TOA

AUDIO CATALOG
Asia Pacific

We supply sound, not equipment.

![TOA logo]

We supply sound,
not equipment.

Founded 1934 in the Japanese city of Kobe, we can draw upon more than 80 years of experience in researching, developing and selling commercial and professional audio and security equipment. Our pride is that we can use this knowledge to create acoustic sound fields for millions of people to make their lives safer and more pleasant. Since its founding, TOA has pursued its business based upon a solid Management Philosophy, which are the "Three Confidences". These important basic foundations will carry us into an even brighter and prosperous future.

TOA group has its headquarter in Kobe and consists of 19 subsidiaries, which are divided into 5 divisions. TOA Electronics Pte Ltd (TES) is located in Singapore since 2002 and has since become the regional office for Asia-Pacific with subsidiaries in Malaysia, Thailand, Vietnam and Indonesia. Our Export Sales Team in Singapore takes care of all other APAC countries.

In each of the Asia-Pacific countries we have authorized distributors, which take care of their country and your needs. TOA has a very good relationship to all of its distributors and is in constant communication to get best market knowledge.

Our Three Confidences

Total confidence
of our customers in the
use of all products.

Total confidence
of our associates in all
business transactions.

Total confidence
of our employees in
all their effort.

Dear reader,

My name is Dr. Sound. I am the new acoustic expert at TOA and am always seeking the perfect sound. At TOA we have made it our mission to supply you not just with high-quality equipment but above all with first-class sound. Whether in schools, concert halls, airports or stadiums – our sound systems make millions of peoples' lives safer and more enjoyable.

Have fun in planning with and browsing through our products,
Yours, Dr. Sound

Dr.Sound

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Microphones

Dynamic Microphones

⟫ Unidirectional Microphone
DM-1100

- Dynamic hand-held microphone for general use
- Rigid diecast aluminum microphone body
- Switching and handling noise suppression
- 7.5 m phone plug cable supplied with unit
- Microphone holder provided as standard accessory

⟫ Unidirectional Microphone
DM-1200
DM-1200D

- Dynamic hand-held microphone for speech use
- Rigid diecast zinc microphone body
- Switching and handling noise suppression
- 10 m phone plug cable supplied with unit
- Microphone holder provided as standard accessory
- Balanced output for long distance connection

⟫ Unidirectional Microphone
DM-1300

- Dynamic hand-held microphone for vocal/speech use
- Rigid diecast zinc microphone body
- Switching and handling noise suppression
- 10 m phone plug cable supplied with unit
- Microphone holder provided as standard accessory
- Balanced output for long distance connection

⟫ Unidirectional Microphone
DM-1500

- Suitable for vocal and speech application
- Robust diecast zinc microphone body
- Short type slide on/off switch reduces handling noise
- XLR-connector (balanced) and 10m cable with phone plug
- Adapter for stand mount is provided

Model	DM-1100	DM-1200	DM-1200D	DM-1300	DM-1500
Type	Moving coil microphone (Dynamic microphone)				
Directivity	Unidirectional				
Rated Impedance	600 Ω, unbalanced	600 Ω, balanced			
Rated Sensitivity	−55 dB (1k Hz 0 dB = 1 V/Pa)	−52 dB (1k Hz 0 dB = 1 V/Pa)		−54 dB (1k Hz 0 dB = 1 V/Pa)	−56 dB (1kHz 0 dB = 1 V/Pa)
Frequency Response	100 Hz – 12 kHz	50 Hz – 12 kHz		70 Hz – 15 kHz	
Weight	155 g (without connection cable)	265 g (without connection cable)		245 g (without connection cable)	280 g (without connection cable)
Dimensions	ø 55 x 178 mm	ø 39.5 x 163 mm		ø 51 x 170 mm	ø 40.5 x 173 mm
Talk switch	Short-off type, slide on/off switch		Short-off type, slide on/off switch with extra remote control contact	Short-off type, slide on/off switch	
Finish	Body: Die cast aluminum, painted black Head: ABS resin, black/ zinc platedsteel wire, painted black	Body: Die cast zinc, painted metallic grey Head: Die cast aluminum, zinc plated steel wire, painted metallic grey		Body: Die cast zinc, painted metallic grey Head: Aluminum, zinc plated steel wire, painted metallic grey	Body: Die cast zinc, painted metallic gold Head: Brass and zinc plated steel wire, painted metallic gold
Standard accessory	Microphone holder (W 5/16", W 5/8")	Microphone holder (W 5/16", W 5/8", W3/8")		Microphone holder (W 5/16")	

**Please refer to specification sheet for detailed information.

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⟫ Unidirectional Microphone
DM-270

• Special coating on microphone body for a non-slip grip

⟫ Unidirectional Microphone
DM-320
DM-420

• Reproduce high sound clarity for use with other sound system equipment
• Cable can be detached for easy storage

⟫ Unidirectional Microphone
DM-520

• Consists of a magnetic switch to reduce noise casued by switch contact

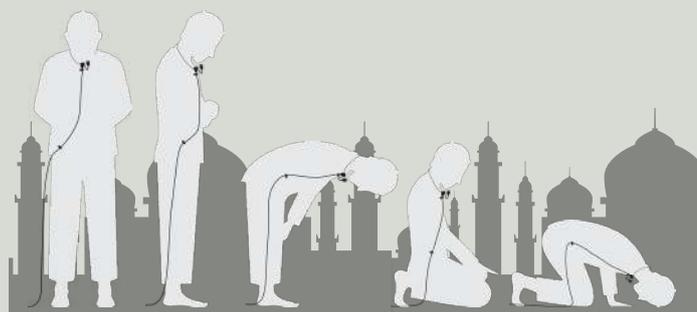| Model	DM-270	DM-320	DM-420	DM-520
Type	Moving coil microphone (Dynamic microphone)			
Directivity	Unidirectional			
Rated Impedance	600 Ω, balanced			
Rated Sensitivity	−52 dB (1 kHz 0 dB = 1 V/Pa)	−55 dB (1 kHz 0 dB = 1 V/Pa)	−52 dB (1 kHz 0 dB = 1 V/Pa)	−55 dB (1 kHz 0 dB = 1 V/Pa)
Frequency Response	100 Hz – 15 kHz	100 Hz – 12 kHz	80 Hz – 13 kHz	
Weight	300 g (without connection cable)		280 g (without connection cable)	232 g (without connection cable)
Dimensions	ø 47 x 175 mm	ø 52 x 183 mm		ø 50 x 176 mm
Talk switch	Short-off type, slide on/off switch			Short-off type, slide on/off switch, magnetic switch, locking system
Finish	Body: Die cast aluminum, painted black Head: Die cast aluminum, zinc plated steel wire, painted black	Body: Die cast zinc, painted dark grey Head: Die cast aluminum, zinc plated steel wire, painted dark grey	Body: Die cast zinc, painted dark grey Head: Die cast aluminum, zinc plated steel wire, silver	Body: Die cast zinc, painted dark grey Head: Die cast aluminum, zinc plated steel wire, painted dark grey
Standard accessory	Microphone holder			

Condenser Microphones

⟫ Neck-worn Microphone
EM-362

Say goodbye to unnecessary noise made by microphone brushing against your clothes!

TOA EM-362, neck-worn microphone's unique design suspends the microphone in front of the speaker's mouth optimizing speech pick up and avoid contact with speaker's clothing.

It is a perfect choice for users like prayer leaders, teachers and presenters who have high volume of body movement during their use of micro-phone.

• Microphone suspended in front of speaker's mouth for optimum speech pick up
• Flexible shalf for easy microphone positioning
• High sensitivity and wide-range frequency response
• Option to operate with either 2 x AAA battery or phantom power
• ON/OFF switch allowing user to switch on and off microphone when needed

Model	EM-362
Power Source	3 V DC (2 x "AAA" batteries) or Phantom Power: 9-52 V
Microphone Element	Electret Condenser
Polar Pattern	Cardioid
Rated Impedance	600 Ω, balanced
Rated Sensitivity	−35 dB ± 3 dB (1 kHz 0 dB = 1 V/Pa)
Frequency Response Mic	60 Hz – 20 kHz
Output Connector	1/4" Balanced L plug, 200 mm
Cable Length	7 m
Finish	Battery Case Unit, Switch Unit, Mic Unit: ABS Resin, Black Flexible Shaft: Copper alloy, Black, Paint, Shield tube Wire Hanger: Steel wire shield rubber, Black, Paint
Dimensions (H x W)	260 × 135 mm
Weight	190 g (exclude batteries)

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Condenser Microphones

⋙ Tie Clip Microphone
EM-361

- Electret condenser microphone element for speech applications
- High sensitivity (-29dB) provides a satisfying tonal response
- "AA" battery operated

⋙ Headset Microphone
EM-370HS

- Electret condenser microphone element for speech applications
- "AA" battery operated

⋙ Lavalier Microphone
EM-410

- Electret condenser microphone element for voice-oriented applications such as lectures, presentations and religious services
- Designed for best performance when attached to the chest area
- Capsule rotates 360 degrees, for optimal pickup even when worn on a lapel

⋙ Gooseneck Microphone
EM-380

- Electret condenser microphone designed for speech application
- Uniquely shaped and has double flexible bends on the shaft allowing more flexibility in adjusting it to speaker's ideal position
- Power option selectable between battery or phantom power
- Ideal for lecture halls, houses of worship and paging application

⋙ Flush-Mount Boundary Microphone
EM-600

- Electret condenser microphone for conference room recording and security monitoring
- Wide frequency range (30Hz-20kHz) provides well-balanced sound with clarity and a satisfying tonal response
- Unobtrusive design allows easy flush-mounting in walls, ceilings, and desktops
- Optimized to deliver best performance when used on a desk or attached to a ceiling
- A 50 Hz low-cut filter reduces intrusive noise, such as air conditioner rumble or door opening/closing
- Two rubber isolation rings provided as an accessory serving to reduce vibration

⋙ Boundary Microphone
EM-700

- Electret condenser microphone for speech and recording applications
- Design, optimized to deliver best performance when used on a desk
- Slim, stylish design suits interior decor
- Rejection of undesirable off-axis sound minimizes possible feedback
- Low-cut filter switch prevents interference from ambient noise from being picked up
- Wide frequency range of 35 to 20 kHz provides well-balanced sound with clarity and a satisfying tonal response

⋙ Gooseneck Microphone
EM-800

(With microphone stand: ST-800)

- Electret condenser microphone for such speech applications as meetings, lectures, and religious services
- Excellent high-frequency response of 60 to 20k Hz delivers clear output
- High sensitivity (-35dB) provides a satisfying tonal response
- Gooseneck with two adjustment points allows more flexible microphone positioning angles
- Rejection of undesirable off-axis sound minimizes possible feedback

ST-800
For EM-800

Model	EM-361	EM-370HS	EM-410	EM-600	EM-700
Directivity	Unidirectional		Hyper-cardioid	Omnidirectional	Cardioid
Rated Impedance	2 kΩ, unbalanced	2.5 kΩ, unbalanced	120 Ω, balanced		
Rated Sensitivity	–29 dB (1k Hz 0 dB = 1 V/Pa)	–51 dB (1k Hz 0 dB = 1 V/Pa)	–47 dB (1k Hz 0 dB = 1 V/Pa)	–36 dB (1k Hz 0 dB = 1 V/Pa)	–33 dB (1k Hz 0 dB = 1 V/Pa)
Phantom power	AA battery x 1		9-52 V DC		
Frequency Response	60 Hz – 20 kHz	50 Hz – 12 kHz	100 Hz – 15 kHz	30 Hz – 20 kHz	35 Hz – 20 kHz
Output Connector	unbalanced-phone plug	1/4" unbalanced-phone plug	Balanced-phone plug	XLR-3-12 equivalent	
Finish	ABS black	Battery case: ABS, black Headset: Metal, black	Body: Copper alloy, black, semi-gloss, paint	Body: Steel, white, semi-gloss, paint Head: Zinc-plated steel wire, white, semi-gloss, paint	Body: Die-cast aluminum, black, mat finish, paint Punched net: Surface-treated steel plate, black, mat finish, paint
Dimensions (W x H x D)	89.5 x 38.5 x 19 mm (mic body)	89.5 x 38 x 19 mm (mic body)	ø 8.9 × 28.6 mm (cord excluded)	ø 28 × 68 mm	83 × 23 × 83 mm (cord excluded)
Weight	140 g	142 g	100 g	85 g	290 g
Accessory	-	-	Windscreen × 1, Clip Holder × 1	Rubber Isolation Ring×2, M20 Nut×1	-

Model	EM-380	EM-800
Directivity	Cardioid	
Rated Impedance	750 Ω, balanced	120 Ω, balanced
Rated Sensitivity	–41 dB ± 3 dB (1 kHz 0 dB = 1 V/Pa)	–35 dB (1 kHz 0 dB = 1 V/Pa)
Power	3V DC (2 x "AA" batteries) or Phantom Power (9-52 V DC)	Phantom Power (9-52 V DC)
Frequency Response	50 Hz – 16 kHz	60 Hz – 20 kHz
Output Connector	XLR-3-32 equivalent	XLR-3-12 equivalent
Finish	Stand Mic: ABS Resin, Black, Paint Mic Shaft: Copper alloy, Black, Paint	Body, Shaft: Copper alloy, black, semi-gloss, paint
Dimensions	110 (W) × 532 (H)× 145 (L) mm	ø 12 × 420 mm
Weight	550 g (exclude batteries)	135 g
Accessory	Windscreen x 1, XLR to Phone Jack Cable (7.5m) x 1	Windscreen × 1

Paging Microphones

PM-660

- Dynamic paging microphone with phone jack
- Large talk switch with locking lever
- Fitted with 2.5m, 1-core shielded cable

PM-660D

- Dynamic paging microphone with DIN Connector
- Large talk switch with locking lever
- Extra switch contact for mute or relay control
- Fitted with 2.5m, 2-core shielded cable and DIN plug
- Optional: Amplifier Control Unit RU-2001 / RU-2002

PM-660U

- Dynamic paging microphone without plug
- Large talk switch with locking lever
- Extra switch contact for mute or relay control
- Fitted with 2.5m, 2-core shielded cable without plug

Model	PM-660	PM-660D	PM-660U
Rated Impedance	600 Ω, unbalanced	600 Ω, balanced	
Rated Sensitivity	–58 dB (1 kHz, 0 dB = 1 V/Pa)		
Frequency Response	100 Hz to 10 kHz		
Remote Switch	None	Leaf spring contact (interlocked with talk switch), 30 V DC, under 500 mA	
Finish	Head: Zinc plated steel wire, gray, paint Body: ABS resin, gray		
Dimensions (W x H x D)	100 x 215 x 150 mm		
Weight	400 g (cable excluded)		

