



# Infrared Wireless Conference System

## TS-900/800 Series

Installation made easier than ever thanks to infrared system coupled with clear sound amplification.

Wireless conference system provides flexible adaptation to diverse styles of conference.





# Infrared communication system contributes to smoother management of medium to small-scale conferences

## ■ Higher security with infrared communication

The system's infrared communication method is not only resistant to radio interference and eavesdropping, but it also permits simultaneous use of systems in adjacent conference rooms with no crosstalk.

## ■ Easy installation

Infrared communication system eliminates the need of connecting the conference units. Installation can be done quick and smart without cumbersome cable arrangements.

## ■ Easy connection with a single coaxial cable

Central unit and Infrared Transmitter/Receiver unit can be connected using a single coaxial cable.



## ■ Flexible adaptation to change of the number of participants or layout

Up to 96 Chairman and Delegate units can be used per system for TS-900 Series (up to 64 Chairman and Delegate units for TS-800 Series). Cordless and easy-to-relocate feature makes the system ideal for any conference apt to change the number of participants or layout.

## ■ Compact light-weight Chairman/Delegate units

Microphone, monitor speaker, Talk key and Speech indicator are totally integrated.

When the unit's Talk key is pressed, the Microphone indicator lights up to enter the mode accepting a speech. Microphone is removable for compact storage.

## ■ Clear sound amplification and recording

The Chairman and Delegate units have a built-in monitor speaker which makes talker's voice clearly audible at seat.

When recording equipment is connected to the Central unit, clear recording is possible which is indispensable in preparing conference minutes.

## ■ Selectable power supply system

Both Chairman and Delegate units can be operated on either their built-in rechargeable lithium-ion batteries (for approx. 10 hours use) or AC power supply. Battery charger can recharge up to 8 lithium-ion batteries at a time in about 5 hours.

## ■ Adjustable to broader area use

Up to 16 Infrared Transmitter/Receiver units can be connected to expand the area of infrared communication coverage using a distributor.

\* Up to 4 Infrared Transmitter/Receiver units can be directly connected to the Central unit. Distributors are needed in order to connect 5 or more Infrared Transmitter/Receiver units.

## ■ Capability of manipulation from PC or console (customized)

Using the customized software, it is possible to control the system from PC or console to perform recording, giving permission of speech, and other operations.

## ● Other features

■ The Chairman units features a priority speech key which allows it to take precedence over Delegate units when speaking.

■ Sounds from a wired microphone or sound source equipment can be heard from the Chairman and Delegate units' speakers.

■ Two types of dedicated microphones are made available for the Chairman and Delegate units: "standard" (368 mm long) and "long" (518 mm long).

■ Besides ceiling or wall mounting, the Infrared Transmitter/Receiver unit can also be tentatively installed on a microphone stand (applicable thread size: W 5/16").

## Six features addressing various conference management needs

### Features common in TS-900/800 series

#### 1 Speaker restriction function to prevent speech interruption

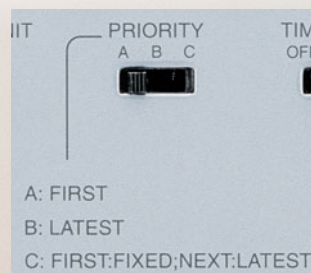
The number of conference units can be set for any of one, two or four persons allowed to talk at a time, preventing possible disorder that could result from simultaneous speeches by participants.



\*Top of the Central unit

#### 2 Speech system selection function to set priority of speech

When the Talk keys on the conference units are pressed beyond the restricted number of talkers, the microphone ON/OFF operation can be set to any of the following; first-in-first-out, last-in-first-out, or last-in-first-out after 2nd unit (the microphone stays ON for the unit whose Talk key was first pressed).



\*Top of the Central unit

#### 3 Auto Mic-Off function to prevent inadvertent microphone shutoff failure

When this function is set to ON, the microphone automatically turns off if duration of silence lasts for 30 seconds after it is ON by pressing the Talk key.



\*Top of the Central unit

#### 4 Installation status checkup function to show communicable units at a glance

When operated on the Central unit, the microphone indicators on the Chairman and Delegate units light up. In TS-900 series, the Central unit can indicate the number of units. This feature allows the prior system check to see if all units are capable of infrared communication.

