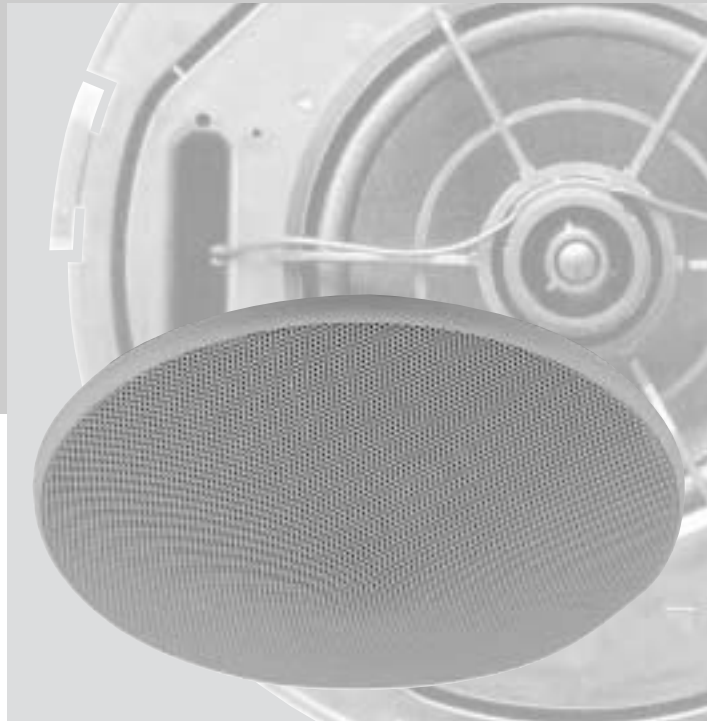


# WIDE-DISPERSION FLUSH-MOUNT CEILING SPEAKER



**F-2852C**  
**F-2322C**  
**F-2352C**  
**F-122C**  
**F-2352SC**  
**F-1522SC**

## DESCRIPTION

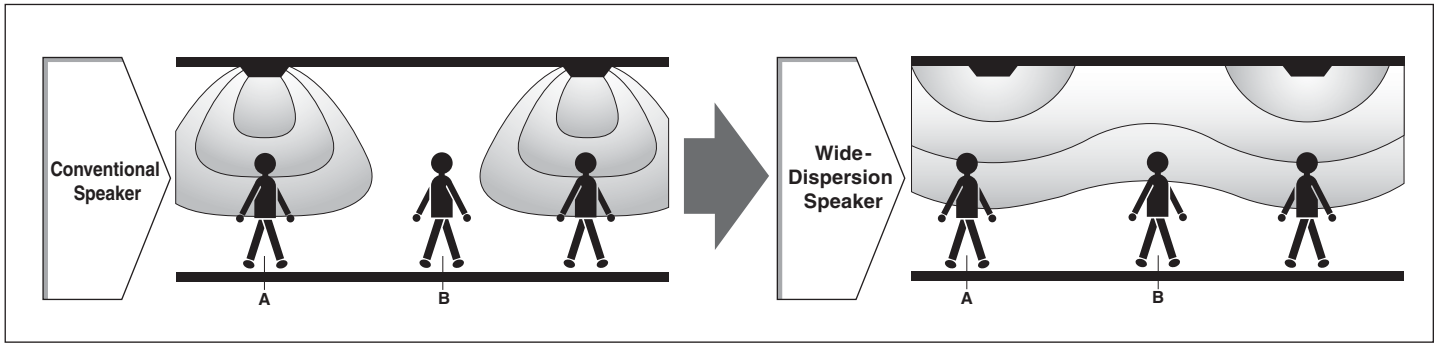
TOA introduces a new range of ceiling-mounted speakers that have been designed and engineered to overcome limiting factors that have been associated with conventional ceiling-mount speakers. Most noticeable has always been the high-frequency rolloff that resulted from limited speaker dispersion characteristics. TOA's new ceiling speaker range provides well-balanced audio reproduction without treble attenuation over an expanded listening area thanks to the extra-wide dispersion characteristics that are part of the overall speaker design. Perceived speaker directionality and beaming tendencies are minimized, resulting in a natural, well-balanced sound over a wide area at all levels. Conventional speakers exhibit high frequency rolloff characteristics as the distance between speaker and listener increases. However TOA believes that an ideal ceiling-mounted speaker's response characteristics should include wide dispersion and non-frequency dependent directionality and this new ceiling speaker series proves that.

## FEATURES

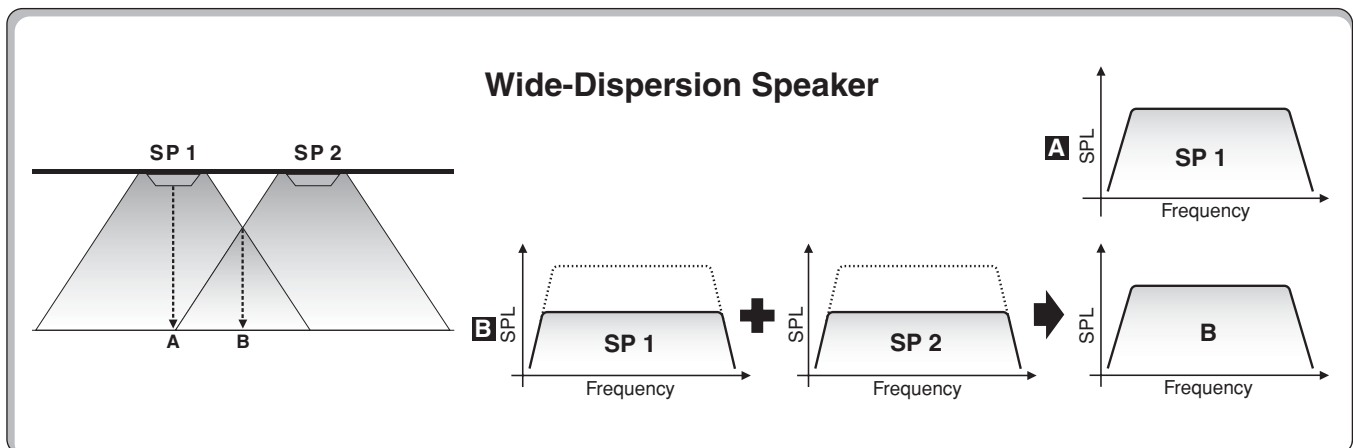
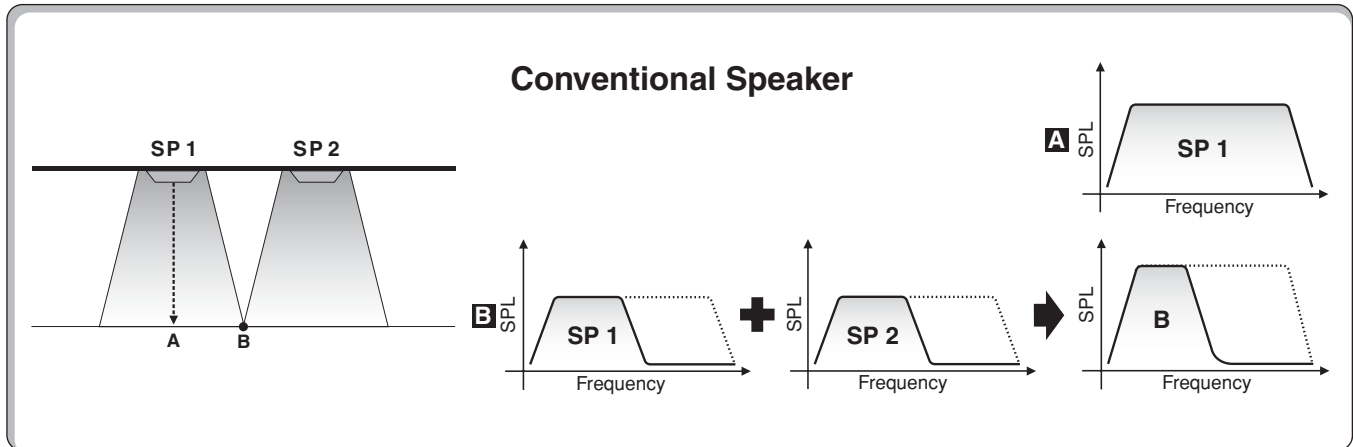
- Designed to blend into ceilings with a smooth, low-profile design.
- Extra ease of use and higher cost-effectiveness with the metal "back can" enclosure for the speaker rear. (F-122C, F-2352C, F-2852C, F-2322C models)
- Minimal high frequency rolloff allows clear and well-balanced sound reproduction over a wide listening area.
- Quick and easy installation to precisely mount speaker onto ceilings and walls. Rotating front grille also installs quickly and conveniently.
- The Electronic Controller (AC-120) option is required to provide increased control of the F-122C's speaker response.