≫ Gooseneck MIcrophone with Chime
EC-380

- Pre-paging chime of 4-tone up, and post-paging chime of 4-tone down
- Double flexible bends on the shaft allowing more flexibility in adjusting it to speaker's ideal position
- Power option selectable between battery or DC power

Model	EC-380
Power Source	6V DC (4 x "AA" batteries) or DC adapter: 9-24 V
Current Consumption	13 mA during chime and 6 mA microphone operation
Microphone Element	Condenser
Polar Pattern	Cardioid
Chime Tones	4-Tone Chime (Up/Down)
Rated Impedance	600 Ω, balanced
Output	Microphone: –41 dB ± 3 dB (1 kHz 0 dB = 1 V/Pa)
	Chime Tone: –31 dB ± 3 dB (maximum position)
Frequency Response Mic	50 Hz – 18 kHz
Output Connector	XLR-3-32 equivalent
	RJ45: Audio Output, Power Supply and Contact Output
Finish	Stand Mic: ABS Resin, Black, Paint
	Mic Shaft: Copper alloy, Black, Paint
Dimensions (WxHxL)	110 × 532 × 145 mm
Weight	558 g (exclude batteries)
Accessory	Windscreen x 1, XLR Cable Stereo Phone Plug (7.5 m) x 1

Microphone Stands

≫ Desktop Microphone Stand
ST-66A

- Desk-top type
- Clip type microphone holder (U5/16" thread)
- Height adjustable from 225 to 340 mm

≫ Microphone Stand with boom
ST-321B

- Floor microphone stand with folding legs and boom (53 to 660 mm)
- Height adjustable from 1045 to 1706 mm
- NS5/8" pipe thread, U5/16" adapter

≫ Microphone Stand
ST-303A

- Floor microphone stand with folding legs
- Height adjustable from 940 to 1600 mm
- NS5/8" pipe thread, U5/16" adapter

≫ Flexible Gooseneck
ST-506

- Length 150 mm
- U5/16" thread
- Mountable to the desk-top microphone stands

ST-507

- Length 300 mm
- U5/16" thread
- Mountable to the floor microphone stands

ST-506   ST-507

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Wireless Systems

≫ Single Channel Wireless Microphone System

WS-420　　　WS-430

System features
- Up to 4 simultaneous channels (region dependent)
- IR Sync
- Approx. 100 m operating range (line of sight)

≫ Dual Channel Wireless Microphone System

WS-402　　　WS-422　　　WS-432

System features
- Up to 16 simultaneous channels (region dependent)
- IR Sync
- Approx. 100 m operating range (line of sight)

Receiver
- Usable frequencies scanning and vacant channel search function
- Compact and stylish hardware
- Numerical LED display
- Indication of transmitter's battery life

Handheld Microphone
- 1 AA battery provides up to 10 hours of continuous use
- Numerical LED display
- Battery life indicator

Lavalier
- 1 AA battery provides up to 10 hours of continuous use
- MIC/Instrument switch
- Numerical LED display
- Adjustable sensitivity
- 3.5mm Screw Jack
- Battery life indicator
- Detachable antenna for maintenance

Set Configurations

Model	Microphone		Receiver	
	Handheld Mic	Wireless Transmitter + Lavalier Mic	Single Channel	Dual Channel
WS-420	√	x	√	x
WS-430	x	√	√	x
WS-402	√	√	x	√
WS-422	√ (2 units)	x	x	√
WS-432	x	√ (2 units)	x	√

Mounting Bracket kit available for WS-402, WS-422, WS-432.

Microphones	Handheld Microphone	Wireless Transmitter
Microphone unit	Dynamic with cardioid pattern	Back Electret Condenser, Omni-directional
RF Carrier Power	10 mW	
Audio Frequency Response	80 Hz - 15 kHz	50 Hz - 15 kHz
Audio input Level	140 dBSPL (maximum)	-6 dBV (maximum), mic gain 0dB
Battery Life	approx. 10 hours	
Power Supply	1 AA size alkaline battery, 1.5 V	
Finish	Resin, coating	
Dimensions	250 x ø 55 mm	62 (W) x 100 (H) x 25 (D) mm (with clip)
Weight	245 g (with battery)	85 g (with battery)

Receivers	Single Channel	Dual Channel
Diversity Reception	AC mains (supplied AC-DC adapter must be used)	
Sensitivity	10 uV at 45 dBA S/N	
Squelch (SQ)	Tone SQ, Carrier SQ, Noise SQ	
Audio Frequency Response	50 Hz - 15 kHz	
Audio Output Level (Maximum)	Balanced (XLR socket) : -20 dBu Unbalanced (1/4" jack socket) : 10 dBu	Balanced (XLR socket) : 16 dBu Unbalanced (1/4" jack socket) : 10 dBu
Power Supply	11 - 18 VDC 300 mA	11 - 18 VDC 500 mA
Dimensions (W x H x D)	215 x 39 x 102 mm (excluding antenna and BNC)	210 x 44 x 202 mm (excluding antenna)
Weight	480 g	720 g

Optional Microphones

≫ Ear-Hook Microphone
YP-MS4E

- Omnidirectional electret condenser microphone element
- Ultra lightweight and convenient
- Connector for ø 3.5 Stereo-plug

≫ Headset Microphone
YP-MS4H

- Omnidirectional electret condenser microphone element
- Ultra lightweight and convenient
- Connector for ø 3.5 Stereo-plug

**Please refer to specification sheet for detailed information.

TOA D5000 Series

The TOA D5000 Series provides unprecedented speech clarity for delivering the presenter's voice to audiences in any speaking scenario. Experience for yourself the clarity, ease and safety of this wireless solution, whether for the classroom, office meeting rooms, banquet halls, courthouses, or multipurpose halls.

System features

- TOA's proprietary digital audio processing ensures optimal sound quality and intelligibility for speech applications.
- Dedicated maintenance software enables visual monitoring of any jam radio waves or changes to incoming radio waves.
- 15 compatible channels per 6 MHz, 20 compatible channels per 8 MHz TV channel
- Up to 32 simultaneous channels *Region dependent
- Approx. 100 m operating range (line of sight)
- Proprietary encryption settings to prevent data leakage
- Signal stability is assured using the digital diversity method.
- Control of peripherals is possible using contact output.

⋙ Receiver
WT-D5800

- Frequency channel scan
- Feedback suppression
- Built-in optimized preset equalization in microphones
- Detachable antenna
- Audio mixing with cascading voice input connectivity
- Antenna mixing with cascading antenna connectivity
- Intuitive LCD display

⋙ Handheld Transmitter
WM-D5200

- Lightweight body
- Dedicated rechargeable (NiH2 = nickel-hydrogen) battery or an AA alkaline battery can be used
- 1 AA battery provides up to 8 hours of continuous use
- Selectable microphone sensitivity
- Selectable transmission output (1mW/10mW)
- 3-step battery life indicator
- Built-in antenna

⋙ Beltpack Transmitter
WM-D5300

- Ultra slim and lightweight body
- Dedicated rechargeable (NiH2 = nickel-hydrogen) battery or an AA alkaline battery can be used
- 1 AA battery provides up to 8 hours of continuous use
- Selectable microphone sensitivity
- Selectable transmission output (1mW/10mW)
- 3-step battery life indicator

Model	WM-D5200	WM-D5300
Microphone Element	Electret condenser unit: Unidirectional	-
Modulation System	FSK	
Frequency Range	576 - 606 MHz, 606 - 636 MHz, 798 - 832 MHz, 694 - 703 MHz	
Channel Selectable	160 channels (The number of channels may differ from country to country.)	
RF Carrier Power	Less than 50 mW	
Maximum Input Level	132 dB SPL (Sensitivity: L) / 122 dB SPL (Sensitivity: H)	-18 dB * (Sensitivity: L) / -28 dB * (Sensitivity: H)
Audio Frequency Response	100 Hz - 12 kHz	
Antenna	Built-in type	Lamda / 4 whip antenna
Dynamic Range	Typ. 90 dB (when used with WT-D5800)	-
ID Selectable	10 patterns	
Battery / Battery Life	WB-2000 rechargeable battery (option) or AA Alkaline dry cell battery / Approx. 8 hours	
Finish	Body: ABS resin, black, coating / Head: steel, black, paint	Body: ABS resin, black, paint
Dimensions	ø 47 × 239.5 mm	C04/C07 ver. : 62 (W) x 171 (H) x 19 (D) mm G01 ver.: 62 (W) x 185 (H) x 19 (D) mm
Weight	220 g (with battery)	90 g (with battery)
Option	-	Unidirectional lavalier microphone: YP-M5300 Omnidirectional lavalier microphone: YP-M5310 Headset microphone: WH-4000A, WH-4000H

Model	WT-D5800
Power Source	AC mains (supplied AC adapter must be used)
Current Consumption	350 mA (13.5 V)
Receiving Frequency	576 - 606 MHz, 606 - 636 MHz, 798 - 832 MHz, 694 - 703 MHz
Channel Selectable	160 selectable frequencies
Receiving System	Double super-heterodyne
Diversity System	Space diversity (digital diversity)
Mixing Output	MIC/LINE (selectable): –60 dB* (MIC)/–20 dB* (LINE), 600 Ω phone jack (unbalanced), 600 Ω XLR-3-32 type connector (balanced)
Mixing Input	–20 dB*, 10 kΩ, unbalanced, phone jack
Antenna Input	75 Ω, BNC (phantom powering for antenna), 9 V DC, 30 mA (max)
Antenna Output	75 Ω, BNC (Gain 0 dB)
Contact Output	1 channel, no-voltage make contact output, withstand voltage: 30 V DC, control current 0.5 A max, terminal block (2 pins)
Receiving Sensitivity	24 dBµV or less (Bit error rate: 1E-5 or less)
Antenna Input Attenuator	0 dB / –10 dB switchable
Indicator	Audio (5 steps), RF (5 steps), ANT A/B, Audio (peak), Battery alarm
Frequency Response	50 Hz - 12 kHz
Total Harmonic Distortion	0.5 % or less
Function	Frequencies scanning, Feedback suppressor, Equalizer (optimizing each compatible microphone)
ID Selectable	10 patterns
Finish	Resin, black
Dimension	210 (W) × 44 (H) × 211.9 (D) mm
Weight	730 g
Option	Rack mounting bracket kit: MB- WT3 (for rack mounting one WT-D5800 unit), MB- WT4 (for rack mounting two WT-D5800 units)

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TOA 5000 Series is the ultimate choice for the presenter, offering incredible intelligibility so your audience won't miss a single word. You can be assured that with TOA's continuous commitment to research and development, we will always provide wireless solutions that allow your voice to be heard clearly by all.

TOA 5000 Series   16 Channel Wireless Solution

The Series lineup consists of microphones operating on a single battery, as well as microphones and a transmitter powered by rechargeable batteries. Battery chargers have also been added, for use with TOA-exclusive batteries.
The chargers are available in different capacities, while the transmitter is now a standalone unit, to allow users to select the type of microphone best suited to their needs. The WT-5100 receiver, a new addition to the 5000 Series, expands the range of applications, including museums, conferences and theaters, and enhances the Series' versatility and usability.

⟫ Receiver
WT-5800

- Phase Locked Loop (PLL) synthesis operation • 64 selectable channels
- True diversity technology • Two-line LCD display • Auto mixing input function
- Squelch function (carrier, noise, tone)
- Usable frequencies scanning and vacant channel search function
- Compact half-rack size body
- 6 points audio level meter for microphone sensitivity adjustment
- Compander circuitry for minimizing ambient noise • Antenna distribution output
- Low-battery indicator (wireless microphone's battery voltage becomes low)

⟫ Receiver
WT-5805

- Phase Locked Loop (PLL) synthesis operation • 64 selectable channels
- TOA space diversity technology • Two-line LCD display
- Auto mixing input function • Squelch function (carrier, noise, tone)
- Usable frequencies scanning and vacant channel search function
- Compact half-rack size body
- 6 points audio level meter for microphone sensitivity adjustment
- Compander circuitry for minimizing ambient noise
- Low-battery indicator (Wireless microphone's battery voltage becomes low)

⟫ Receiver
WT-5810

- Phase Locked Loop (PLL) synthesis operation
- 16 selectable channel frequencies • TOA space diversity technology
- Auto mixing input function • Squelch function (carrier, noise, tone)
- Usable frequencies scanning and vacant channel search function
- Compact portable design
- Compander circuitry for minimizing ambient noise
- Balanced output (XLR connector) and phone jack output
- Low-battery indicator (Wireless microphone's battery voltage becomes low)

Model	WT-5800	WT-5805	WT-5810
Power Source	AC mains (supplied AC-DC adapter must be used)		
Channel Selectable	64 channel capability (Max. 16 Simultaneous channels)		16 CH
Diversity System	Space divercity (true diversity)	Space diversity	
Mixing Output	MIC: –60 dB*1, 600Ω, balanced, XLR-3-31 type connector LINE: –20 dB*1, 600Ω, unbalanced, phone jack		
Mixing Input	–20 dB*1, 10 kΩ, unbalanced, phone jack		
Antenna Input	75 Ω, BNC (phantom powering for antenna) 9V DC, 30mA (max.)		—
Antenna Output	75 Ω, BNC (Gain 0dB)	—	
Receiving Sensitivity	90 dB or more, S/N ratio (20 dBμV input, 40 kHz deviation)		
Squelch Sensitivity	18 – 40 dBμV variable		
Squelch System	Using together of noise SQ, carrier SQ and tone SQ		
Indicator	Audio (6 step), RF (6 step), ANT A/B, Audio (peak), battery alarm		ANT A/B, Audio (peak), battery alarm
S/N Ratio	110 dB or more (A-weight, unbalanced output)		104 dB or more (A-weight, unbalanced output)
Harmonic Distortion	1% or less (typical)		
Frequency Response	100 – 15 kHz, ±3 dB		
Dimensions (W x H x D)	210 × 44 × 205.1 mm		206 × 40.6 × 152.7 mm
Weight	700 g		590 g

*1 0dB = 1 V

⟫ Receiver
WT-4820

- Modular dual channel wireless receiver • 16 selectable channel frequencies
- Antenna cascade output function
  (parallel connection possible for linking two WT-4820 units)
- TOA space diversity technology • Auto mixing input function
- Antenna distribution output • Accept up to two WTU-4800 tuner units
- Compact half-rack size body • External antenna input

⟫ Receiver Unit
WTU-4800

Model	WT-4820
Power Source	12 – 18 V DC
Channel Selectablet	16 CH
Mixing Input	–20 dB*1, 10 kΩ, unbalanced, phone jack
Antenna Input	75 Ω, BNC (phantom powering for antenna) 9 V DC, 30 mA (max.)
Antenna Output	75 Ω, BNC (Gain 0dB)
Indicator	ANT A/B, Audio (peak), Power
S/N Ratio	Over 102 dB (A-weight, unbalanced output)
Harmonic Distortion	Under 1%
Frequency Response	50 Hz – 18,000 Hz, ±3 dB
Dimensions (WxHxD)	210 × 44 × 181 mm
Weight	770 g (without receiver unit)

*1 0dB = 1 V

**Please refer to specification sheet for detailed information.

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TOA 5000 Series   16 Channel Wireless Solution

>>> Wireless Portable Receiver
WT-5100

Guided Tour Applications

Transmitter for tour guide

Receiver for tourists

- Commercial earphones can also be used (ø 3.5 mm, impedance: over 16 Ω)
- Allows up to 16 different frequencies to be received by selection
- An optimized PLL-synthesizer minimizes the oscillation frequency drift resulting from the ambient temperature or voltage fluctuation.
- WB-2000 rechargeable battery or single AA battery operation for compact and lightweight body
- Built-in antenna

Model	WT-5100
Power Source	1.5 V DC (Battery)
Receiving Sensitivity	60 dB or more, Signal to Noise ratio (20 dBμV input, ±40 kHz deviation)
Frequency Response	200 Hz – 5 kHz (Portable transmitter to Portable receiver)
Output Level	4 mW (16 Ω load, 10 % distortion)
Battery	WB-2000-2 rechargeable battery (option) or LR6/AA alkaline dry cell battery
Battery Life	16 h (when the WB-2000-2 rechargeable battery is used) 15 h (when the alkaline battery is used)
Dimensions (W x H x D)	62 × 163.6 × 32.5 mm
Weight	125 g (battery included)

*When using an earphone not made by TOA, use the one with a ø3.5mm plug and impedance of over 16Ω.

