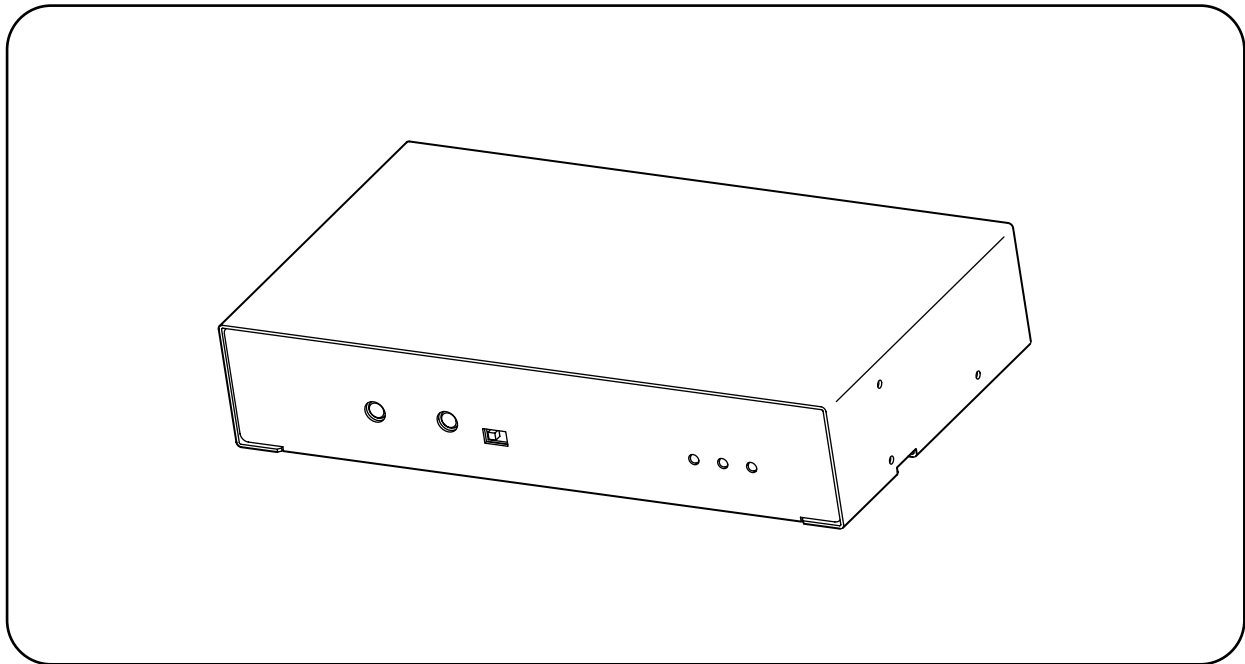


**COAXIAL AUDIO ADAPTER**

**C-AP105**



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

# 1. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section in order to ensure long, trouble-free operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings regarding safety.
- After reading, keep this manual handy for future reference.

## Safety Symbol and Message Conventions

Safety symbols and messages are used in this manual to prevent bodily injury and property damage which could result from mishandling. The conventions of the symbols and messages are described below. Before doing anything else, read this section first so you are thoroughly aware of the potential safety hazards as well as understanding the safety symbols and messages. Then before operating your equipment, read through the instruction manual so you are familiar with its general operation.



### **WARNING**

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.



### **WARNING**

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

- 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.
- 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.
- Install the unit only in a location that can structurally support the weight of the unit and the mounting bracket. Doing otherwise may result in the unit falling down and causing personal injury.
- Only install the unit indoors. Installing the unit outdoors could result in the unit falling down due to deterioration, possibly causing personal injury. Also, electric shock could result from the unit's exposure to rain.
- Should the following irregularities be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Do not attempt to further operate the unit to avoid fire or electric shock.
  - If you detect smoke or a strange smell coming from the unit.
  - If water or any foreign 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 or cable disconnection, etc.).



### **CAUTION**

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

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- Do not place heavy objects on the unit. Such object may fall or the unit may tip over, possibly resulting in personal injury.
- 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.

C-AP105 complies with Part 15 of the FCC Rules.

**Note**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**Modifications**

Any modifications made to this device that are not approved by TOA Corporation may void the authority granted to the user by the FCC to operate this equipment.

Underwriters Laboratories Inc. (UL) has not tested the performance or reliability of the security aspects of this product. UL has only tested for fire, shock or casualties as outlined in UL's Standard(s) for Safety. UL Certification does not cover the performance or reliability of the security hardware and security operating software. UL MAKES NO REPRESENTATIONS, WARRANTIES OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY RELATED FUNCTIONS OF THIS PRODUCT.