# WIDE-DISPERSION FLUSH-MOUNT CEILING SPEAKER

Delivering a new level of audio performance in ceiling-mounted speakers.



Expanded listening area coverage thanks to the extra-wide dispersion characteristics of TOA's ceiling speakers makes it possible to utilize fewer speakers to cover a desired area, allowing more cost-effective installations.



# F-2852C (16cm cone)

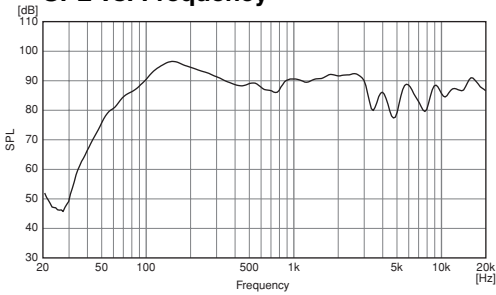
## HIGH POWER (60W) 2-WAY WIDE RANGE



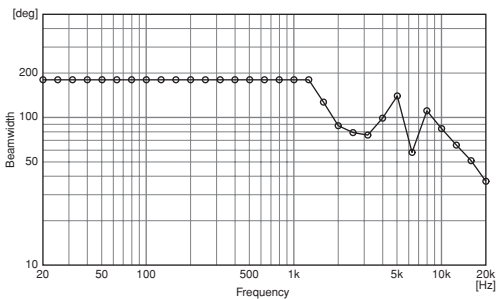
Designed for higher power (60W) applications in locations having higher ceilings that are in the range of 3 to 6 meters.

- Equipped with back can meeting heat-resistant specifications.
- Equipped with a diffuser for wide dispersion of high frequencies.

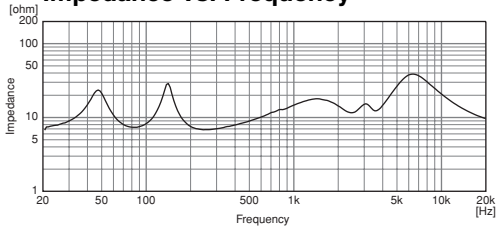
### SPL vs. Frequency



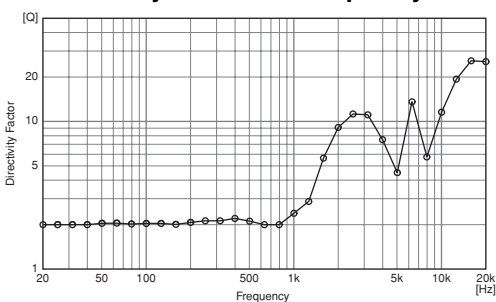
### Beamwidth vs. Frequency



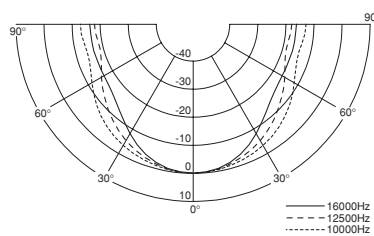
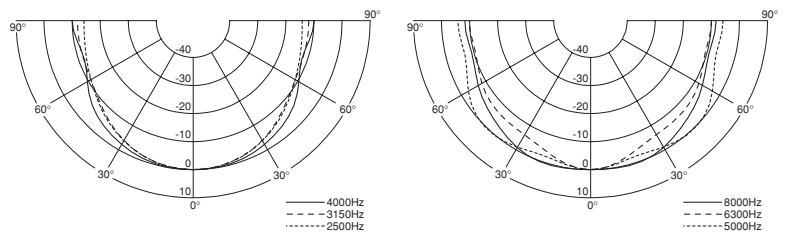
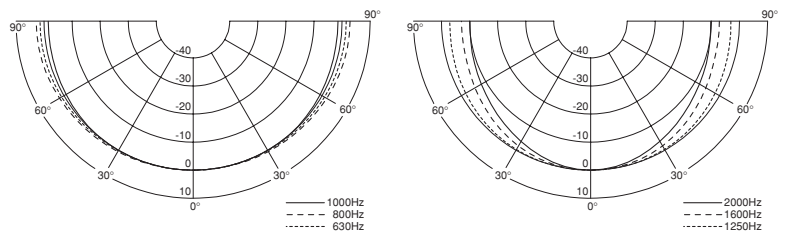
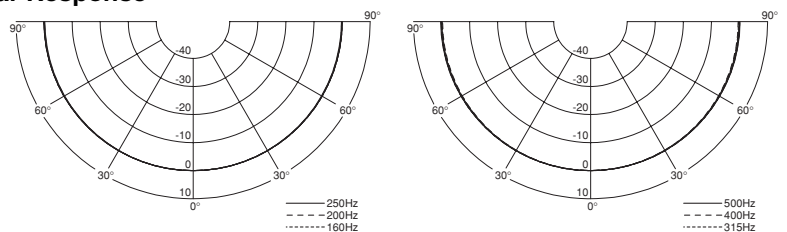
### Impedance vs. Frequency



