



INSTRUCTION MANUAL

WIDE RANGE SPEAKER

CS-154BS

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Thank you for purchasing TOA's Wide Range Speaker.

Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

Traceability Information for Europe (EMC directive 2004/108/EC)

Manufacturer:
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7-2-1, Minatojima Nakamachi, Chuo-ku, Kobe, Hyogo,
Japan

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Suederstrasse 282, 20537 Hamburg,
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1. SAFETY PRECAUTIONS

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

Safety Symbol and Message Conventions

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



WARNING

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

When Installing the Unit

- Refer all installation work to the dealer from whom the speaker was purchased. Installation work requires extensive technical knowledge and experience. The speaker may fall off if incorrectly installed, resulting in possible personal injury.
- Install the speaker only in a location that can structurally support the full weight of the unit and mounting bracket. Doing otherwise may result in the speaker falling down and causing personal injury and/or property damage.
- When installing the speaker in the snowy area, take appropriate measures to prevent snow from lying on the speaker. If the snow lies on it, the speaker may fall, causing personal injuries.
- Do not use other methods than specified to install the speaker. Extreme force is applied to the speaker and the speaker could fall off, possibly resulting in personal injuries.
- Use screws that are appropriate for the ceiling's or wall's material and structure. Failure to do so may cause the speaker to fall, resulting in material damage and possible personal injury.
- Ensure that all screws are securely tightened. If they are loose after installation, the speaker could fall down, possibly resulting in personal injury.
- Do not mount the speaker in locations exposed to constant vibration. The speaker or its mounts can be damaged by excessive vibration, potentially causing the speaker to fall, which could result in personal injury.

- Do not use anti-rust lubricant. If it contacts resin or rubber parts, they could deteriorate and cause the speaker to fall, possibly resulting in personal injury.
- Avoid installing the speaker near seaside or in locations exposed to corrosive gas. The speaker or its parts may be subject to corrosion, which might cause it to fall or result in personal injury.
- Do not install the speaker in indoor swimming pools or such locations where liquid chemicals are used. The parts deteriorate if corroded, causing the speaker to fall, which could result in personal injury.

When the Unit is in Use

- If any of the following irregularities occurs, immediately switch off the amplifier's power, and inform the shop from where the speaker was purchased. Further using the speaker may result in fire or electric shock.
 - If you detect smoke or a strange smell coming from the speaker
 - If water or any metallic object gets into the speaker
 - If the speaker falls, or the speaker case breaks
- To prevent a fire or electric shock, never open nor remove the speaker case. Refer all servicing to your nearest TOA dealer.



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

- Avoid touching the speaker's sharp metal edge to prevent injury.
- To avoid electric shocks, be sure to switch off the amplifier's power when connecting speakers.

When the Unit is in Use

- Do not operate the speaker for an extended period of time with the sound distorting. Doing so may cause the speaker to heat, resulting in a fire.

- Do not stand or sit on, nor hang down from the speaker as this may cause it to fall down or drop, resulting in personal injury and/or property damage.
- Have the speaker checked periodically by the shop from where it was purchased. Failure to do so may result in corrosion or damage to the speaker or the mounts that could cause it to fall, possibly causing personal injury.

2. GENERAL DESCRIPTION AND FEATURES

TOA's CS-154BS Wide range speaker features an ABS resin enclosure and stainless steel bracket for all-weather durability. It is comprised of a high-efficiency weather-resistant horn and a high quality sound cone speaker, providing clear and highly directional sound reproduction. The CS-154BS is equipped with a constant directivity horn (90° horizontal) to control sound directivity, realizing uniform and clear sound dispersion over a wide area.

The CS-154BS is certified to the European Standard EN 54-24: 2008 and the International Standard ISO 7240-24: 2010, and is compliant with the British Standard BS 5839-8: 2008.

- Wide-range speaker suitable for voice evacuation, background music, and paging announcements applications.
- Comprised of a horn and cone speaker in combination, reproducing high efficiency and high quality sound.
- Constant directivity horn improves directivity characteristics and ensures uniform, clear sound dispersion.
- Weatherproof polyurethane resin paint protects the speaker from damage by ultraviolet light.
- Stainless steel bracket is protected from corrosion.
- Certified to EN 54-24, and ISO 7240-24, and compliant with BS 5839-8.
- Equipped with a large steatite terminal block of screw type and thermal fuse.
- Provided with a cable gland on the terminal cover.
- One cable gland can be added, enabling bridge wiring.
- Impedance change available by a rotary switch located inside the terminal cover.