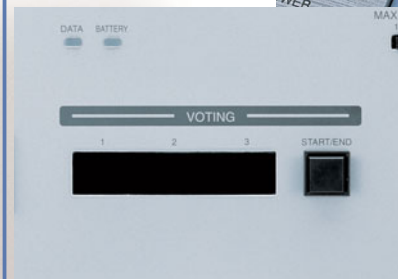
### Features in TS-900 series only

#### 5 Threefold choice vote function for instantaneous voting and totalization

TS-900 series Chairman and Delegate units feature the Vote key for threefold choice to enable easy balloting by participants. The result is indicated on the Central unit, allowing a quick vote.



• Vote key of TS-902



• Vote result indicator of central unit TS-900

#### 6 Main/Sub audio function to allow bilingual conference

TS-900 series system is capable of providing two types of audios (main and sub) besides the conference unit's speech voice.

In TS-900 series, the Chairman and Delegate units are equipped with the monitor selector key which enables monitoring of desired main or sub audio.



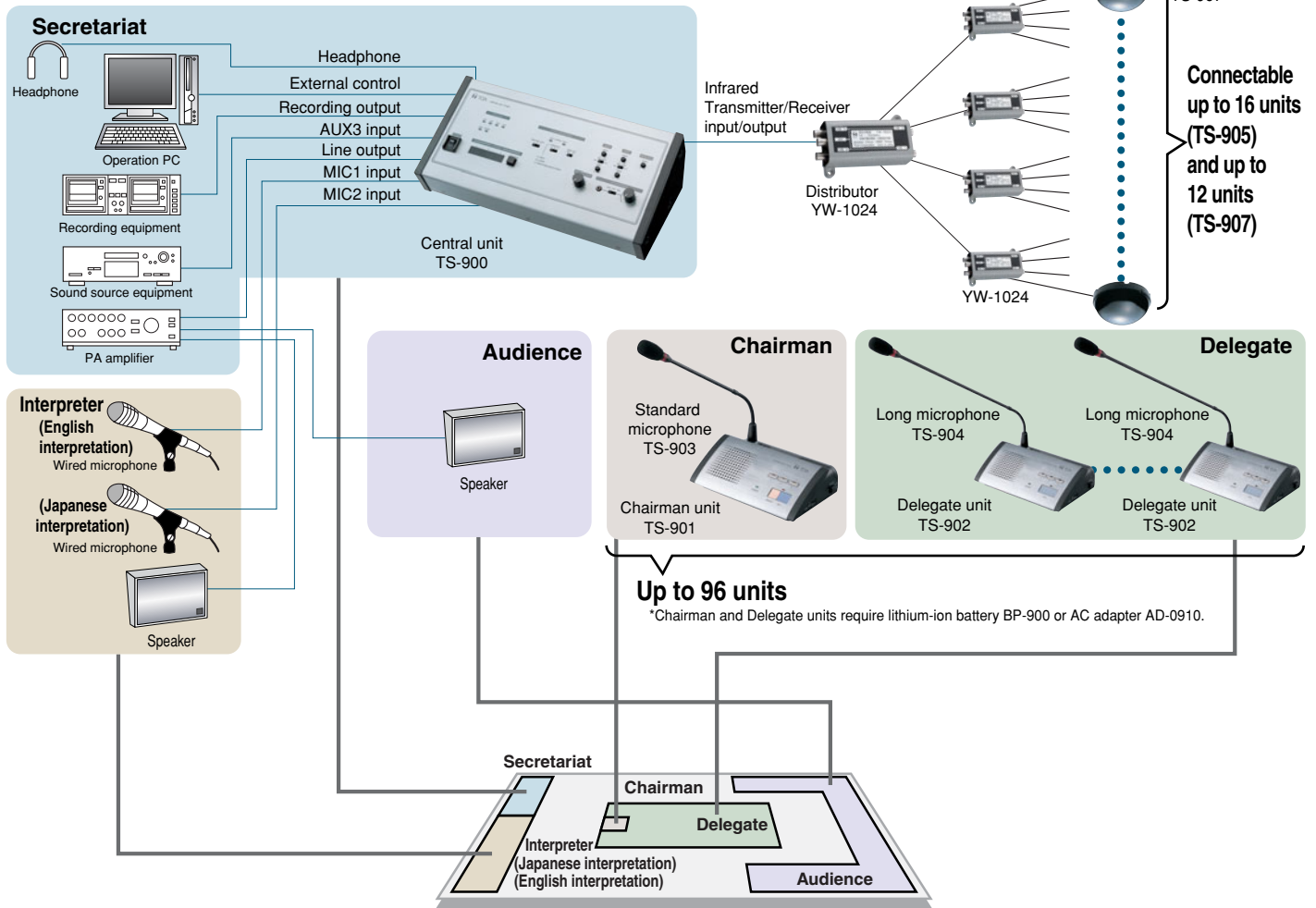
• Monitor selector key of TS-902



# TS-900 Series System Example (Bilingual Conference System)

## TS-900 Series

High-end system with versatile functions to support sophisticated conference styles