### Directivity Factor vs. Frequency

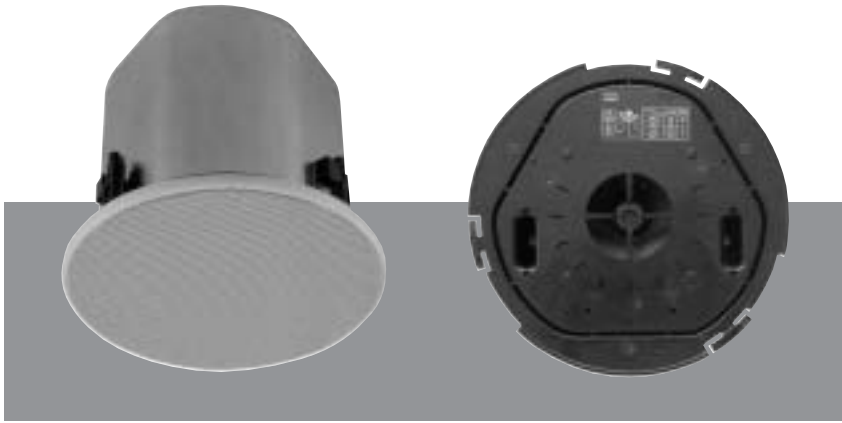


### Polar Response



# F-2322C (12cm cone)

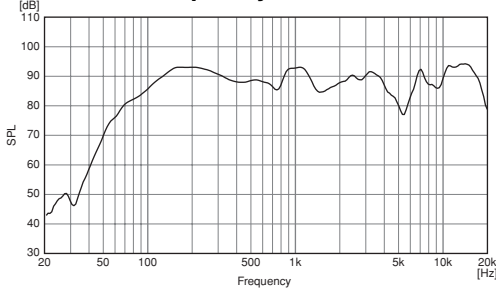
## 30W SERIES FULL RANGE



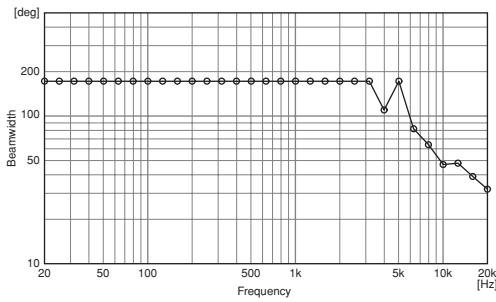
A cost-effective full-range speaker that is ideal for most ceiling sound requirements. (recommended 2 to 4m)

- Equipped with back can meeting heat-resistant specifications.
- Flat front panel mounts flush.

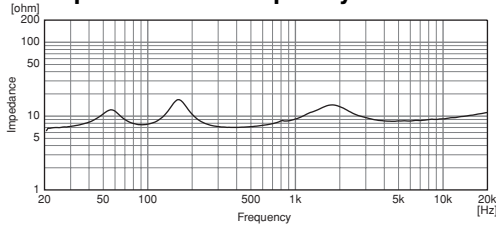
**SPL vs. Frequency**



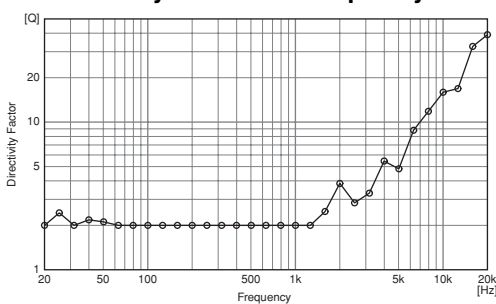
**Beamwidth vs. Frequency**



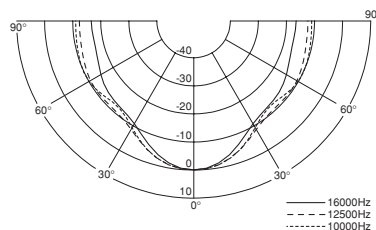
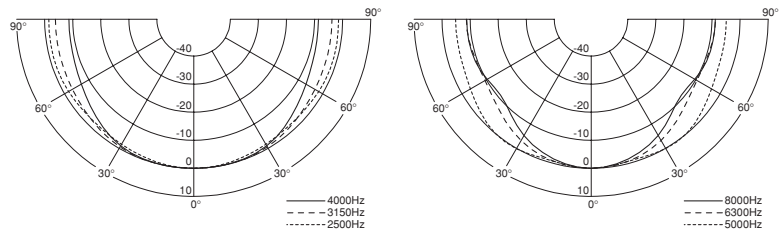
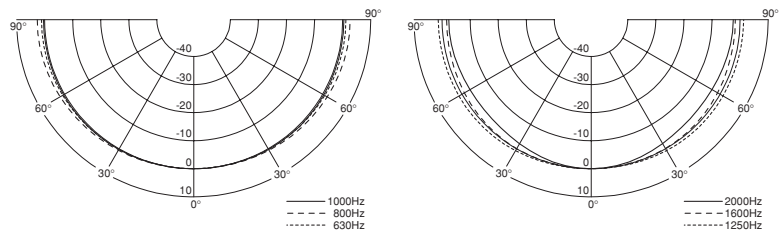
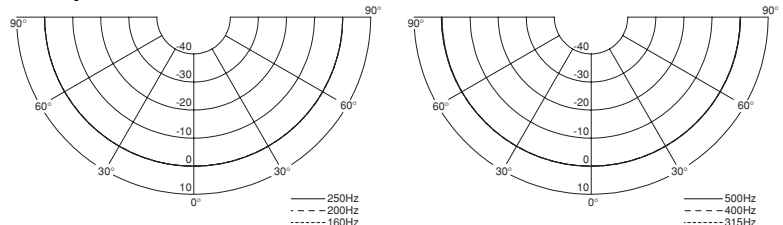
**Impedance vs. Frequency**



**Directivity Factor vs. Frequency**

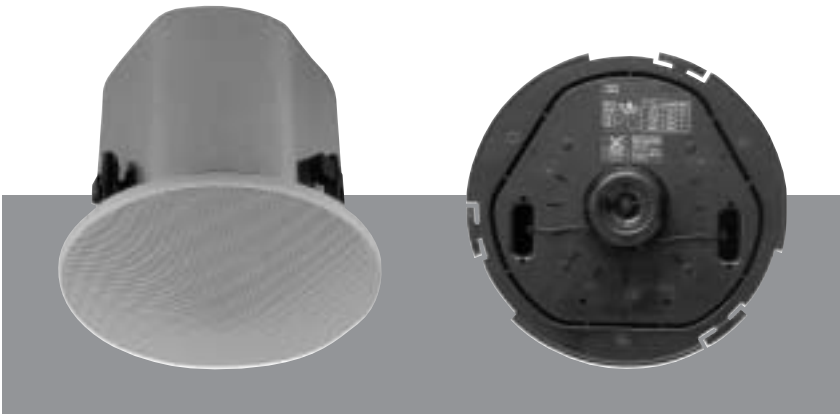


**Polar Response**



# F-2352C (12cm cone)

## 30W SERIES 2-WAY WIDE RANGE

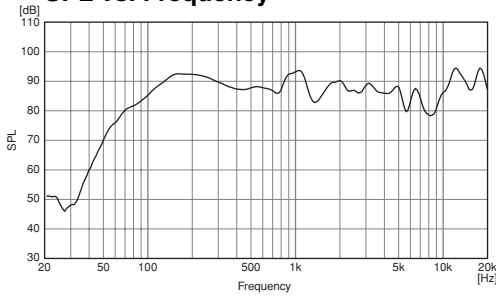


Standard 2-way ceiling speaker for applications requiring a full range frequency response.

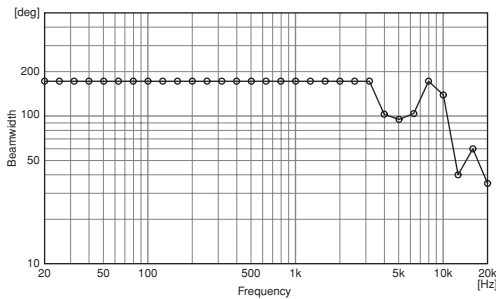
(recommended 2 to 4m)

- Equipped with back can meeting heat-resistant specifications.
- Equipped with a diffuser for wide dispersion of high frequencies.

