

CEILING SPEAKER



CEILING
SPEAKER

interM



Inter-M provides various range of speakers to cover a wide area of regions for broadcasting, installed in a building or outdoor facility with type of Ceiling, Column, or Wall Mounted, etc. In order to reproduce clear sound even in an emergency, the speaker output power is 10W or higher, and the installation distance recommendation between speakers is to be set within 10m in a building of school or a government office.

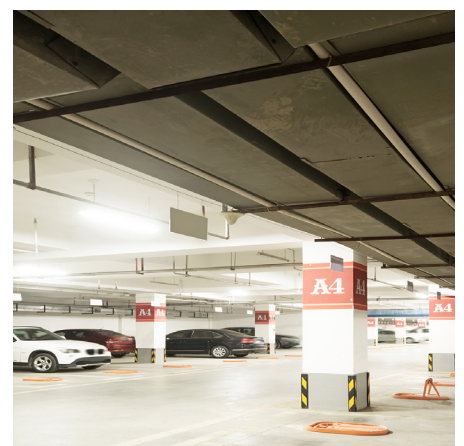
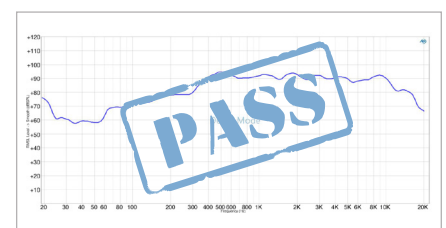
To play background music with clean, vivid sound for customers using in commercial facilities as in restaurants, hotels or department stores, the BGM Ceiling Speaker is required. Using a 2Way coaxial driver, Inter-M's BGM speaker provides high quality sound over a wide band, and it offers various output models from 15W to 80W to reproduce the rich sound pressure for a variety of places.

It is recommended to use the Column Speaker to deliver a voice with clarity in a wide area of park, playground or for an outdoor space. It is recommend a Wall Mounted speaker to play announcements or high quality BGM with the same tone and sound pressure at any location.



◆ Thorough quality control

The products passing a variety test including a 100 hours full power noise, high temperature, low temperature, humidity are assigned with 'PASS' to provide a stable and equal quality in the market. The relevant test is proceeded through the automated equipment and support the exact verification about the products.



Recommended usage of ceiling speakers

Ceiling Speakers are used in a wide variety of applications such as Emergency/Announcement, BGM in various facilities. Intelligibility is an important factor when delivering information with voice, including BGM. The intelligibility of the voice, which is a combination of vowels and consonants, is determined by the clarity of consonants. The vowels that occupy most of the voice energy are concentrated in the frequency band below about 1 to 2kHz, but the consonants that influence intelligibility are concentrated in the frequency band above 2kHz.

Because human hearing is most sensitive in the band from 2kHz to 4kHz, in order to communicate with intelligible voice, a good playback of 3kHz~4kHz frequency band is required. As the frequency increases, dispersion angle gets narrower for a Ceiling Speaker with conical dispersion. For example, for a speaker with a dispersion angle of 100 ° in a midrange of frequencies above 2 to 4kHz, which dominate the intelligibility, the dispersion angle narrows down to around 50 to 60 degrees.

Therefore, it is recommended to determine the Ceiling Speaker installation interval based on the narrow range of dispersion characteristics.

◆ Ceiling speaker selection and location for Information/Emergency broadcasting

When choosing Ceiling Speaker, it needs to be careful about sound pressure, output, and directivity in high and mid-range, and frequency reponse. When using in a full range speaker unit, the Ceiling Speakers generally have a narrower directivity as the frequency gets higher.

Figure 1 is a simulation of the EASE sound pressure distribution when a 10 W Ceiling Speaker for universal announcement is installed at an installation distance of 10 meters. (Speaker height: 3m, listening position: 1.2m, frequency band: 2kHz)

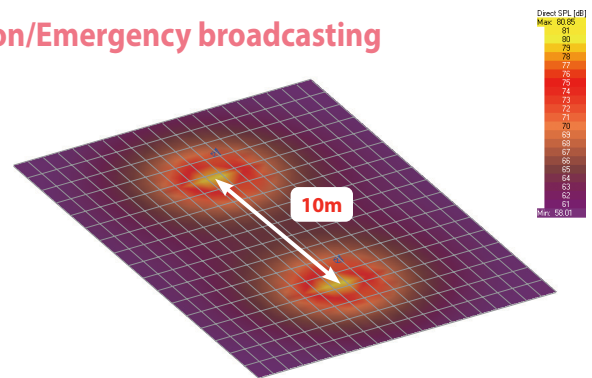
The sound pressure is sufficient just below the speaker, but the dispersion characteristic (directivity) of sound over 2kHz that influences intelligibility is narrow and the sound pressure level is attenuated at the point between the speakers.

Also, the overall sound pressure level is lower by 20dB SPL than the sound pressure level just Below the speaker.

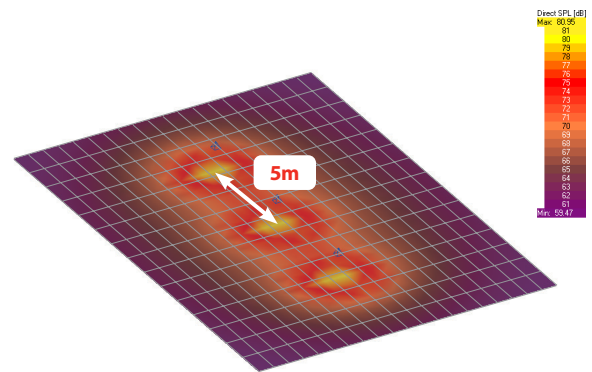
Therefore in emergency broadcasting, an accurate information delivery and guidance alerts are supported only to a limited range for 10m interval installation.

Just below the speaker, a sound pressure is 81dB SPL, but the range of 2kHz sound can cover a radius of 2.5m, and the attenuation occurs more and the Intelligibility decreases over that distance.

Based on a 2kHz simulation, it is recommended to narrow the spacing of speakers to minimize difference between direct SPL and SPL at midpoint of speakers. Figure 2 shows the EASE sound pressure distribution simulation with a speaker placed at 5m intervals. Anywhere in the region, it is possible to broadcast a voice to deliver information with the same intelligibility.



[Figure 1] Typical installation (2kHz, 10m spacing)



[Figure 2] Ideal installation (2kHz, 5m spacing)

Space	Average noise level (dB)	Broadcast sound pressure level	
		BGM (music)	Announcement
Factory, train platform	80~90	93	96
waiting room, shopping mall	75~85	88	91
general store	70~80	83	86
hotel, office, etc.	60~70	73	76

< Sound pressure standard table >

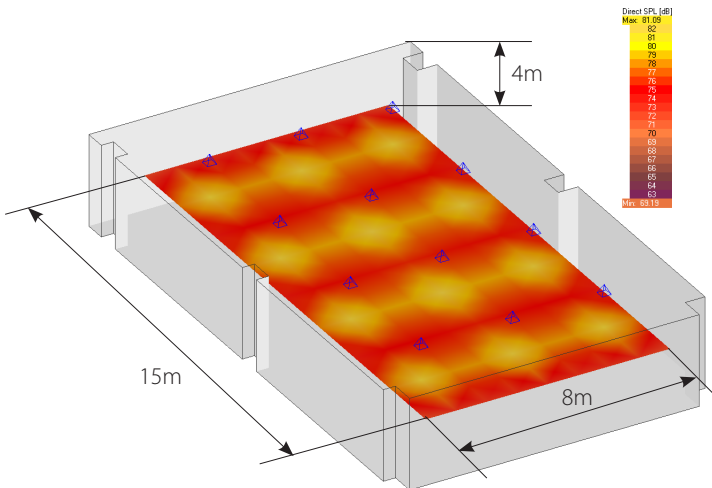
Adequate sound pressure level by noise

The table on the left shows the noise level and the adequate sound pressure level of each space. The optimal and clear playback that is not masked with noise is possible when broadcasted with sound pressure of 6dB that is higher than the noise level of the used space. The EASE simulation can visually represent the speaker's coverage, sound pressure level, and intelligibility, etc. in installing a speaker including architectural sound.

Because of the exact simulation capability at the design level, EASE is commonly used in the professional market as a simulation software.

When installing a speaker, EASE is simulation software that is commonly used in professional markets for speaker cover range, sound pressure level, articulation and including architectural sound. An accurate simulation is applied at the design level.

◆ Ceiling Speaker selection and location for music playback/BGM



[Figure 3] Ideal installation (2kHz, 3m interval)

Ceiling Speakers for playing music (BGM) are used in all places such as restaurant, lobby, airport, banquet hall, cafe, etc. to cover the entire area of a facility uniformly that does not require sound image fixing.

Unlike the speaker for information or emergency broadcasting, selecting a speaker for pleasant listening for music and placing good position for the speaker are more important. The Ceiling Speaker is capable of broadband playback and the 2Way speaker is good for wide spreading sound in medium high frequency range.

