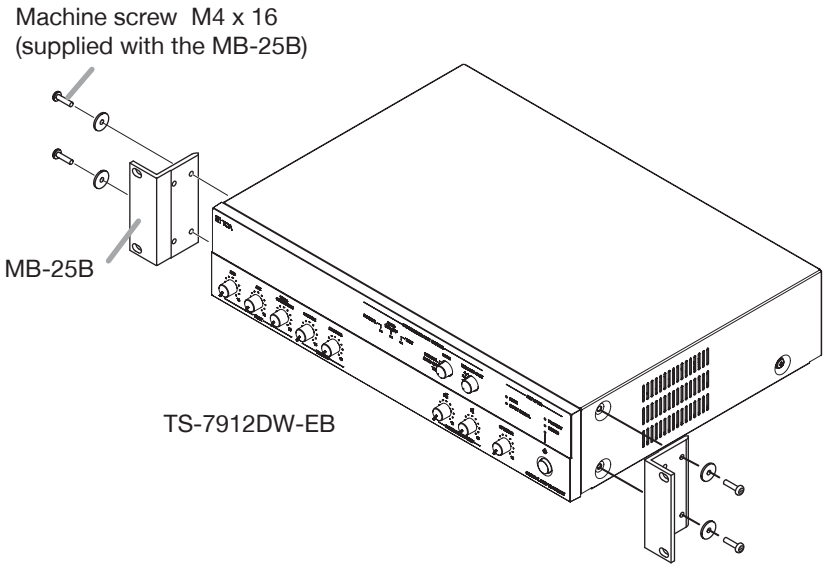
11. IF MOUNTING THE CENTRAL UNIT IN AN EQUIPMENT RACK

When installing the Central unit to an equipment rack, remove the four plastic feet screwed on the unit's base as shown below.



When installing the Central unit to an equipment rack, use the optional MB-25B Rack mounting bracket.

⚠ CAUTION Rack-mounting screws are not supplied with the optional MB-25B Rack mounting bracket. Prepare them that are appropriate for the equipment rack



Note
To improve ventilation, ensure that a perforated panel (panel with air openings) of 1-unit size or greater is mounted over and under each unit, as well as on the top and at the bottom of the rack.

12. SPECIFICATIONS

12.1. Central Unit TS-7912DW-EB

Model No.		TS-7912DW-EB
Power Source		100 – 240 V AC, 50/60 Hz
Rated Output		120 W
Power/Current Consumption		235 W (rated output, 64 units), 85 W (1/8 of rated output, 64 units) 200 mA or less (when power switch is OFF)
Frequency Response		20 Hz to 20 kHz ±3 dB
Distortion		1 % or less at 1 kHz (20 kHz LPF (AUX-0025))
Tone Control		Bass: ±10 dB at 100 Hz, Treble: ±10 dB at 10 kHz (Speaker Out)
Signal to Noise Ratio		83 dB or more (Speaker volume: min). 76 dB or more (Speaker volume: max, Input volume: min). 55 dB or more (Speaker volume: max, Input volume: max). (A-weighted)
Audio Input		
	MIC	-60 dB* (unbalanced)/ -41 dB* (balanced) selectable, 600 Ω, Ø6.3 mm phone jack. Note: MIC input is equipped with phantom power (24 V DC, ON/OFF switchable)
	AUX IN	AUX IN: -20 dB*, 10 kΩ unbalanced, RCA pin jack X 2
	MODULE 1, 2	-20 dB*, 10 kΩ, compatible Wireless Tuner Module WTU-M9800-EB
Audio Output		
	SPEAKER OUT	High impedance (100 V line/ total 83 Ω)/ Low impedance (4 - 16 Ω) selectable, removable terminal block (3 pins)
	REC OUT	-10 dB*, 10 kΩ, unbalanced, RCA pin jack X 2
Equalizer RETURN/SEND Terminal		-10 dB*, 10 kΩ, unbalanced, RCA pin jack, ON/OFF switchable
Video Conference IN/OUT Terminal		-10 dB*, 10 kΩ, unbalanced, RCA pin jack USB Audio Type-B port (for PC) Audio streaming data-in: 11.025/16/22.05/32/44.1/48 kHz sampling frequency (selectable on PC), 16-bit PCM. Audio streaming data-out: 32/44.1/48 kHz sampling frequency (selectable on PC), 16-bit PCM.
Chairman/Delegate Units Terminal		LINE1, 2: 8 pins DIN Socket
Number of Connectable Chairman/Delegate Units		Max. 64 units
Conference Unit Setting		MODE Switch: NORMAL/ AUTO OFF/ TEST MAX MIC UNIT Switch: Number of Delegate Units can be turned on microphone set to 0, 1, 2 or 4
Priority Speech Chime		Operation of Chairman Unit's priority button activates a single-tone chime (with volume control)
Volume Control		MIC volume, AUX volume, VIDEO CONFERENCE volume, SPEAKER volume, Microphone and Monitor speaker of Conference Unit volume, CHIME volume.
		MODULE1 volume, MODULE2 volume
LED Indicators		Power (Green) Amplifier: INPUT SIGNAL (Green), PEAK (Red), PROTECT (Red), ERROR (Red) Conference Unit Setting: NORMAL (Green), AUTO MIC OFF (Green), TEST (Red)
Operating Temperature		0 to 40 °C (32 to 104 °F)
Operating Humidity		90 % RH or less (no condensation)
Finish		Panel: ABS resin, black Case: Surface-treated steel plate, black, paint
Dimension		420 (w) X 96.1 (h) X 313.1 (d) mm or 16,54" X 3.78" X 12.33"
Weight		5.2 kg (11.4 lb)