>>> Earphone
YP-E401

- ø 3.5 mm mini plug (2 pole)
- Impedance: 16 Ω
- Frequency response of 300 - 15 kHz

>>> Handheld Microphone
WM-5270

- Dynamic microphone unit: Unidirectional
- 64 selectable channels, built-in antenna
- Rolling stopper prevents the microphone from rolling
- Single AA battery operation for more compact and light weight body

>>> Handheld Microphone
WM-5225

- Electret condenser microphone unit: Unidirectional
- 64 selectable channels, built-in antenna
- ON/OFF switch prevents the microphone from rolling.
- WB-2000 rechargeable battery or single AA battery operation for compact and lightweight body

>>> Handheld Microphone
WM-5265

- Dynamic microphone unit: Unidirectional
- 64 selectable channels, built-in antenna
- ON/OFF switch prevents the microphone from rolling
- WB-2000 rechargeable battery or single AA battery operation for compact and lightweight body

>>> Wireless Microphone (Press-Talk type)
WM-5420

- Dynamic microphone unit: Unidirectional
- Shock absorbent structure
- Built-in chime
- Round shape and handling hook prevents being dropped
- Hands-free clip allows clipping onto chest pocket
- Lock of Talk switch available for extended broadcasting
- Pocket microphone mode and remote mode

>>> Beltpack Transmitter
WM-5325

- 64 selectable channels, built-in antenna
- Maximum input level: -14 dB to -29 dB
- Built-in circuitry minimizes ambient noise effects
- WB-2000 rechargeable battery or single AA battery operation for compact and lightweight body
- Connector for ø3.5 mini-plugs

Model	WM-5420	WM-5270	WM-5265	WM-5225	WM-5325
RF Carrier Power	10 mW	Less than 50 mW (Factory preset 10mW ERP)			
Oscillator	PLL synthesizer				
Maximum Input Level	132 dB SPL (±38 kHz Dev.)	142 dB SPL	132 dB SPL	126 dB SPL	-14 dB to -29 dB*1 (Audio level control: Min. to Max.)
Audio Input Connector	—	—	—	—	ø 3.5mm (ø 0.14") mini plug
Audio Frequency Response	200 Hz - 12 kHz	80 Hz – 15 kHz	100 Hz – 15 kHz		
Dynamic Range (AF Circuit)	—		95dB or more (with WT-5800)		—
Battery	AA alkaline dry cell battery		WB-2000 (Ni-MH battery) or LR6(AA)		
Battery Life	Approx. 10 h (when the alkaline battery is used)		Approx. 13 h (when the WB-2000 rechargeable battery is used) Approx. 10 h (when the alkaline battery is used)		
Indicator	Power/Battery lamps				
Dimensions	74 (W) x 184 (H) x 20 (D) mm	ø 48 × 244 mm	ø 50 × 229 mm	ø 43.6 × 231.5 mm	62 (W) x 102.5 (H) x 23 (D) mm
Weight	105 g (with battery)	340 g (with battery)	205 g (with battery)	180 g (with battery)	90 g (with battery)

*1 0dB = 1 V

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TOA 5000 Series Set

WS-5225
WM-5225+WT-5810 Set

WS-5265
WM-5265+WT-5810 Set

WS-5325U
WM-5325+YP-M5300+WT-5810 Set

WS-5325M
WM-5325+YP-M5310+WT-5810 Set

WS-5325H
WM-5325+WH-4000H+WT-5810 Set

5000 Series
UHF Wireless Microphone System

TOA D5000 Series / 5000 Series Optional Microphones & Accessories

Lavalier Microphone
YP-M5300
- Unidirectional electret condenser microphone element
- Connector for ø3.5 mini-plug

Lavalier Microphone
YP-M5310
- Omnidirectional electret condenser microphone element
- Connector for ø3.5 mini-plug

Headworn Microphone
WH-4000H
- Unidirectional electret condenser microphone

Headworn Microphone
WH-4000A
- Unidirectional electret condenser microphone
- Ideal for sports applications

Ear-Hook Microphone
YP-M5000E
- Omnidirectional electret condenser microphone element
- Ultra lightweight and convenient
- Connector for ø3.5 Stereo-plug

Headset Microphone
YP-M5000H
- Omnidirectional electret condenser microphone element
- Ultra lightweight and convenient
- Connector for ø3.5 Stereo-plug

Antenna Distributor
WD-5800

Wall Mount Antenna
YW-4500

Rechargeable Battery
WB-2000-2

Rack Mount Bracket
MB-15B

Rack Mount Bracket
MB-WT3

Rack Mount Bracket
MB-WT4

TOA D5000 Series Accessories

Battery Charger
BC-2000

AC Adapter
AD-5000-2

TOA 5000 Series Accessories

Battery Charger
BC-5000-2

AC Adapter
AD-5000-2

Waist Pouch
WH-4000P

Windscreen
WH-4000S

**Please refer to specification sheet for detailed information.

TOA Wireless Guide System

⟫ 1-Way Wireless Guide Receiver
WG-D100R

⟫ 1-Way Wireless Guide Transmitter
WG-D100T

Model	WG-D100R	WG-D100T
Frequency Range	510-530 MHz, 803.3-805.7 MHz	
Frequency Response	65 Hz - 3.8 kHz	
RF Output Power	-	10 mW
Receiver Sensitivity	- 88 dBm	-
Microphone Source	-	Built-In & External
Input Level	-	Mic: -35.5 dBV / AUX: -25 dBV
Battery	Ni-MH type "AA" 1.2 V x 1 / Alkaline "AA" 1.5 V x 1	
Battery Life	14 hours (based on 1 x AA Ni-MH 2600mAh rechargeable battery)	12 hours (based on 1 x AA Ni-MH 2600mAh rechargeable battery)
LCD Display	Channel, Battery Indicator, Volume, Signal Strength	
Antenna	Headphone	Whip
Color	Black frame	
Dimensions (W x H x D)	40 x 83.5 x 24.6 mm	
Weight	38.6 g (batteries not included)	

⟫ 2-Way Wireless Guide Receiver
WG-D120R

⟫ 2-Way Wireless Guide Transmitter
WG-D120T

Model	WG-D120R	WG-D120T
Frequency Range	510-530 MHz, 803.3-805.7 MHz	
Frequency Response	65 Hz - 3.8 kHz	
RF Output Power	10 mW	
Receiver Sensitivity	- 88 dBm	
Microphone Source	Built-In	Built-In & External
Input Level	-	Mic: -35 dBV / AUX: -20 dBV
Battery	Ni-MH type "AA" 1.2 V x 1 / Alkaline "AA" 1.5 V x 1	
Battery Life	14 hours (based on 1 x AA Ni-MH 2600mAh rechargeable battery)	12 hours (based on 1 x AA Ni-MH 2600mAh rechargeable battery)
LCD Display	Channel, Battery Indicator, Volume, Signal Strength, 2-Way Communication Indicator	
Antenna	Whip / Helical	Whip
Color	Silver frame	
Dimensions (W x H x D)	40 x 83.5 x 24.6 mm	
Weight	38.6 g (batteries not included)	

⟫ Battery Charger
WG-TC12A

Model	WG-TC12A
Applicable Models	WG-D100 / WG-D120
Power Supply	DC 5V 4A
No. of Slots	12
Dimensions (W x H x D)	350 x 140 x 120 mm
Weight	1.11 kg
Accessory	AC Adapter x 1, Universal Plug Converter x 1

⟫ Rechargeable Battery
WB-2000-2

- Can be used with WG-D100 and WG-D120.

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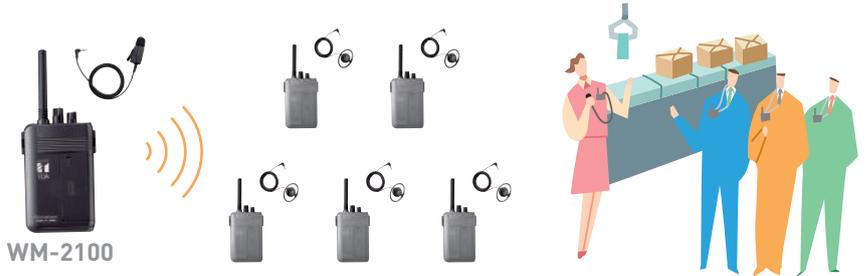Technical Column 11
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TOA Wireless Guide System

System Features

- Transmits and receives on five channels on the 470MHz frequency band
- The portable transmitter provides clear coverage over a 30-meter distance while the desk-top transmitter extends the distance to 70 meters
- Input sensitivity control with six settings on the desk-top transmitter and two-step mic input sensitivity control on the portable transmitter for ideal transmission without any signal degradation
- Desk-top transmitter transmit on/off operation controllable with external equipment
- Battery indicator provides at-a-glimpse battery level status
- Four different microphone options — paging, tie-clip, close-talking, and headset microphones to meet specific requirements
- Paging microphone and close-talking microphone equipped with press-to-talk feature to reject ambient noise
- Desk-top transmitter can be connected to external PA equipment for extending coverage area

On-site Tours

Allows on-the-spot guidance and explanation to be easily provided.
Ideal when touring noisy environments such as factories, plants and other industrial sites.
Also useful for guided tours of museums and other quieter environments.

WM-2100

⋙ Desk-top Transmitter
WM-2110

Model	WM-2110
Transmitting Frequencies	470 MHz band (5 ch) (470.075, 470.150, 470.375, 470.625, 470.725 MHz)
RF Carrier Power	5 mW
Oscillator	PLL synthesizer
Frequency Response	150 Hz – 6 kHz (Desk-top transmitter to Portable receiver)
Input Level (selectable)	Standard input: –54 dB*/–60 dB*/–66 dB* (Mic) –12 dB*/–18 dB*/–24 dB* (Line) Maximum input: –30 dB*/–36 dB*/–42 dB* (Mic) +12 dB*/+6 dB*/0 dB* (Line) Mic/Line selection, 600 Ω, unbalanced, phone jack
Remote Input	Make contact input: Release voltage: 2 V DC short-circuit current: 0.2 mA loop resistance: under 100 Ω Remote control mode: Transmit radio signal when at make
Dimensions (W x H x D)	140 × 31 × 119.5 mm
Weight	270 g

* 0dB = 1V

⋙ Portable Transmitter
WM-2100

Model	WM-2100
Transmitting Frequencies	470 MHz band (5 ch) (470.075, 470.150, 470.375, 470.625, 470.725 MHz)
RF Carrier Power	2 mW
Oscillator	PLL synthesizer
Frequency Response	200 Hz – 5 kHz (Portable transmitter to Portable receiver)
Input Level	–50 dB* (sensitivity Hi)/–44 dB* (sensitivity Low)
Battery Life	18 hours (alkaline)
Battery	LR6 (1.5 V) × 1
Dimensions (W x H x D)	62 × 163.6 × 32.5 mm
Weight	115 g (battery included)

*1 0dB = 0.775 V

⋙ Portable Receiver
WT-2100

Model	WT-2100
Receiving Frequencies	470 MHz band (5 ch)(470.075, 470.150, 470.375, 470.625, 470.725 MHz)
Receiving Sensitivity	Better than 25 dB, S/N ratio (7 dBμVEMF input, ±1.7kHz deviation)
Frequency Response	200 Hz – 5 kHz (Portable transmitter to Portable receiver) 150 Hz – 6 kHz (Desk-top transmitter to Portable receiver)
Output Level	4 mW (16 Ω load, 10 % distortion)
Battery Life	18 hours (alkaline)
Battery	LR6 (1.5 V) × 1
Dimensions (W x H x D)	62 × 163.6 × 32.5 mm
Weight	112 g (battery included)

*When using an earphone not made by TOA, use a one with a 3.5 mm-diameter plug and impedance of over 16 Ω.

⋙ Tie-clip Microphone
YP-M101

⋙ Close-talking Microphone
YP-M201

⋙ Headset Microphone
YP-M301

⋙ Earphone
YP-E401

**Please refer to specification sheet for detailed information.

Infrared Wireless Microphone System

TOA's Infrared Wireless Microphone System incorporates a range of conference and communication enhancing features that will appeal to users who want confidentiality as well as interference-free communication.
Because the microphones use infrared signals, sensitive matters being discussed in a meeting room won't leave the room, and the wireless microphones can be used in several adjacent classrooms simultaneously without interference.