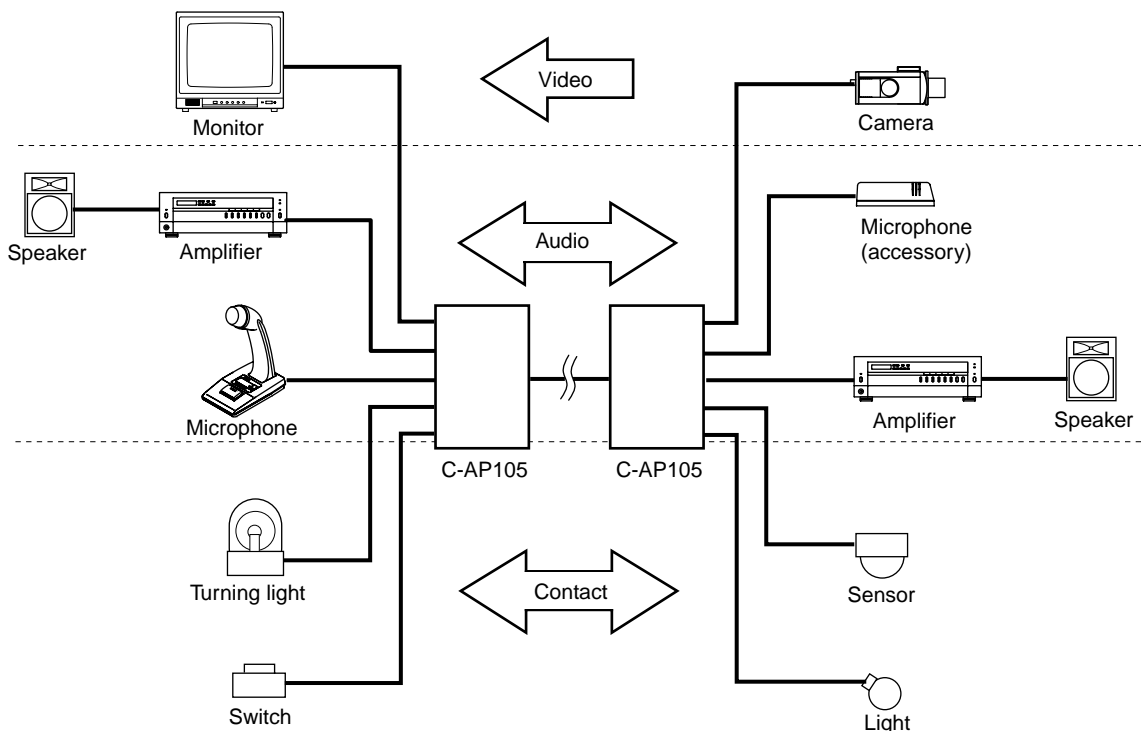
## 2. LIST OF INCLUDED COMPONENTS AND PARTS

Check to be sure that the following components and parts are contained in the package.

Unit (A) .....	1	Microphone mounting plate mounting screw ....	2
Unit (B) .....	1	(3 x 20 tapping screw)	
Microphone .....	1	Removable terminal plug 3P .....	3
(fitted with a microphone mounting plate and removable terminal block 3P)		Removable terminal plug 8P .....	4
Wall mounting bracket .....	4	Instruction manual .....	1
Wall mounting screw (3 x 20 tapping screw) ....	8	List of offices to contact .....	1
Wall mounting bracket mounting screw .....	8	Warranty card .....	1
(3 x 8 tapping screw)			
M2.5 x 16 microphone mounting screw .....	1		

## 3. GENERAL DESCRIPTION

The C-AP105 Coaxial Audio Adapter permits both audio and contact control signals to be transmitted in both directions by superimposing them on CCTV system video signals. The Coaxial Audio Adapter can be used with any of TOA's CCTV systems except networking systems.



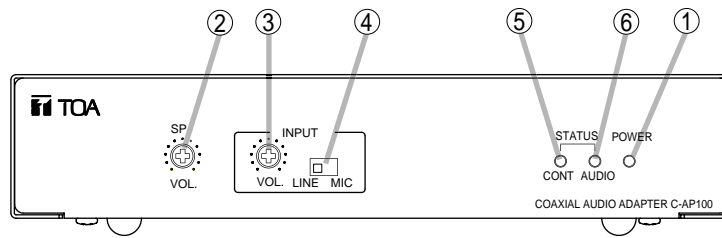
**Note :** Use relays when the control current of equipment connected to the contact output exceeds 10 mA.  
Either Unit A or B can be connected to the speaker side.

## 4. HANDLING PRECAUTIONS

- The Coaxial Audio Adapter and the camera's microphone cannot be used simultaneously. If the camera has a built-in microphone, turn off the microphone during camera video operation. If the camera is equipped with an external microphone (C-A10MC), do not use the microphone during camera operation.
- When using multiple C-AP105 units, be sure to only connect Unit A to Unit B. The system will not operate correctly if Unit A is connected to Unit A or Unit B is connected to Unit B.
- Use relays when controlling equipment that exceeds the unit's contact output capacity of 30V DC/10 mA.
- When permanently installing the Audio Adapter, do not place it on equipment that can generate excessive heat (over 60°C), such as a camera drive or power amplifier.

## 5. NOMENCLATURE AND FUNCTIONS

### [Front Panel]



#### (1) Power Indicator

Lights (green) when the power is supplied to the unit.

#### (2) Amplifier Volume Control

Adjusts the built-in amplifier volume.

#### (3) Input Level Control

Adjusts the input signal level.