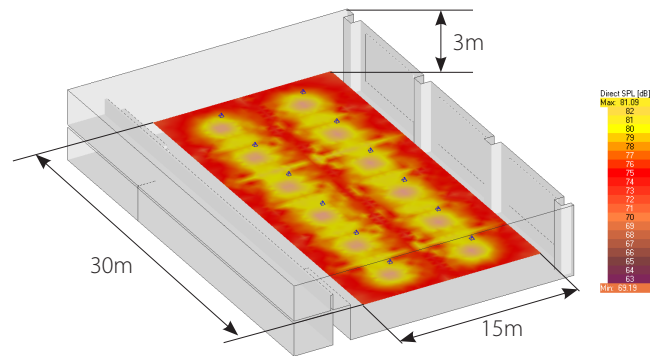
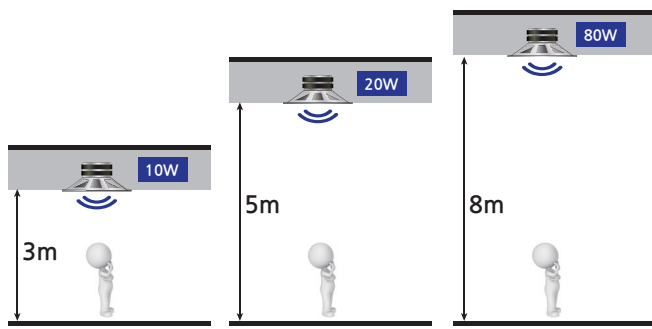
Based on 2kHz, Ideal Ceiling Speaker interval should be set so that the sound pressure of the whole area is within -3dB for the sound pressure just below the speaker.

EASE sound pressure distribution simulation is at Figure 3, when the speaker is installed for 3m intervals at 2kHz.

Because it is possible to play with the same sound quality and sound pressure throughout the space, clear announcements and music playback(BGM) is delivered without the need to be aware of the location of the listener or speaker.

If the ceiling height is different or speakers are in a different noise level space, it is needed to change the Ceiling Speaker's output (Power tab) for each region, and to adjust the sound pressure level for each room.

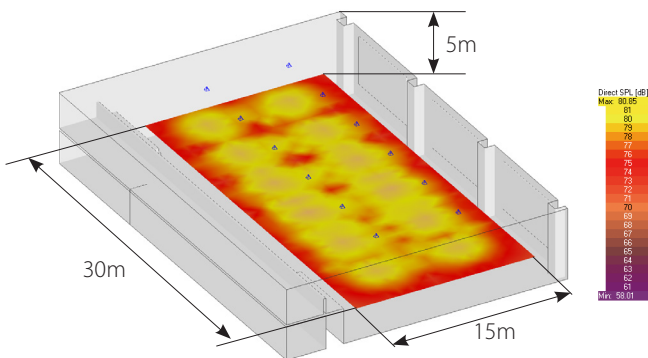
◆ Speaker selection and location by ceiling height



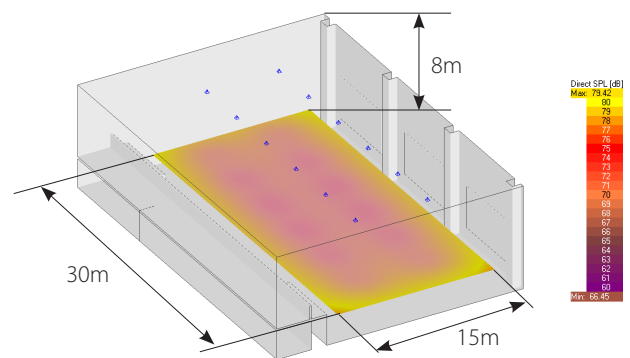
[Figure 4] Ceiling 3m, 10W speaker 2kHz

3m the ceiling height

Assuming the ear height is 1.2m from the floor, the distance from the speaker to the listener's ears is 1.8m. In general, choose speakers such as 10W, 20W, 30W depending on the maximum sound pressure required at the listening position. However, if there is a place with 10W speakers installed, to acquire a high sound quality with no distortion and intelligibility, it is suggested to select a speaker of 20W, considering the power margin. Although the distance from the speaker to the ear position is short and the sound pressure attenuation is relatively low at high frequencies, it is recommended to set the speaker interval to make the middle point between the speakers overlap as the reference to the figure on the right.



[Figure 5] Ceiling 5m, 20W speaker 2kHz



[Figure 6] Ceiling 8m, 80W speaker 2kHz

5m/8m ceiling height

The higher the ceiling height, the farther will be the distance to the listener's ears from the speaker. Therefore, it is recommended to use the 2Way Ceiling Speaker, which supports excellent directivity and reachability at high frequencies rather than a full range speaker. When the ceiling height is increased, the coverage of the speaker is increased, it is recommended for the speaker to be installed with narrow intervals because of the sound image fixing.

Inter-M

Ceiling Speaker Line-up

Usage	Environment		Model	Unit	Input power	Impedance	Maximum SPL	Cut-out Diameter (mm)
BGM (Music Playback)	Department Store Restaurant etc.		CS-620FH	6.5" 2Way Coaxial	20/10/5W	500/1k/2kΩ	99dB	Ø200~205
			CS-630FH	6.5" 2Way Coaxial	30/20/10W	330/500/1kΩ	101dB	Ø200~205
			CS-680FH	6.5" 2Way Coaxial	80/40/20W	125/250/500Ω	107dB	Ø200~205
Emergency (Announcement)	General Environment	Residential facilities	CS-301FC	3"	1W	10kΩ	80dB	Ø110 ~ 115
			CS-303FC	3"	3W	3.14kΩ	88dB	Ø110 ~ 115
			CS-301FQ	3"	1W	10kΩ	83dB	-
			CS-303FQ	3"	3W	3.14kΩ	90dB	-
		Office Public, Building Complex, Building	CS-610	6.5"	10/5/3W	1k/2k/3.3kΩ	100dB	Ø195~200
			CS-610M	6.5"	10/5/3W	1k/2k/3.3kΩ	100dB	Ø195~200
			CS-606F	6.5"	6/3/1W	1.66k/3.3k/10kΩ	93dB	Ø200~210
			CS-610F	6.5"	10/5/3W	1k/2k/3.3kΩ	102dB	Ø200~210
			CS-615F	6.5"	15/7.5/3.75W	660/1.3k/2.6kΩ	101dB	Ø200~210
		Special Environment	Exposed	CS-503FE	5"	3/1W	3.3k/10kΩ	94dB
	Lighting		CS-510F	5"	10/5/3W	1k/2k/3.3kΩ	98dB	Ø150

SPEAKERS for BGM



6.5" 2Way Coaxial Ceiling Speaker

CS-620FH/630FH/680FH

CS-620FH/630FH/680FH is a Ceiling Speaker that can be used versatile in restaurants, stores, hotels, meeting rooms, etc. where both music playback and announcement are required. The exposure is so small that it blends naturally in with the interior design, and provides wide-band sound from 2Way coaxial drivers.



Unit



Rear



Side

FEATURES

- **6.5" Coaxial 2Way speaker**

- **Using High quality matching transformer (100V)**

- **Low impedance input terminal**

Provides a connection terminal for low impedance (8Ω) to play high quality music.

- **In compliance with international standards(CS-620FH)**

It is a high quality speaker with high reliability, durability and flame retardancy guaranteed by development and production according to international standards.

- **Suitable for music playing**

It is suitable for playing music with a wide band bandwidth ranging from 400Hz~4kHz.

- **Offering an installation bracket**

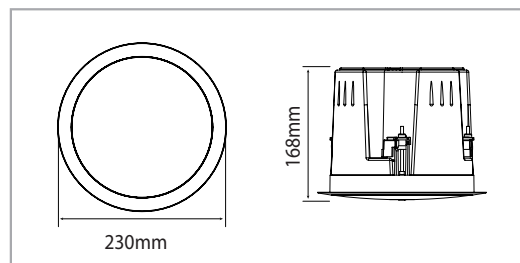
It ensures a safe installation of speaker by providing High-quality speaker installation tools made up with bracket-ring and bracket-rail.

- **How to install**

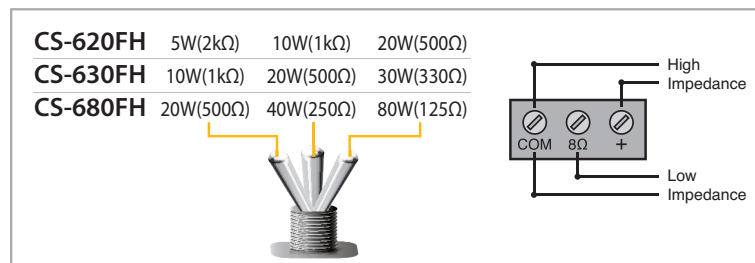
Refer to no.2 or no.3 of the SPEAKER INSTALLATION GUIDE on pages 24-27.