⫸ Infrared Wireless Microphone
IR-200M

- Stable voice transmission
- Intelligent positioning of the emitter avoids drop-outs through user's handling
- Electret condenser microphone unit
- Lightweight
- Infrared light emission intensity adjustable
- Two selectable channels
- Antibacterial treatment
- Low-battery indicator

⫸ Infrared Wireless Microphone
IR-300M

- Ready-to-wear design with neck strap
- Intelligent positioning of the emitter avoids drop-outs through user's handling
- Built-in electret condenser microphone
- Infrared light emission intensity adjustable
- 2 selectable channels
- Antibacterial treatment
- Low-battery indicator
- Connection of optional external microphone possible
- An external MIC input level adjustable

Model	IR-200M	IR-300M
Battery	IR-200BT-2 Ni-MH battery or AA alkaline (2 pieces)	
Infrared Emitter Wavelength	870 nm (AM: Brightness modulation)	
Modulation Method	Frequency modulation	
Carrier Frequency	Channel A: 3.100 MHz/Channel B: 3.350 MHz	
Transmission Distance	Approx. 20 m (Power selector switch: H; In an unobstructed space.)/Approx. 15 m (Power selector switch: N; In an unobstructed space.)	
Maximum Input Sound Pressure	120 dB SPL	
Input Sensitivity Adjustment	—	Adjustment range: -9dB to 0dB (factory-preset: 0dB)
Microphone Unit	Unidirectional electret condenser microphone	
Frequency Response	100 Hz – 12 kHz	
Input	—	External microphone input (ø 3.5 monaural mini jack)
Battery Operation Time	Approx. 8 hours (IR-200BT-2, Power selector switch: N)	Approx. 6 hours (alkaline battery, Power selector switch: N)
Dimensions	ø 37 × 241.8 mm	64 (W) × 91.3 (H) × 27.3 (D) mm
Weight	170 g (with batteries)	130 g (with batteries & strap)

⫸ Battery Charger
IR-200BC

⫸ Ni-MH Battery
IR-200BT-2

⫸ Infrared Wireless Tuner
IR-702T
(CE-GB/US version)

- Built-in 2-channel fixed-frequency tuner
- Up to 4 infrared light receivers per unit
- Equipped with signal reception light and knob for microphone volume control
- Two line outputs, one with a MIX output switch allowing output of mixed voice from channels A and B

⫸ Infrared Wireless Distributor
IR-700D

- Equipped with 4 receiver mixing outputs and 2 distributor outputs
- By using the IR-700D in conjunction with IR-702T and YW-1022/YW-1024, a system with up to 16 infrared receivers is configurable

Model	IR-702T
Power Source	AC mains 50/60Hz (supplied from the accessory AC adaptor)
Receiving Frequency	Channel A: 3.100 MHz/Channel B: 3.350 MHz
Receiver Sensitivity	S/N ratio over 50 dB (40 dBμ V input, 1 kHz modulation, ±4.8 kHz deviation)
Infrared Receiver Input	75 Ω, BNC jack × 2 (Infrared wireless receiver's power source: 24V DC, max. 220mA in total of 2 terminals)
Output	Channel A and B: –10 dB* (±4.8 kHz deviation, at volume level max.), 600 Ω, electronically balanced, 3 pole phone jack Note: Channel A switchable to mixer output
Frequency Response	100 Hz – 12 kHz
Dimensions (W x H x D)	210 × 44 × 210.9 mm
Weight	630 g (unit only)

⫸ Distributor
YW-1022
- 1 into 2 outputs

YW-1024
- 1 into 4 outputs

⫸ Wall-mount Receiver
IR-500R

- Reception area approx. 15m
- Adjustable reception angle

⫸ Ceiling-mount Receiver
IR-510R

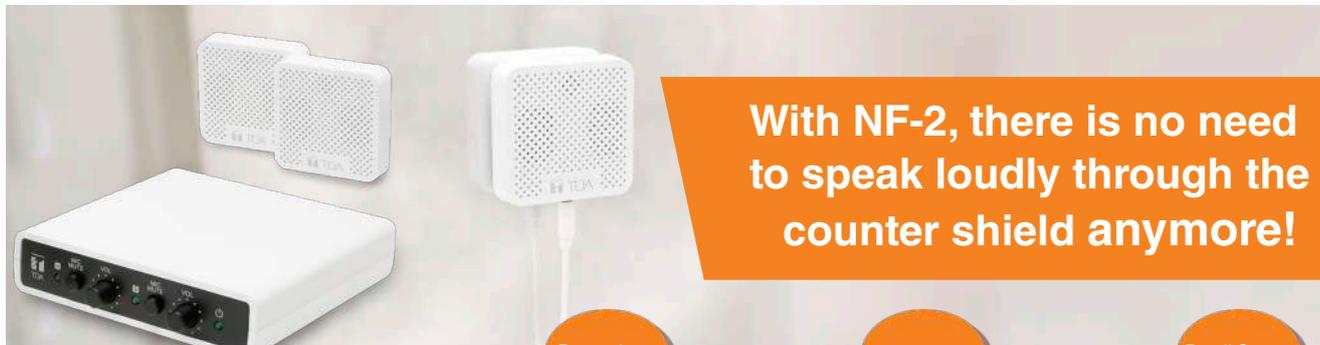- Reception radius approx. 8m

⫸ Wall-mount Receiver
IR-520R

- Reception area approx. 15m

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Intercom System

Window Intercom System

NF-2
NF-2S

With NF-2, there is no need to speak loudly through the counter shield anymore!

Receptions

Hospitalities

Retail Stores

Compact & Lightweight

The communication station can be installed in small spaces which is out of reach to other bulky or heavy communication equipment.

Instant Installation

Simple wiring and mounting process makes it suitable for even temporarily booth setups and/or relocations.

A magnet is pre-mounted on the backside of the station for tool-free quick installation back to back. The optional magnetic plates with a double-sided tape are also included for more flexible installation

My voice

can be heard clearly

Sophisticated Audio Control

Boosting higher frequencies to compensate intelligibility lost with the use of partitions. Higher frequencies also ensures lesser sound spread

Higher frequencies are remarkably decreased with the use of face mask and partition

Easy to hear / Hard to hear
100   Lower Frequency   1000   Higher Frequency   10000 Hz
dB 0 -5 -10 -15 -20 -25 -30 -35
w/o mask
w/ mask
w/ mask and partition
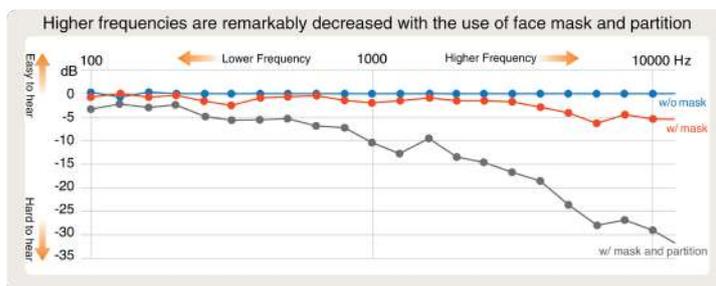
Model	NF-2	NF-2S
Power Source	9 V DC	
Rated Output	1.7 W	
Current Consumption	0.2 A	
Signal to Noise Ratio	73 dB or more (volume: min.), 70 dB or more (volume: max.)	
MIC Input	-30 dB *1, ø 3.5 mm mini jack (4P), phantom power supply	
Speaker Output	16 Ω, ø 3.5 mm mini jack (4P)	
Control Input	-	External mute input: No-voltage make contact inputs, open voltage: 9V DC or less, short-circuit current: 5 mA or less, push-in terminal block (2 pins)
Recording Output	0 dB *1, 10 kΩ unbalanced, RCA pin jack (monaural)	-
Indicators	Power LED, Signal LED	
Finish	Base Unit: Case: ABS resin, white, paint / Panel: ABS resin, black, paint / Sub-Unit: ABS resin, white, paint	
Dimensions (W x H x D)	Base Unit: 127 x 30 x 141 mm / Sub-Unit: 60 x 60 x 20 mm	Base Unit: 127 x 30 x 137 mm / Sub-Unit: 60 x 60 x 22.5 mm
Weight	Base Unit: 225 g / Sub-Unit: 50 g (per unit)	Base Unit: 225 g / Sub-Unit: 65 g (per unit)
Acessories	AC Adapter x 1, Power Cord x 1, Dedicated Cable (4 pins, 2m) x 2, Magnetic Plate for Mounting x 2, Rubber Foot for Base Unit x 4	Power Cord (1.8m)*2 x 1, Dedicated Cable (4 pins, 2m) x 2, Metal Plate x 2, Rubber Foot for Base Unit x 4, Mounting Base x 4, Zip Tie x 4
Optional Accessories	5M Extension Cable: YR-NF5S / AC Adapter: AD-0910	Expansion set: NF-CS1 / 5M Extension Cable: YR-NF5S / AC Adapter: AD-0910

*1 0dB = 1V
*2 No AC Adapter and Power Cord are supplied for Version W. For usable AC Adapter and Power Cord, consult your nearest TOA dealer.

Rack Mount Equipment

Audio Player

>>> **Media Player**
MD-200

- 1U 19" rack type audio player
- Plays USB, SD/MMC card, FM Radio
- 3 stereo output terminals - Tuner Out, Priority Out and USB/SD out
- FM Radio with 30 preset stations and Sleep Timer

Model	MD-200
Power Source	220V - 240V AC, 50/60 Hz
Power Consumption	15 W
Frequency Response	20 - 20 kHz, ±3 dB
Tuner Receiving Frequency	87.5 - 108 MHz (50 kHz step)
Audio Input	FM 75 Ω antenna terminals USB port for memory stick (up to 32 GB, Type file: MP3 file) SD/MMC card slot (up to 32 GB, Type file: MP3 file)
Headphone Output	RCA audio output L and R channels for PRIORITY RCA audio output L and R channels for FM RCA audio output L and R channels for USB / SD
Channels of Memory Tuner	30 Channels in total for FM broadcasts
Indicators	2 LCD Display Light Blue, 2 LED Indicator Light Green
Finish	Front Panel: Steel Plate, Color Black / Case: Steel Plate. Color Black
Dimensions (W x H x D)	482 x 44 x 186 mm
Weight	2.6 kg
Accessory	AC power cord 1CE, AC power cord 4CE, Antenna FM Radio, Remote Control

Program Timer

TT-208

- For timed control of external equipment and events
- Eight channels & control contacts with 80 schedules per channel, programmable by PC or LCD menu
- Built-in Westminster chime
- Weekly timer with 4 programs
- Internal memory retention for approx. 100hours using the internal battery backup in event of power outage
- Setting Software available
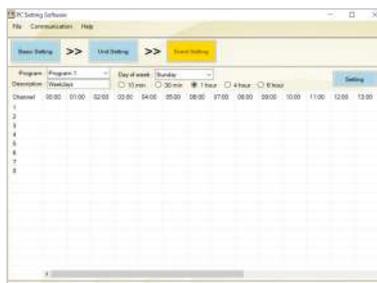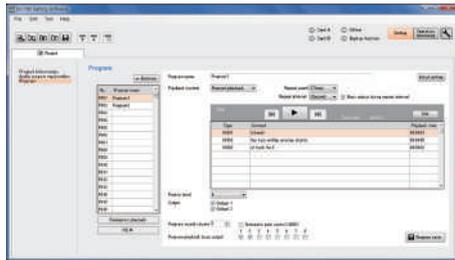
Speaker Selectors

SS-2010
SS-1010
SS-1010R

- SS-2010: 10 zone selectors for paging, 10 zone selectors for background music, and 1 all-call selector
- SS-1010 & SS-1010R: 10 zone selectors and 1 all-call selector
- For SS-2010, uninterrupted background music setup can be configured so that paging in one zone does not affect the brackground music in other zones
- For SS1010, which is for 2-wire connection, music or paging zones can be selected to broadcast the message to all areas
- For SS1010R, which is for 3-wire connection, any previously selected BGM zones will be muted when paging is done to other zones. The volume control will be override to the maximum volume
- Expandable to unlimited zones
- Remote control for zone select and all call select
- Protection for DC input overload and reversed DC polarity installation
- LED indicator for each selector

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Digital Announcer

EV-700

- Permits easy manual distribution or automatic activation by external device of timed and repeat announcements, BGM and other audio programs with excellent sound quality
- Recording in high-quality WAV format (44.1 kHz/32 kHz, 16 bit)
- Supplied a memory card (1 GB)
- Extra memory card slot provided for mounting of second card for recovery or backup
- Storage capacity 32,768 sound source files and 256 audio programs
- 35 preinstalled sound source files
- Automatic gain control (AGC) function
- On-screen GUI facilitating intuitive remote storage of sound source files and activation of broadcasts
- GUI offers Simple Mode for basic operation by novice users
- Interactive operation with external devices
- Prerecorded emergency announcements are stored for immediate broadcast when needed
- R.E.M. (Recording Endless Message) function enabling operators to create/initiate repeated play back of emergency announcements quickly and evacuate with other occupants before anticipated emergencies such as tsunami

Model	EV-700
Power Source	Supplied from an external 24 V DC/400 mA power supply,Removable terminal block (2 pins) or from an optional AD-246 AC adapter
Wave Format	44.1 kHz/32 kHz sampling rate, 16 bits PCM, WAV file (monaural)
Sound Source Rewriting Method	LAN data transfer / Analog recording / Direct write to memory card using the setting software
Audio Input	MIC: −55 dB^{*1} (microphone input volume control in maximum position), 600 Ω, unbalanced, ø 6.3 phone jack (2P) LINE(rear): −20 dB^{*1} (line input volume control in maximum position), 10 kΩ, unbalanced, Removable terminal block (12 pins) LINE(front): −29 dB^{*1} (line input volume control in maximum position), 10 kΩ, unbalanced, RCA pin jack
Audio Output	LINE 1, 2: 0 dB^{*1}, 600 Ω, unbalanced, Removable terminal block (12 pins) / Headphones: 0 dB^{*1}, 100 Ω, monaural, ø 3.5 mini jack (3P)
Storage Media	Compatible with CompactFlash™ specification Memory card
No. of Mountable Memory cards	2 (1 Memory card containing preset sound sources is supplied.)
Number of Recordable Phrases	32768
Maximum Recording Time	About 3 hours (at 44.1 kHz sampling rate) or about 4 hours (at 32 kHz sampling rate)
Audio Output Method	Single channel monaural
Number of Playback Program	Direct mode: 16 programs / Binary mode: 256 programs 1 emergency message takes precedence over the above programs and is played back. R.E.M. (Recording Endless Message) playback *2 can be performed.
Control Input	Activations 1 – 16, playback, pause, recording, erasure/clear, emergency playback, emergency recording, emergency pause No-voltage make contact input, pulse make length: 50 ms or more, open voltage: 30 V DC, short-circuit current: 10 mA, Removable terminal block (12pins, 16 pins)
Control Output	Shorting outputs 1 – 8 (busy), Error: contact capacity: 30 V DC, 0.5 A, Removable terminal block (8 pins)