#### (4) Input Level Selector

Selects the input signal level.  
(MIC: -60 dB/LINE: -20 dB)

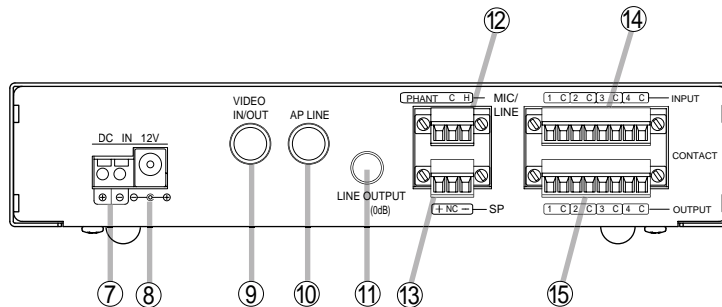
#### (5) Contact Status Indicator

Lights (green) when the contact is ready for communications.

#### (6) Audio Status Indicator

Lights (green) when the unit is ready for audio communications.

### [Rear Panel]



#### (7) Power Supply Terminal

Connect to the DC power supply (rated at 12V DC/ 350 mA ).

#### (8) AC/ DC Adapter Terminal

An AC/DC adapter can be used. The adapter must be suitable for the requirements of last page.

#### (9) Video Input/ Output Terminal

Connects to video equipment such as cameras and monitors. Because direct current passes through this terminal, single-cable cameras can also be connected. When using a single-cable camera, connect the monitor to the drive unit's camera input.

#### (10) AP Line

Used to connect Unit A and Unit B. Do not connect other equipment between both units.

#### (11) Audio Output Terminal

Connect a power amplifier to this terminal if the output power of the built-in amplifier (1W) is insufficient.

#### (12) Audio Input Terminal

Connects to a MIC or LINE signal level sound source. When using an electret condenser microphone, short the phantom power supply terminal and the input terminal with a lead wire. The phantom power supply specification is 5V/0.2 mA.

#### (13) Speaker Terminal

An output of up to 1W can be obtained when an 8 Ω speaker is connected.

#### (14) Contact Input Terminal

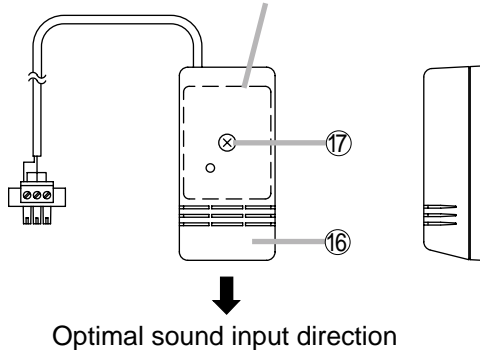
A no-voltage make contact input with a 12V open voltage and 200 Ω loop resistance. The 0V (ground level) C terminal (cold side) is common to 4 contact inputs.

#### (15) Contact Output Terminal

An open collector output with a contact capacity of 30V DC/ 10 mA. Connect the positive DC power line from the connected component to the Audio Adapter's numbered terminal, and the negative DC power line to the C terminal. The C terminals are independent for each contact.

## [Microphone]

Microphone Mounting Plate (for mounting on a wall or ceiling).  
(Attached to the underside of the microphone at the factory.)



### (16) Microphone

Used for collecting voice and sound input.  
Microphone sensitivity is the highest in the direction indicated by the arrow in the figure.

### (17) Microphone Mounting Screw

(for the mounting plate)  
A dedicated mounting screw for the microphone mounting plate, which is used to mount the microphone on a wall or ceiling.

**Note:** When mounting the microphone directly to a camera, use the supplied microphone mounting screw (for direct camera mounting).

## 6. CONNECTOR WIRING

Connect the audio and control input and output connectors as follows. For power supply input connections, refer to p. 7 "POWER SUPPLY CONNECTIONS."

### 6.1. Matching cable size and stripped cable ends

Applications	Cable Materials	Stripped Cable End
For Power Supply Terminal	Solid cable: AWG26 – 16 Stranded cable: AWG22 – 16	11 mm (both solid and stranded cables)
For Audio Terminals For Control Terminals	AWG 28 – 16	7 mm

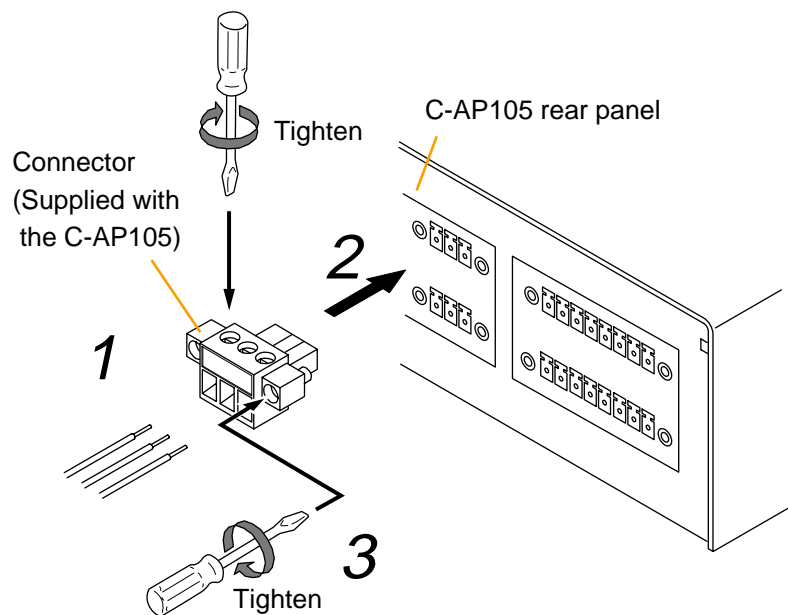
**Note:** When using stranded or shielded cable, do not solder the stripped and exposed ends. When the cable is clamped, the solder becomes crushed, increasing contact resistance and possibly resulting in unit malfunction.