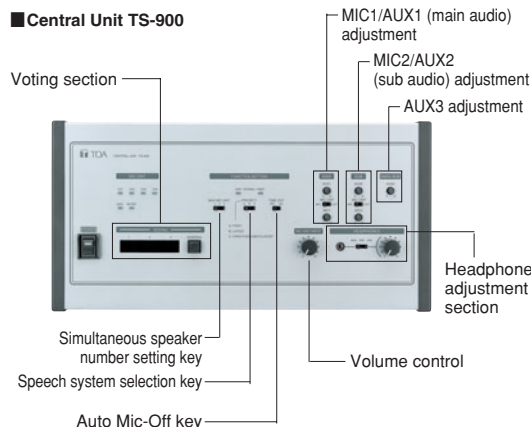
## System Features and Outline

- Bilingual conference system. Either English interpretation (main audio) or Japanese interpretation (sub audio) is selectable for monitoring.
- Operations such as giving speech permission can be done from the operation PC. \*Custom design.
- The number of conference units can be set for any of one, two or four persons allowed to talk at a time.
- All speeches during the conference can be recorded clearly. \*Sub audio(Japanese interpretation) is not recorded.
- Threefold choice vote function enables the voting just at the press of a Vote key on each unit. The result can be instantly totalized on the Central unit.
- Speeches can be addressed to audience via sound amplification. \*The sub audio output is not amplified.

## Parts Designation

### TS-900 Series

#### Central Unit TS-900



#### Chairman Unit TS-901 (with standard microphone TS-903)



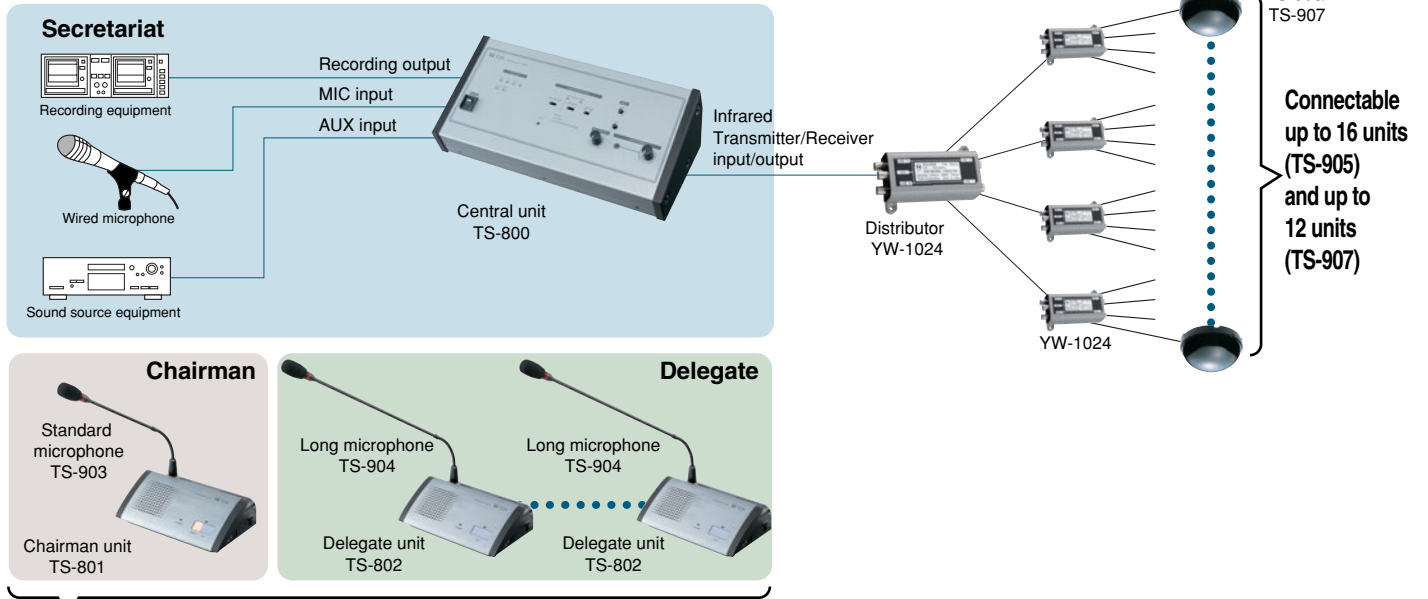
#### Delegate Unit TS-902 (with long microphone TS-904)