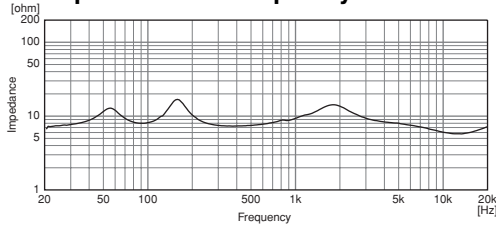
**SPL vs. Frequency**



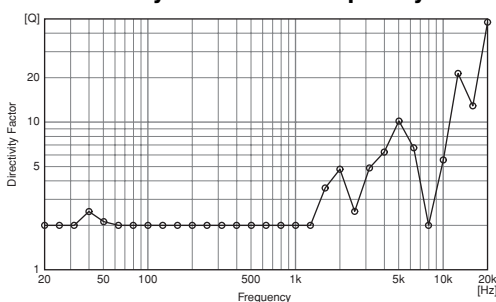
**Beamwidth vs. Frequency**



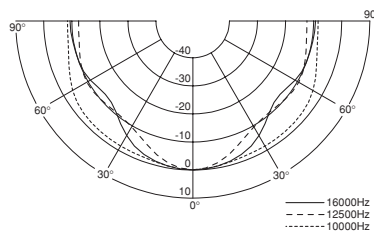
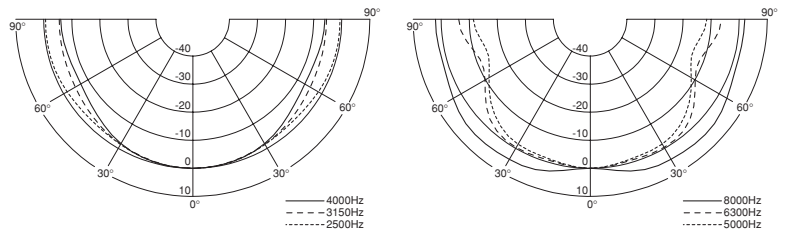
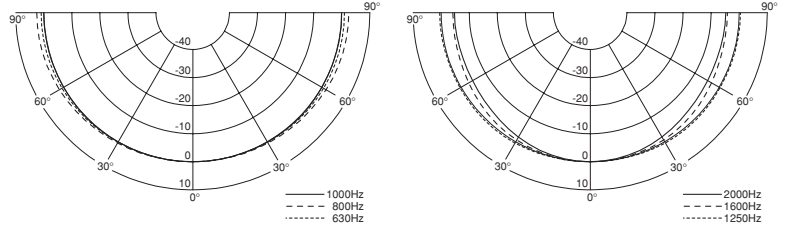
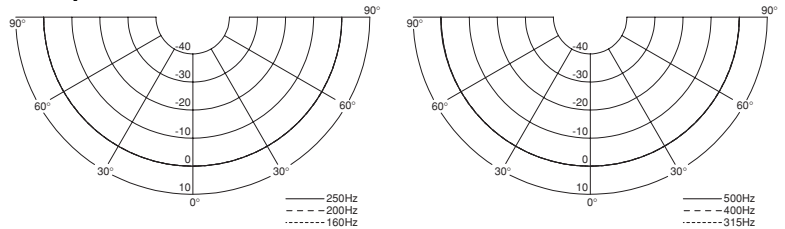
**Impedance vs. Frequency**



**Directivity Factor vs. Frequency**



**Polar Response**



# F-122C (12cm cone)

## EQUALIZING CONTROLLED TYPE 30W SERIES FULL RANGE

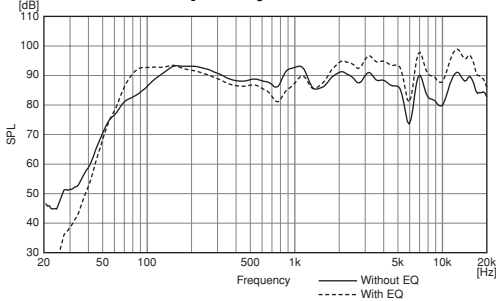


AC-120

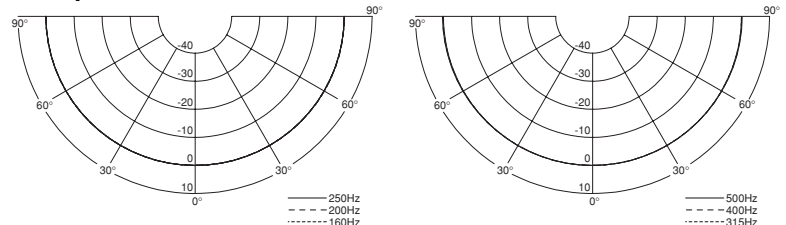
Optimized for use with the optional AC-120 Electronic Controller to deliver the highest quality audio in ceiling-mounted speakers as well as to tailor speaker response to suit specific installation requirements. (recommended 2 to 4m)

- Equipped with back can meeting heat-resistant specifications.
- Equipped with a diffuser for wide dispersion of high frequencies.

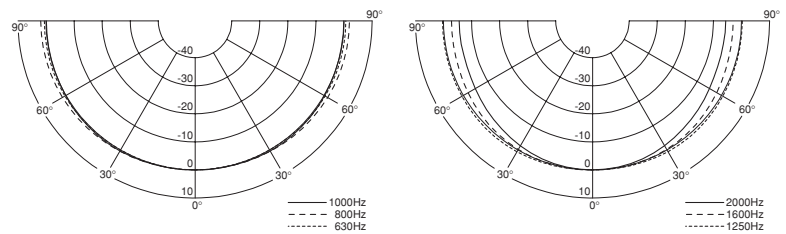
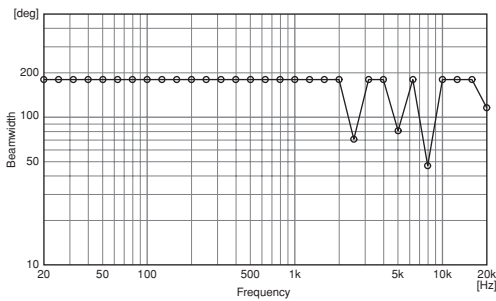
### SPL vs. Frequency



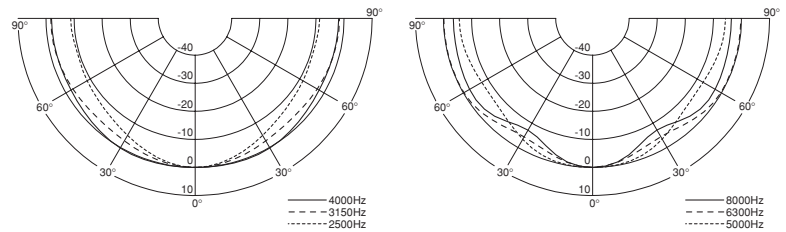
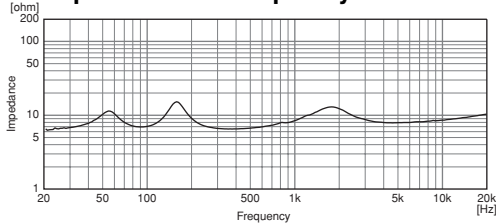
### Polar Response