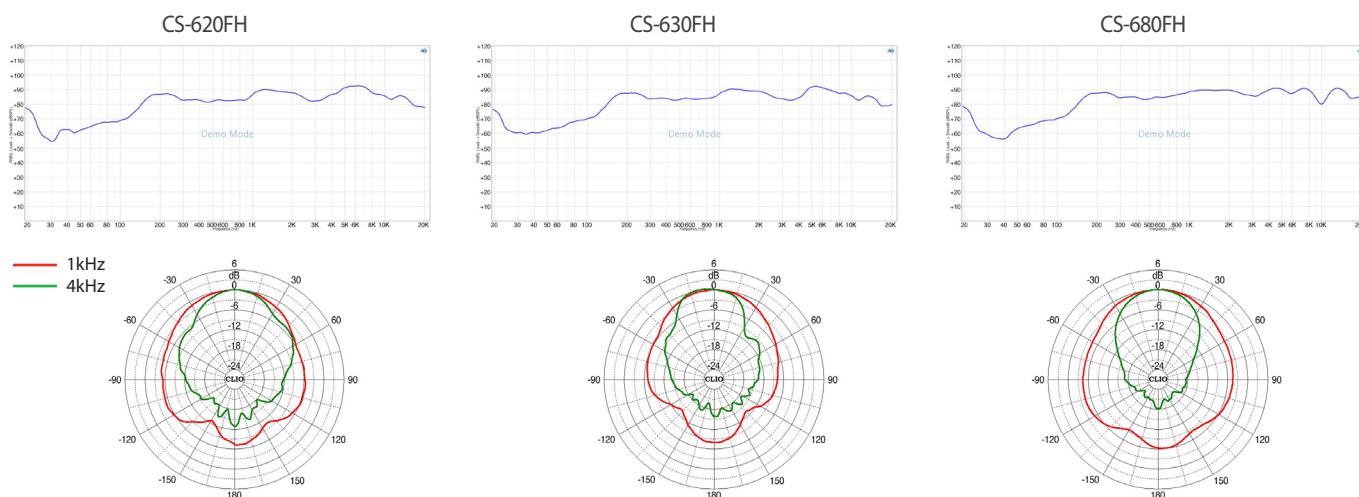
DIMENSION



POWER SELECTION



FREQUENCY RANGE/POLAR PATTERN (1kHz/4kHz)



SPECIFICATION

		CS-620FH	CS-630FH	CS-680FH
Type		6.5" 2Way Coaxial Ceiling Speaker	6.5" 2Way Coaxial Ceiling Speaker	6.5" 2Way Coaxial Ceiling Speaker
Driver		LF : 6.5", HF : 1"	LF : 6.5", HF : 1"	LF : 6.5", HF : 1"
Power Handling (IEC)	100V	20W	30W	80W
Input Power	100V	20/10/5W	30/20/10W	80/40/20W
	LOW	500/1k/2kΩ	330/500/1kΩ	125/250/500Ω
Nominal Impedance		8Ω	8Ω	8Ω
Power Selection		Toggle Switch	Toggle Switch	Toggle Switch
Frequency Range (-20%)		100Hz ~ 20kHz	85Hz ~ 20kHz	100Hz ~ 20kHz
Sensitivity (1W/1m)		86dB	86dB	88dB
Maximum SPL		99dB	101dB	107dB
Nominal Dispersion (Conical)	1kHz	180°	130°	180°
	4kHz	60°	60°	90°
Input connection		3P Euroblock	3P Euroblock	3P Euroblock
Enclosure Material		ABS (V0)	ABS (V0)	ABS (V0)
Enclosure Color		Pure White(RAL 9010)	Pure White(RAL 9010)	Pure White(RAL 9010)
Grille Material		Metal Grille	Metal Grille	Metal Grille
Grille Color		LIGHT GRAY	LIGHT GRAY	LIGHT GRAY
Cut-Out Diameter (Ø, mm)		Ø200 ~ 205	Ø200 ~ 205	Ø200 ~ 205
Weight (Set)		2kg	2kg	3.3kg
Dimensions (Net, Ø(WxH)xD, mm)		Ø230 x 168	Ø230 x 168	Ø230 x 168
Weather Resistant		IP34	IP34	IP34
Flame Resistant		O	O	O
Certification		KS	KS	KS
Included Accessories		BKT-RING, BKT-RAIL	BKT-RING, BKT-RAIL	BKT-RING, BKT-RAIL

SPEAKERS for ANNOUNCEMENT

6.5" Full-range Ceiling Speaker

CS-606F

The CS-606F is a ceiling speaker suitable for emergency broadcasting, for preventing the fire from occurring due to the speaker, V-0 grade flame retardant material is used in compliance with international standards. It is recommended for the public construction, firefighting compliance.



Unit



Rear



Side

FEATURES

- **6.5" Full-range speaker**

- **Using High quality matching transformer (100V)**

- **Suitable for music playing**

It is suitable for playing music with a wide band bandwidth ranging from 400Hz~4kHz.

- **In compliance with international standards**

It is a high quality speaker with high reliability, durability and flame retardancy guaranteed by development and production according to international standards.

- **Dust filter**

Use a dust filter inside the grill to block dust ingress and maintain a clean grill.

- **Easy installation**

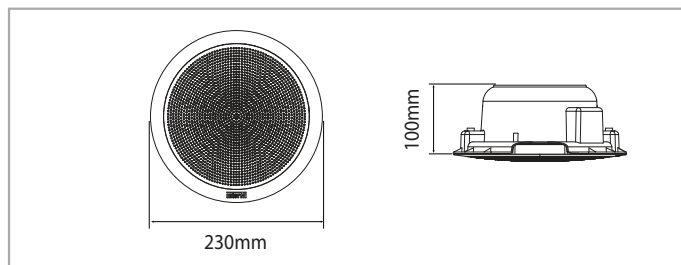
The removable grill is adopted and it is easy to remove and attach. In addition, safety is improved by connecting the unit and cover with wire.

- **How to install**

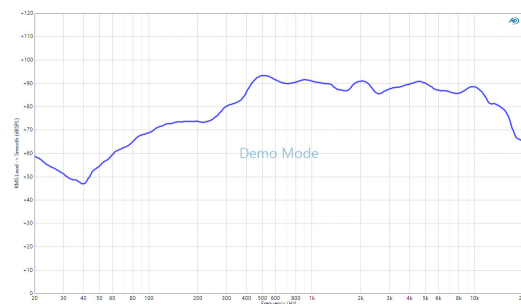
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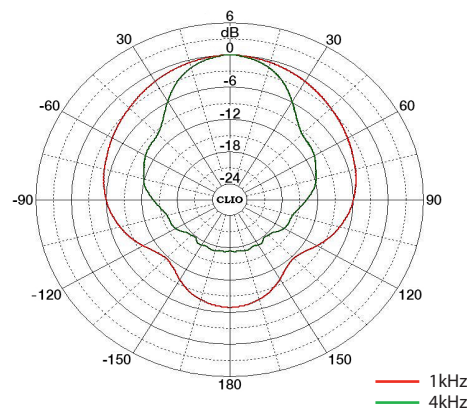
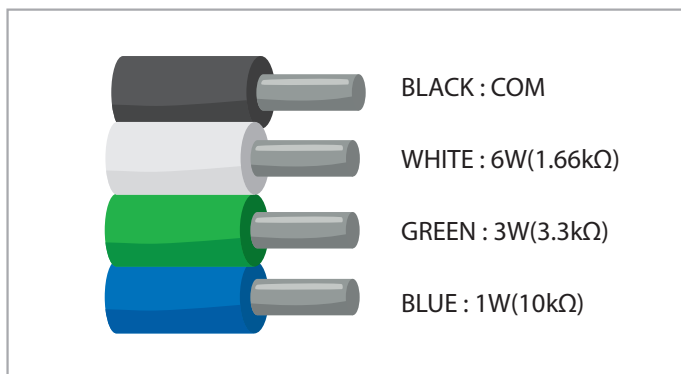
DIMENSION



FREQUENCY RANGE/POLAR PATTERN (1kHz/4kHz)



POWER SELECTION



SPECIFICATION

Model		CS-606F
Type		6.5" Full-range Ceiling Speaker
Driver		6.5"
Power Handling (IEC)		6W
Input Power	100V	6/3/1W
Nominal Impedance	100V	1.66kΩ/3.3kΩ/10kΩ
Power Selection		-
Frequency Range (-10dB)		88Hz ~ 17.4kHz
Sensitivity (1W/1m)		85dB
Maximum SPL		93dB
Nominal Dispersion (Conical)	1kHz	180°
	4kHz	60°
Input connection		Bi-Wired
Enclosure Material		HIPS(V0)
Enclosure Color		WHITE
Grille Material		Metal Grille
Grille Color		WHITE
Cut-Out Diameter (Ø, mm)		Ø200 ~ 210
Weight (Set)		0.63kg
Dimensions (Net, Ø(WxH)xD, mm)		Ø230 x 100
Weather Resistant		-
Flame Resistant		O
Certification		-
Included Accessories		-

SPEAKERS for ANNOUNCEMENT



6.5" Full-range Ceiling Speaker

CS-610F/615F

The CS-610F/615F is a ceiling speaker suitable for emergency broadcasting, for preventing the fire from occurring due to the speaker, V-0 grade flame retardant material is used in compliance with international standards. It is recommended for the public construction, firefighting compliance.



Unit



Rear



Side

FEATURES

- **6.5" Full-range speaker**

- **Using High quality matching transformer (100V)**

- **Suitable for music playing**

It is suitable for playing music with a wide band bandwidth ranging from 400Hz~4kHz.

- **In compliance with international standards**

It is a high quality speaker with high reliability, durability and flame retardancy guaranteed by development and production according to international standards.

- **Dust filter**

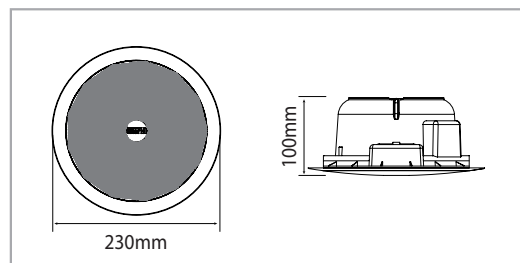
Use a dust filter inside the grill to block dust ingress and maintain a clean grill.