3. IMPEDANCE CHANGE

Input impedance is factory-preset to 670 Ω.

To change the impedance, change the rear panel-mounted rotary switch position using a standard screwdriver.

Notes

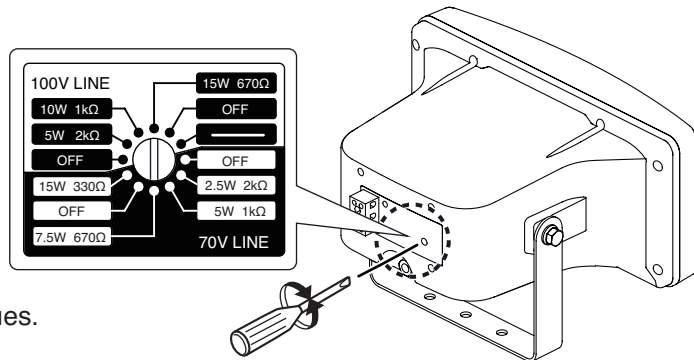
- This speaker is designed to be used for high impedance (70 V/100 V). Never connect the speaker to low impedance line.
- No sound is output from the speaker when the switch is set to the OFF position.

Caution

Never set the switch to "-" position for 100 V line operation, as doing so may result in damage to the speaker.

Line Voltage		Imp.
100 V	70 V	
—	15 W	330 Ω
15 W	7.5 W	670 Ω
10 W	5 W	1 kΩ
5 W	2.5 W	2 kΩ

Bold figures represent factory-preset values.



4. WIRING

The terminal cover is not mounted to the speaker unit when shipped from the factory.

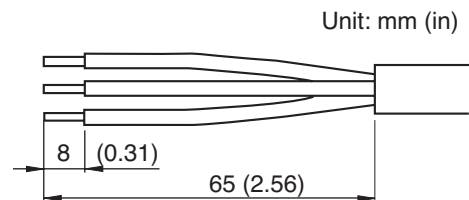
Note

To complete speaker installation, be sure to attach the terminal cover after finishing cable connections.

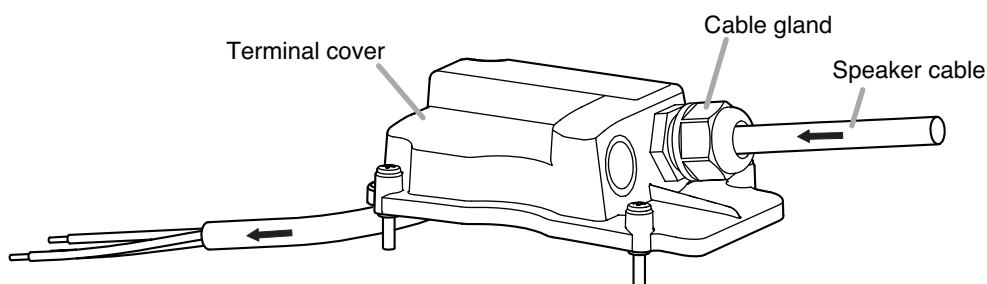
If the unit is left without the terminal cover attached, water or moisture may get inside the speaker, causing the unit malfunction.

4.1. When No Bridge Connection is Required

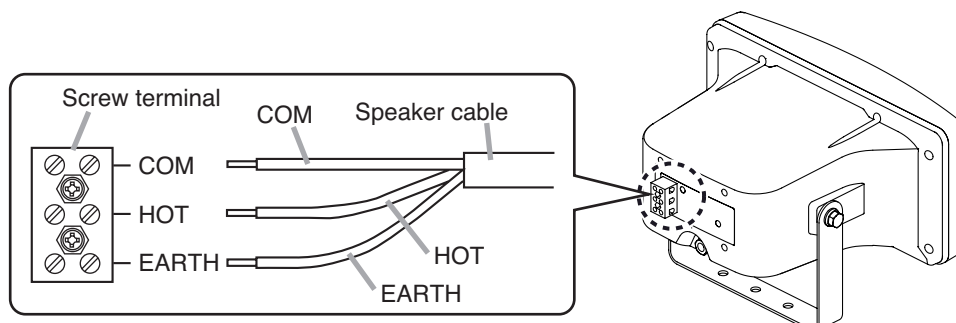
Step 1. Strip the speaker cable jacket as shown at right.