^{*1} 0dB = 1V

Sound Repeater

EV-20R

- For supermarkets and department stores with a distributed speaker system
- Up to 4 separate message selections or announcements to a total maximum of six minutes may be recorded
- Front panel-mounted recording inputs (mic/line switchable)
- PC connection via USB. A CD-ROM with various chimes is included
- Pre-recorded message can be transferred via USB-interface
- Built-in interval timer allows messages to be repeated at various time intervals (0.5 seconds up to ∞)
- 3 W / 8 Ω amplifier section built-in for direct speaker connection.Volume control for level adjustment of an external source
- A line input and output for connecting various program sources including CD players or dedicated BGM inputs

Monitor Panel

MP-210

- Equipped with a speaker and LED display
- Ease of overall operation of an equipment rack
- Selectable and monitoring up to 10 amplifier output levels

**Please refer to specification sheet for detailed information.

Mixers

Pre-Amplifier Mixer

≫ Pre-Amplifier Mixer
MX-9200

- Wireless, slim and compact 1U size
- 9 inputs of which 4 inputs come with phantom power and 2 output
- Remote control for parameter setting adjustments via Android touch screen device connected by Bluetooth
- Audio streaming via Bluetooth
- Option of desk mount or rack mount* (*with optional rack mount bracket
- Ideal for houses of worship, small lecture rooms, training rooms, and more

MX-9200
App Visual

Scan to download
the app

≫ Pre-Amplifier Mixer
MX-113

- Slim and compact 1U size
- 6 microphone inputs, 4 AUX inputs and 2 monaural output
- Remote control contact
- Signal noise gate circuit for MIC 1-5 allowing a signal to pass through only when it is above a set threshold
- Option of desk mount or rack mount* (*with optional rack mount bracket)
- Ideal for houses of worship, gymnasiums, meeting rooms, and more

Digital Stereo Mixer

≫ Digital Stereo Mixer
M-633D

- Stereo mixer with 12 input channels (6 monaural inputs and 3 stereo inputs) and 6 output channels (2 monaural outputs, 1 stereo output, and 1 stereo recording output)
- 2 monaural bus lines allow each input signal to be assigned to each bus line individually
- Automatic Resonance Control function, Feedback Suppression function, and Automatic Clipguard enhance sound intelligibility
- Automatically eliminates unpleasant reverbration and feedback to deliver clear, highly articulate sound
- Ideal for houses of worship, gymnasiums, meeting rooms, and more

≫ Digital Stereo Mixer
M-864D

TOA's new M-864D digital stereo mixer maintains the basic functionality and operability of its predecessor, the M-633D, but adds such versatile features as analog-feel fader operation, 8 monaural and 7 stereo input channels, remote controller operation and fine-tuning of settings with GUI software.

- Automatic Resonance Control (ARC) measurement and processing algorithm that optimizes speech and sound clarity for individual acoustic environments
- Feedback Suppressor (FBS) function that eliminates feedback caused by carrying the microphone from place to place
- Automatic stereo input mute (Auto Mute or Ducker) function that mutes stereo input automatically when detecting a monaural control signal
- Analog-feel fine-tuning by slider control
- Front-mounted stereo input allowing connection of digital audio player
- Preset memory enabling operators to store user-specified settings in response to specific needs
- Interconnection of up to five M-864D units in preset memory system via LAN
- Optional remote control panels (ZM-9011/9012/9013/9014) permitting convenient remote operation and featuring an assign function supporting assignment of such settings as volume control, channel ON/OFF, matrix switching and preset memory recall to specified buttons.
- Dedicated GUI software facilitating higher-precision parameter setting adjustment on PC via Ethernet LAN
- Stand-alone installation (4U rack-mountable)
- Finer speaker setting possible when used in combination

≫ Modular Digital Matrix Mixer
M-9000M2

- Flexible modular design - up to 8 mic/line inputs and 8 outputs
- Detailed GUI software screens make even complex settings intuitive and easy to understand
- Any of the 30 EQ presets appropriate to the TOA speakers used may be selected for each output
- Up to 16 flush-mount remote panels connectable
- Programmed operating system - 32 scene memories and 32 paging memories
- Dual Channel Digital Signal Processor (DSP) on Input & Output channels:
  10-Band Parametric EQ/High and Low Pass Filters/Bass and
  Treble/Loudness/Compressor/Gate/Ducker/NOM (Automix)/
  Delay (Output channel only)/TOA Speaker EQ Presets (Output channel only)/
  DSP included on M-9000M2 Mainframe Outputs,D-001T, D-001R and T-001T modules

**Please refer to specification sheet for detailed information.

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Amplifiers

A-3200D Series   Digital Mixer Amplifiers

⫸ Digital Mixer Amplifier with MP3

A-3212DM `120w`
A-3224DM `240w`
A-3248DM `480w`

Model	A-3212DM	A-3224DM	A-3248DM
Power Source	100 – 240 V AC, 50/60 Hz		
Rated Output	120 W	240 W	480 W
Power Consumption (EN60065)	44 W	62 W	99 W
	(AC operation at 1/8 maximum output without clip)		
Frequency Response	50 Hz – 20 kHz		
Total Harmonic Distortion	Under 1 % at 1 kHz, 1/3 rated power		
Input	MIC 1: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack, selectable to RJ45 MIC 2 - 3: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack MIC 4: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack, selectable to AUX 1 AUX 1: 100 mV (-20 dB*), 10 kΩ, Unbalanced, RCA pin jack, selectable to MIC 4 AUX 2: 100 mV (-20 dB*), 10 kΩ, Unbalanced, RCA pin jack MP3: LED Display, Support USB, SD/MMC card (up to 32GB), Bluetooth, Radio FM, Record		
Output Speaker out: Direct Line (Selectable): Rec out:	Speaker output in screw type terminal 83 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack	Speaker output in screw type terminal 42 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack	Speaker output in screw type terminal 21 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack
Phantom Power	DC +21 V (MIC 1)		
S/N ratio	Over 60 dB		
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz		
Muting	MIC 1: Mutes other input signals by 0 – 30 dB attenuation		
Ventilation	Natural Air Cooling	Fan Cooling	
Finish	Panel: ABS resin, Black / Case: Steel Plate, Black		
Dimensions (W x H x D)	420 × 100.9 × 357 mm		
Weight	4.6 kg	4.9 kg	5.0 kg

⫸ Digital Mixer Amplifier with MP3 and Zones

A-3212DMZ `120w`
A-3224DMZ `240w`
A-3248DMZ `480w`

Model	A-3212DMZ	A-3224DMZ	A-3248DMZ
Power Source	100 – 240 V AC, 50/60 Hz		
Rated Output	120 W	240 W	480 W
Power Consumption (EN60065)	44 W	62 W	99 W
	(AC operation at 1/8 maximum output without clip)		
Frequency Response	50 Hz – 20 kHz		
Total Harmonic Distortion	Under 1 % at 1 kHz, 1/3 rated power		
Input	MIC 1: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack, selectable to RJ45 MIC 2 - 3: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack MIC 4: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack, selectable to AUX 1 AUX 1: 100 mV (-20 dB*), 10 kΩ, Unbalanced, RCA pin jack, selectable to MIC 4 AUX 2: 100 mV (-20 dB*), 10 kΩ, Unbalanced, RCA pin jack MP3: LED Display, Support USB, SD/MMC card (up to 32GB), Bluetooth, Radio FM, Record		
Output Speaker out: Direct Line (Selectable): Rec out: Zone Selection:	Speaker output in screw type terminal 83 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack 5 zone selector (all zones simultaneously selectable)	Speaker output in screw type terminal 42 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack 5 zone selector (all zones simultaneously selectable)	Speaker output in screw type terminal 21 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack 5 zone selector (all zones simultaneously selectable)
Phantom Power	DC +21 V (MIC 1)		
S/N ratio	Over 60 dB		
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz		
Muting	MIC 1: Mutes other input signals by 0 – 30 dB attenuation		
Ventilation	Natural Air Cooling	Fan Cooling	
Finish	Panel: ABS resin, Black / Case: Steel Plate, Black		
Dimensions (W x H x D)	420 × 100.9 × 357 mm		
Weight	4.6 kg	4.9 kg	5.0 kg

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≫ Digital Mixer Amplifier with MP3 and EQ

A-3248DME `480w`

Model	A-3248DME
Power Source	100 – 240 V AC, 50/60 Hz
Rated Output	480 W
Power Consumption (EN60065)	99 W (AC operation at 1/8 maximum output without clip)
Frequency Response	50 Hz – 20 kHz
Total Harmonic Distortion	Under 1 % at 1 kHz, 1/3 rated power
Input	MIC 1: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack, selectable to RJ45 MIC 2 - 5: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack AUX 1 - 2: 100 mV (-20 dB*), 10 kΩ, Unbalanced, RCA pin jack MP3: LED Display, Support USB, SD/MMC card (up to 32GB), Bluetooth, Radio FM, Record
Output 　　　　Speaker out: Direct Line (Selectable): 　　　　　Rec out:	 Speaker output in screw type terminal 21 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack
Phantom Power	DC +21 V (MIC 1)
S/N ratio	Over 60 dB
Tone Control	±10 dB at 80 Hz, 315 Hz, 1 kHz, 3.15 kHz, 8 kHz
Muting	MIC 1: Mutes other input signals by 0 – 30 dB attenuation
Ventilation	Fan Cooling
Finish	Panel: ABS resin, Black / Case: Steel Plate, Black
Dimensions (W x H x D)	420 × 100.9 × 357 mm
Weight	5 kg

≫ Digital Mixer Amplifier

A-3224D `240w`
A-3248D `480w`

Model	A-3224D	A-3248D
Power Source	100 – 240 V AC, 50/60 Hz	
Rated Output	240 W	480 W
Power Consumption (EN60065)	62 W	99 W
	(AC operation at 1/8 maximum output without clip)	
Frequency Response	50 Hz – 20 kHz	
Total Harmonic Distortion	Under 1 % at 1 kHz, 1/3 rated power	
Input	MIC 1: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack, selectable to RJ45 MIC 2 - 3: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack MIC 4: 1 mV (-60 dB*), 600 Ω, Balanced, phone jack, selectable to AUX 1 AUX 1: 100 mV (-20 dB*), 10 kΩ, Unbalanced, RCA pin jack, selectable to MIC 4 AUX 2: 100 mV (-20 dB*), 10 kΩ, Unbalanced, RCA pin jack	
Output 　　　　Speaker out: Direct Line (Selectable): 　　　　　Rec out:	 Speaker output in screw type terminal 42 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack	 Speaker output in screw type terminal 21 Ω (100 V) or 4 Ω 0 dB*, 600 Ω, Unbalanced, RCA pin jack
Phantom Power	DC +21 V (MIC 1)	
S/N ratio	Over 60 dB	
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz	
Muting	MIC 1: Mutes other input signals by 0 – 30 dB attenuation	
Ventilation	Fan Cooling	
Finish	Panel: ABS resin, Black / Case: Steel Plate, Black	
Dimensions (W x H x D)	420 × 100.9 × 357 mm	
Weight	4.9 kg	5.0 kg

≫ Digital Booster Amplifier

P-3248D `480w`

Model	P-3248D		Control	Remote power control, screw terminal Remote master volume bypass, screw terminal
Power Source	100 – 240 V AC, 50/60 Hz		S/N ratio	Over 70 dB
Rated Output	480 W		Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz
Power Consumption (EN60065)	99 W (AC operation at 1/8 maximum output without clip)		Ventilation	Fan Cooling
Frequency Response	50 Hz – 20 kHz		Finish	Panel: ABS resin, Black / Case: Steel Plate, Black
Total Harmonic Distortion	Under 1 % at 1 kHz, 1/3 rated power		Dimensions (W x H x D)	420 × 100.9 × 351.3 mm
Input	Line In: 0 dB*, 10 kΩ, Balanced, Screw Terminal 100 V Line In: 40 dB*, 330 kΩ, Unbalanced, Screw Terminal		Weight	5.2 kg
Output 　　　　Speaker out: Direct Line (Selectable): 　　　　Loop out:	 Speaker output in screw type terminal 21 Ω (100 V) or 4 Ω 0 dB*, 10 kΩ, balanced, screw terminal			

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A-3500D Series   Digital Mixer Amplifiers

Key Features
- TOA class D amplifiers fo maximum efficiency
- 2 - channel Zone Selector
- 4 microphone inputs and 1 auxillary input
- Emergency and Priority Paging
- Remote Zone Control

Applications:

- Schools
- Office
- Supermarkets

⋙ Digital Mixer Amplifiers

A-3506D   60W
A-3512D   120W
A-3524D   240W
A-3548D   480W

Model	A-3506D	A-3512D	A-3524D	A-3548D
Power Source	100 – 240 V AC, 50 / 60 Hz			
Rated Output	60 W	120 W	240 W	480 W
Power / Current Consumption	96 W (rated output) 40 W (based on EN62368)	171 W (rated output) 48 W (based on EN62368)	314 W (rated output) 70 W (based on EN62368)	601 W (rated output) 113 W (based on EN62368)
	200 mA or less (when power switch is OFF)			
Frequency Response	50 Hz – 20 kHz ±3 dB (1/8 rated output)			
Distortion	1 % or less at 1 kHz, rated power (20 kHz LPF (AUX-0025))			
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz			
S/N Ratio	88 dB or more (Master volume: min.) 76 dB or more (Master volume: max.) 55 dB or more (INPUT 1 - 6) 72 dB or more (INPUT 7) (A-weighted)			
Audio Input	INPUT 1, 2: -60 dBV (MIC) / -20 dBV (LINE) selectable, 600 Ω, electronically-balanced, removable terminal block (5 pins) / ø6.3 mm phone jack (2P) Note: MIC inputs are equipped with phantom power (24 V DC, ON/OFF switchable). INPUT 3: -60 dBV, 600 Ω, electronically-balanced, ø6.3 mm phone jack (2P) INPUT 4: -60 dBV (MIC) / -20 dBV (LINE) selectable, 600 Ω, electronically-balanced, ø 6.3 mm phone jack (2P) INPUT 5: -20 dBV, 10 kΩ, unbalanced, RCA pin jack x 2 PWR AMP IN: 0 dBV, 600 Ω, unbalanced, RCA pin jack			
Audio Output — Speaker out:	Low impedance (8 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 170 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 60 W per output)	Low impedance (4 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 83 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 120 W per output)	Low impedance (4 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 42 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 240 W per output)	Low impedance (4 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 21 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 480 W per output)
Rec out: Line out 1, 2:	0 dBV, 600 Ω, unbalanced, RCA pin jack 0 dBV, 600 Ω, unbalanced, RCA pin jack (interlock with zone selection is possible)			
Control Input	2 channels, no-voltage make contact input, open voltage: 35 V DC or less, short-circuit current: 10 mA or less, removable terminal block (5 pins) REMOTE VOLUME: Removable terminal block (4 pins) ZONE CONTROL IN: No-voltage make contact input, open voltage: 35 V DC or less, short-circuit current: 10 mA or less, removable terminal block (4 pins)			
Control Output	POWER REMOTE OUT: Open collector output, withstand voltage: 30 V DC or less, control current: 25 mA or less, removable terminal block (4 pins) EMERGENCY OUT: Open collector output, withstand voltage: 30 V DC or less, control current: 25 mA or less, removable terminal block (4 pins) ZONE CONTROL OUT: Open collector output (polarized), withstand voltage: 30 V DC or less, control current: 25 mA or less, removable terminal block (4 pins)			
Indicators	5-point LED output level meter, Power indicator LED, Priority indicator LED, Emergency indicator LED, Thermal protection indicator LED, Over current protection indicator LED, Zone 1 indicator LED, Zone 2 indicator LED			
Operating Temperature	-10 ℃ to +40 ℃			
Operating Humidity	85 %RH or less (no condensation)			
Finish	Panel: ABS resin, Black / Case: Surface-treated Steel Plate, Black, Paint			
Dimensions (W x H x D)	420 × 96.1 × 313.1 mm			
Weight	4.9 kg			5.1 kg
Accessory	Power cord (2 m) x 1, Audio Input removable terminal plug (3.81 mm, 5 pins) x 2, Control I/O removable terminal plug (3.81 mm, 4 pins) x 2 Remote Control removable terminal plug (3.5 mm, 4 pins) x 1 Speaker Out removable terminal plug (5 mm, 6 pins) x 1, Volume Control Cover x 4			
Option	Rack Mounting Bracket: MB-25B, Perforated Panel: PF-013B			