- **How to install**

Refer to no.1 of the SPEAKER INSTALLATION GUIDE on pages 24-27.



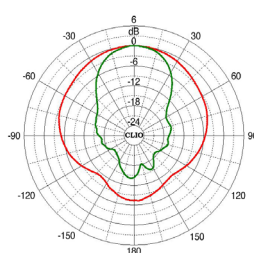
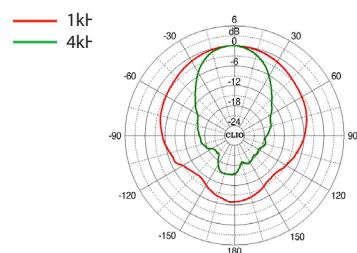
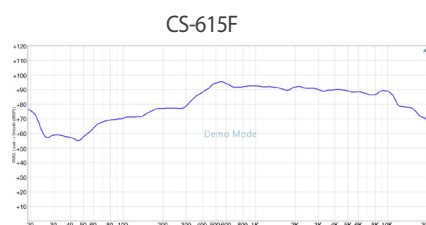
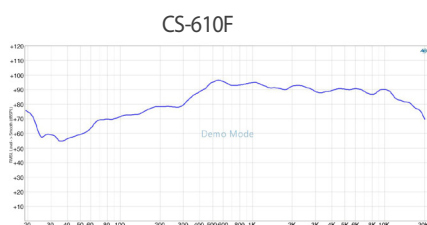
DIMENSION



POWER SELECTION

CS-610F	10W(1k Ω)	5W(2k Ω)	3W(3.3k Ω)
CS-615F	15W(660 Ω)	7.5W(1.3k Ω)	3.8W(2.6k Ω)

FREQUENCY RANGE/POLAR PATTERN (1kHz/4kHz)



SPECIFICATION

Model		CS-610F	CS-615F
Type		6.5" Full-range Ceiling Speaker	6.5" Full-range Ceiling Speaker
Driver		6.5"	6.5"
Power Handling (IEC)		10W	15W
Input Power	100V	10/5/3W	15/7.5/3.75W
Nominal Impedance	100V	1k/2k/3.3k Ω	660/1.3k/2.6k Ω
Power Selection		Slide Switch	Slide Switch
Frequency Range (-10dB)		350Hz ~ 12kHz	-
Frequency Range (-20%)		-	105Hz ~ 18kHz
Sensitivity (1W/1m)		92dB	89dB
Maximum SPL		102dB	101dB
Nominal Dispersion (Conical)	1kHz	180°	180°
	4kHz	62°	60°
Input connection		Bi-Wired	Bi-Wired
Enclosure Material		HIPS (V0)	HIPS (V0)
Enclosure Color		Gray	Gray
Grille Material		Metal Grille	Metal Grille
Grille Color		Ivory	Ivory
Cut-Out Diameter (Ø, mm)		Ø200 ~ 210	Ø200 ~ 210
Weight (Set)		0.85kg	0.88kg
Dimensions (Net, Ø(WxH)xD, mm)		Ø230 x 100	Ø230 x 100
Weather Resistant		IP34	IP34
Flame Resistant		O	O
Certification		KS	KS
Included Accessories		-	-

SPEAKERS for ANNOUNCEMENT



6.5" Full-range Ceiling Speaker

CS-610

CS-610 is a Ceiling Speaker optimized for announcement and emergency broadcasting, and designed for high sound pressure. By adopting the method of fixing the grill by using the spring, it is possible to install easily, and 10W, 5W, and 3W output tabs are provided so that users can freely select and install them according to the installation environment.



Unit



Rear



Side

FEATURES

- **6.5" Full-range speaker**

- **Using High quality matching transformer (100V)**

- **Suitable for music playing**

It is suitable for playing music with a wide band bandwidth ranging from 400Hz~4kHz.

- **Corrosion protection**

Apply corrosion protection coating to enable installation and operation in humid environments.

- **Dust filter**

Use a dust filter inside the grill to block dust ingress and maintain a clean grill.

- **Easy installation**

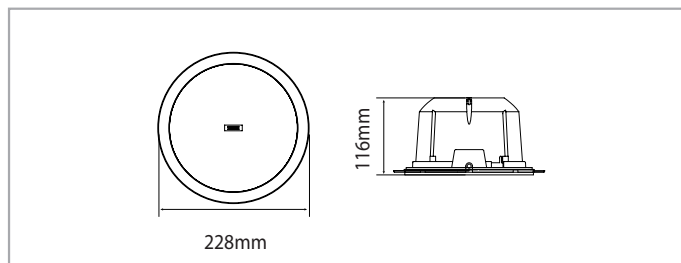
The removable grill is adopted and it is easy to remove and attach. In addition, safety is improved by connecting the unit and cover with wire.

- **How to install**

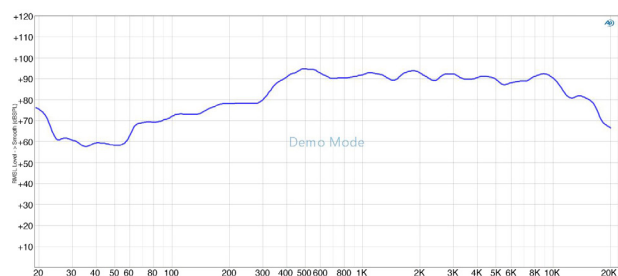
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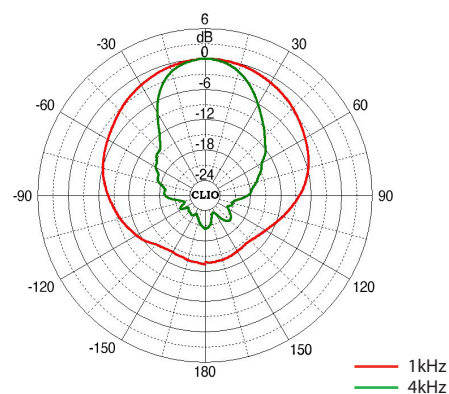
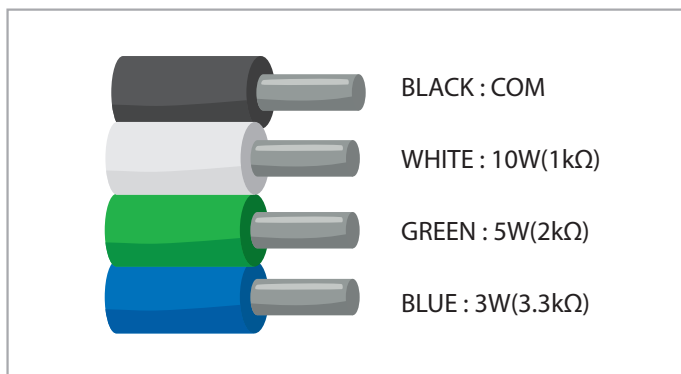
DIMENSION



FREQUENCY RANGE/POLAR PATTERN (1kHz/4kHz)



POWER SELECTION



SPECIFICATION

CS-610		
Type	6.5" Full-range Ceiling Speaker	
Driver	6.5"	
Power Handling (IEC)	100V	10W
Input Power	100V	10/5/3W
Nominal Impedance	1k/2k/3.3kΩ	
Power Selection	By Wiring	
Frequency Range (-20%)	100Hz ~ 17.4kHz	
Sensitivity (1W/1m)	90dB	
Maximum SPL	100dB	
Nominal Dispersion (Conical)	1kHz	167°
	4kHz	56°
Input connection	Bi-Wired	
Enclosure Material	HIPS (HB)	
Enclosure Color	LIGHT GRAY	
Grille Material	Metal Grille	
Grille Color	IVORY	
Cut-Out Diameter (Ø, mm)	Ø195 ~ 200	
Weight (Set)	0.87kg	
Dimensions (Net, Ø(WxH)xD, mm)	Ø228 x 116	
Weather Resistant	-	
Flame Resistant	-	
Certification	-	
Included Accessories	-	

SPEAKERS for ANNOUNCEMENT



6.5" Full-range Ceiling Speaker

CS-610M

CS-610M is Ceiling Speaker supports output with high sound pressure for announcement and emergency broadcasting.

It is made of metal enclosure and has excellent durability. It is possible to install more rigidly by fixing method using separate grill and bracket. 10W, 5W, and 3W output tabs are provided so that users can freely select and install them according to the installation environment.



Unit



Rear



Side

FEATURES

- **6.5" Full-range speaker**

- **Using High quality matching transformer (100V)**

- **Dust filter**

Use a dust filter inside the grill to block dust ingress and maintain a clean grill.

- **Easy installation**

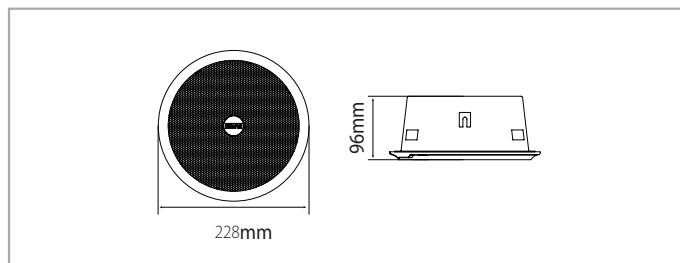
The removable grill is adopted and it is easy to remove and attach. In addition, safety is improved by connecting the unit and cover with wire.

