

RAMSA

Speaker System
WS-AT300
Subwoofer System
WS-AT350



Operating Instructions

Panasonic[®]

Before attempting to connect or operate this product, please read these instructions completely

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REGULATORY STATEMENTS

WARNING:
TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR
MOISTURE.

The serial number of this product may be found on the back of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

Serial No. _____

SAFETY INSTRUCTIONS

Please observe the following instructions carefully for your own safety and that of equipment.

- If the speakers fall, it can cause serious damage to persons or properties.
- Read the instructions printed on the back of the speakers.
- Ask your nearest dealer or qualified installers for installation and wiring.
- Place the speakers on a stable surface.
- Secure the speakers with safety wires or equivalent.
- Detach the speaker and the speaker stand before adjusting their height.
- Separate the speaker and the speaker stand before moving the set to a different location.
- Do not install the speaker with the stand at a place where passers-by might stumble on them.

PREFACE

WS-AT300

- This speaker system is a 2-way bass-reflex type incorporating a 38-cm (15") woofer and a Square Contour Wave Guide (SCWG) horn tweeter.
- The speaker system accepts a continuous program input of 400 W or 200 W(RMS). It delivers high outputs from its compact body with a maximum sound pressure level of 122 dB.
- The SCWG horn minimizes the disturbing reflection sound generated near the open end and to provide a constant directivity of 60° (horizontal) and 40° (vertical). You can easily attach again the horn to the enclosure by turning it 90° as required for horizontal or vertical speaker installation.
- The enclosure has essential features such as toughness to transportation, a recessed type handle for carrying, the convex and concave for stacking, holes for mounting bracket, safety wires, etc.

WS-AT350

- This Subwoofer is a bass-reflex type incorporating a 38-cm (15") cone speaker and to be used with the RAMSA Subwoofer Processor WS-SP2A.
- The WS-AT350 accepts an input of 400 W (RMS). It delivers high outputs, though it is small in size, with a maximum sound pressure level of 118 dB.
- The enclosure has essential features such as toughness to transportation, a recessed type handle for carrying, the convex and concave for stacking, holes for mounting bracket, safety wires, etc.

PRECAUTIONS

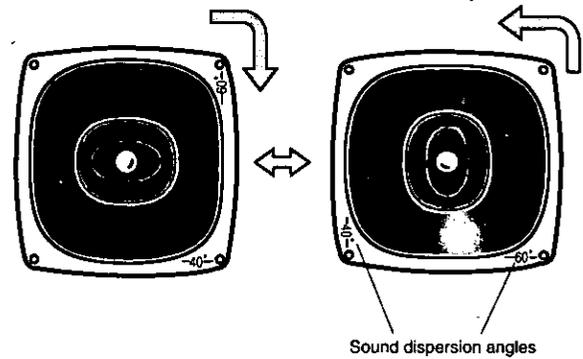
- Power loss may increase as the total speaker impedance gets lower with a number of speaker hookups. Use the largest speaker cable in wire gauge to reduce power loss.
- Switch off the power amplifiers before connecting the speakers or other peripherals.
- Avoid the followings all the time to protect the speakers from damage.
 - Turning on and off mixing consoles and other peripherals may cause shock noise when the amplifiers and subwoofer processor are on.
 - Shock noise resulting from the connection/disconnection of inputs/outputs with any powered-up equipment
 - Pop noise from microphones without appropriate use of breath-pop screen and/or high-pass filter
 - Click noise caused by switching on or off the phantom power for microphones
 - Continuous operation at very low frequency from an oscillator, synthesizer or program sources
 - High frequency noise developed by fast-forward or fast-rewind operation of a tape deck
 - Out of tune noise in FM broadcast
 - Feed-back from microphones or electronics musical instruments.
- Match the polarities of all the speakers by observing the connectors and wire colors when using two or more speakers.
- Read "PROTECTION CIRCUITS" on page 8. Turn down the volume control of the amplifier immediately if the sound suddenly decreases.
- You should use the WS-AT350 Subwoofer all the time with Subwoofer Processor WS-SP2A. The WS-SP2A processes the signal to protect the speakers from damage due to an excessive input signal.

INSTALLING THE SPEAKER

• Changing the tweeter direction

You can alter the directivity when placing the WS-AT300 horizontally.