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A-3600D Series   Digital Mixer Amplifiers

Key Features
- 4 selection of power amplifier output
- TOA class D amplifiers for maximum efficiency
- Feedback Suppressor (Dynamic feedback filters)
- Speaker EQ (3 points equalizer)
- Assignable input priorities
- Built-in pre-announce chime
- IP protocol available

⟫ Digital Mixer Amplifiers

A-3606D `60W`
A-3612D `120W`
A-3624D `240W`
A-3648D `480W`

Model	A-3606D	A-3612D	A-3624D	A-3648D
Power Source	100 – 240 V AC, 50 / 60 Hz			
Rated Output	60 W	120 W	240 W	480 W
Power / Current Consumption	96 W (rated output) 40 W (based on EN62368)	171 W (rated output) 48 W (based on EN62368)	314 W (rated output) 70 W (based on EN62368)	601 W (rated output) 113 W (based on EN62368)
	200 mA or less (when power switch is OFF)			
Frequency Response	50 Hz – 20 kHz ±3 dB (1/8 rated output)			
Distortion	1 % or less at 1 kHz, rated power (20 kHz LPF (AUX-0025))			
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz			
S/N Ratio	88 dB or more (Master volume: min.) 76 dB or more (Master volume: max.) 55 dB or more (INPUT 1 - 6) 72 dB or more (INPUT 7) (A-weighted)			
Audio Input	INPUT 1, 2: -60 dBV (MIC) / -20 dBV (LINE) selectable, 600 Ω, electronically-balanced, removable terminal block (3 pins) Note: MIC inputs are equipped with phantom power (24 V DC, ON/OFF switchable). NPUT 3, 4: -60 dBV, 600 Ω, electronically-balanced, removable terminal block (3 pins) Note: Equipped with phantom power (24 V DC, ON/OFF switchable). INPUT 5, 6: MIC (BUS 1) / LINE (BUS 2) selectable MIC: -60 dBV, 600 Ω, electronically-balanced, removable terminal block (3 pins) LINE: -20 dBV, 10 kΩ, unbalanced, RCA pin jack x 2 INPUT 7: -20 dBV, 10 kΩ, unbalanced, RCA pin jack x 2 PWR AMP IN: 0 dBV, 600 Ω, unbalanced, RCA pin jack			
Input Bus	INPUT 1 - 4: BUS 1 INPUT 5, 6: BUS 1 / BUS 2 selectable INPUT 7: BUS 2			
Audio Output — Speaker out:	Low impedance (8 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 170 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 60 W per output)	Low impedance (4 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 83 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 120 W per output)	Low impedance (4 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 42 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 240 W per output)	Low impedance (4 - 16 Ω) High impedance (DIRECT, ZONE 1/ZONE 2: 100 V / total 21 Ω), removable terminal block (6 pins) (ZONE 1 / ZONE 2 is selectable, Max. 480 W per output)
Rec out: Line out 1, 2:	0 dBV, 600 Ω, unbalanced, RCA pin jack 0 dBV, 600 Ω, unbalanced, RCA pin jack (interlock with zone selection is possible)			
Control Input	4 channels, no-voltage make contact input, open voltage: 35 V DC or less, short-circuit current: 10 mA or less, removable terminal block (4 pins) REMOTE VOLUME: Removable terminal block (4 pins) ZONE CONTROL IN: No-voltage make contact input, open voltage: 35 V DC or less, short-circuit current: 10 mA or less, removable terminal block (4 pins)			
Control Output	POWER REMOTE OUT: Open collector output, withstand voltage: 30 V DC or less, control current: 25 mA or less, removable terminal block (4 pins) EMERGENCY OUT: Open collector output, withstand voltage: 30 V DC or less, control current: 25 mA or less, removable terminal block (4 pins) ZONE CONTROL OUT: Open collector output, withstand voltage: 30 V DC or less, control current: 25 mA or less, removable terminal block (4 pins)			
Chime	1 - note, 2 - note, or ascending 4 - note chime, or None selectable with switch setting			
Indicators	5-point LED output level meter, Power indicator LED, LAN Connect indicator LED, Priority indicator LED, Emergency indicator LED, Thermal protection indicator LED, Over current protection indicator LED, CPU RUN indicator LED, Error indicator LED, Zone 1 indicator LED, Zone 2 indicator LED			
Operating Temperature	-10 °C to +40 °C			
Operating Humidity	85 %RH or less (no condensation)			
Finish	Panel: ABS resin, Black / Case: Surface-treated Steel Plate, Black, Paint			
Dimensions (W x H x D)	420 × 96.1 × 313.1 mm			
Weight	5.0 kg			5.2 kg
Accessory	Power cord (2 m) x 1, Audio Input removable terminal plug (3.81 mm, 3 pins) x 6, Control I/O removable terminal plug (3.81 mm, 4 pins) x 4 Remote Control removable terminal plug (3.5 mm, 4 pins) x 2 Speaker Out removable terminal plug (5 mm, 6 pins) x 1, Volume Control Cover x 4			
Option	Rack Mounting Bracket: MB-25B, Perforated Panel: PF-013B			

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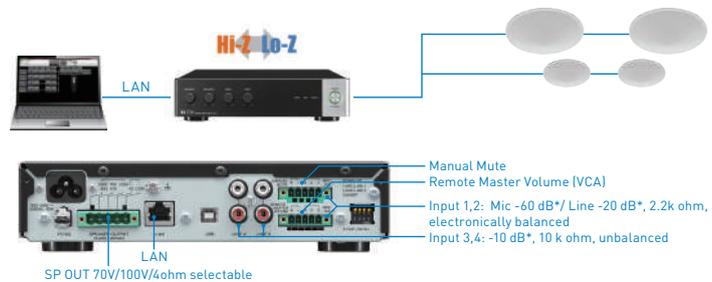11 Technical Column
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A-5000 Series   Digital Mixer Amplifiers

⟫ Digital Mixer Amplifier

A-5006 60w
A-5012 120w

- 1U-half size compact and simple hardware for easy setting
- Hi-/Low-Z speaker connection
- 60W and 120W models
- 2 x mic/line inputs with mute
- Intuitive GUI software for sound optimization
  - 5-band Parametric Equalizer for each input and output
  - Remote Master Volume Control
  - Mute (Mic 1 priority: Manual mute)
  - Compressor for each input 1 and 2

Hi-Z Lo-Z

LAN

Manual Mute
Remote Master Volume (VCA)
Input 1,2: Mic -60 dB*/ Line -20 dB*, 2.2k ohm, electronically balanced
Input 3,4: -10 dB*, 10 k ohm, unbalanced

LAN
SP OUT 70V/100V/4ohm selectable

Model	A-5006	A-5012
Power Source	100 - 240 V AC, 50/60 Hz	
Rated Output	60 W	120 W
Power/Current Consumption	106 W (rated output), 20 W (based on cULus standards) Max. 2 A	207 W (rated output), 39 W(based on cULus standards) Max. 3 A
Frequency Response	50 Hz - 20 kHz (1/8 output)	
Distortion	1 % or less (1 kHz, rated output)	
Input	INPUT 1, 2: MIC -60 dB*, LINE -20 dB*, MIC/LINE selectable, 2.2 kΩ, electronically-balanced, removable terminal block (5 pins) INPUT 3, 4: LINE -20 dB*, 10 kΩ, unbalanced, RCA pin jack	
Output	SPEAKER: 4 Ω, 70 V (83 Ω), 100 V (170 Ω) removable terminal block (5 pins)	Speaker: 4 Ω, 70 V (42 Ω) , 100 V (83 Ω) removable terminal block (5 pins)
S/N Ratio	MIC 1, 2: 50 dB or more, LINE 1 - 4: 70 dB or more (A-weighted)	
Function	Parametric equalizer: 5 points settable on each input and output, 20 Hz - 20 kHz +/-15 dB, Q: 0.267 - 69.249 Compressor: ON/OFF settable on Inputs 1 and 2 (OFF by default) Threshold, Ratio, Attack time, Release time, and Gain are settable independently on each input	
Control	Mute control, Remote master volume control, Power ON/OFF switch, Ground lift	
Indicator	Power, Signal, Peak, Protect	
Finish	Panel: PS resin, black, Case: Sruface-treated steel plate, black. paint	
Dimensions (W x H x D)	210 x 52.5 x 375 mm	
Weight	3.6 kg	3.9 kg
Accessory	1 x CD(setting software), 1 x Large type removable terminal plug (5 pins), 2 x Small type removable terminal plug (5 pins), 6 x Bracket mounting screw, 6 x Plain washer, 1 x Power supply cord (2 m (6.56 ft.))	
Options	Half width blank panel: MB-15B-BK, Rack joint bracket: MB-15B-J, Rack runner: YA-706	

A-2000 Series   Mixer Power Amplifiers

⟫ Mixer Power Amplifier

A-2128M 120w X2

- High capacity to meet audio requirements in most Houses of worship
- 5 microphone inputs, 3 AUX inputs
- Individual channel ON/OFF switch
- MIC 1 input is equipped with Echo and Phantom Power
- Individual volume control for each inputs
- Individual contol for bass and treble adjustment on each input
- Output speaker with 100 V line and 4 Ω low impedance
- AC/DC compliant
- Current limitor to prevent damage due to current overload
- Excess heat limit to protect the transistor and power transformer

Model	A-2128M
Power Supply	220V AC, 50/60 Hz or 24V DC
Power Consumption	AC: 520W (rated output); AC: 286W (operation at EN60065); DC: 20A (rated output)
Frequency Response	50 Hz – 20 kHz (±3 dB)
Distortion	Less than 1% at 1 kHz, 1/3 rated power
Input (Sensitivity, Impedance, Connector)	(Rear) MIC 1: 1.0 mV (-60 dB*), 600 Ω, Balanced, 2 Pole-Phone Jack, Echo (Rear) MIC 2-5: 1.0 mV (-60 dB*), 600 Ω, Balanced, 2 Pole-Phone Jack (Rear) AUX 1-3: 300 mV (-10 dB*), 10 kΩ, Unbalanced, 2 RCA Pin Jack
Speaker Outputs	100 V x 2, 4 Ω x 2
PRE AMP OUT	1.0 V (0 dB*), 600 Ω x 2, Unbalanced, RCA Pin Jack
PWR AMP IN	1.0 V (0 dB*), 10 kΩ x 2, Unbalanced, RCA Pin Jack
REC OUT	1.0 V (0 dB*), 600 Ω x 2, Unbalanced, RCA Pin Jack
Phantom Power	DC +21 V (MIC 1)
S/N ratio	More than 80 dB at All Volume Control Full CCW; More than 50 dB at All Volume Control Full CW
Output Regulation	Less than 3 dB no load to full load
Controls	(Front) 5 Microphone Gain Controls, 3 AUX Gain Controls, 8 Bass Tone Controls, 8 Treble Tone Controls, 1 Echo Level Control, 2 Master Controls, 2 Output Channel ON/OFF Switches (CH 1, CH 2), 1 Power ON/OFF Switch
Tone Control	Bass: ±10 dB at 100 Hz; Treble: ±10 dB at 10 kHz
Indicators	2 LED Output CH, 2 LED Signal, 2 LED Peak, 1 LED Power ON
Finish	Front Panel: Aluminum Painting Grey; Case: Steel Plate, Grey
Dimensions (W x H x D)	420 × 144 × 361 mm
Weight	19.3 kg

*0dB = 1V

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》》 Digital Mixer Power Amplifier

A-2030D `30w`
A-2060D `60w`
A-2120D `120w`
A-2120DT `120w`
A-2240D `240w`
A-2240DT `240w`

- 3 microphone inputs, 2 AUX input and one recording output
- Speaker output of constant voltage distribution system (100 V)
- Muting function
- Independent input volume control and master volume control
- Independent tone control of boost and cut type for both high and low frequency
- MIC 1 with phantom power for condenser microphone
- Current limitor to prevent damage due to current overload
- Excess heat limit to protect the transistor and power transformer