- **How to install**

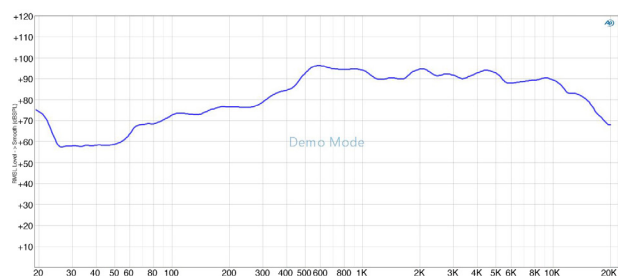
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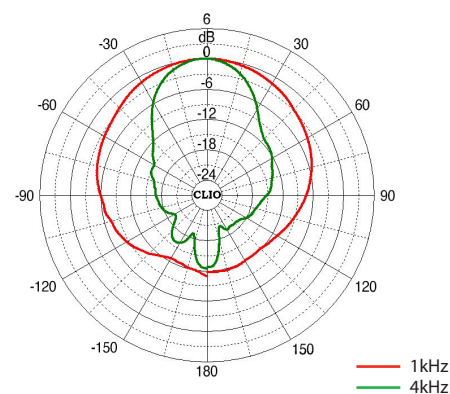
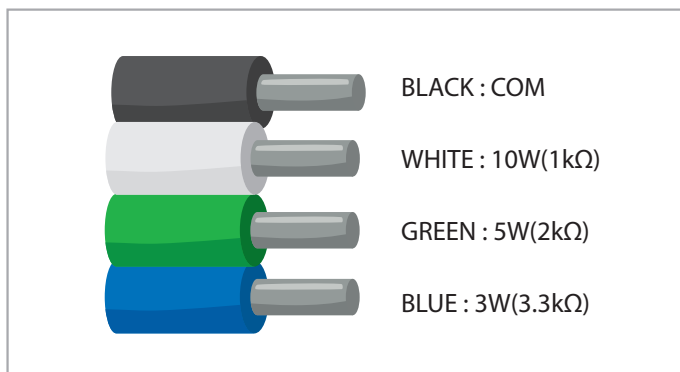
DIMENSION



FREQUENCY RANGE/POLAR PATTERN (1kHz/4kHz)



POWER SELECTION



SPECIFICATION

CS-610M		
Type	6.5" Full-range Ceiling Speaker	
Driver	6.5"	
Power Handling (IEC)	100V	10W
Input Power	100V	10/5/3W
Nominal Impedance	1k/2k/3.3kΩ	
Power Selection	By Wiring	
Frequency Range (-20%)	100Hz ~ 17.4kHz	
Sensitivity (1W/1m)	90dB	
Maximum SPL	100dB	
Nominal Dispersion (Conical)	1kHz	168°
	4kHz	58°
Input connection	Bi-Wired	
Enclosure Material	Aluminum	
Enclosure Color	WHITE	
Grille Material	Metal Grille	
Grille Color	LIGHT BLUE	
Cut-Out Diameter (Ø, mm)	Ø195 ~ 200	
Weight (Set)	0.96kg	
Dimensions (Net, Ø(WxH)xD, mm)	Ø228 x 96	
Weather Resistant	-	
Flame Resistant	O	
Certification	-	
Included Accessories	-	

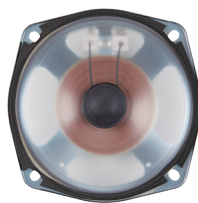
SPEAKERS for EXPOSURE TYPE



5" Exposure Ceiling Speaker

CS-503FE

CS-503FE is an exposed Ceiling Speaker that can be installed on a ceiling or a wall that has no textile finish. Using V-0 grade flame retardant material suitable for international standards, it is possible to broadcast for a long time under emergency such as fire.



Unit



Rear



Side

FEATURES

- **5" Full-range speaker**

- **Using High quality matching transformer (100V)**

- **Easy to installation**

It is possible to install on the wall surface without the need for a cut-out hole.

- **Water-resistant cone of the speaker**

CS-503FE adopts PP made water-resistant cone of the speaker that prevents the unit from corrosion. So, the speaker even maximizes its strength in high humidity environments.

- **V0 rated flame resistant material**

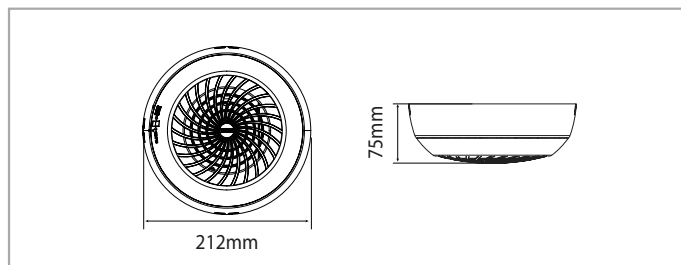
By made up of HIPS V0 rated flame resistant material, it is safe to conduct a long-hour operation even in emergency situations such as sudden disasters and fire.

- **How to install**

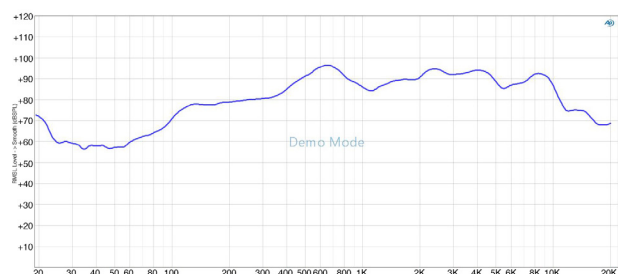
Refer to no.5 of the SPEAKER INSTALLATION GUIDE on pages 24-27.



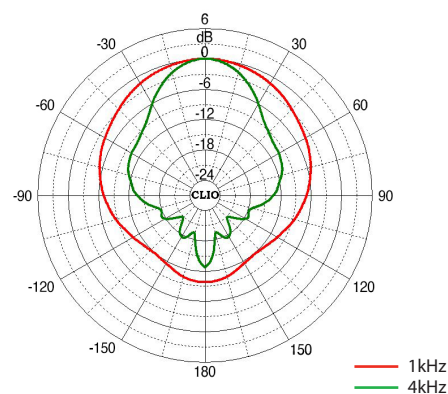
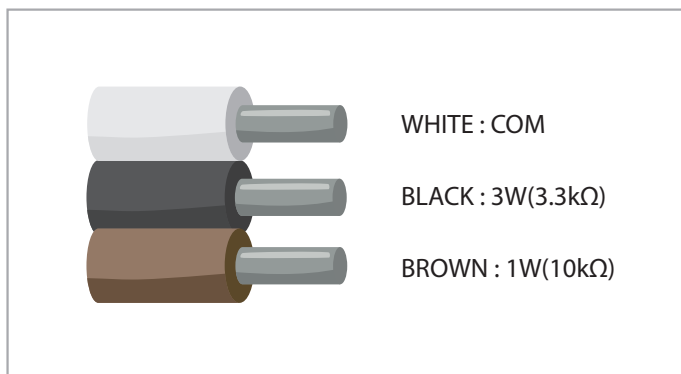
DIMENSION



FREQUENCY RANGE/POLAR PATTERN (1kHz/4kHz)



POWER SELECTION



SPECIFICATION

Model		CS-503FE
Type		5" Exposure Ceiling Speaker
Driver		5"
Power Handling (IEC)		3W
Input Power	100V	3/1W
Nominal Impedance	100V	3.3k/10kΩ
Power Selection		By Wiring
Frequency Range (-20%)		260Hz ~ 10kHz
Sensitivity (1W/1m)		89dB
Maximum SPL		94dB
Nominal Dispersion (Conical)	1kHz	180°
	4kHz	60°
Input connection		Euro BLOCK [PCB]
Enclosure Material		HIPS (V0)
Enclosure Color		GRAY
Grille Material		HIPS (V0)
Grille Color		GRAY
Cut-Out Diameter (Ø, mm)		-
Weight (Set)		0.76kg
Dimensions (Net, Ø(WxH)xD, mm)		Ø212 x 75
Weather Resistant		-
Flame Resistant		O
Certification		KS
Included Accessories		2xScrew M4

SPEAKERS for SPECIAL ENVIRONMENT



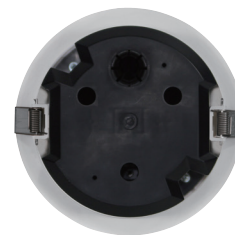
5" Full-range Ceiling Speaker

CS-510F

The CS-510F is designed with a circular-sized footprint and is suitable for use in spaces where interior design is important, such as commercial facilities and residential facilities. It is a multi-purpose speaker that can be used continuously without any interruption in the fire by using flame retardant material suitable for international standards. It adopts the clip type fixing method and is designed with the same perforation size as circular light, so it is very convenient to construct.



Unit



Rear



Side

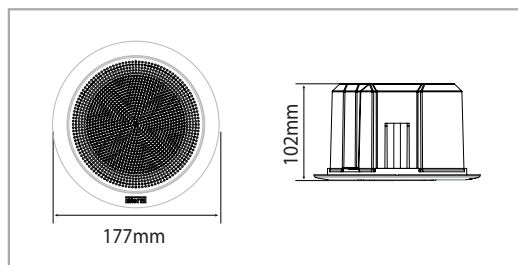
FEATURES

- **5" Full-range speaker**
- **Using High quality matching transformer (100V)**
- **150mm cut-out dimension**
With the same size of the ordinary cut-out dimension of lighting equipment, it is easy to conduct field installation.
- **Rich bass**
It uses the advanced voice coil to provide a low-frequency range despite its compact size.