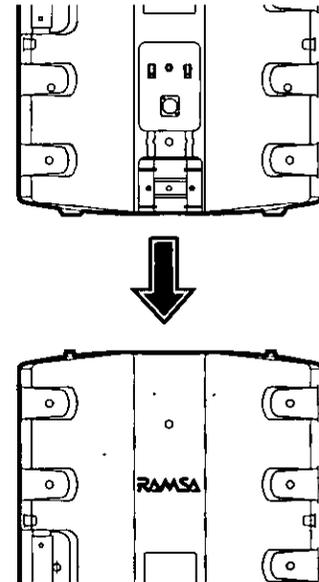
1. Unscrew four bolts to detach the tweeter.
2. Turn the tweeter by 90°.
3. Tighten four bolts to attach the tweeter again.
4. Rotate the RAMSA badge by 90°.



• Stacking

Speakers can be stacked one upon another as illustrated.

Place an additional speaker on top of another, making sure to match their convex and concave portions.



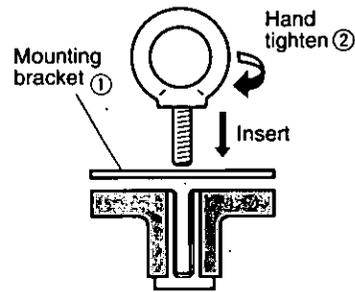
INSTALLING THE SPEAKER

• On wall or ceiling

You can install the speaker on a wall or ceiling with a mounting bracket (not supplied).

- ① Place the bracket on the enclosure.
- ② Screw the eye bolts into the screw holes of the enclosure by hand.
- ③ Fix the speaker to a wall or ceiling.
- ④ Take safety protections mentioned in "Secure the speaker."

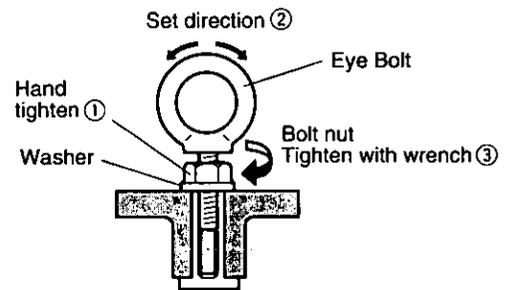
Note: Installers should seek advice on the building structure and load capacity, if unknown, from an architect or a structural engineer.



• Secure the Speaker

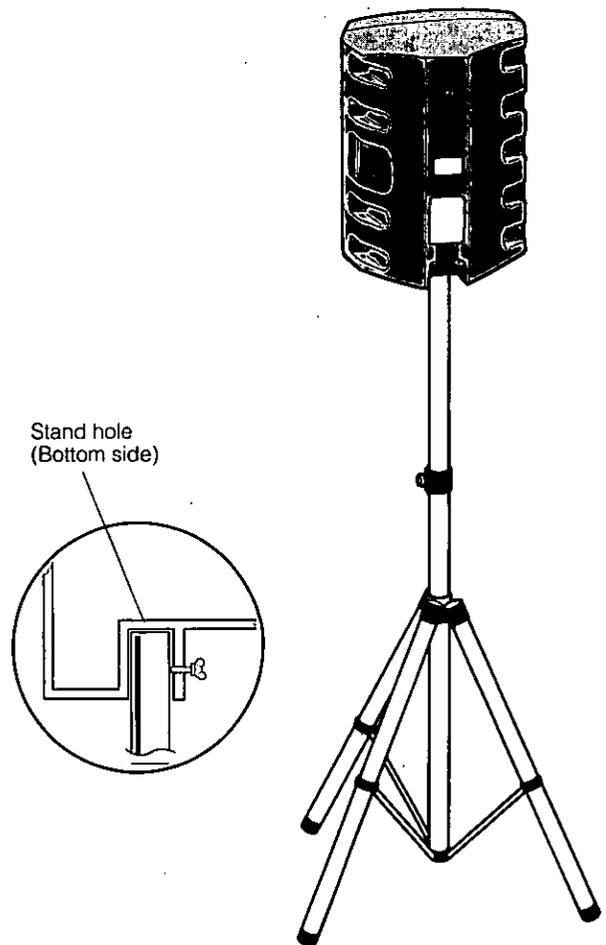
Use safety wires (not supplied) when hanging the speaker from a wall or ceiling. This is not a major means of support but just a safety relief.