### 6.2. Cable Connections

- Loosen the terminal screw to insert the cable into the connector, then retighten the screw. Tug lightly on the cable to be sure that it does not pull free.
- Insert the connector into the rear panel-mounted terminal.
- Tighten the fixing screw.

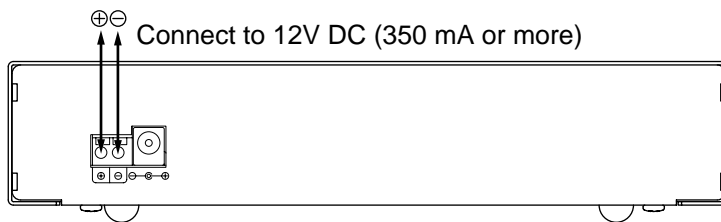
#### Notes

- Take care not to reverse Steps 1 and 2. When tightening the terminal screw, force is applied to the connector pins on the internal circuit board, possibly resulting in poor contact.
- Use the appropriate type of screwdriver for the connector wiring screws.



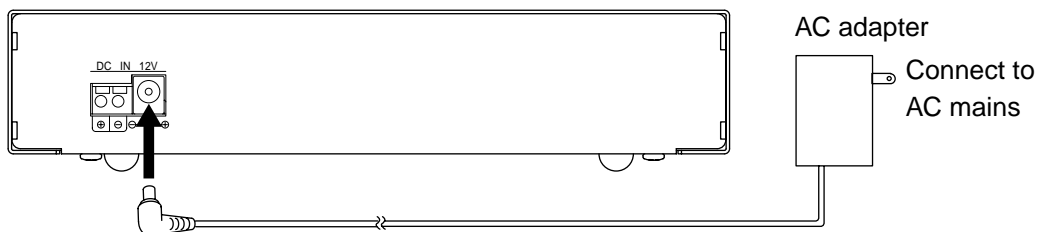
## 7. CONNECTIONS

### 7.1. Power Supply Connections



**Note:** Make sure that the dc power supply is switched OFF during cable connection or disconnection.

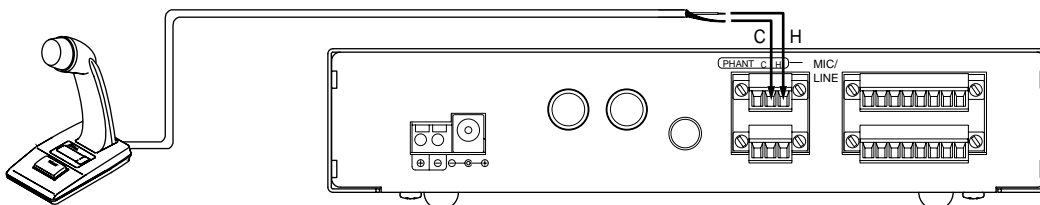
#### [If using an AC/ DC adapter]



### 7.2. Audio Input Connections

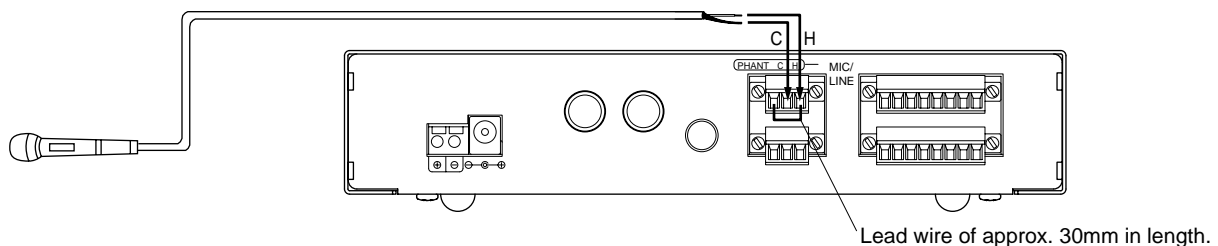
(Refer to CONNECTOR CONNECTIONS on the previous page for how to connect the connectors.)