## TS-800 Series System Example (Standard Conference System)

### TS-800 Series

Simple style conference system with ultimate ease of use



Up to 64 units

\*Chairman and Delegate units require lithium-ion battery BP-900 or AC adapter AD-0910.

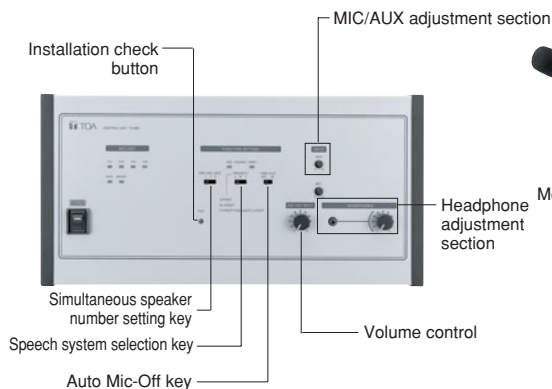
## System Features and Outline

- Conference system for usual meetings
- The number of conference units can be set for any of one, two or four persons allowed to talk at a time.
- All speeches during the conference can be recorded clearly.
- As a custom feature, the operation of giving speech permission can be controlled from PC.

## Parts Designation

### TS-800 Series

#### Central Unit TS-800



#### Chairman Unit TS-801 (with standard microphone TS-903)



#### Delegate Unit TS-802 (with long microphone TS-904)



## Notes on Installation of Infrared Transmitter/Receiver Unit

- Make sure to position the Chairman and Delegate units within the optimal coverage area of the Infrared Transmitter/Receiver unit.
- Infrared light will not reach the Infrared Transmitter/Receiver unit if it is located behind user or other obstacles. Install the Infrared Transmitter/Receiver units in such a way that two or more units are visible from the Chairman and Delegate units.
- With only one Infrared Transmitter/Receiver unit used for communication, the reception can be interrupted if infrared signal is obstructed by a person or an obstacle. Install two or more Infrared Transmitter/Receiver units so that the Chairman and Delegate units can communicate with them at all times.
- Do not install the Infrared Transmitter/Receiver units close to the wall or an obstacle.
- Install the Infrared Transmitter/Receiver units at least 2-3 meters away from the nearest window. Cover the windows with curtains or blinds to keep the units free from direct sunlight.
- Position the units at least 50 cm away from fluorescent lights.
- Keep away other infrared light sources. Lighting equipment, LCD projectors, overhead projectors, incandescent lamps, mercury-arc lamps, plasma displays, remote controllers, infrared microphones, infrared equipment such as infrared LANs, dimmers.