- ① Tighten the eye bolts with washers and bolt nuts (not supplied) into the screw holes of the enclosure by hand.
- ② Set the direction of the eye bolts to be in the best position for binding safety wires.
- ③ Fasten the bolt nuts with wrench.
- ④ Bind one end of safety wires to the eye bolts.
- ⑤ Secure the other end of safety wires to the supporting structure of the building.



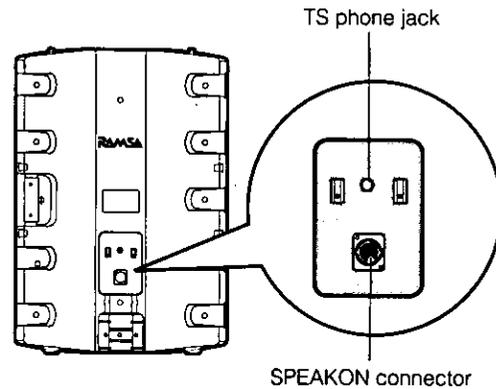
• Mounting on a stand

1. You can mount the speaker on a speaker stand by using the stand hole in the enclosure bottom.
2. The stand should have a supporting pipe of $\varnothing 1.5$ inches.
3. Take safety protections by placing it in a safety location, for example.

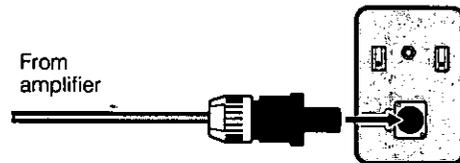
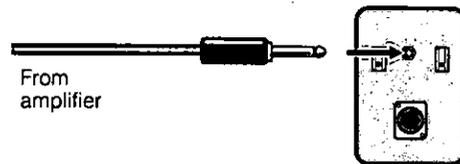


CONNECTING SPEAKER CABLES

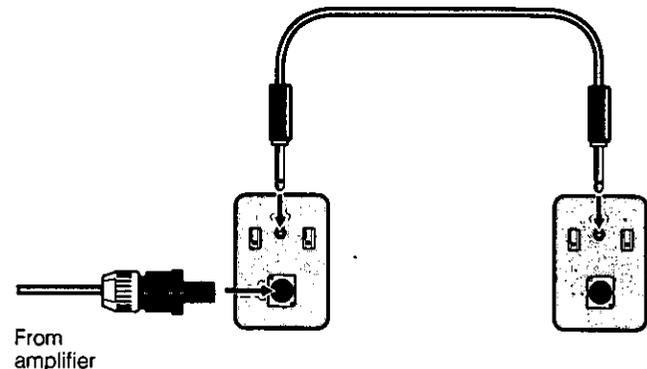
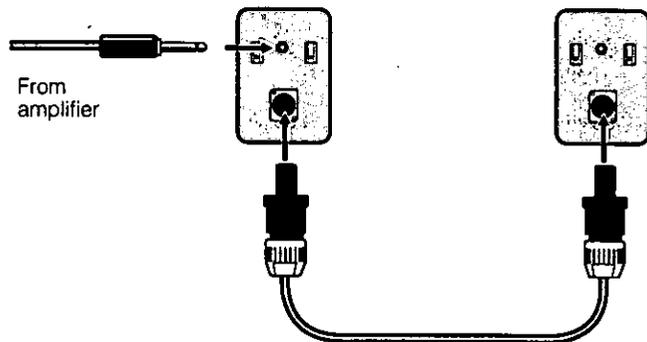
You can find the TS (tip-sleeve) phone jack and SPEAKON connector on the back of the enclosure. These two are usable as input or output terminals since they are wired in parallel. See the block diagram on page 9.



1. Connect signal input from an amplifier to either TS phone jack or SPEAKON connector.



2. Bridge the first speaker and the second when using two speakers in parallel as illustrated.



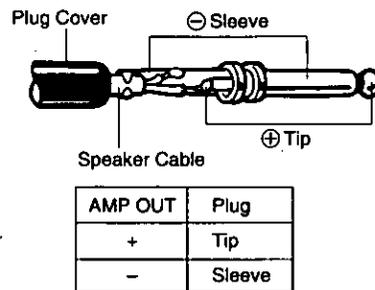
Notes:

- Do not connect more than two speakers in parallel. Excessively low impedance can cause distorted output sound or damage to the amplifier.
- Match the sound phase of all speakers by confirming the polarities of connection when using two or more speakers.