#### [If using a dynamic microphone]



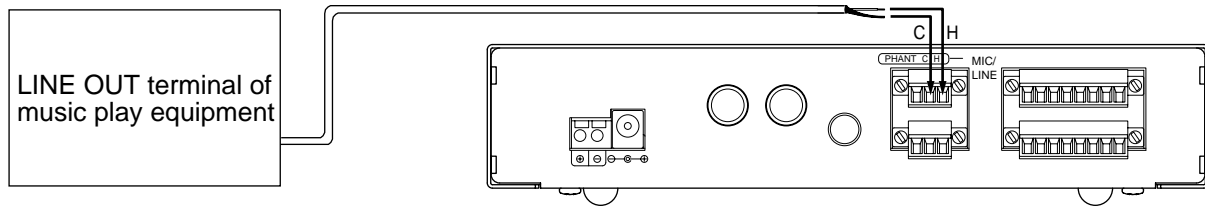
1. Connect cable conductor to "H" and shields to "C."
2. Set the front panel-mounted Input level selector switch to the MIC position.
3. Adjust the volume control so that voice output is not distorted.

#### [If using an electret condenser microphone]



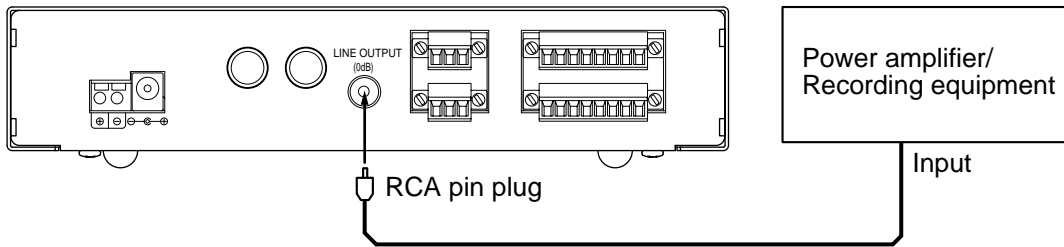
1. Connect both the microphone cable conductor (HOT) and lead wire to "H."
2. Connect the shields to "C", then connect either end of the lead wire to "PHANT."
3. Set the front panel-mounted Input level selector switch to the MIC position.
4. Adjust the volume control so that voice output is not distorted.

**[If using line signal level equipment]**



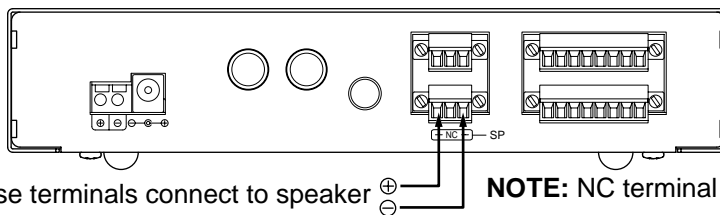
1. Connect the cable conductor to "Input" and shields to "C."
2. Set the front panel-mounted Input level selector switch to the LINE position.
3. Adjust the volume control so that sound output is not distorted.

**7.3. Audio Output Connections**



**NOTE:** Signal level is adjusted at the amplifier.

**7.4. Speaker Connections**



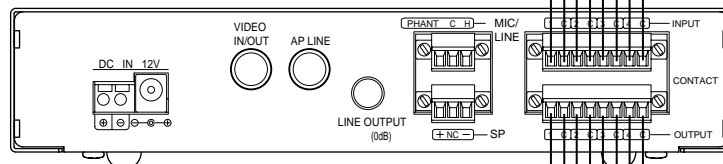
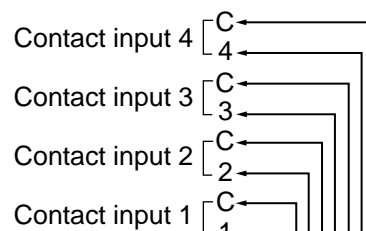
These terminals connect to speaker **NOTE:** NC terminal is not connected.

Adjust the volume level with the Speaker volume control located on the front panel. Set so feedback does not occur during bi-directional sound output.

**7.5. Contact Input and Output Connections**

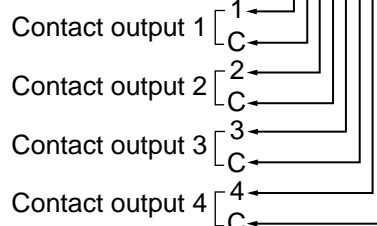
**[Contact Inputs]**

Connect to the sensor contact output or switch. The C terminal is common to all 4 contact inputs and internally connected to 0 V.



**[Contact outputs]**

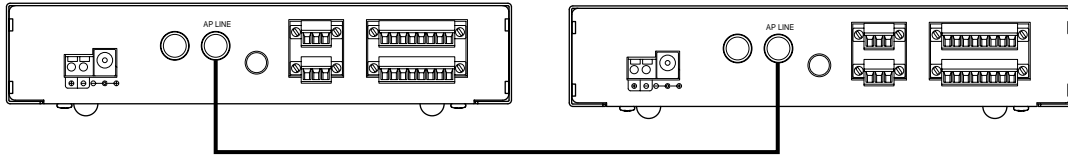
Connect to equipment's control input. These are open collector outputs, and the emitter is floated and connected to the C terminal. Connect using relays when the control current exceeds 10 mA.