Model	A-2030D	A-2060D	A-2120D	A-2240D	A-2120DT	A-2240DT
Power Source	220 – 240V AC, 50/60 Hz					
Rated Output	30 W	60 W	120 W	240 W	120 W	240 W
Power Consumption	12 W	16 W	30 W	48 W	34 W	48 W
	(AC operation at 1/8 maximum output without clip)					
Frequency Response	50 Hz – 20 kHz (±3 dB)					
Distortion	Under 1% at 1 kHz, 1/3 rated power					
Input	MIC 1 – 3: -60 dB*, 600 Ω, Balanced, Phone jack AUX 1, 2: -20 dB*, 10 kΩ, Unbalanced, RCA pin jack				MIC 1 – 3: -60 dB*, 600 Ω, Balanced, 3P XLR AUX 1, 2: -20 dB*, 10 kΩ, Unbalanced, RCA pin jack	
Output Speaker out: High Impedance: Rec out:	Balanced (Floating) 330 Ω (100 V) 0 dB*, 600 Ω, Unbalanced, RCA pin jack	Balanced (Floating) 170 Ω (100 V) 0 dB*, 600 Ω, Unbalanced, RCA pin jack	Balanced (Floating) 83 Ω (100 V) 0 dB*, 600 Ω, Unbalanced, RCA pin jack	Balanced (Floating) 42 Ω (100 V) 0 dB*, 600 Ω, Unbalanced, RCA pin jack	Balanced (Floating) 83 Ω (100 V) 0 dB*, 600 Ω, Unbalanced, RCA pin jack	Balanced (Floating) 42 Ω (100 V) 0 dB*, 600 Ω, Unbalanced, RCA pin jack
Tones	-				6 tones contact trigger (Chime, Bell, Evac, Siren, Lockdown, All Clear)	
Phantom Power	DC +21V (MIC 1)					
S/N ratio	Over 60 dB					
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz					
Muting	MIC 1: Mutes other input signals by 0 – 30 dB attenuation				MIC 1: Mutes other input signals by 0 – 30 dB attenuation Tones will mute other Input Functions	
Indicator	Power LED, Signal LED, Peak LED					
Dimensions	420 (W) × 100.6 (H) × 280.3 (D) mm					
Weight	4 kg	4.6 kg	4 kg			

*0dB = 1V

》》 Mixer Power Amplifier

A-2030 `30w`
A-2060 `60w`
A-2120 `120w`
A-2240 `240w`

(CE/CE-AU/CE-GB/H version)

- Cost effective and durable mixer power amplifier
- User friendly front panel allows easy operation
- 2 electronically balanced microphone inputs, 2 AUX inputs and recording output.
- Phantom power at MIC 1
- Wide tone-control adjustment range of -/+10 dB for both bass and treble
- 100V / 70V line or 4Ω speaker outputs
- Booster amplifier for additional power

》》 Power Amplifier

P-2240 `240w`

(CE/CE-AU/CE-GB/H version)

- 100V line input allows connection to speaker output of A-2000 Series amplifiers
- Power remote switch by make contact input
- Emergency bypass of master volume(H version only)

Model	A-2030	A-2060	A-2120	A-2240	P-2240
Power Req.	110 – 120V AC (L Version)/220 – 240V AC (H Version) or 24V DC				
Rated Output	30 W	60 W	120 W	240 W	
Frequency Response	50 Hz – 20 kHz (±3 dB)				
Input	MIC 1 – 3: Phone jack AUX 1, 2: RCA pin jack				Line in: Screw terminal 100V line in: Screw terminal Power remote control: Make contact
Output	34 W (EN60065), 78 W (AC operation at rated output), 2 A (DC operation at rated output)	72 W (EN60065), 150 W (AC operation at rated output), 4 A (DC operation at rated output)	124 W (EN60065), 260 W (AC operation at rated output), 8 A (DC operation at rated output)	238 W (EN60065), 520 W (AC operation at rated output), 15A (DC operation at rated output)	
Phantom Power	DC +21 V (MIC 1)				—
S/N ratio	Over 60 dB				
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz				
Muting	MIC 1: Mutes other input signals by 0 – 30 dB attenuation				—
Dimensions	420 (W) × 100.9 (H) × 280.3 (D) mm		420 (W) × 100.9 (H) × 360.3 (D) mm		420 (W) × 100.9 (H) × 351.3 (D) mm
Weight	5 kg	7 kg	10.8 kg	13.2 kg	

*0dB = 1V

》》 Rack Mount Bracket

MB-25B

(For A-2000, A-2000D, A-2000DT, A-3200D, A-3500D, A-3600D)

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Digital Mixer Amplifier and Remote Controller

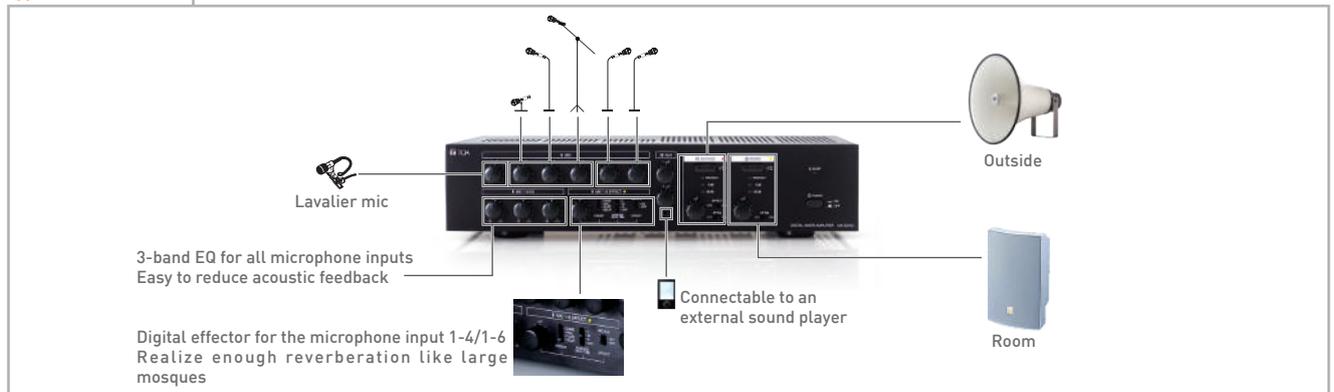## ⟫ Digital Mixer Amplifier

MX-6224D 240w X2
(1CE/4CE version)

- Digital mixer amplifier designed specifically for mosques
- Incorporates DSP function and a two-channel class-D amplifier
- Superior Sound Quality - Built-in digital amp module + DSP module, designed with state-of-the-art TOA technology.
- Easy Operation - Simply designed, compactly installed.
- Standardized remote controller also offers easy operation.
- Safe, Reliable System - Loudspeakers are less vulnerable to damage, thanks to the equipped high-pass filter.
- Optimal microphone sensitivity
- Built-in effector realizes celestial sound even in small mosques
- The 3-band EQ are effective for all mic inputs.

⟫ Remote Controller
RC-03

Typical Connection | MX-6224D

Outside

Lavalier mic

3-band EQ for all microphone inputs
Easy to reduce acoustic feedback

Connectable to an external sound player

Digital effector for the microphone input 1-4/1-6
Realize enough reverberation like large mosques

Room

Model	MX-6224D
Power Source	220 V – 240 V AC, 50/60 Hz
Power Output	240 W x 2 channels (100 V, 42 Ω, rated output)
Power Consumption	150 W (according to IEC60065), 650 W (at rated output, both channels)
Application System	Class D, Output transformerless galvanic isolated output
Frequency Response	50 Hz - 20 khz, ±3 dB (at 1/3 rated output, rated load, from power amplifier input)
Distortion	1 % or less (at 1 kHz, 1/3 rated output power)
Input	MIC 1: −50 dB* (24 V phantom powered)/ −60 dB* (phantom power OFF) 600 Ω, electronically-balanced, ø 6.3 mm phone jack MIC 2 – 4: −66 dB*, 200 Ω, electronically-balanced, XLR-3-31 type and ø 6.3 mm phone jack (either one usable) MIC 5 – 6: −60 dB*, 600 Ω, electronically-balanced, XLR-3-31 type and ø 6.3 mm phone jack (either one usable) AUX 1: −10 dB*, 10 kΩ mixed monaural, unbalanced, RCA pin jacks (1 pair) AUX 2: −20 dB*, 10 kΩ mixed monaural, unbalanced, ø 3.5 mm mini jack (3P: stereo) Power amplifier input: 0 dB*, 10 kΩ, unbalanced, RCA pin jacks (1 each for ROOM and OUTSIDE outputs)
Output	Speaker output: 2 zones, 100 V (42 Ω), galvanic isolated balanced, M4 screw terminal Recording output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair) Effect bus output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair) Preamplifier output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 each for ROOM and OUTSIDE outputs)
Phantom Power	ON/OFF switchable for MIC 1 and XLR-3-31 type connectors of MIC 2 – 6
Signal to Noise Ratio	60 dB or more (All volume controls: min.)
Controls	6 Microphone volume controls, 2 AUX volume controls, 1 ROOM output switch, 1 ROOM volume control, 1 OUTSIDE output switch, 1 OUTSIDE volume control, 1 Effect control (0 to 100 %) of Effect bus, 1 Effect preset type selection switch (DOME/HALL/DELAY/PLATE), 1 Effect Room size/Delay time selection switch (OFF/small/middle/large), 1 Effect output selection switch (ROOM/ROOM+OUTSIDE), 1 MIC 5 – 6 effect switch, 1 Low EQ control (15 dB, 80 Hz) for MIC 1 – 6, 1 Mid EQ control (±15 dB, 2.5 kHz) for MIC 1 – 6, 1 High EQ control (±15 dB, 12 kHz) for MIC 1 – 6, 1 Speaker EQ (TC-631M, TC-651M) switch for OUTSIDE output, 1 Speaker EQ (BS-1030B, BS-1030W) switch for ROOM output, 1 Power switch, 1 Phantom switch for MIC 1, 1 Phantom switch for MIC 2 – 6 (XLR-3-31)
Indicators	SLEEP indicator Output Level meters (2 points, −20 dB and 0 dB) for ROOM and OUTSIDE Protection indicators for ROOM and OUTSIDE amplifier Output indicators for ROOM and OUTSIDE EFFECT indicator for MIC 1 – 6
Ventilation	Natural air cooling
Ambient Temperature	0 ℃ to 40 ℃
Dimensions (W x H x D)	420 x 99 x 364.8 mm
Installation Method	Desktop mount, Rack mount with mounting bracket MB-25B (option)
Weight	6.5 kg
Finish	Front Panel: Aluminum, black, alumite Case: Steel plate, black, paint

*0dB = 1V

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9000 Series Modular Digital Matrix Mixer/Amplifier

The TOA 9000 Series Digital Matrix Mixer/Amplifiers redefines the conventional mixer/amplifier category by combining a modular matrix mixer, digital signal processor (DSP) and amplifiers in a compact, two rack space package. The versatile new series is ideal for multi-zone paging, music distribution and room-combining applications. The 9000 Series allows for easily configured, custom systems with up to eight mic/line inputs and eight outputs. Each 9000 Series chassis has two output channels with built-in DSP, including; ten band parametric EQ, compressor, delay and more. Input and output modules include additional DSP.

A new integrated operating mode provides powerful functionality for both simple mixing and complex multi-zone paging applications. Features include telephone zone paging, automatic microphone mixing and ambient noise control.

≫ Digital Mixer Amplifier

A-9500D2 500w X2

- Flexible modular design - up to 8 mic/line inputs and 8 outputs
- Detailed GUI software screens make even complex settings intuitive and easy to understand
- Any of the 30 EQ presets appropriate to the TOA speakers used may be selected for each output
- Up to 16 flush-mount remote panels connectable
- Programmed operating system - 32 scene memories
- Up to 12 filters and compressor setting can be applied to each input-output channel

Model	A-9500D2
Power Source	220-240V AC, 50/60Hz
Power Consumption	220 W
Audio Input	Max. 8 channels, modular construction *1
Speaker Output 1, 2	100 V, 500 W, 20 Ω, M4 screw terminal
Amplification System	Class D
Module Slot	Analog Input (slot 1-8): -10 dB*2,10 kΩ, unbalanced Digital Input (slot 1-4): 24bit / 48 kHz MIX Output (slot 1-8): -14 dB*2, 330 Ω (CH1 prefader output), unbalanced Digital Output (slot 5-7): 24bit / 48 kHz Power Supply (Slot 1-8): +24 V, -24 V, + 6 V DC
Digital Audio Signal Reference Level	-20 dB FS
Frequency Response	20 Hz – 20 kHz, +1, -3 dB
Total Harmonic Distortion	0.3 %
S/N Ratio	At input short, 20 Hz – 20 kHz, ALL FLAT or OFF setting Output volume min.: 85 dB Output volume max.: 61 dB (input 1 volume: 0 dB, other inputs: OFF)
Crosstalk	Above 60 dB (at 20 kHz)
Tone Control	Bass: +/-12 dB (at 100 Hz) / Treble: +/-12 dB (at 10 kHz)
Parametric EQ	10 bands, Freq: 20 Hz – 20 kHz, 31 points, Various range: +/- 12 dB, Q: 0.3 – 5
Speaker Equalizer	10 (PC software has 30 TOA speaker presets)
High-pass Filter	-12 dB/oct, Variable frequency range: 20 Hz - 20 kHz, 31 points
Low-pass Filter	-12 dB/oct, Variable frequency range: 20 Hz - 20 kHz, 31 points
Compressor	Depth: 1 - 5
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only
Scene Memory	32
Auxiliary Function	Key Lock Function
Control Input/Output	RS-232C*3, D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1mA, removable terminal block (14 pins) Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50mA, removable terminal block (14 pins) Remote volume: 2 channels, connect a 10kΩ/linear taper variable resister or Input 0 – 10 V DC, removable terminal block (14 pins)
Operating Temperature	-10 °C to +40 °C
Operating Humidity	35 % to 80 % RH (no condensation)
Finish	Panel: Aluminium, hair-line, black Case: Surface-treated steel plate, black, paint
Dimensions (W x H x D)	420 × 107.6 x 415 mm
Weight (without modules)	9.6 kg

*1 Factory slot 1 is already installed with D-001T module, other modules must be purchased separately
*2 0dB = 1V
*3 Allowing it to be controlled by a control system such as AMX and Creston through RS-232C port.
AMX is trademark of AMX Corporation.
Creston is a trademark of Creston Electronics, Inc.