Step 2. Run the speaker cable through the cable gland.



Step 3. Connect the speaker cable according to the polarity indication at the screw terminal.



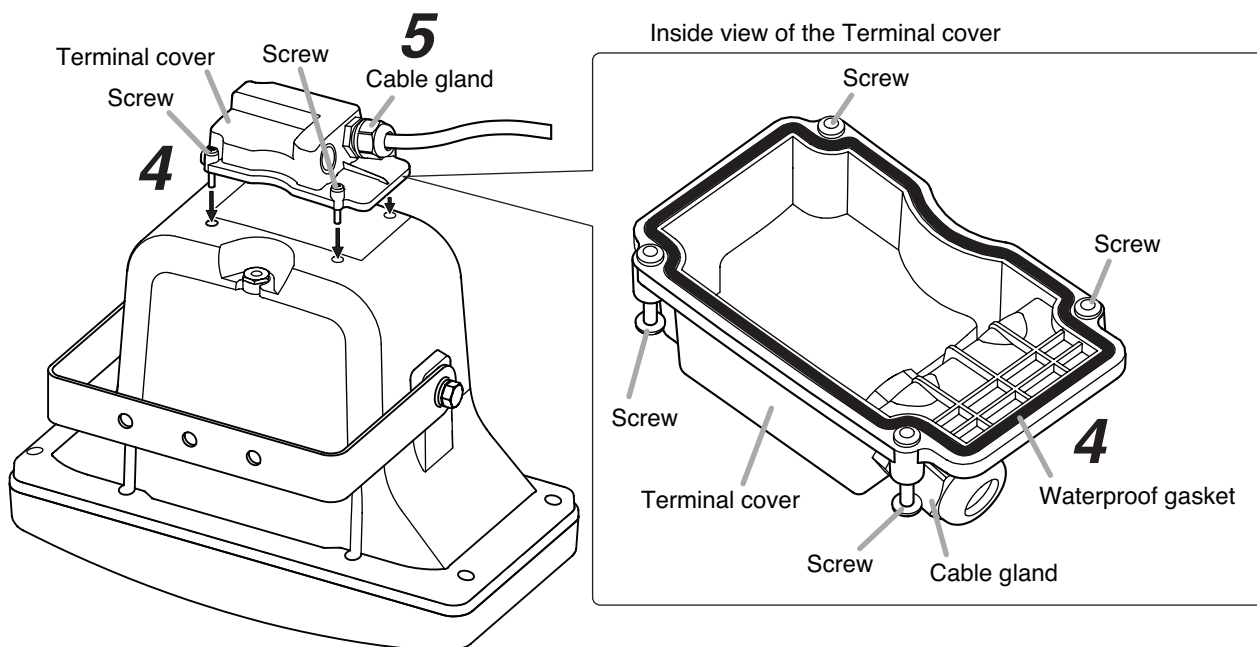
Step 4. Attach the terminal cover.

Secure the terminal cover using the 4 supplied screws.

In this case, take care not to pinch the wiring, and check that the waterproof gasket is secured into place.

Note

If wiring or the waterproof gasket is pinched between the terminal cover and the unit case, this causes water or moisture to get inside the terminal cover.



Step 5. Securely tighten the cable gland.

Note

If loosely tightened, water or moisture may get inside the terminal cover.

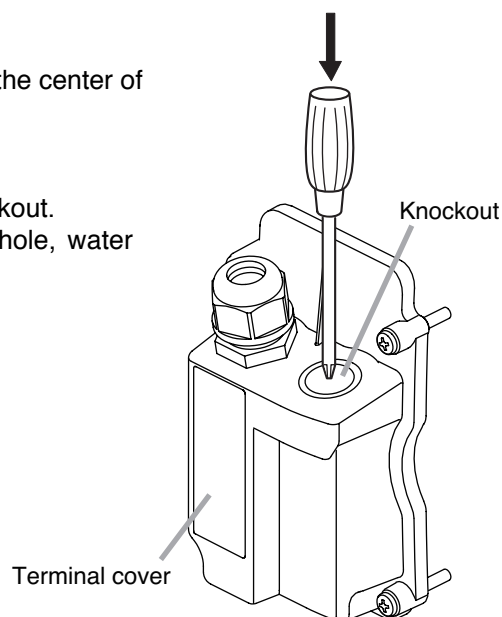
4.2. When Bridge Connection is Required

Step 1. Punch a knockout hole.