* 0 dB = 1 V

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

• Accessories
Power cord (2 m) 2
USB cable (3m) 1
Speaker out removable terminal plug (5.00 mm, 3 pins) 1

• Optional products
Extension cord: YR-790-3-EB (3m), YR-790-10-EB (10m)
Rack mounting bracket: MB-25B
WTU-M9800-EB with 5000 series wireless microphones

12.2. Chairman Unit with Long Microphone TS-791L-EB and Delegate Unit with Long Microphone TS-792L-EB

Power Source	36 V DC, 30mA or less (supplied from the Central unit TS-7912DW-EB)
Output	Headphone/Recording: Φ3.5 mm, mini jack (3P: monaural) X 2 Monitor Speaker: 130 Ω, 200 mW
Control	Speech: Microphone, speaker on-off control by speech button Priority (TS-791L-EB only): Microphone, speaker on-off, other microphone cut off and single-tone chime activation by priority button. Volume control: Headphone/Recording and Monitor speaker volume adjustable X 2
Connection Terminal	LINE terminal: 8 pins DIN socket X 1, Connection cord X 1 (8 pins DIN plug, cord length: 2 m, black)
Microphone unit (Accessory)	Electret condenser microphone Directivity: Unidirectional Impedance: 1.8 kΩ Sensitivity: -37 dB (1 kHz 0 dB = 1 V/Pa) Frequency response: 100 Hz - 13 kHz LED Indicator: Speech indicator (ring type) Blue Output Connector: Equivalent to XLR-4-12C Length : 518 (mm). Weight: 105 (g) Shaft: Copper alloy, black, paint Head: ABS resin, black
Operation Temperature	0 to 40°C
Operation Humidity	90 % RH or less (no condensation)
Finish	Upper case: ABS resin, dark grey, paint Lower case: ABS resin, black, paint
Dimension	145.3 (w) x 70.7 (h) x 150.5 (d) mm (Excluding microphone unit)
Weight	800 g (Excluding microphone unit)

* 0 dB = 1 V

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

• Accessory
Microphone unit.....1

• Optional products
Extension cord: YR-790-3-EB (3m), YR-790-10-EB (10m)

12.3. Extension Cord YR-790-3-EB (3 m) and YR-790-10-EB (10 m)

Model No.	YR-790-3-EB	YR-790-10-EB
Cable Length	3 m	10 m
Weight	210 g (0.46 lb)	640 g (1.41 lb)
Cord	8-Core shielded cable, black	
Connector	8 pins DIN socket (going to the unit's base), black ....1 8 pins DIN plug (going to the cord), black 1	

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

TOA Corporation

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