Closing Contact input 1 closes Contact output 1 of the other connected unit. Each of the 4 contacts can be used independently. Transmission delay time is less than 300 ms.



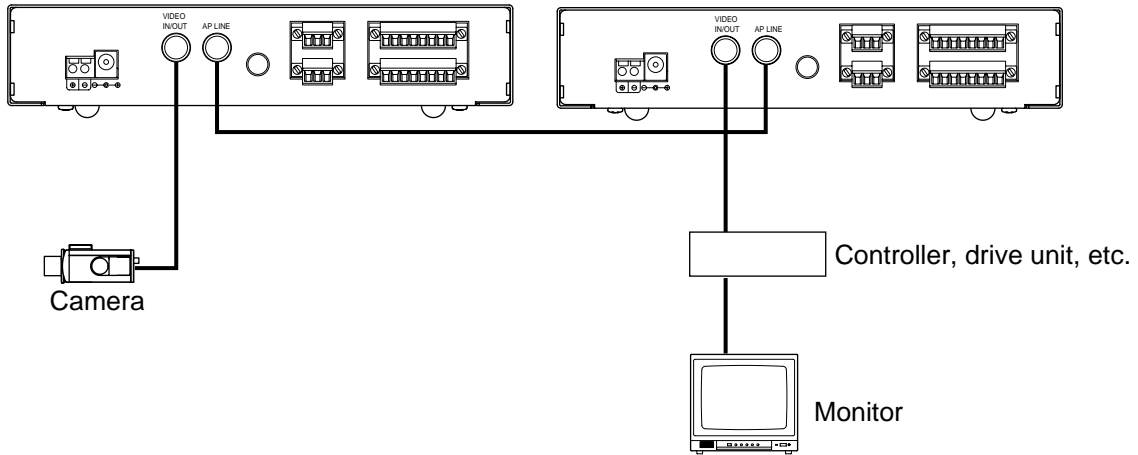
## 7.6. AP Line Connections



Use coaxial cable to connect between AP Line terminals.  
Do not connect other equipment or components between Unit A and Unit B.  
Shown below are guidelines on cable distances:

- RG-59/ U : Max. 400 m
- 5C-FB : Max. 600 m
- 5C-2V : Max. 400 m
- 3C-2V : Max. 300 m

## 7.7. Video Equipment Connections

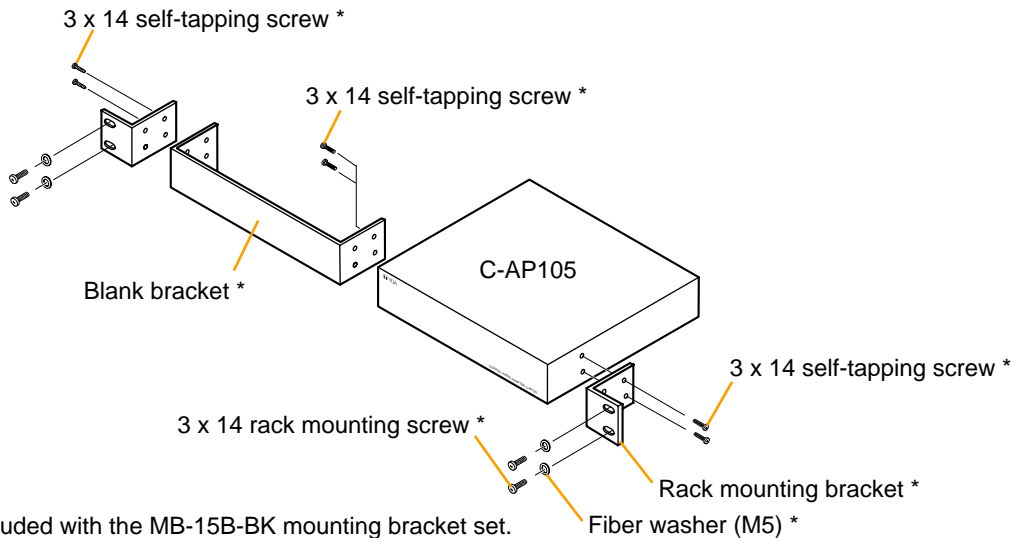


Connect the camera or monitor to the Video input/output terminal.  
The camera's internal microphone or optional external microphone (C-A10MC) cannot be used during camera video operation.