Punch out the knockout on the terminal cover by tapping the center of the knockout with a screwdriver or other tool.

Note

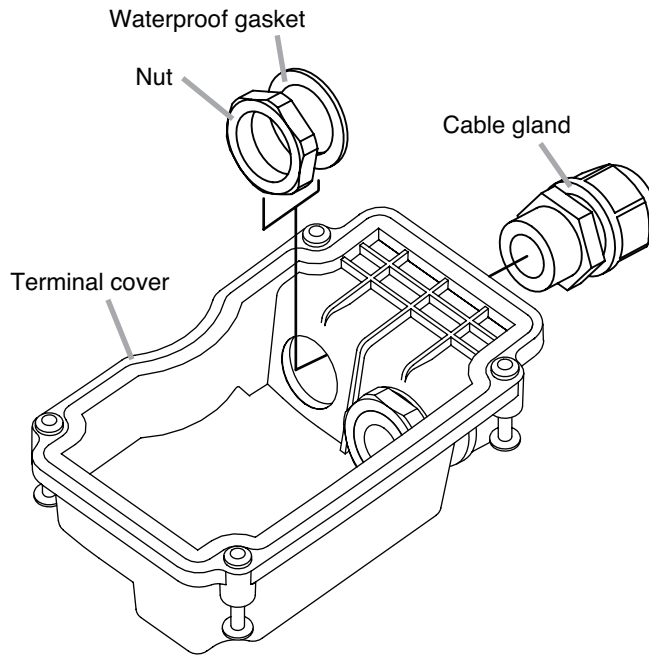
Clean burrs off the knockout hole after removing the knockout.
If the cable gland is attached with the burrs left in the hole, water may get inside the terminal cover.



Step 2. Mount the cable gland to be added.

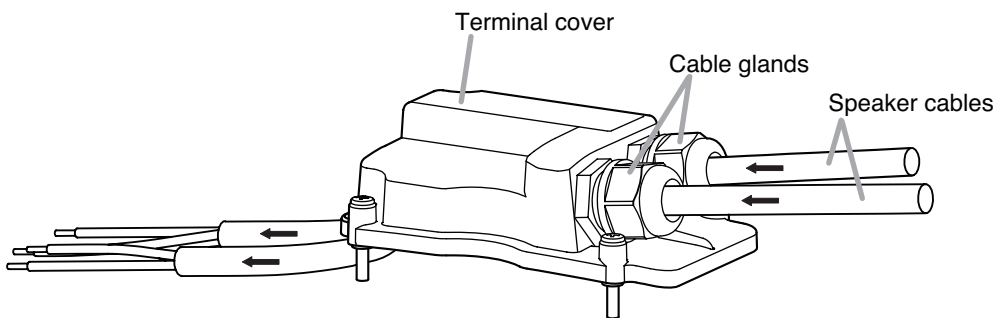
Notes

- Prepare the cable gland of PG 13.5 size separately.
- Ensure that the cable gland is securely tightened. If loosely tightened, water may get inside the terminal cover.

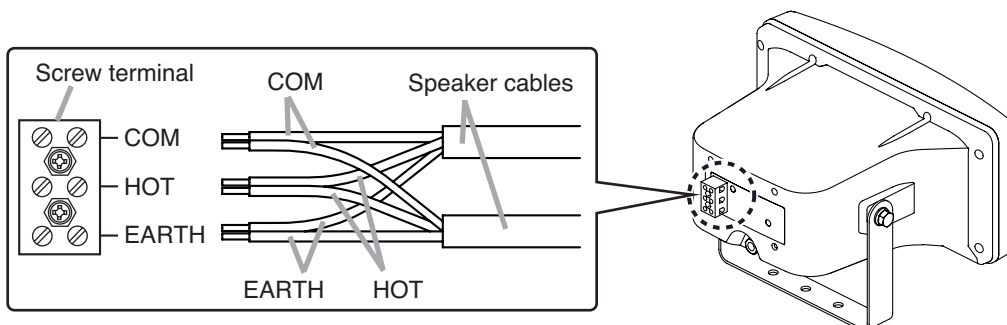


Step 3. Strip the speaker cable jacket. (Refer to page 4, Step 1.)

Step 4. Run one each of speaker cables through the cable gland.



Step 5. Connect the speaker cables with the same polarity to each terminal according to the polarity indication at the screw terminal.