WIRING CONNECTOR AND CABLE

TS (tip-sleeve) phone plug

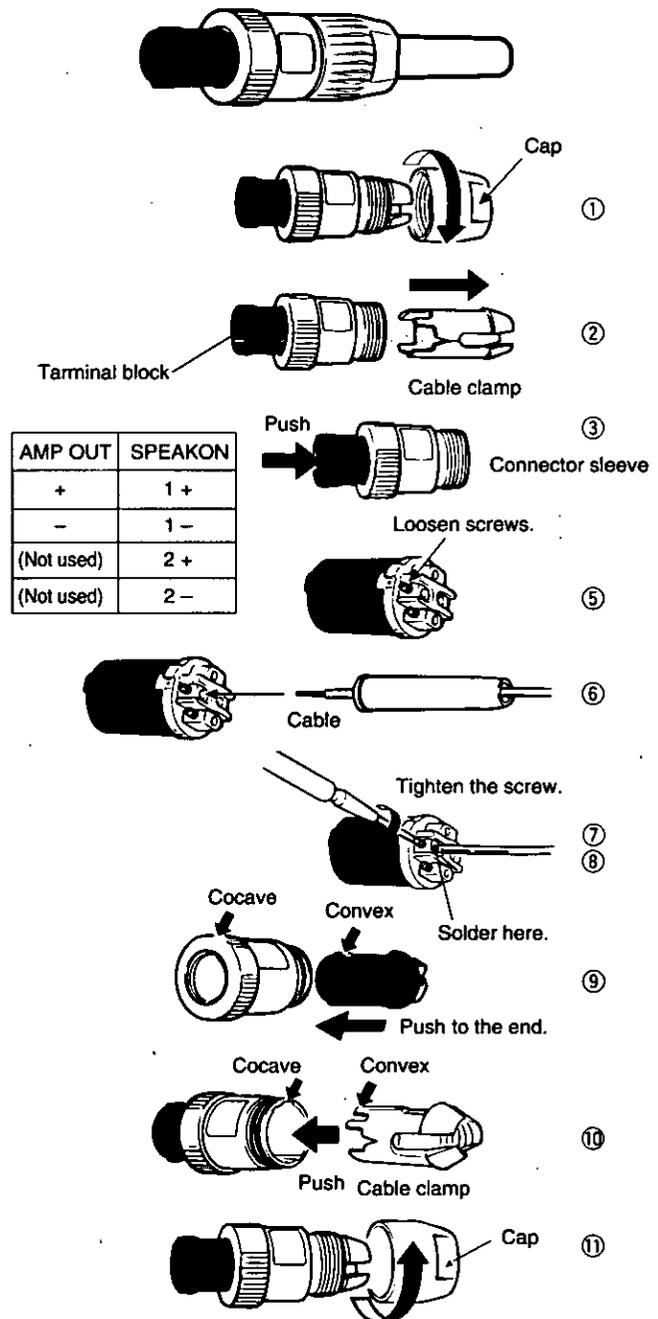
1. Unscrew the plug cover.
2. Thread speaker cables through the plug cover.
3. Connect and solder the + (positive) polarity wire to the tip of the plug.
4. Connect and solder the - (negative) polarity wire to the sleeve of the plug.
5. Tighten cable with the clamp of the plug.
6. Fasten the plug cover.



SPEAKON connector

Use SPEAKON connector (4-pole, NL4FC series, by NEUTRIK AG) as followings.

- ① Unscrew the connector cap by rotating it counterclockwise.
- ② Slide the cable clamp out from the rear of the connector.
- ③ Push and separate the connector sleeve from the terminal block.
- ④ Pass the connector cap and cable clamp over the end of the cable.
- ⑤ Loosen the clamping screws in the terminal block.
- ⑥ Prepare and insert the wires into the terminals as shown in the table.
- ⑦ Tighten the screws to secure the wires.
- ⑧ For added security in portable applications, soldering of the wires together with the terminals is recommended.
- ⑨ Assemble the terminal block and the connector sleeve after matching the positions of the concave and the convex.
- ⑩ Match the convex position of the cable clamp to the concave of the connector sleeve, then push the cable clamp.
- ⑪ Screw the connector cap.