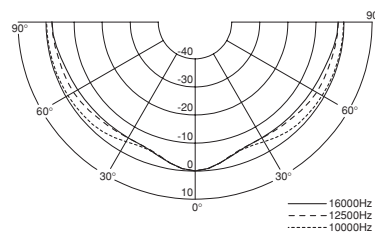
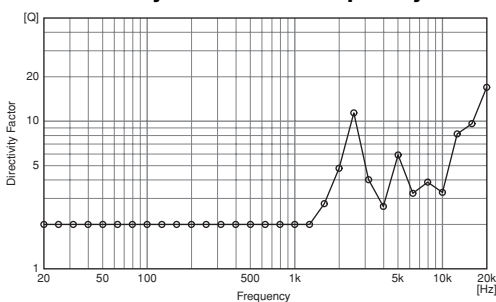
### Beamwidth vs. Frequency



### Impedance vs. Frequency

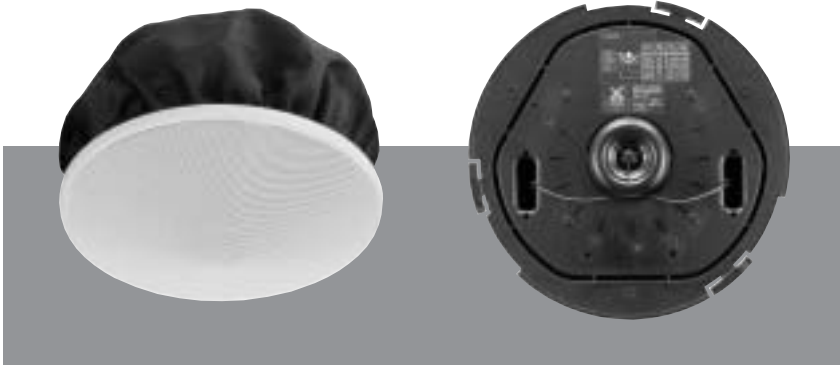


### Directivity Factor vs. Frequency



# F-2352SC (12cm cone)

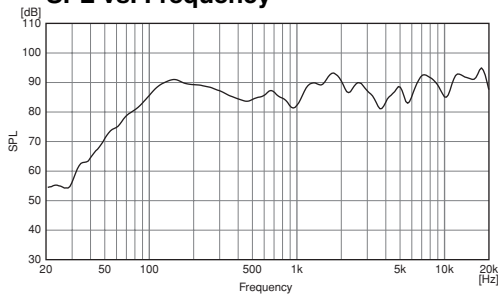
## 6W SERIES 2-WAY WIDE RANGE



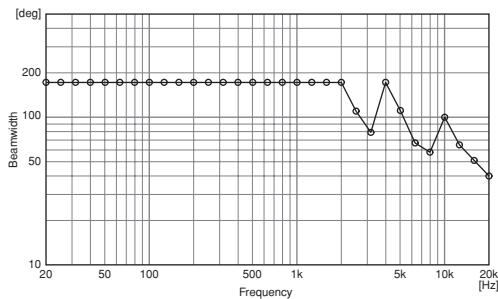
Perfect for low power use, this speaker has increased cost-effectiveness and includes a metal "back can" for greater installation ease. (recommended 2 to 4m)

- Because there is no back can, it can be mounted in ceilings even having minimal depth.
- Equipped with a diffuser for wide dispersion of high frequencies.

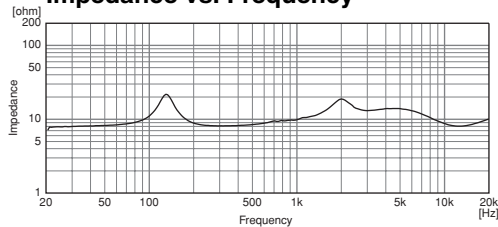
### SPL vs. Frequency



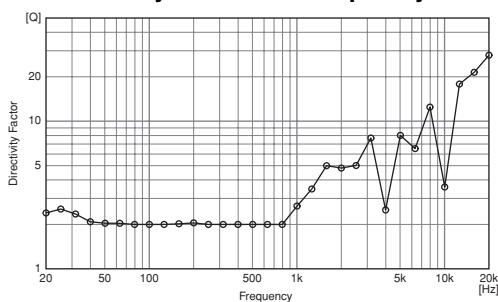
### Beamwidth vs. Frequency



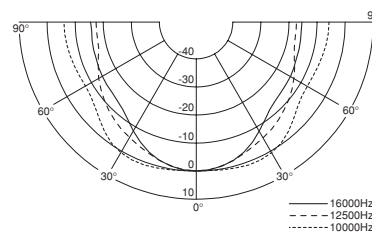
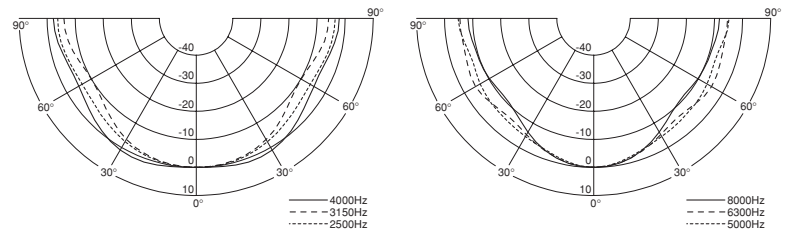
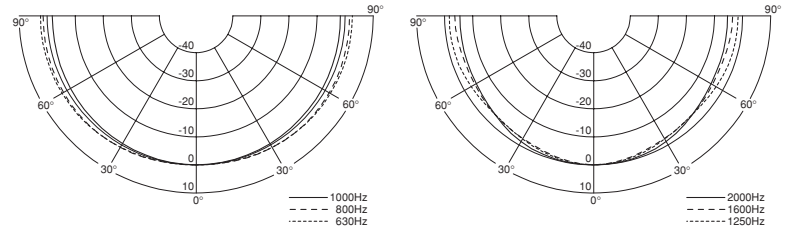
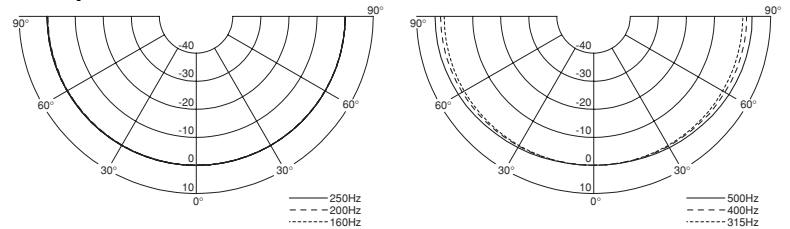
### Impedance vs. Frequency