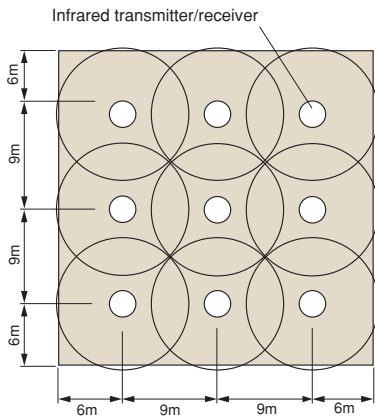
Optimal Coverage Areas

Transmitter/Receiver	Ceiling height	Radius of coverage area
TS-905	2.5m	Approx. 7.0m
	3.0m	
	3.5m	
	4.0m	
	4.5m	
TS-907	5.0m	Approx. 6.0m
	5.5m	
	6.0m	
	6.5m	
	7.0m	

## Infrared Transmitter/Receiver Units Arrangement Examples

### [Conference room with 30 x 30 m area]

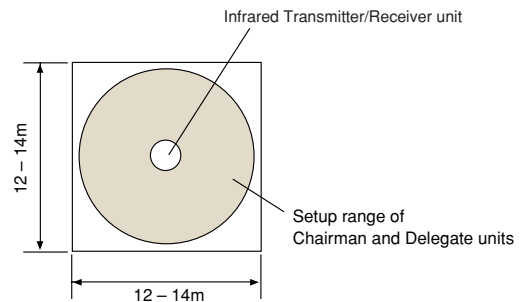
When the ceiling is lower than 7 meters, preferably arrange the units 9 meters apart from each other as shown in the figure. A service area covering every corner of the room can be secured.



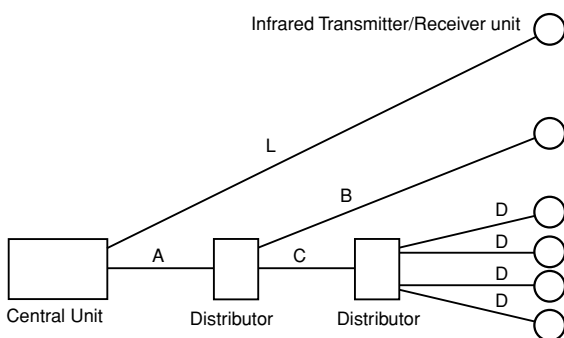
\*Choose the appropriate Transmitter/Receiver Unit according to the ceiling height.

### [Conference room using a round table]

All Chairman and Delegate units are arranged around the table, in which case only one Infrared Transmitter/Receiver unit may suffice for complete coverage of conference communications.



## Notes on wiring



If two or more Infrared Transmitter/Receiver units with different connection cable lengths receive infrared signals from the Chairman and Delegate units, the signal reception level may decrease to cause malfunction.

- Ensure that the cable length between Infrared Transmitter/Receiver unit and Central unit is identical. Cable length between each Infrared Transmitter/Receiver unit and Central unit:  $L=A+B=A+C+D$

\*This length must always be the same even if a distributor is included in the wiring.  
 Length between Infrared Transmitter/Receiver unit and distributor: D  
 Length between distributors (where two distributors are connected): C  
 Length between distributor and Central unit: A

## Distributor use

- Avoid connecting more than 2 distributors in series. Connecting 3 or more distributors increases high frequency signal loss, and could result in system malfunction.
- It is possible to mix Infrared Transmitter/Receiver units not connected to any distributor, those connected to 1 distributor, and those connected to 2 distributors in the same system.

## Conditions for finding maximum cable length

The maximum cable length between each Infrared Transmitter/Receiver unit and the Central unit differs depending on the type of coaxial cable used. The following two requirements must be met. The shorter length of the two results is considered to be the maximum length allowed. Do not exceed the maximum cable length.

1. Maximum allowable cable loss: 20 dB \_ Total distributor loss (varying with type of distributor and the number of serially-connected distributors)
2. Maximum allowable cable DC voltage drop: 5 V

\*For more details, please contact your dealer.

# Dimensions / Specifications

## ■ TS-900/TS-800 (Central Unit)

\*Appearance view of TS-900. TS-800 has the same dimensions.