- **In compliance with international standards**
It is a high quality speaker with high reliability, durability and flame retardancy guaranteed by development and production according to international standards.
- **Dust filter**
Use a dust filter inside the grill to block dust ingress and maintain a clean grill.
- **Easy installation**
It is easy to install as ceiling clip type without additional tools.
- **How to install**
Refer to no.6 of the SPEAKER INSTALLATION GUIDE on pages 24-27.



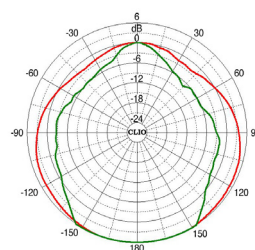
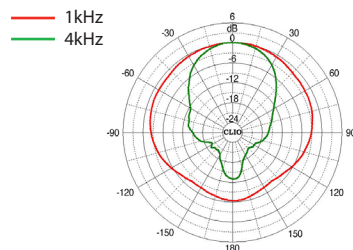
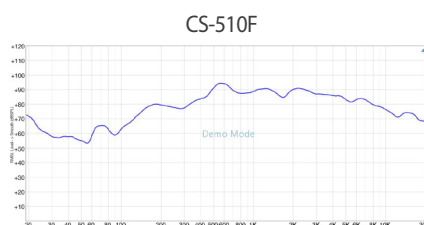
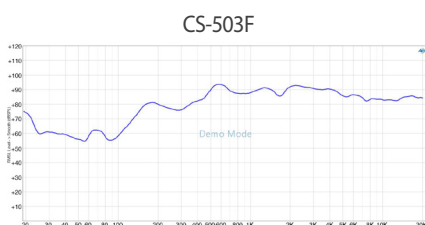
DIMENSION



POWER SELECTION

	CS-503F	CS-510F
	COM	COM
BLACK	3W(3.3kΩ)	10W(1kΩ)
WHITE	2W(5kΩ)	5W(2kΩ)
GREEN	1W(10kΩ)	3W(3.3kΩ)
BLUE		

FREQUENCY RANGE/POLAR PATTERN (1kHz/4kHz)



SPECIFICATION

CS-510F		
Type	5" One-way Ceiling Speaker	
Driver	5"	
Power Handling (IEC)	100V	10W
Input Power	100V	10/5/3W
Nominal Impedance	1k/2k/3.3kΩ	
Power Selection	By Wiring	
Frequency Range (-20%)	120Hz ~ 18kHz	
Sensitivity (1W/1m)	86dB	
Maximum SPL	98dB	
Nominal Dispersion (Conical)	1kHz	180°
	4kHz	83°
Input connection	Bi-Wired	
Enclosure Material	HIPS (V0)	
Enclosure Color	WHITE	
Grille Material	HIPS (V0)	
Grille Color	IVORY	
Cut-Out Diameter (Ø, mm)	Ø150	
Weight (Set)	0.69kg	
Dimensions (Net, Ø(WxH)xD, mm)	Ø177 x 102	
Weather Resistant	-	
Flame Resistant	O	
Certification	KS	
Included Accessories	-	

SPEAKERS for APT TYPE



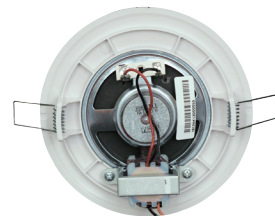
3" Full-range Ceiling Type Apart Speaker

CS-301FC/303FC

The CS-301FC/303FC is a round speaker optimized for announcements in apartments and multi-family homes. Compact design using a 3-inch driver does not affect the aesthetics of the interior, and it is very convenient to use the clip type fixing system. In compliance with international standards, it is recommended to use it as a speaker for emergency broadcasting in general apartment and public housing.



Unit



Rear



Side

FEATURES

- 1Way speaker system
- High quality trans version
- Aesthetic design

- **In compliance with international standards**

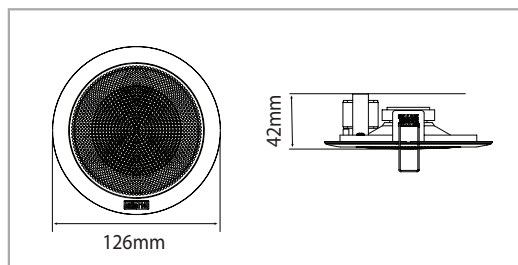
It is a high quality speaker with high reliability, durability and flame retardancy guaranteed by development and production according to international standards.

- Nonflammable material
- Easy installation (Clip type)
- How to install

Refer to no.6 of the SPEAKER INSTALLATION GUIDE on pages 24-27.

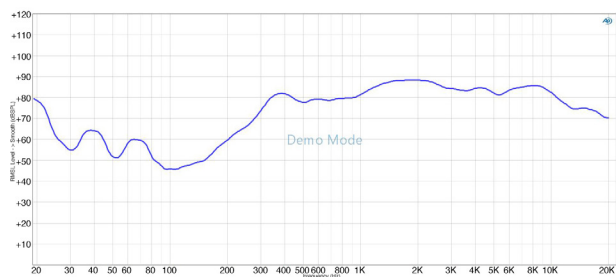


DIMENSION

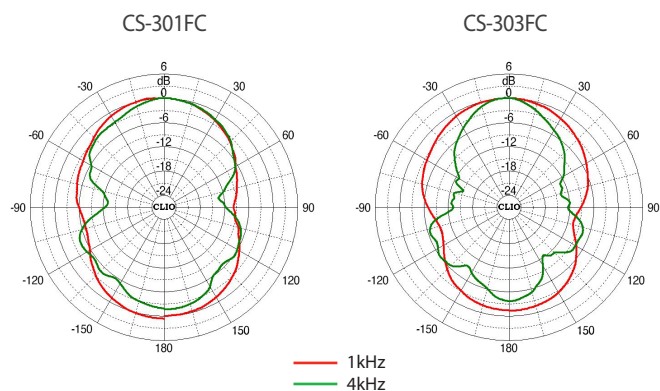


FREQUENCY RANGE

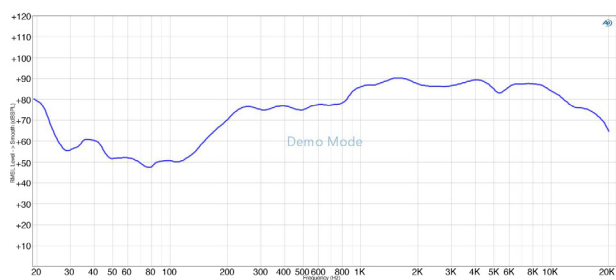
CS-301FC



POLAR PATTERN (1kHz/4kHz)



CS-303FC



SPECIFICATION

		CS-301FC	CS-303FC
Type		3" One Way Apart Speaker	3" One Way Apart Speaker
Driver		3"	3"
Power Handling (IEC)	100V	1W	3W
Input Power	100V	1W	3W
Nominal Impedance		10kΩ	3.14kΩ
Power Selection		By Wiring	By Wiring
Frequency Range (-20%)		170Hz ~ 10kHz	150Hz ~ 9kHz
Sensitivity (1W/1m)		80dB	83dB
Maximum SPL		80dB	88dB
Nominal Dispersion (Conical)	1kHz	150°	150°
	4kHz	110°	110°
Input connection		Bi-Wired	Bi-Wired
Enclosure Material		ABS+PC (V0)	ABS+PC (V0)
Enclosure Color		WHITE/IVORY	WHITE/IVORY
Grille Material		ABS+PC (V0)	ABS+PC (V0)
Grille Color		WHITE/IVORY	WHITE/IVORY
Cut-Out Diameter (Ø, mm)		Ø110 ~ 115	Ø110 ~ 115
Weight (Set)		0.17kg	0.2kg
Dimensions (Net, Ø(WxH)xD, mm)		Ø126 x 42	Ø126 x 42
Weather Resistant		-	-
Flame Resistant		O	O
Certification		KS	KS
Included Accessories		-	-

SPEAKERS for APT TYPE



3" Full-range Square Wall Type Apart Speaker

CS-301FQ/303FQ

The CS-301FQ/303FQ is a square speaker optimized for announcements in apartments and multi-family homes.

Compact design with 3-inch drivers, does not affect the aesthetics of the interior. In compliance with international standards, it is recommended to use it as a speaker for emergency broadcasting in general apartment and public housing.



Unit



Rear



Side

FEATURES

- 1Way speaker system
- High quality trans version
- Aesthetic design

- **In compliance with international standards**

It is a high quality speaker with high reliability, durability and flame retardancy guaranteed by development and production according to international standards.

- **Nonflammable material**

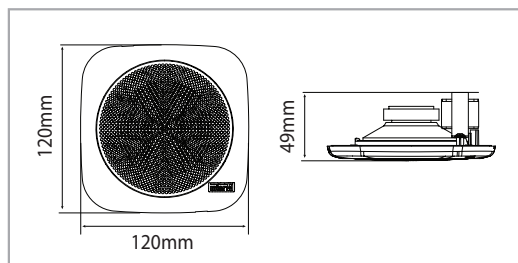
- **Easy installation**

- **How to install**

Refer to no.7 of the SPEAKER INSTALLATION GUIDE on pages 24-27.