### Directivity Factor vs. Frequency

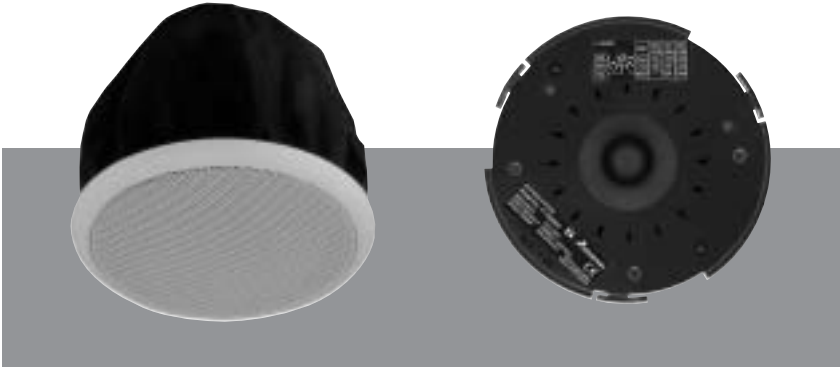


### Polar Response



# F-1522SC (10cm cone)

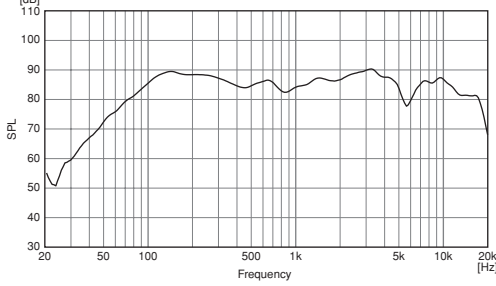
## 6W SERIES FULL RANGE



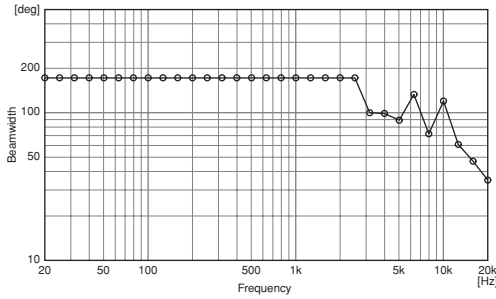
Special compact model designed for low output applications.  
(recommended 2 to 4m)

- Because there is no back can, it can be mounted in ceilings even having minimal depth.
- Flat front panel mounts flush.

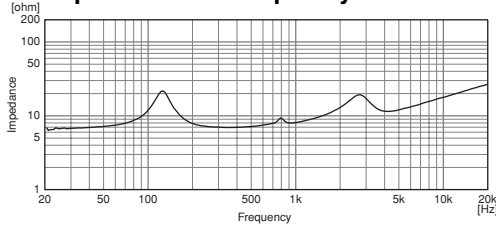
### SPL vs. Frequency



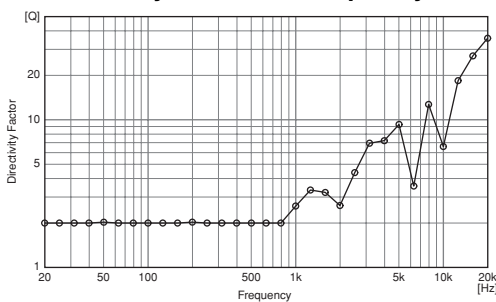
### Beamwidth vs. Frequency



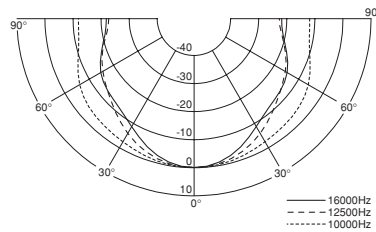
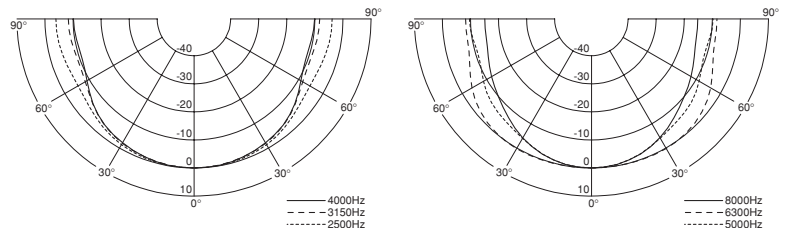
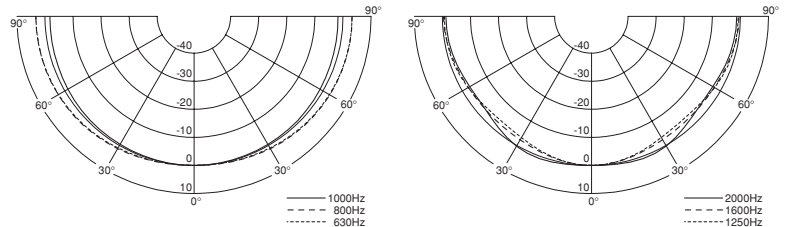
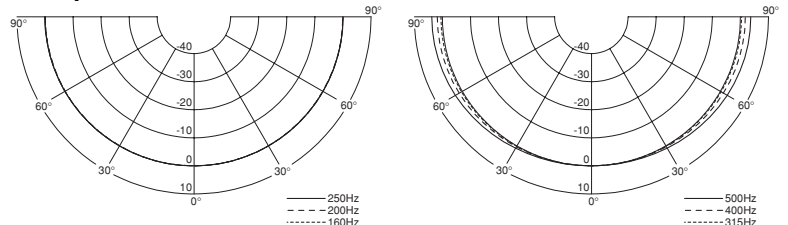
### Impedance vs. Frequency