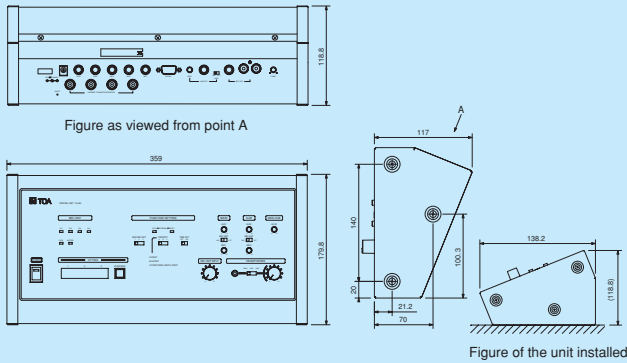
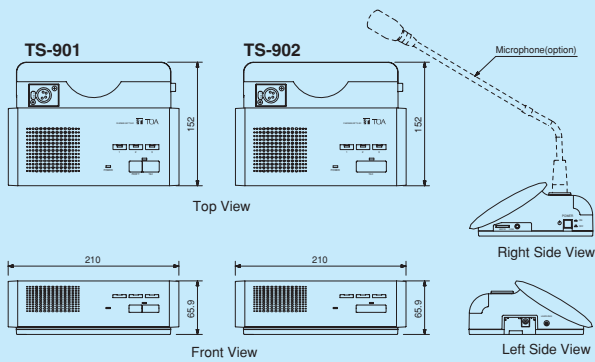


Figure as viewed from point A

Figure of the unit installed

## ■ TS-901/TS-801 (Chairman Unit), TS-902/TS-802 (Delegate Unit)

\*Appearance view of TS-901/902. TS-801/802 have the same dimensions.