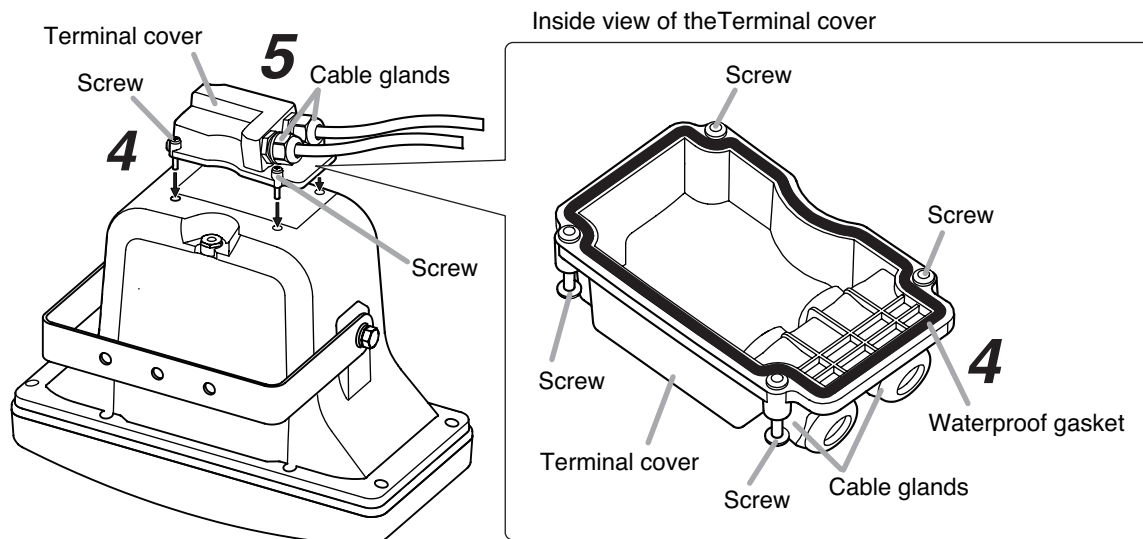
Step 6. Attach the terminal cover.

Secure the terminal cover using the 4 supplied screws.

In this case, take care not to pinch the wiring, and check that the waterproof gasket is secured into place.

Note

If wiring or the waterproof gasket is pinched between the terminal cover and the unit case, this causes water or moisture to get inside the terminal cover.



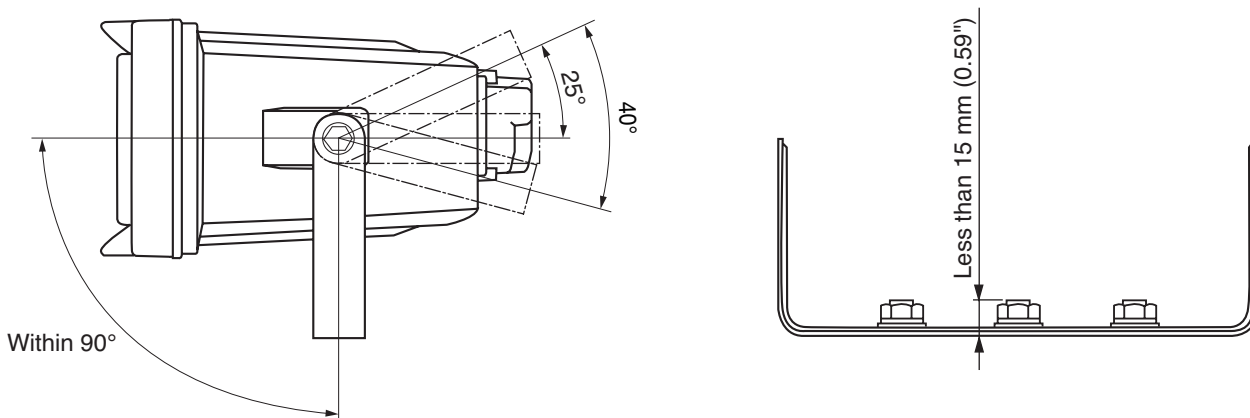
Step 7. Securely tighten the cable glands.

Note

If loosely tightened, water or moisture may get inside the terminal cover.