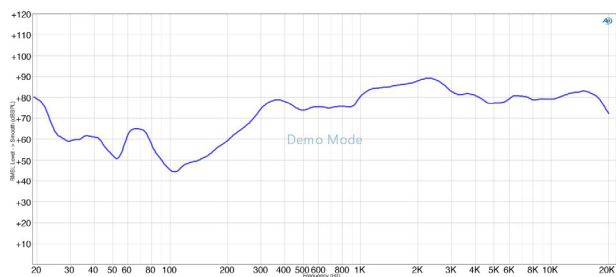


DIMENSION

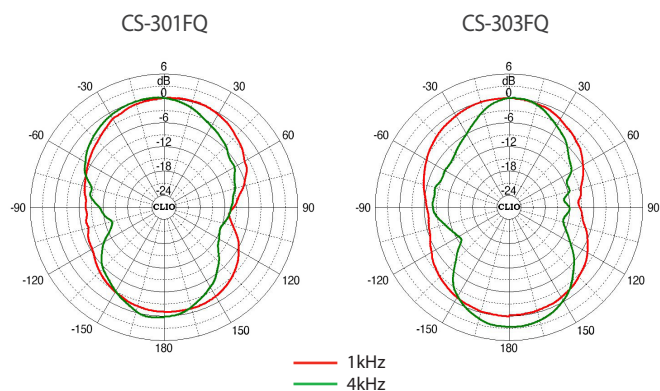


FREQUENCY RANGE

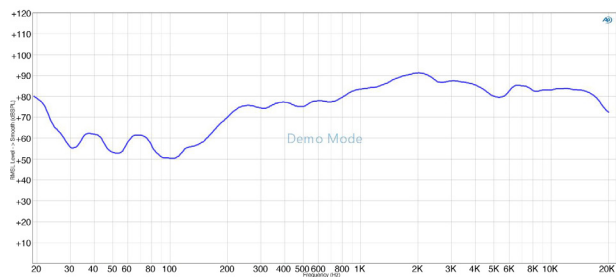
CS-301FQ



POLAR PATTERN (1kHz/4kHz)



CS-303FQ



SPECIFICATION

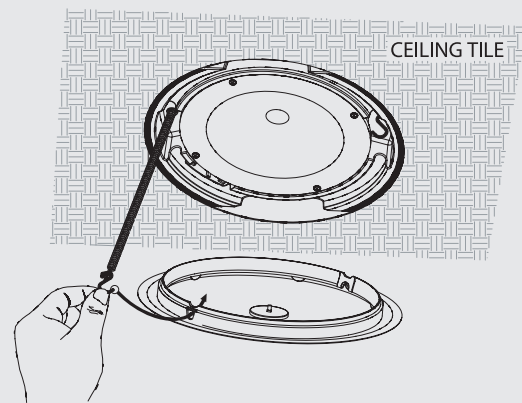
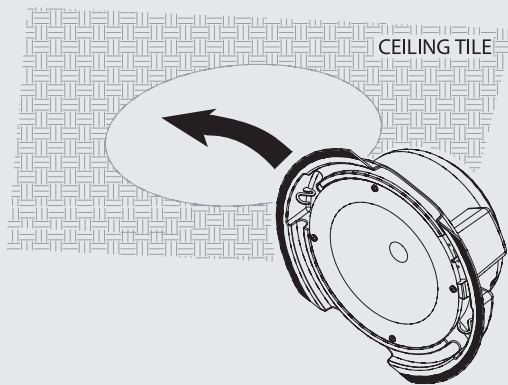
Model		CS-301FQ	CS-303FQ
Type		3" Full-range Square Wall Type Apart Speaker	3" Full-range Square Wall Type Apart Speaker
Driver		3"	3"
Power Handling (IEC)		1W	3W
Input Power	100V	1W	3W
Nominal Impedance	100V	10kΩ	3.14kΩ
Power Selection		By Wiring	By Wiring
Frequency Range (-20%)		180Hz ~ 19kHz	200Hz ~ 19kHz
Sensitivity (1W/1m)		80dB	82dB
Maximum SPL		83dB	90dB
Nominal Dispersion (Conical)	1kHz	137°	142°
	4kHz	115°	73°
Input connection		Bi-Wired	Bi-Wired
Enclosure Material		ABS+PC (V0)	ABS+PC (V0)
Enclosure Color		IVORY	IVORY
Grille Material		ABS+PC (V0)	ABS+PC (V0)
Grille Color		IVORY	IVORY
Cut-Out Diameter (Ø, mm)		-	-
Weight (Set)		0.19kg	0.22kg
Dimensions (Net, Ø(WxH)xD, mm)		120 x 120 x 49	120 x 120 x 49
Weather Resistant		-	-
Flame Resistant		O	O
Certification		KS	KS
Included Accessories		M4 SCREW 4EA	M4 SCREW 4EA

SPEAKER

INSTALLATION GUIDE

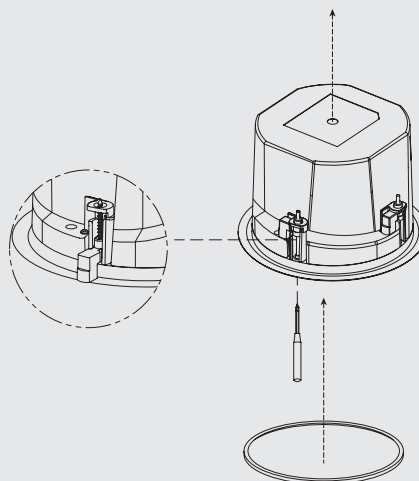
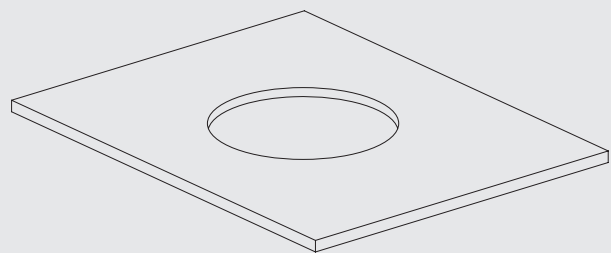
1. Hook type _ CS-610, CS-606F, CS-610F/615F

1. Insert the body unit (front grille cover removed) into the hole on the ceiling.
2. Align the center of the unit with the hole and position it so that it does not come out through both wings.
3. Pull forward the hooks connected to the spring into the grooves on both sides and hook them on the side holes of the front grill cover.
4. Repeat the same procedure for the other side and place it on the ceiling in line with the center.
5. If the holes on the ceiling are assembled invisibly, check whether they are in close contact.



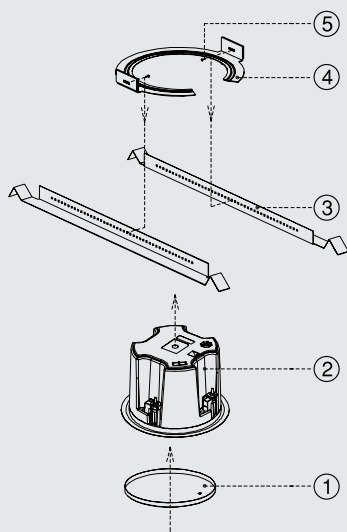
2. Screw lever type _ CS-620FH/630FH/680FH

1. After removing the grille cover, insert the set into the hole on the ceiling.
2. Tighten the screws inside the holes located in the four directions with a screwdriver. (Do not tighten one at a time, but tighten only loosely enough to allow the set to move.) Tighten the sequence in diagonal order, not clockwise / counterclockwise.
3. Align the approximate center and position the holes on the ceiling so that the gap is hidden from view.
4. Tighten all four screws until tight.
5. Insert the grill into the groove and push it all the way into the palm of your hand.

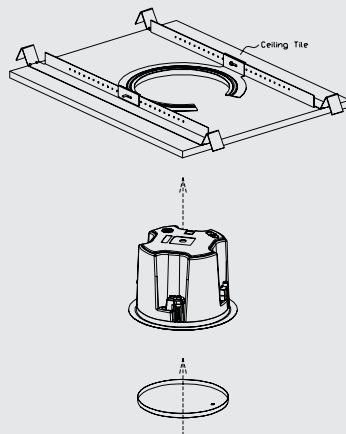


3. Screw Lever (Rail Bracket) Type _ CS-620FH/630FH/680FH

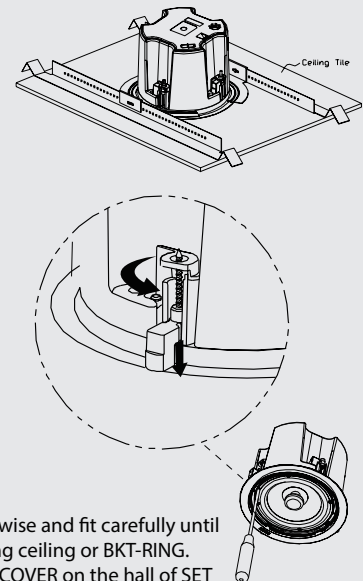
1. Position the rail brackets side by side in the ceiling.
2. Fit the socket of the ring bracket to No. 1 rail bracket, and fix the screws securely.
3. After inserting the body that the grill removed, tighten the screws in 4 directions until they come into close contact with the ceiling using a screwdriver. (Do not tighten one at a time, but tighten only loosely enough to allow the set to move.)
Tighten the sequence in diagonal order, not clockwise/counterclockwise.
4. Align the approximate center and position the holes on the ceiling so that the gaps are hidden from view.
5. Tighten all four screws until they are tight.
6. Insert the grill into the groove and push it all the way into the palm of your hand.