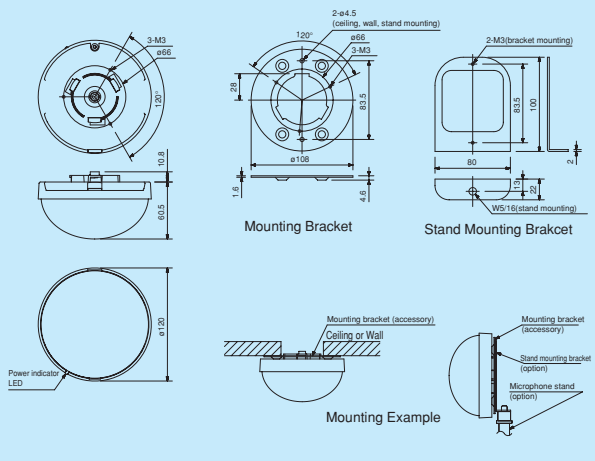
Top View

Front View

Right Side View

Left Side View

## ■ TS-905/TS-907 (Infrared Transmitter/Receiver Unit)

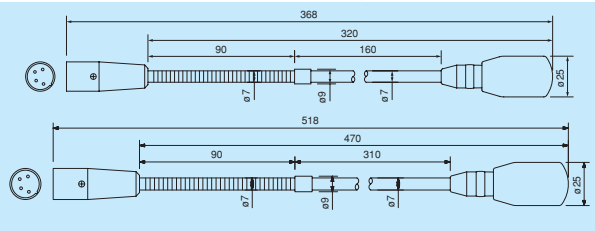


Mounting Bracket

Stand Mounting Bracket

Mounting Example

## ■ TS-903 (Standard microphone), TS-904 (Long microphone)



Model No.	TS-900	TS-800
Power Source	100-240 V AC, 50/60Hz (supplied from AC adapter (accessory))	
Power Consumption	72W	
Input	MIC1 (Base Language): -60 dB*, 600Ω, unbalanced, phone jack MIC2 (Translation Language): -60 dB*, 600Ω, unbalanced, phone jack AUX1 (Base Language): -20 dB*, 10 kΩ, unbalanced, phone jack AUX2 (Translation Language): -20 dB*, 10 kΩ, unbalanced, phone jack AUX3 (Base and Translation Language): -20 dB*, 10 kΩ, unbalanced, phone jack	MIC: -60 dB*, 600Ω, unbalanced, phone jack AUX: -20 dB*, 10 kΩ, unbalanced, phone jack
Output	LINE: -20 dB*, 10 kΩ, unbalanced, phone jack REC: -20 dB*, 10 kΩ, unbalanced, phone jack, RCA pin jack HEADPHONE: Mini jack	REC: -20 dB*, 10 kΩ, unbalanced, phone jack, RCA pin jack HEADPHONE: Mini jack
Number of Connectable Chairman/Delegate Units	96 units	
Number of Connectable Infrared Transmitter/Receiver Units	4 units (up to 16 units by using four Distributors)	
Infrared Transmitter/Receiver I/O Terminal	4 BNC jacks	
External Control Terminal	D-sub connector (9 P, male)	
LED Indicator	Voting result indicators 1-3 (7-segment LED, double-digit number), Audio signal receiving indicators 1-4 CH, Data signal receiving indicator, External control priority indicator, External control communication indicator, Power indicator, Battery indicator (flashes when a Chairman/Delegate unit's battery nears complete discharge)	Audio signal receiving indicators 1-4 CH, Data signal receiving indicator, External control priority indicator, External control communication indicator, Power indicator (flashes when a Chairman/Delegate unit's battery nears complete discharge)
Microphone Mix/Cut Switch (for the Base Language)	MIC/CUT (Mix): Chairman/Delegate units + MIC 1 + AUX 1 + AUX 3 →Base Language (Cut): MIC 1 + AUX 1 + AUX 3 →Base Language	---
Microphone Mix/Cut Switch (for the Translation Language)	MIC/CUT (Mix): Chairman/Delegate units + MIC 2 + AUX 2 + AUX 3 →Translation Language (Cut): MIC 2 + AUX 2 + AUX 3 →Translation Language	---
AUX 3 Mixing Select Switch	MIC/CUT (Mix): AUX 3 input is relayed to the line output. (Cut): AUX 3 input is not relayed to the line output.	---
Operating Temperature	0°C to +40°C	
Finish	Panel: Surface-treated steel plate, gray metallic, paint, semi-gloss	
Weight	2.8kg	2.7kg
Accessory	AC adapter (Cord length: 1.8 m DC cord, and 2 m detachable AC cord) × 1	
Option	Rack mounting bracket: MB-TS900	

\*0dB=1V

Model No.	TS-901/902	TS-801/802
Power Source	7.4 V DC (battery), 9 V DC (AC adapter) (supplied from BP-900 battery (option) or AD-0910 AC adapter (option))	
Current Consumption	MAX. 270 mA	
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 (radius)	
Input	Microphone terminal: Combined type of XLR-4-31 (dedicated for connecting the optional TS-903 or TS-904)	
Output	Monitor speaker: 8Ω, 0.2 W Headphone: Mini jack × 2	
LED Indicator (TS-901/9029)	Speech indicator (flashes when the unit is out of communications range), Voting status indicators 1-3 (flashes when the unit is out of communications range or when the battery level is low), 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)	
Operating Temperature	0°C to +40°C	
Finish	Top panel: ABS resin, gray metallic, paint, semi-gloss	
Dimensions	210 (W) × 65.9 (H) × 152 (D) mm	
Weight	640g	630g
Option	Microphone: TS-903, TS-904 (Select either one.) Lithium-ion battery: BP-900 AC adapter: AD-0910	

Model No.	TS-905	TS-907
Power Source	24 V DC (supplied from the optional TS-900 or TS-800)	
Current Consumption	Max. 100 mA	Max. 180 mA
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°
Covering Range	7m	
Communication Area	Approx. 6m in radius from the point underneath (Ceiling height: 5 - 7m)	
Connection Terminal	BNC jack	
LED Indicator	Power	
Operating Temperature	0°C to +40°C	
Finish	Dome: PC resin, visible light cut filter Base: ABS resin, black	
Dimensions	ø120 × 71.3 (H)mm	
Weight	230 g (unit only)	
Accessory	Mounting bracket × 1, Stand mounting bracket × 1	
Option	Microphone stand (The mounting thread size must be W 5/16.)	