SETTING THE SUBWOOFER PROCESSOR

For further details please refer to the Operating Instructions of the RAMSA Subwoofer Processor WS-SP2A.

RECOMMENDED FUNCTION SELECTOR SETTING		
SUB WOOFER	MAIN SPEAKER	FUNCTION SELECTOR POSITION
WS-AT350	WS-AT300	

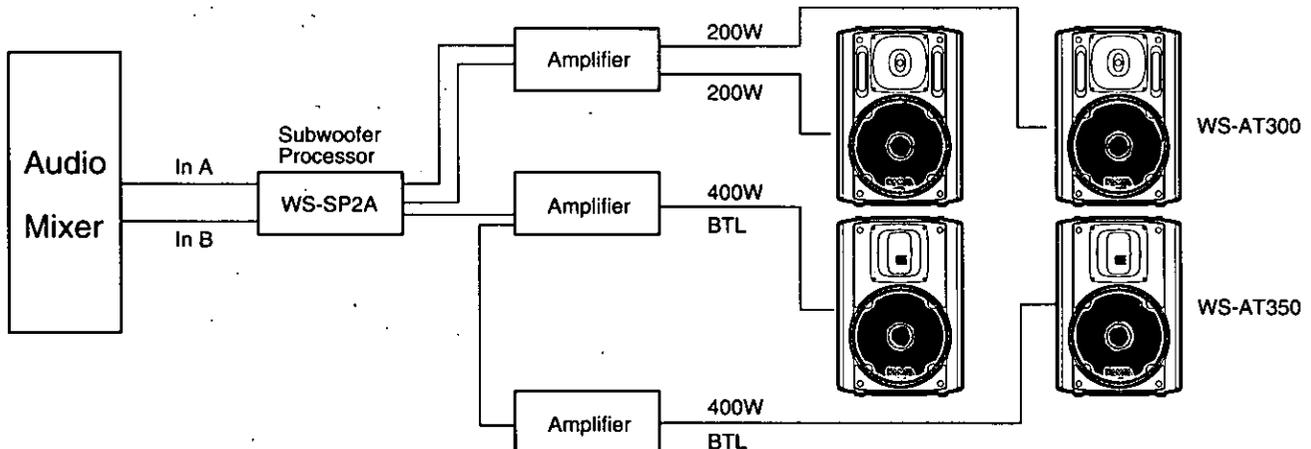
PROTECTION CIRCUITS FOR WS-AT300

- The WS-AT300 has separate overload protection circuits for woofer and tweeter. When activated by an excessive input signal, they mute the output sound. Turn down the volume control for 2 to 20 seconds to reset the circuits.

Note: Make sure to lower the volume control of the amplifiers if the output sound suddenly decreases. Keeping or even increasing the volume can cause serious damage to the speaker.

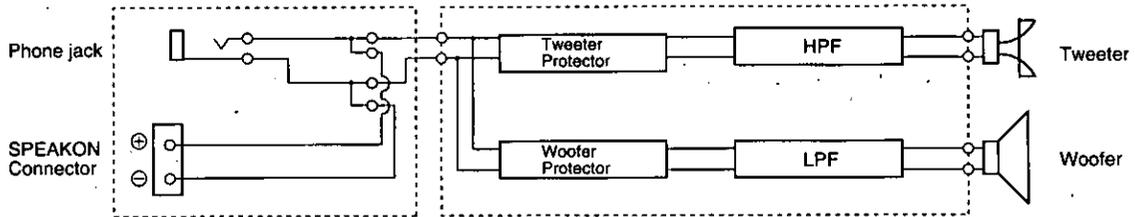
SYSTEM DIAGRAM

This shows an example of system connections.