5	SCREW 1WPTC 4 x 12B	2
4	BKT-RING	1
3	BKT-RAIL	2
2	SET	1
1	GRILL COVER	1
NO	NAME	QTY



※ Ceiling Hole Size : $\varnothing 200 \sim \varnothing 205$

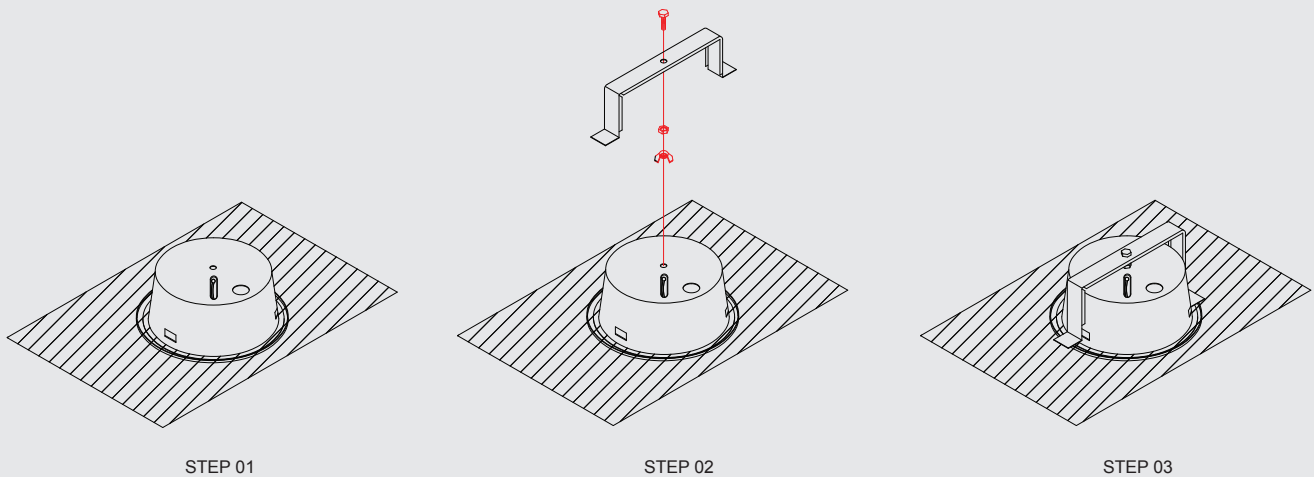


1. Turn clockwise and fit carefully until approaching ceiling or BKT-RING.
2. Put GRILL-COVER on the hall of SET and press to be combined.

SPEAKER INSTALLATION GUIDE

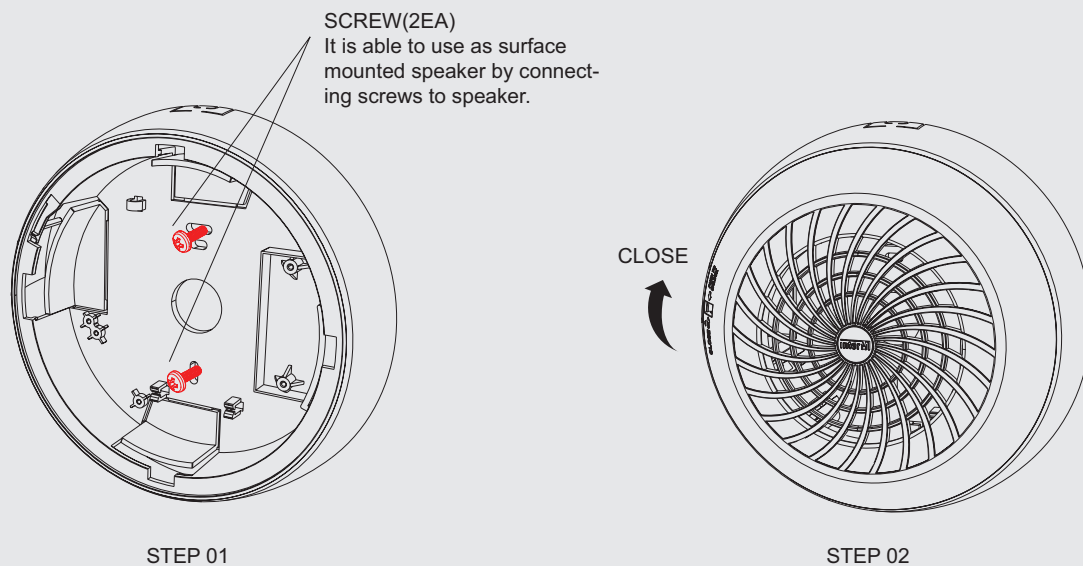
4. Bracket type _ CS-610M

1. Assemble the cylinder cover and 'C' bracket so that they cannot be separated using screws and nuts. (Do not fix completely.)
2. Put the work set in step 1 into the hole in the ceiling and place the 'C' bracket on both sides of the ceiling so that it does not come out.
3. Turn the butterfly nut loosely fastened in 1. clockwise to tighten it completely.
4. Align the clip cover on the groove on both sides of the cylinder cover.
5. Slide it in until it is in close contact with the ceiling, and check that the hole in the ceiling is not visible after completion.



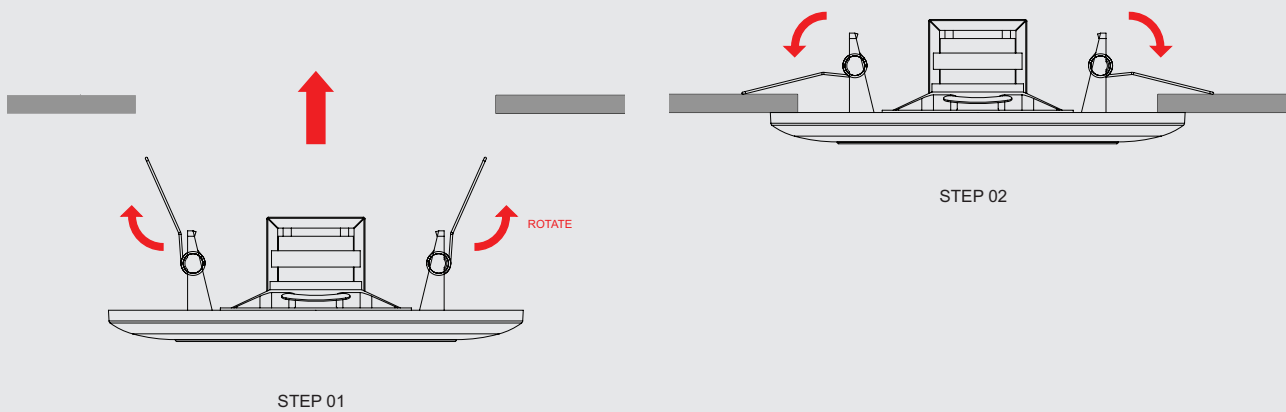
5. 2 points Built-in Screw Type _ CS-503FE

1. Mount the screws to the wall in the inner hole of the set with cover removed.
2. Turn the cover clockwise to assemble it.



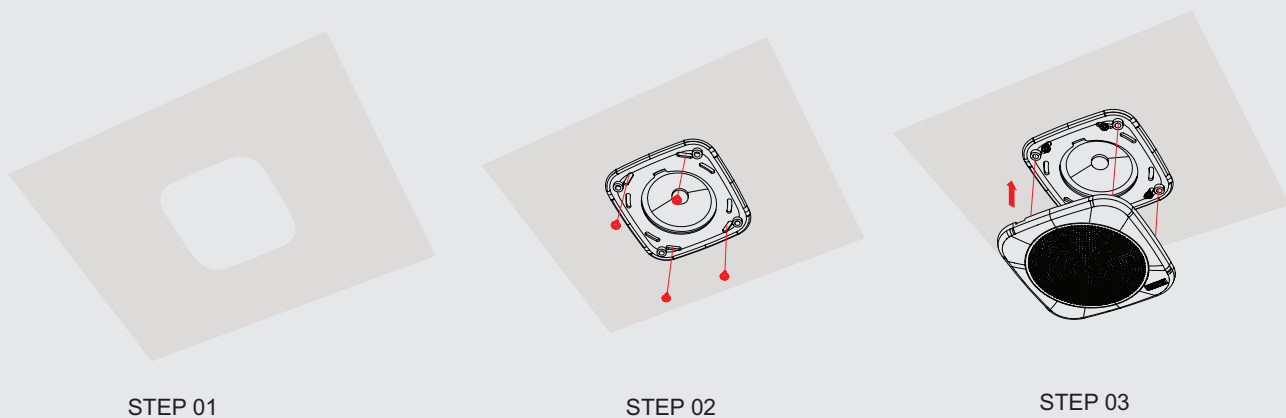
6. Clip spring type _ CS-510F, CS-301FC/303FC

1. Press both clip-type springs and turn enough to get inside the hole on the ceiling
2. Insert the spring into the hole to the extent for stretching and leave it from your hand, and slowly place the main unit on the ceiling.
3. Make sure that the gap between the product and the center of the hole is not visible.



7. 4 points Built-in Screw Type _ CS-301FQ / 303FQ

1. Insert the UNIT of the body uncovered into the wall or the hole on the ceiling and fix it with screws
2. Insert the cover into the groove of the fixed body and press it until it comes in close contact with the wall or ceiling.





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