### Directivity Factor vs. Frequency



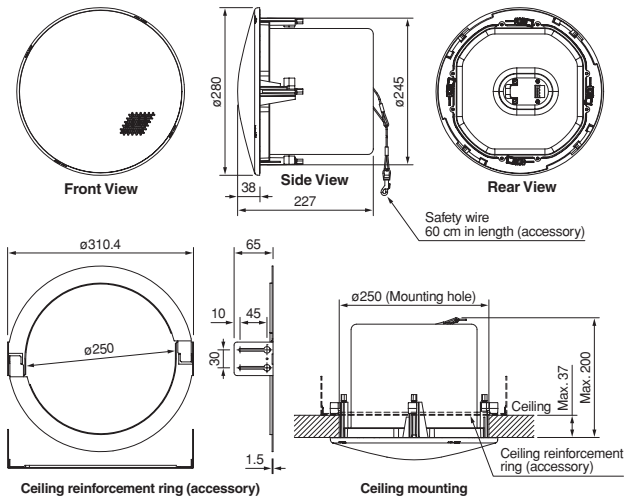
### Polar Response



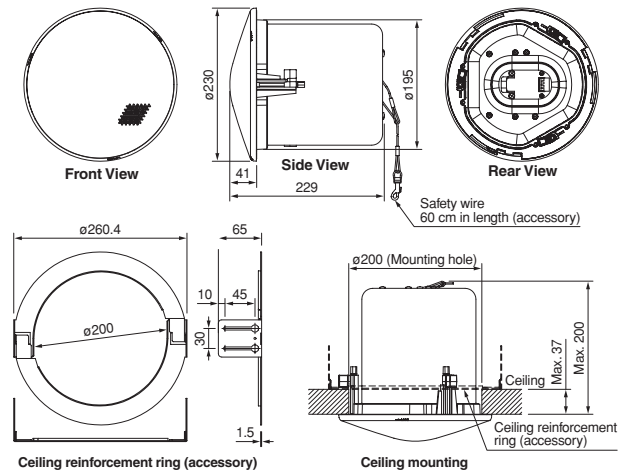


# APPEARANCE AND DIMENSIONAL DIAGRAMS

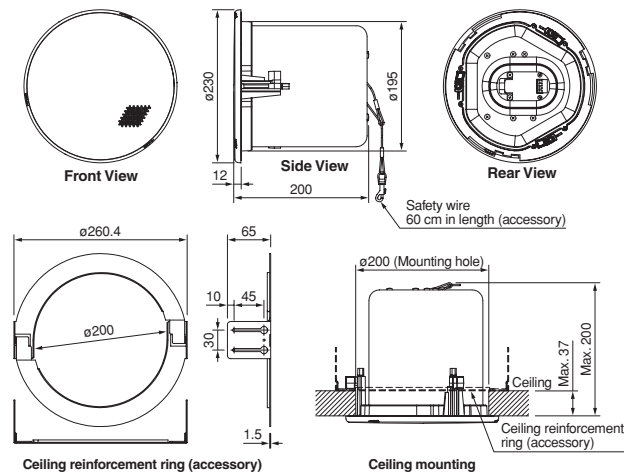
**F-2852C**



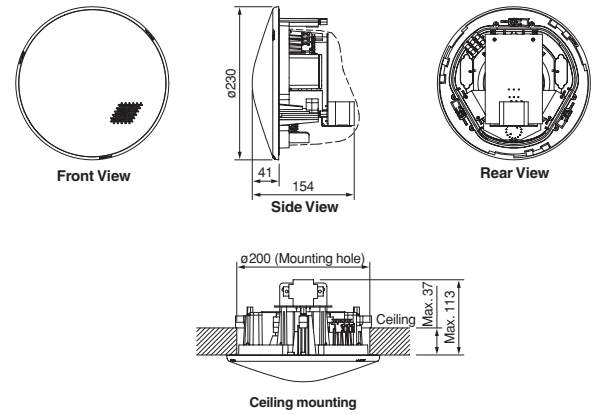
**F-122C**



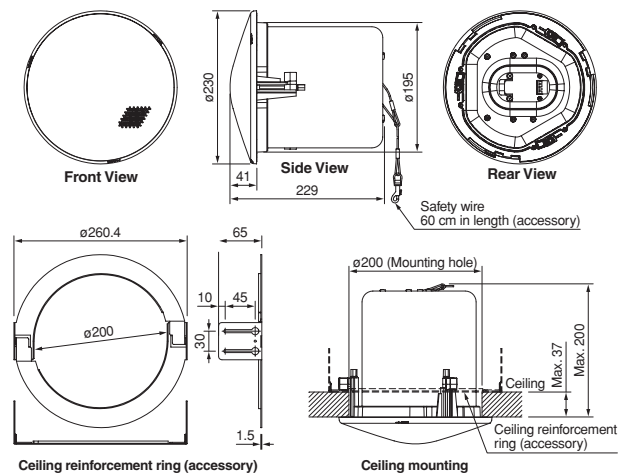
**F-2322C**



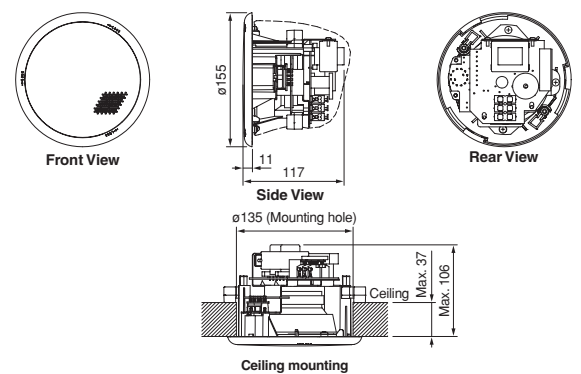
**F-2352SC**



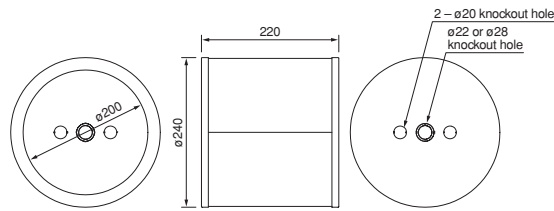
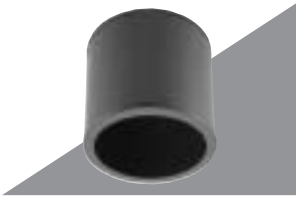
**F-2352C**



**F-1522SC**



### HY-BC1 Back Can



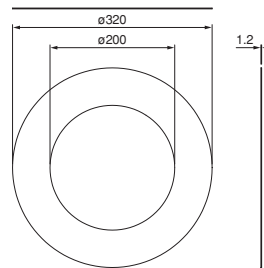
Unit: mm

The HY-BC1 Back Can is a metal case attached to flush-mount ceiling speaker when mounted in exposed applications. The Back Can is hung from a ceiling suspension pipe.

#### Specifications

Finish	Surface-treated steel plate, t0.8, black, paint
Weight	1,5kg
Accessory	Rubber grommet x 2

### HY-TR1 Trim Ring



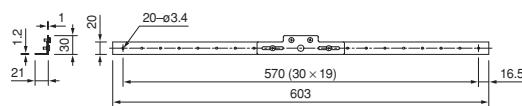
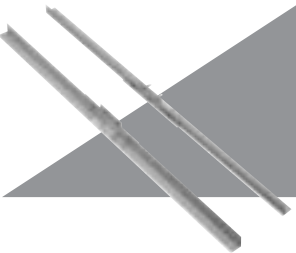
Unit: mm

The HY-TR1 Trim Ring allows installation of flush-mounted ceiling speakers in pre-existing ceiling panel holes which are over 200mm in diameter. The use of 2 Trim Rings allows the speaker to be mounted in holes from 240mm to 300mm in diameter.

#### Specifications

Ceiling Hole Diameter	ø200 – ø300mm
Finish	Surface-treated steel plate, white, paint
Weight	500g

### HY-TB1 Tile Bar Bridge



Magnified view of preinstalled tie-plate

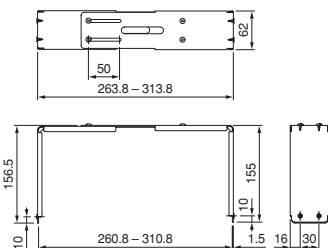
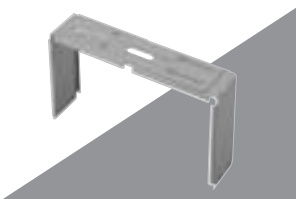
Unit: mm

The HY-TB1 is channel bar to be used when supporting flush-mounted ceiling speakers by way of ceiling bars to prevent their full weight from being directly applied to the ceiling panel during installation. This channel bar is used in conjunction with reinforcement hardware supplied with the speaker. One complete set consists of 2 HY-TB1 bars.

#### Specifications

Finish	Steel plate, plating
Weight	500g (for set of 2 bars)
Accessory	Mounting screw x 4

### HY-AH1 Anchor Hanging Bracket



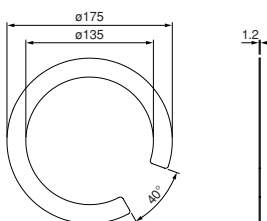
Unit: mm

The HY-AH1 Anchor Hanging Bracket is designed to support ceiling-suspended speakers from an anchor bolt in order to prevent the speaker's full weight from being directly applied to the ceiling panel. It is used in conjunction with reinforcement hardware supplied with the speaker.

#### Specifications

Finish	Steel plate, plating
Weight	700g
Accessory	Paper pattern x 1

## HY-RR1 Reinforcement Ring



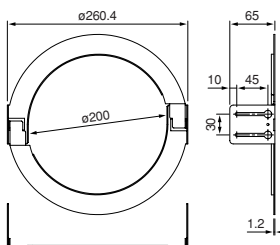
Unit: mm

The HY-RR1 Reinforcement Ring is specially designed for use with the F-1522SC Ceiling Speaker System. It permits the F-1522SC to be installed even in a weak ceiling.