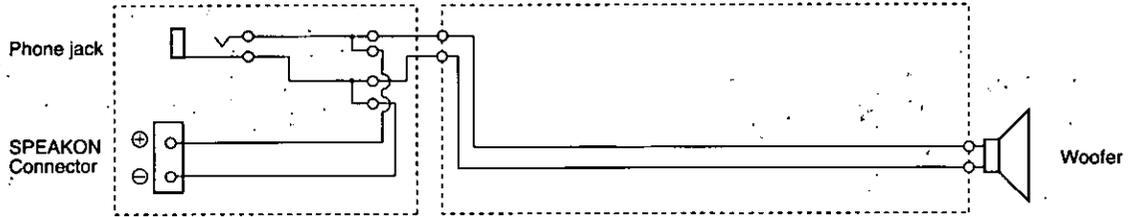


BLOCK DIAGRAM

WS-AT300



WS-AT350



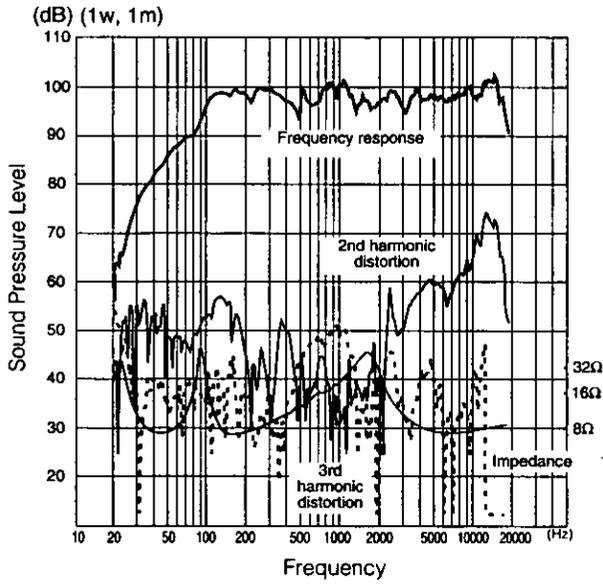
SPECIFICATIONS

	WS-AT300	WS-AT350
Type	2 Way, Bass-reflex type	Bass-reflex type
Input impedance	8 ohms	
Power capacity	400 W (continuous program input) 200 W (RMS)	400W (RMS) —
Sound Pressure Level	99 dB [1 W, 1m (3.3 ft)]	92 dB [1 W, 1m (3.3 ft)]
Max. Sound Pressure Level	122 dB [1m (3.3 ft)]	118 dB [1m (3.3 ft)]
Frequency response	70 Hz - 18 000 Hz	30 Hz - 1 400 Hz
Crossover frequency	2 200 Hz	—
Speaker		
Woofer	38 cm (15") cone speaker	38 cm (15") cone speaker
Tweeter	SCWG horn speaker	—
Dispersion	60° (horizontal), 40° (vertical)	—
Dimensions	480 (W) x 694 (H) x 38 (D) mm [18-7/8" (W) x 27-5/16" (H) x 15" (D)]	
Weight	26 kg (57 lbs.)	26.5 kg (58 lbs.)
Finish		
Enclosure	Resin molded, Blue black	
Front panel	Punched grille, Blue black	
Standard accessories	Eyebolt (M8 x 25) 2 Operating Instructions 1	

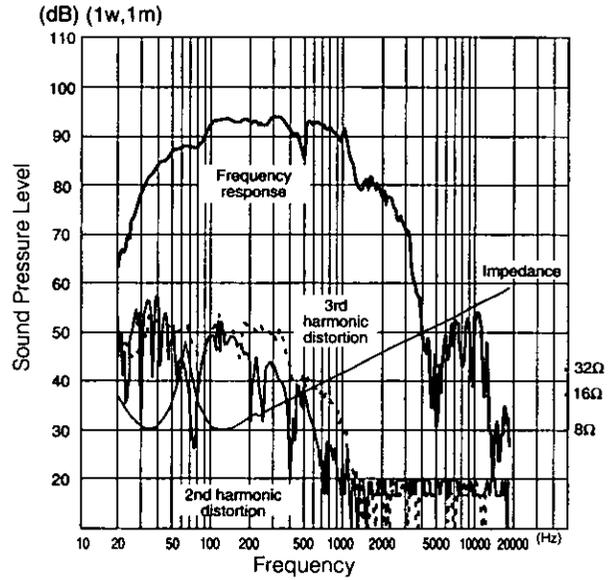
- Dimensions and weight indicated are approximate.
- Specifications are subject to change without notice.
- True effective power measured by the test method prescribed by American National Standard EIA (Electronic Industries Association), RS-426-A (1980).
In this test, the noise signal with a higher frequency power component was used to match the latest programme sources.