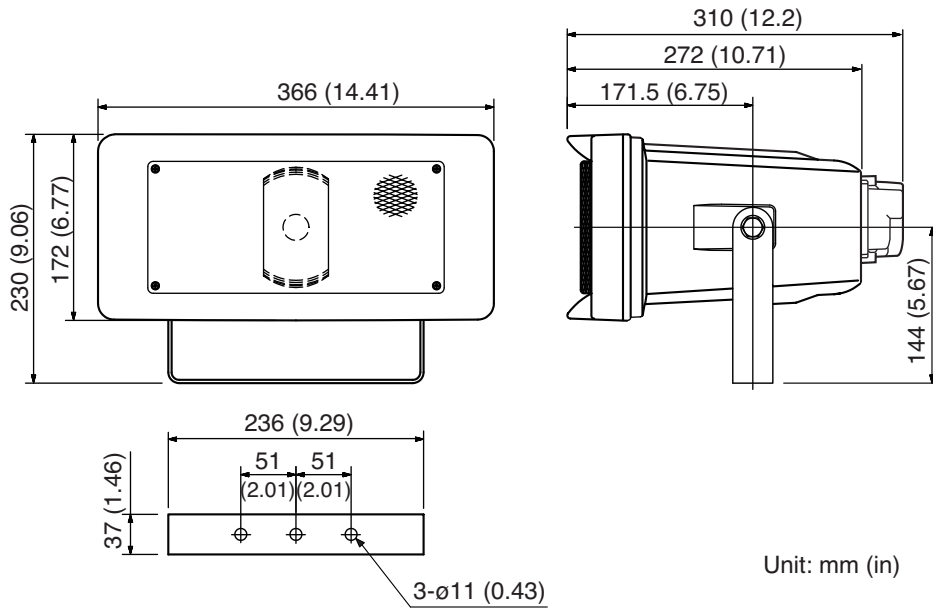
5. INSTALLATION PRECAUTION

- The mounting bracket cannot be adjusted within the angle shown in the figure below, which differs depending on the number of cable glands mounted on the terminal cover as follows.
 - When 1 cable gland is mounted: 25° range not adjustable
 - When 2 cable glands are mounted (one is additional): 40° range not adjustable
- Be sure that the bolt projection length from wall surface is less than 15 mm (0.59"). If the length is increased beyond 15 mm (0.59"), the bolt touches the speaker's terminal cover, causing the speaker mounting angle to be limited further.

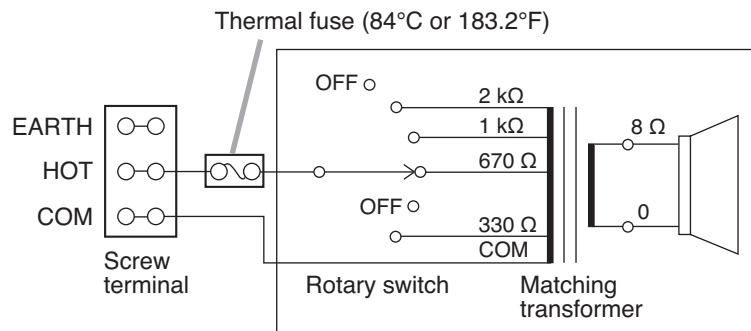


- Do not install the speaker face-up from a horizontal plane nor in such a way that the paper cone is exposed to direct sunlight.
If water accumulates on the paper cone, or ultraviolet rays are radiated on it, this may cause the paper cone to deteriorate, leading to speaker malfunction.