### Specifications

Ceiling Hole Diameter	ø135mm
Finish	Surface-treated steel plate
Weight	80g

## HY-RR2 Reinforcement Ring



Unit: mm

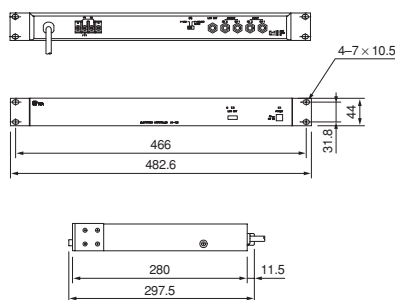
The HY-RR2 Reinforcement Ring is specially designed for use with the F-2352SC Ceiling Speaker System, enabling the F-2352SC installation to a weak ceiling.

It also permits the F-2352SC to be installed to a wide range of locations in versatile mounting methods using in conjunction with the HY-TB1 Tile Bar Bridge, HY-TR1 Trim Ring, or HY-AH1 Anchor Hanging Bracket.

### Specifications

Ceiling Hole Diameter	ø200mm
Finish	Surface-treated steel plate
Weight	280g

## AC-120 Electronic Controller



Unit: mm

The AC-120 is a controller for F-122C, F-121C/121CM or F500, 600 series.

### Specifications

AC Line Voltage	AC mains, 50/60Hz
Power Consumption	9W 120V version 9W 220 - 240V version
Total Harmonic Distortion	Less than 0.05% (1kHz, +4dB*)
Hum and Noise	Less than -94dB* (20Hz - 20kHz B.P.F)
Input	+4dB* 10k ohms balanced phone jack Max input level: +20dB*
Output	CH out: +4 dB* 600 ohms balanced phone jack Max output level: +20dB* Low out: +4dB* 600 ohms balanced phone jack Max output level: +20dB* Filter: 12dB per octave Cut off frequency: 10z
Low Cut Center frequency	100Hz, 6dB cut (for F-122C and F-121C)
Finish	Black
Dimensions	482.6 (W) x 44 (H) x 297.5 (D)mm
Weight	3.7kg

\* 0dB = 0.775Vrms

# SPECIFICATIONS

Model No.	F-2852C	F-2322C	F-2352C	F-122C	F-2352SC	F-1522SC
<b>Enclosure</b>	Bass reflex type				—	
<b>Rated Input</b>	60W (high impedance)	30W (high impedance)			6W (high impedance)	
<b>Power Handling Capacity</b>	Continuous pink noise: 90W(8Ω), 60W (16Ω) Continuous program: 180W(8Ω), 120W(16Ω)	Continuous pink noise: 60W(8Ω), 30W (16Ω) Continuous program:120W(8Ω), 60W(16Ω)			Continuous pink noise: 9W(8Ω), 6W (16Ω) Continuous program: 18W (8Ω), 12W(16Ω)	
<b>Impedance</b> 100V line:	170Ω(60W), 330Ω(30W) 670Ω(15W), 3.3kΩ(3W)	330Ω(30W), 1kΩ(10W), 3.3kΩ(3W), 10kΩ(1W)			1.7kΩ(6W), 3.3kΩ(3W) 10kΩ(1W), 20kΩ(0.5W)	1.7kΩ(6W), 3.3kΩ(3W)
70V line:	83Ω(60W), 170Ω(30W) 330Ω(15W), 670Ω(7.5W) 3.3kΩ(1.5W)	170Ω(30W), 330Ω(15W), 1kΩ(5W), 3.3kΩ(1.5W), 10kΩ(0.5W)			830Ω(6W), 1.7kΩ(3W) 3.3kΩ(1.5W),10kΩ(0.5W) 20kΩ(0.25W)	830Ω(6W), 1.7kΩ(3W) 3.3kΩ(1.5W)
25V line:	83Ω(7.5W), 170Ω(3.7W) 330Ω(1.9W), 670Ω(0.9W) 3.3kΩ(0.2W)	170Ω(3.7W), 330Ω(1.9W), 1kΩ(0.6W), 3.3kΩ(0.2W), 10kΩ(0.06W)			830Ω(0.75W), 1.7kΩ(0.4W) 3.3kΩ(0.2W),10kΩ(0.06W) 20kΩ(0.03W)	830Ω(0.75W) 1.7kΩ(0.4W) 3.3kΩ(0.2W)
Low (adjustable)	16Ω, 8Ω					
<b>Sound Pressure Level</b>	91dB(1W, 1m)	90dB(1W, 1m)	90dB(1W, 1m)	90dB(1W, 1m)	89dB(1W, 1m)	88dB(1W, 1m)
<b>Frequency Response</b>	60 – 20,000Hz (–10dB), 45 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.)	70 – 20,000Hz (–10dB), 50 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.)			80 – 20,000Hz (–10dB), 50 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.)	65 – 18,000Hz (–10dB), 45 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.)
<b>Speaker Component</b> High frequency:	Dome-type	12cm cone-type	Balanced dome-type	12cm cone-type	Balanced dome-type	10cm cone-type
Low frequency:	16cm cone-type		12cm cone-type		12cm cone-type	
<b>Mounting Hole</b>	ø250mm (maximum ceiling thickness: 37mm)	ø200(maximum ceiling thickness: 37mm)				ø135mm (maximum ceiling thickness: 37mm)
<b>Input Terminal</b>	Removable locking connector with screw-down terminals (2 input terminals and 2 bridge terminals)				Push-in connector (Bridging terminal-2 branch type)	
<b>Usable Cable</b>	Solid copper wire: ø0.5 – ø1.6mm (equivalent to AWG No. 24 – 14) Stranded copper wire: 0.2 – 2.5mm <sup>2</sup> (equivalent to AWG No. 24 – 14)				600V Vinyl-insulated cable (IV wire or HIV wire) Solid copper wire; ø0.8 – ø1.6mm (equivalent to AWG No.20 – 15) 7-core twisted copper wire: 0.75 – 1.25mm <sup>2</sup> (equivalent to AWG No.18 – 17)	
<b>Finish</b> Enclosure:	Steel plate, plating				—	
Baffle:	Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), black					
Rim:	Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), white, paint					
Punched net:	Steel plate, white, paint					
Dust-proof bag:	—				Artificial fiber, black	
<b>Dimensions</b>	ø280 x 227 (D)mm	ø230 x 200 (D)mm	ø230 x 229 (D)mm	ø230 x 229 (D)mm	ø230 x 154 (D)mm	ø155 x 117 (D)mm
<b>Weight</b>	5.1kg (including mounting accessories)	3.7kg (including mounting accessories)	3.7kg (including mounting accessories)	3.7kg (including mounting accessories)	1.5kg (including panel)	1kg (including panel)
<b>Accessories</b> Panel:	1					
Ceiling reinforcement ring:	1			—		
Safety wire:	1			—		
Paper pattern:	1					
<b>Option</b> Anchor hanging bracket:	HY-AH1				—	
Back can:	—	HY-BC1				—
Tile bar bridge:	HY-TB1				—	
Trim ring:	—	HY-TR1				—
Electronic controller:	—			AC-120C		—
Reinforcement ring:	—			HY-RR2		HY-RR1

Note: The F-122C must be used with an Electronic Controller AC-120.



TOA Corporation

URL : <http://www.toa.jp/>

Specifications are subject to change without notice.  
Printed in Japan (0311) 833-52-300-2A U