TYPICAL PERFORMANCE

■ WS-AT300

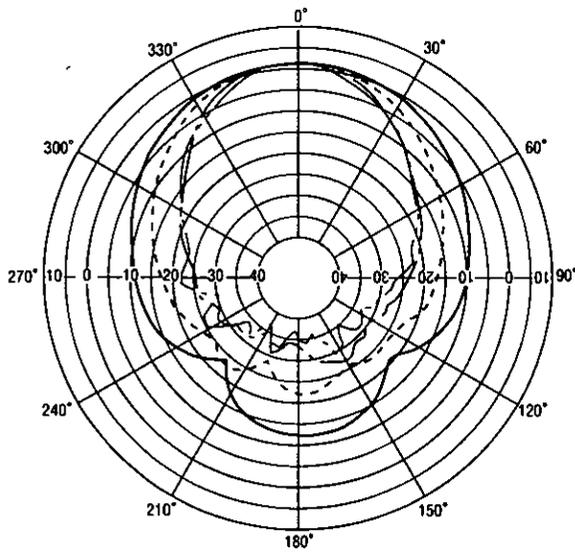


■ WS-AT350

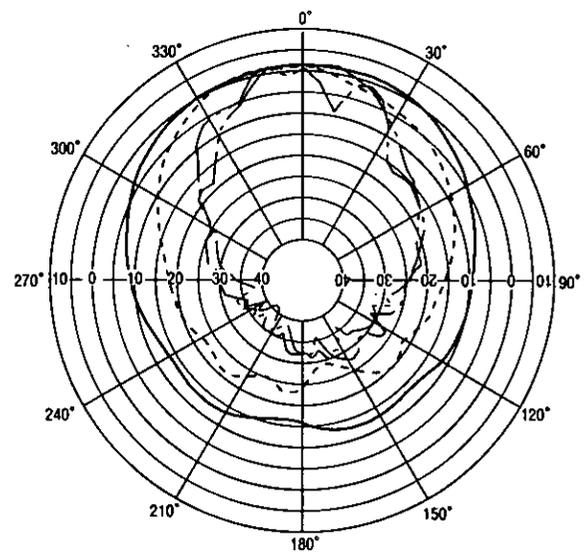


DIRECTIVITY

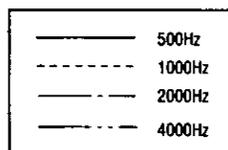
■ WS-AT300



Horizontal