## 8. INSTALLATION

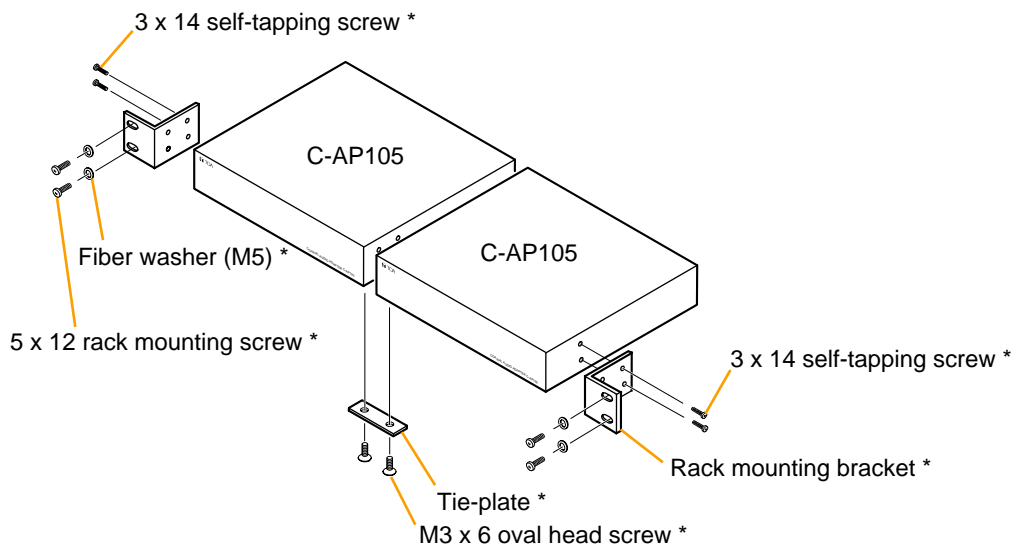
When mounting the unit in an equipment rack, use the optional mounting bracket set and remove the rubber feet installed on the underside of the unit.

### 8.1. Rack-mounting a single unit (using the optional MB-15B-BK mounting bracket set)



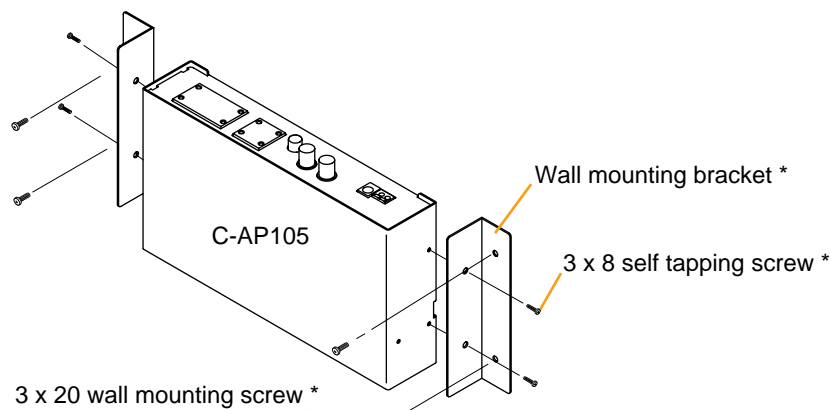
\* Parts included with the MB-15B-BK mounting bracket set.

## 8.2. Rack-mounting two units (using the optional MB-15B-J mounting bracket set)



\* Parts included with the MB-15B-J mounting bracket set.

## 8.3. Wall Mounting

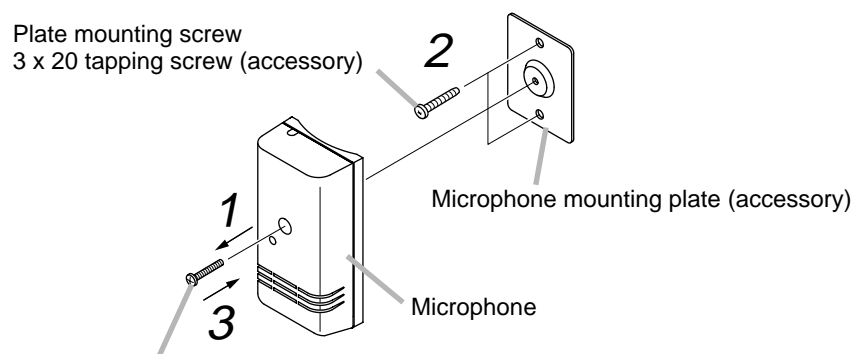


\* Parts supplied with the C-AP105 unit.

## 8.4. Microphone Attachment

### [Mounting to a wall or ceiling]

1. Remove the microphone mounting screw (for the mounting plate) (17), and detach the microphone mounting plate.  
**Note:** Removing the mounting screw (17) disassembles the microphone. Take care not to drop its parts and components.
2. Using the 2 supplied plate mounting screws, mount the microphone mounting plate removed in Step 1 to a wall or ceiling.
3. Using the microphone mounting screw (17) removed in Step 1, mount the microphone to the microphone mounting plate.



⑰ Microphone mounting screw (for mounting plate)  
M2.5 x 14 screw

**Note:** Attached to the mounting plate when shipped from the factory.

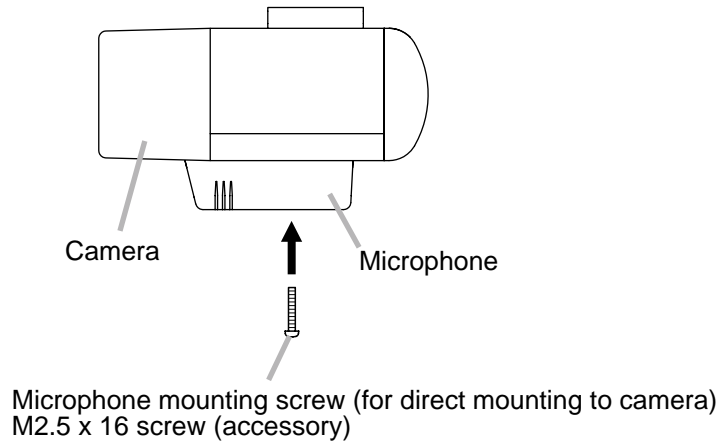
### [Mounting to TOA cylindrical cameras]

1. Remove the microphone mounting screw (for the mounting plate) (17) and detach the microphone mounting plate.

**Note**

Removing the mounting screw (17) disassembles the microphone.  
 Take care not to drop its parts and components.  
 The removed plate and screw are no longer used.