6. DIMENSIONAL DIAGRAM

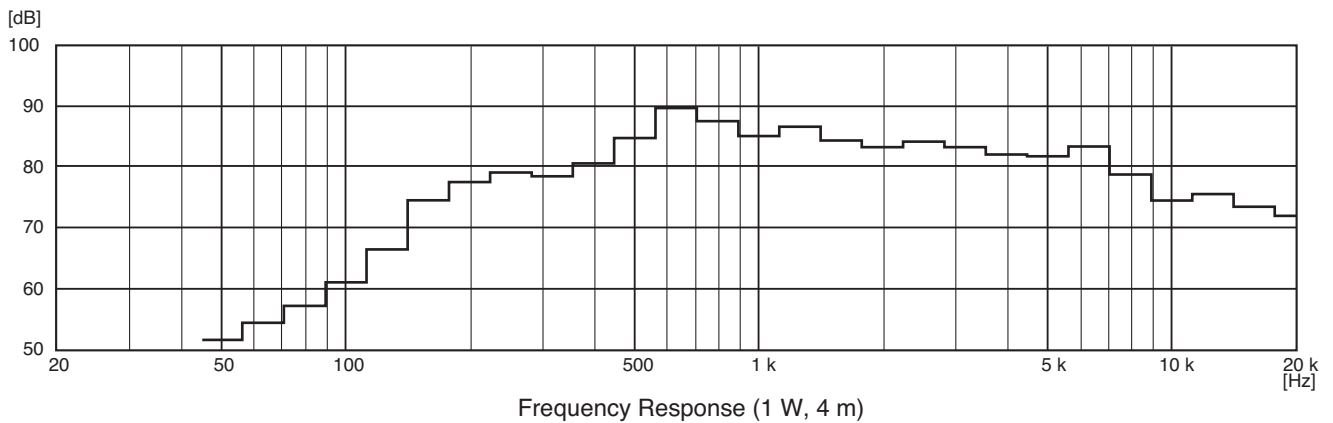


7. WIRING DIAGRAM




(Shown above is the factory default wiring.)

8. FREQUENCY RESPONSE



9. SPECIFICATIONS

Standards	Certified to the European Standard EN 54-24:2008 Loudspeaker for voice alarm systems for fire detection and fire alarm systems Certification No. 0359-CPD-0108	 EN 54-24: 2008 11 0359-CPD-0108
	Certified to the International Standard ISO 7240-24: 2010 Sound-system loudspeaker for fire detection and fire alarm systems	
	In Compliance with the British Standard BS 5839-8: 2008 14.8	
Environment Type	Type B (Outdoor applications)	
Rated Noise Power	15 W (100 V line and 70 V line)	
Rated Impedance	100 V line: 670 Ω (15 W), 1 kΩ (10 W), 2 kΩ (5 W) 70 V line: 330 Ω (15 W), 670 Ω (7.5 W), 1 kΩ (5 W), 2 kΩ (2.5 W)	
Sensitivity	97 dB (1 W, 1 m at 330 Hz to 3.3 kHz pink noise)	
	94 dB (1 W, 1 m at 100 Hz to 10 kHz pink noise)	
	82 dB (1 W, 4 m at 100 Hz to 10 kHz pink noise)	
Max.SPL	104 dB (15 W, 1 m at 100 Hz to 10 kHz pink noise)	
	92 dB (15 W, 4 m at 100 Hz to 10 kHz pink noise)	
Frequency Response	150 Hz – 15 kHz	
Coverage Angle (–6 dB)	Horizontal: 140° (500 Hz), 90° (1 kHz), 90° (2 kHz), 100° (4 kHz)	
	Vertical: 200° (500 Hz), 155° (1 kHz), 90° (2 kHz), 60° (4 kHz)	
Speaker Component	12 cm (5") cone-type (treated for splash proof)	
Operating Temperature	–20 °C to +55 °C (–4 °F to +131 °F)	
Dust/Water Protection	IP65	
Cable Gland	Size: PG 13.5	
	One cable gland is factory-installed.	
	For bridge connection, one cable gland can be added.*	
Cable Connection	Screw terminal (Steatite), can be bridge-connected	
Applicable Cable Size	Outer diameter: ø8.0 – ø12.5 mm	
	Conductor: Solid wire or 7-core wire	
	No bridge connection: 0.8 – 10 mm ² (AWG18 – 7) for solid wire, 0.8 – 8 mm ² (AWG18 – 8) for 7-core wire	
	Bridge connection: 0.8 – 2.5 mm ² (AWG18 – 13) for solid wire, 0.8 – 1.5 mm ² (AWG18 – 15) for 7-core wire	
Finish	Horn, Cover, and Terminal cover: ABS resin, off-white, paint	
	Bracket:	Stainless steel
	Net:	Aluminum, gray, paint
	Screw:	Stainless steel
Dimensions	366 (w) x 230 (h) x 310 (d) mm (14.41" x 9.06" x 12.2")	
Weight	3.0 kg (6.61 lb)	
Accessory	Terminal cover 1	

Notes

- The design and specifications are subject to change without notice for improvement.
- The specifications data was measured in an anechoic chamber, according to EN 54-24.
- Reference axis: Axis is on the center of horn-mouth and perpendicular to the horn-mouth.
- Reference plane: Plane is on the horn-mouth and perpendicular to the reference axis.
- Horizontal plane: Plane is containing the reference axis and perpendicular to the reference plane.

* Suppliable cable gland's part code and name: 525-52-011-70 Cable gland AVC PGB13.5-12 (GRY)