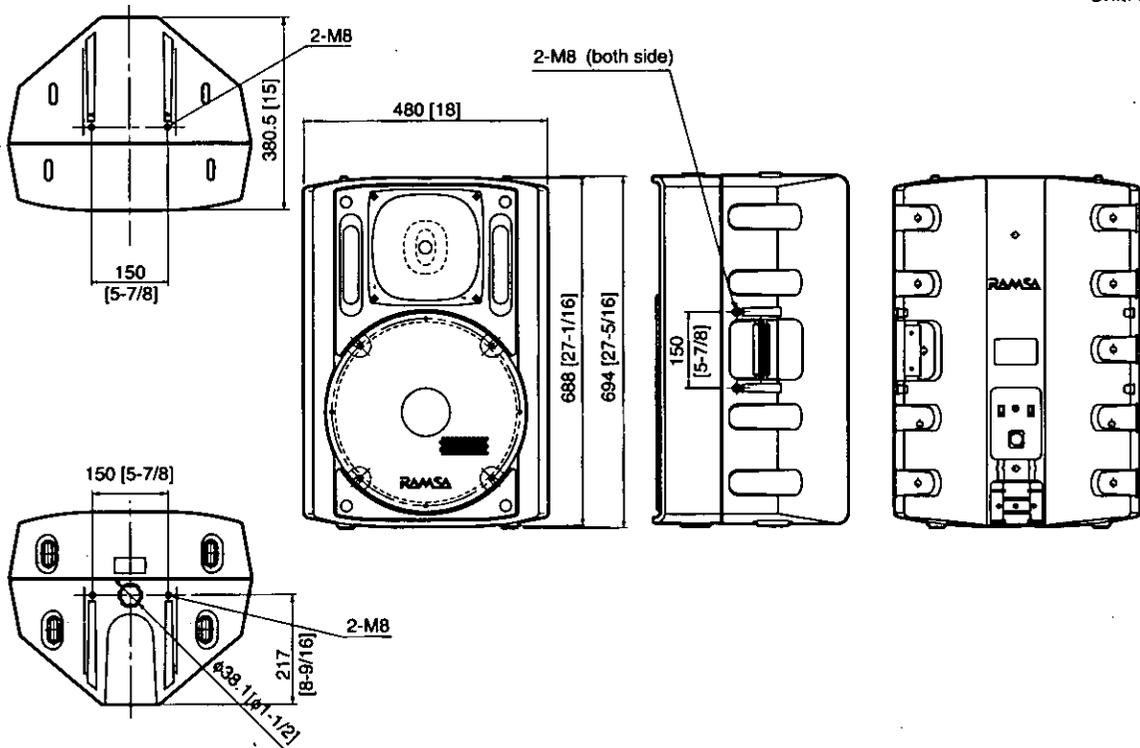
Vertical



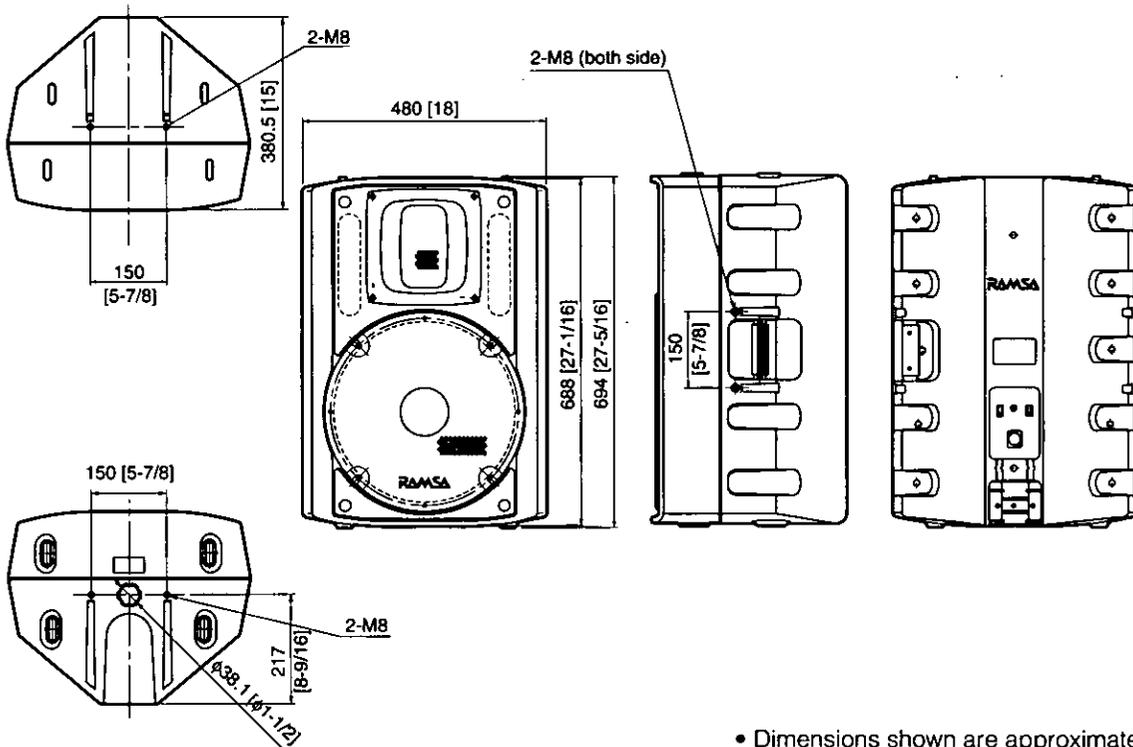
APPEARANCE

■ WS-AT300

Unit: mm [inch]



■ WS-AT350



• Dimensions shown are approximate.

Panasonic

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