2. Using the supplied microphone mounting screw (1 piece), attach the microphone to the camera.



## 9. IF A FAILURE IS DETECTED (TROUBLESHOOTING)

Symptom	Cause	Remedy
Cannot turn power on.	The DC power supply (or AC/ DC adapter) is incorrectly connected.	Connect the DC power supply (or AC/ DC adapter) correctly.
No sound output.	The Audio status indicator is not illuminated. Communications cannot be performed while the indicator remains off.	Ensure that a coaxial cable is correctly connected to the AP line terminal. Check to confirm that the installed cable length is within the range of permissible cable distance.
	Phantom power supply is not connected to the electret condenser microphone in use.	Connect the phantom power supply.
	The polarity and terminals of the audio input and speaker output are not correctly connected.	Ensure all terminals are properly connected with the correct polarity.
Low sound volume.	Input level is not adjusted.	Adjust using the Input level selector switch and input level control.
Contact output in-operative.	The Contact status indicator is not illuminated. Communications cannot be performed while the indicator remains off.	Ensure that a coaxial cable is correctly connected to the AP line terminal. Check to confirm that the installed cable length is within the range of permissible cable distance.
	The contact input of another unit is not correctly connected, or the Contact output is not correctly connected to a corresponding Contact input.	Ensure the Contact input is correctly connected.
Noise in voice signals.	Microphone attached to the connected camera turned ON.	Turn off the microphone switch.
	Optional microphone attached.	Disconnect the optional microphone.

## 10. SPECIFICATIONS

Power Source	12V DC 350mA (cage clamp) Solid Wire : $\varnothing$ 0.4 - 1.2 mm (AWG26 - 16), Stranded Wire: 0.3 - 1.25mm <sup>2</sup> (AWG22 - 16) AC/ DC adapter not supplied by TOA.*1	
Power Consumption	3 W (standby), 8 W (maximum output)*2	
Coaxial Cable Length (between units)	RG-59/U : Max. 400 m 5C-FB : Max. 600 m 5C-2V : Max. 400 m 3C-2V : Max. 300 m	
Carrier	Unit A: Transmission: 50.65 MHz / Reception: 53.65 MHz Unit B: Transmission: 53.65 MHz / Reception: 50.65 MHz	
Transmission Direction	Communications in both directions between a pair of (2) units (Other equipment cannot be connected between units.)	
AP Line Terminals	BNC	
Video Input/Output Terminals	BNC (DC - 8 MHz, loss : under 1 dB)	
Audio	Modulation System	FM
	Frequency Deviation	$\pm$ 75 kHz (1kHz)
	Frequency Response	100 - 10,000 Hz
	S/N Ratio	54 dB (MIC) / 65 dB (LINE)
	Inputs	MIC: -60 dB*3, 2k $\Omega$ , unbalanced, phantom power (externally connected to microphone input terminal) LINE: -20 dB*3, 10 k $\Omega$ , unbalanced (MIC/LINE switch-selectable) Removable terminal block (3P)
	Line Output	0 dB*3, 10 k $\Omega$ , unbalanced, RCA pin jack
Speaker Terminal	Max. 1 W, 8 $\Omega$ , Removable terminal block (3P)	
Transmission Contacts	Sub-carrier AM (DTMF)	
Contact Inputs	4 contacts, no-voltage make contact input, open voltage: 12V DC, loop resistance: under 200 $\Omega$ (short circuit current: 5 mA), Removable terminal block (8P)	
Contact Outputs	4 contacts, open collector output, withstand voltage: 30V DC, current: max. 10 mA, Removable terminal block (8P)	
Operating Temperature	-10°C to +50°C	
Operating Humidity	Under 90% RH (no condensation)	
Finish	Panel: Pre-coated steel plate, black (Munsel N1.0), 30% gloss Cover: Pre-coated steel plate, black (Munsel N1.0), 30% gloss	
Dimensions	210 (W) x 47.4 (H) x 126.5 (D) mm*2	
Weight	815 g *2	

\*1 An AC/ DC adapter can be used. The adapter must be suitable for the following requirements :

Nominal Output : 12V DC/ Over 350mA (under 18 V DC at no load)

Plug : (EIAJ RC-6705) Internal diameter : 2.1mm, Outer diameter : 5.5mm, center+

\*2 Represents value per unit.

\*3 0 dB = 1 V

Product specifications and external design are subject to change without notice.