Model No.	TS-903	TS-904
Type	Electret condenser microphone	
Directivity	Unidirectional	
Rated Impedance	1.8kΩ	
Rated Sensitivity	-37dB (1kHz, 0dB = 1V/Pa)	
LED Indicator	Speech indicator (ring type)	
Frequency Response	100 - 13,000Hz	
Output Connector	Combined type of XLR-4-32	
Finish	Gooseneck: Stainless steel, black Other: ABS resin, black	
Weight	90g	105g
Applicable Unit (Option)	Chairman/Delegate units: TS-801, TS-802, TS-901, TS-902	

## Peripheral Equipment / Specifications

### LITHIUM-ION BATTERY BP-900 (CE)/BP-900 (UL)

The BP-900 is a rechargeable lithium-ion battery designed for exclusive use with the conference units TS-801, TS-802, TS-901, and TS-902.



Nominal Voltage	7.4 V DC
Nominal Capacity	1700 mAh
Operating Temperature	0°C to +40°C
Dimensions	71.6 (W) × 20.4 (H) × 37.6 (D) mm
Weight	95 g
Accessory	Terminal protection cover (pre-installed at the factory) × 1

### BATTERY CHARGER BC-900

The BC-900 is a dedicated battery charger for the BP-900 (optional) used in the Chairman Units, and Delegate Units. It permits up to 8 batteries to be simultaneously charged within up to 5 hours.



Power Source	100 – 240V AC, 50/60 Hz (supplied from AC adapter (accessory))
Current Consumption	Max. AC2A
Charging Time	Approx. 5 hours
Charging Capacity	8 BP-900 batteries (option)
LED Indicator	Charging status (Green: Full charge, Red: On charge), Power indicator
Operating Temperature	0°C to +40°C
Finish	Case: Steel, black, paint Battery receptacles: PPO resin, black
Dimensions	240 (W) × 70 (H) × 115 (D) mm
Weight	Unit: 1.1 kg, AC adapter: 520 g
Accessory	AC adapter (Cord length: 1.5 m DC cord, and 2 m detachable AC cord) × 1

### RACK MOUNTING BRACKET MB-TS900

The MB-TS900 Rack Mounting Bracket is designed for exclusive use with the Central units TS-800 and TS-900 of the TOA Infrared Conference Systems.

The MB-TS900 is a 4-units size that can be mounted in an EIA Standard equipment rack.



Finish	Surface-treated steel plate, gray metallic, paint, semi-gloss
Dimensions	65.5 (W) × 177 (H) × 61 (D) mm
Weight	680g
Accessory	Rack mounting screw × 4, Rack mounting washer × 4

### AC ADAPTER AD-0910

The AD-0910 is an AC adapter to operate the Chairman units TS-801 and TS-901, and the Delegate units TS-802 and TS-902 on AC.



Power Source	100 – 240V AC, 50/60Hz
Output	9V DC, 1 A
Ripple Voltage	100mV (p-p)
Power Consumption	400mA AC, Input 100V
Cord Length	1.8m
Plug	RC6705, center "+"
Operating Temperature	0°C to +40°C
Finish	Case: PC/ABS alloy, black
Weight	190g
Accessory	AC power cord (2 m) × 1

### DISTRIBUTOR YW-1022 (to 2 outputs), YW-1024 (to 4 outputs)

The YW-1022 . YW-1024 is a distributor that can work in the frequency range of 1.6 to 1,000 MHz (except 50 to 70 MHz). Power passing type permits easy power supply.



Model No.	YW-1022	YW-1024
Frequency Range	1.6 – 1,000 MHz (excluding 50 – 70 MHz)	
Distribution Loss	4.5dB ±3dB (between the Mixing and each Distribution terminals)	8.5dB ±3dB (between the Mixing and each Distribution terminals)
Input/Output Impedance	75Ω	
Coaxial Connector	Mixing terminal: BNC jack, power passing type (under 30 V DC, under 2 A) Distribution 1 and 2(YW-1022), 1-4(YW-1024) terminals: BNC jack, power passing type (under 30 V DC, under 1 A)	
Operating Temperature	–10°C to +50°C	
Finish	ABS resin, gray	
Dimensions	75 (W) × 122 (H) × 34 (D) mm	
Weight	105g	120g



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