9000 Series Modules

≫ Wireless Tuner Module	≫ Dual Mic/ Line Input Module with DSP	≫ Line Input Module	≫ Input/Output Control Module	≫ Dual Line Output Expansion Module with DSP
WTU-M9800	D-001T	D-001R	C-001T	T-001T

≫ Remote Control Module	≫ Ambient Noise Control Module	≫ Telephone Zone Paging Module	≫ Speaker Selector	≫ Ambient Noise Sensing Microphone
RC-001T	AN-001T	ZP-001T	SS-9001	AN-9001

9000 Series Remote Panels

ZM-9001	ZM-9002	ZM-9011	ZM-9012	ZM-9013	ZM-9014

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Matrix Amplifier

>>> Matrix Amplifier
MA-725F

- Class-D amplifier with various protection features against over current, high temperature and short circuit of speaker lines at each output channels.
- 4 stereo-summing line inputs with matrix routing to 4 amplifier outputs
- Input level adjustable at each line input and the possibility to assign restriction setting for each output to prevent routing selection.
- Each output channel in equipped with 250W Class-D amplifier at 70V/100V output voltage selectable with independent DSP preset selection and 50Hz HPF for the protection of connected speakers.
- Each output channel also has auxilliary line output to deliver audio to other systems.
- Browser-based smart control

Model		MA-725F
Power Source		100 – 240V AC, 50/60 Hz
Power Consumption		1350 W (rated output)
Frequency Response		20 Hz – 20 kHz (-3 dB / +1 dB, LPF OFF)
Total Harmonic Distortion		1 % or less, at 1 kHz, rated output
Input	Priority 1-2	Mic -60 dB/Line -10 dBV selectable, 2.2 kΩ, electronically-balanced, removable terminal block
	Line In 1-4	-10 dBV, 10 kΩ, unbalanced, 2 RCA jacks (Stereo summing)
Output	Speaker 1-4	70 V (20 Ω), 100 V (40 Ω), removable terminal block
	Line Out 1-4	0 dBV, 600 Ω, unbalanced, RCA jack
	MOH	0 dBV, 600 Ω, transformer balanced, removable terminal block
DSP Preset		16 presets in 4 banks at each output channel, selectable
Signal to Noise Ratio		Mic: 60 dBV or more, Line: 75 dBV or more (A-weighted)
Muting		Manual mute / Automatic mute
Mute Hold Time		50 ms - 10 seconds, adjustable
Priority Level		PRIORITY 1 > PRIORITY 2 > LINE 1-4
Control	Power	ON/OFF switch, Power remote terminal
	Priority 1-2	MIC/LINE selector switch, Gain control, Assign switch, Auto mute switch, Mute sense control, Manual mute terminal, Mute hold time control, Priority mix switch
	Line In 1-4	Gain control, Assign restriction switch
	Output 1-4	LINE IN 1-4 selector switch, Output gain control, 70V/100V selector switch, HPF switch, DSP bank selector switch, DSP preset selector switch
	Remote 1-4	Remote control connector (RJ-45), Remote link switch
Operating Temperature		0 to 40 °C degree
Operating Humidity		35% to 80%RH (no condensation)
Finish		Panel: Aluminum, hair line, black; Case: Steel plate, black, paint
Dimensions (W x H x D)		420 x 107.6 x 350 mm
Weight		7.6 kg
Accessories		Power cord (2 m) x1, Removable terminal plug (5 pins x 2, 3 pins x 1, 2 pins x 4); Rack mounting bracket x 2, Bracket mounting screws x 4, User manual x 1

Package Amplifier

>>> School Digital Amplifier
SA-60D 60w

Model	SA-60D
Power Source	220 – 240V AC, 50 / 60 Hz
Rated Output	60 W
Power Consumption	100 W (rated output), 18 W (EN 60065)
Frequency Response	20 Hz – 20 kHz
Distortion	1 % or less
Input	MIC 1, 2: -52 dBV, 600 Ω, unbalanced, ø 6.3 phone jack (2P) AUX 1, 2: -20 dBV, 10 kΩ, unbalanced, RCA pin jack
Output	Speaker out: Low impedance (2 x 8 Ω or 1 x 4 Ω), Push-in terminal
S/N Ratio	MIC 1, 2: 60 dB or more / AUX 1, 2: 70 dB or more
Protection	Power Supply Thermal Shut down / Power Amplifier Thermal Shut down / Power Amplifier Over Current / Each protection will be restored automatically
Indicator	Power LED (Blue)
Finish	Case: Steel Plate, Off-White, Paint / Knob: ABS resin, Black
Dimensions (W x H x D)	210 × 70.6 × 180 mm
Weight	1.6 kg

Universal Box Speakers

Media Player

Audio Player

Infrared Wireless Microphone System

SA-60D

Package Amplifier

⟫ Package Amplifier

A-230 `30w`

(HV version)

Model	A-230
Power Source	220 – 230V AC, 50/60 Hz or 12 V DC
Rated Output	30 W
Frequency Response	50 Hz – 20 kHz
Input	MIC 1 – 3: phone jack AUX: RCA pin jack
Output	Speaker out: High impedance: 330 Ω (100 V), Low impedance: 4 Ω (11 V)
S/N Ratio	60 dB or more (MIC 1 – 3), 70 dB or more (AUX)
Tone Control	Bass: -10 dB at 100 Hz / Treble: -10 dB at 10 kHz
Muting	MIC 1 overrides other Mic inputs and AUX inputs with 0 – 30 dB attenuation, attenuation by MIC 1 input
Dimensions (W x H x D)	350 × 105 × 240 mm
Weight	3.5 kg

*0dB = 1V

Portable Amplifiers

⟫ Mobile Amplifier

CA-115
CA-130
CA-160

- Easy installation in any 12 V battery equipped car
- Compact rugged construction, and front panel controls
- 2 microphone inputs and convenient auxiliary for tape recorder, radio, connection
- Unidirectional dynamic microphone with talk switch

Model	CA-115	CA-130	CA-160
Power Source	Standard voltage: 14 V DC, Operating range: 10 – 16 V DC (12 V battery used)		
Rated Output	15 W (35 W max.)	30 W (60 W max.)	60 W (120 W max.)
Frequency Response	100 Hz - 10 kHz		
Input	MIC 1, 2: 600 Ω, 4 mV, Phone jack / AUX: 10 kΩ, 500 mV, Phone jack		
Dimensions (W x H x D)	178 x 50 x 132 mm	178 x 50 x 144 mm	178 x 50 x 170 mm
Weight	0.9 kg	1.1 kg	1.2 kg

⟫ Wireless Meeting Amplifier

WA-1830M
WA-1830MB

- Compact, portable meeting amplifier
- Can install up to 2 wireless tuner (WTU-4800)
- Optional wireless microphones, giving you the flexibility to choose one that suits your need

Model	WA-1830M	WA-1830MB
Power Source	100-240V AC, 50/60 Hz; DC: 12 V, 2.3 Ah (Rechargeable battery* not included)	100-240V AC, 50/60 Hz; DC: 12 V, 2.3 Ah (Rechargeable battery included)
Power Consumption	AC: 55 W (rated output) ; AC: 11 W (operation at EN60065)	
Rated Output	AC: 30 W ; DC: 10 W	
Applicable Tuner Unit	WTU-4800 (Optional)	
Battery Life	-	Approx. 5 hours continuous music
Battery Charging Time / Battery Type	-	12 hours / 12 V, 2.3 Ah x 1 pc Lead Acid Battery
Frequency Response	50 Hz - 15 kHz, ± 3 dB	
Distortion	Under 5% (rated output)	
Input	Wired mic: -45 dB*, 600 Ω, Unbalanced, 6.3 mm phone jack / External Input: -20 dB*, 10 kΩ, Unbalanced, RCA jack	
Output	External speaker: 4 - 16 Ω/over 30 W of rated input / External Output: 0 dB*, 1 kΩ, Unbalanced, 6.3 mm phone jack	
Other Feature	Internal or External Speaker selection switch	
S/N Ratio	Over 60 dB (rated output)	
Antenna	Internal antenna (PCB Antenna)	
Internal Speaker	2-way speaker system: 20cm full-range speaker and tweeter	
MP3 Player	- Extension Type file is: MP3, WMA, WAV, AAC, FLAC / - Max. supported storage size of the medium (stick): 32GB. (FAT16/FAT32) / - Source: USB, SD/MMC, FM, REC, AUX / - We do not guarantee that it can support all kinds of USB/SD	
Operating Temperature	-10 °C to +50 °C	
Finish	ABS resin, Black	
Dimensions (W x H x D)	298 × 460 × 200 mm	
Weight	5.3 kg	6.2 kg
Accessories	Power cord (YA-301) x 1, Dust Cover x 1, Screw Driver x 1, Remote Control x 1	

* Reference of battery dimension: 178 (W) x 60 (H) x 34 (D) mm

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Speakers

Ceiling Speakers

⋙ Flush Mount Type Ceiling Speaker

PC-2852   PC-2869

- Thin panel harmonize with the venue's architecture and decor
- Quick and easy installation with new SUS spring clamp installation method
- Wide frequency response
- Variety of ceiling speaker diameters (5", 6", 8" (12, 16, 20cm))

Model	PC-2852	PC-2869
Rated Input (100V line)	15 W	6 W
Rated Impedance	100 V line: 670 Ω, 1 kΩ, 2 kΩ, 3.3 kΩ 70 V line: 330 Ω, 670 Ω, 1 kΩ, 2 kΩ, 3.3 kΩ	100 V line: 1.7 kΩ, 3.3 kΩ, 10 kΩ 70 V line: 1.7 kΩ, 3.3 kΩ, 10 kΩ
Sensitivity (1W, 1m)	96 dB	94 dB
Frequency Response	45 Hz – 20 kHz	40 Hz – 20 kHz
Mounting Hole Diameter	ø 250 +/-3 mm	
Speaker Component	20 cm coaxial cone-type	20 cm double cone-type
Finish	Frame: Steel plate, traffic-white (RAL9016) / Grille: Surface-treated steel plate net, traffic-white (RAL9016)	
Dimensions	ø 280 x 92 (D) mm	
Weight	1.6 kg	1.4 kg

⋙ Flush Mount Type Ceiling Speaker

PC-1860 / PC-1860EN
PC-2360 / PC-2360EN

- Thin panel harmonize with the venue's architecture and decor
- Spring clamp mechanism for easy speaker mounting to ceiling
- Wide frequency response
- Available in 12 cm and 16 cm cone-type
- PC-1860EN & PC-2360EN is EN-54-24:2008 certified

Model	PC-1860	PC-1860EN	PC-2360	PC-2360EN
Speaker Component	12 cm cone-type		16 cm cone-type	
Rated Input	6 W (100 V Line), 3 W (70 V Line)			
Rated Impedance	100 V line: 1.7 kΩ (6 W), 3.3 kΩ (3 W), 6.7 kΩ (1.5 W), 13 kΩ (0.8 W); 70 V line: 1.7 kΩ (3 W), 3.3 kΩ (1.5 W), 6.7 kΩ (0.8 W), 13 kΩ (0.4 W)			
Sensitivity (1 W, 1 m)	94 dB (500 Hz - 5 kHz, pink noise)	94 dB (500 Hz - 5 kHz, pink noise) 92 dB (100 Hz - 10 kHz, pink noise) 80 dB (1W, 4m) (100 Hz - 10 kHz, pink noise)	94 dB (500 Hz - 5 kHz, pink noise)	94 dB (500 Hz - 5 kHz, pink noise) 92 dB (100 Hz - 10 kHz, pink noise) 80 dB (1W, 4m) (100 Hz - 10 kHz, pink noise)
Frequency Response	80 Hz - 20 kHz (peak -20 dB)		60 Hz - 20 kHz (peak -20 dB)	
Dimensions for Fixing Hole	Mounting hole: ø 150 ±3 mm; Ceiling thickness: 5 - 25 mm		Mounting hole: ø 200 ±3 mm; Ceiling thickness: 5 - 25 mm	
Connection	Push wire connection (Bridging terminal - 2 branch type)			
Finish	Frame: Steel plate, white (RAL 9016 equivalent), paint; Grille: Steel net, white (RAL 9016 equivalent), paint			
Dimensions (ø x D)	ø 180 x 70 mm		ø 230 x 76 mm	
Weight	560 g		740 g	

⋙ Flush Mount Type Ceiling Speaker

PC-648R   PC-668R
PC-658R   PC-668RC

- Spring clamp mechanism for easy speaker mounting to the ceiling
- High cost performance
- PP Resin, SECC punching net
- Optional flame retardant (HIPS UL-94VO) backcan (HY-BC648 for PC-648R & HY-BC658 for PC-658R)

⋙ Surface Mount Type Ceiling Speaker

PC-2268
PC-2268WP

- Clearly audible vocal and smooth sound reproduction for easy-to-hear broadcasts
- Contemporary low-profile design that blends perfectly with interior decor
- Fire-resistant enclosure with HIPS resin front and rear cases
- PC-2268WP: IPX4 compliant splash-proof construction
- Ideal for applications like rooms with high humidity, under eaves, connecting corridor, etc
- Application versatility with transformer tap position input power changes

Model	PC-648R	PC-658R	PC-668R	PC-668RC	PC-2268	PC-2268WP
Rated Input (100V line)	6 W		15 W		6 W	
Rated Impedance	100 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ 70 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ		100 V line: 670 Ω, 1 kΩ, 2 kΩ, 3.3 kΩ 70 V line: 330 Ω, 670 Ω, 1 kΩ, 2 kΩ, 3.3 kΩ		100 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ 70 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ	
Sensitivity (1W, 1m)	90 dB		96 dB		90 dB	
Frequency Response	100 Hz – 18 kHz	65 Hz – 18 kHz	65 Hz - 20 kHz		160 Hz – 14 kHz	
Mounting Hole Diameter	ø 145 +/-5 mm	ø 170 +/-5 mm	ø 250 +/-5 mm		-	
Speaker Component	12 cm cone-type	16 cm cone-type	20 cm double cone-type		12 cm cone-type	
Input Connector	-	-		Push-in Connector with capacitor	-	
Finish	Frame: Polypropylene resin, traffic-white (RAL9016) Grille: Surface-treated steel plate net, traffic-white (RAL9016), paint				Frame: Fire-resistant HIPS resin Grille: Fire-resistant HIPS resin	
Dimensions (ø x D)	ø 168 x 77 mm	ø 192 x 73 mm	ø 280 x 90 mm		ø 220 x 80.5 mm	
Weight	470 g	500 g	960 g	970 g	880 g	890 g

Ceiling Speakers

>>> Surface Mount Type Ceiling Speaker
PC-2668

- 12 cm speaker
- Easy installation with spring catches
- Push-in terminals for speaker cable
- Exposed installation to the ceiling
- In-/Out bridge connection
- ABS resin baffle
- Mounting bracket for back box included

>>> Splashproof Ceiling Speaker
PC-3CL

- Clean room / shower room speaker
- For humid or high temperature areas
- IP64 certified weatherproof construction
- Resistant against formalin and iodine solutions
- Wide temperature range of -20 to 60°C
- Fits in ø100 mm holes

Model	PC-2668	PC-3CL
Rated Input (100V line)	6 W	3 W
Rated Impedance	100 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ 70 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ	100 V line: 3.3 kΩ, 10 kΩ 70 V line: 3.3 kΩ, 10 kΩ
Sensitivity (1W, 1m)	90 dB	87 dB
Frequency Response	100 Hz – 16 kHz	150 Hz – 20 kHz
Mounting Hole Diameter	—	ø 100 mm
Speaker Component	12 cm dynamic cone-type	—
Finish	Frame: ABS resin, off-white Grille: ABS resin, off-white	Frame: Alloy-coated ABS resin/Grille: Stainless steel punching net
Dimensions	ø 260 x 202 (D) mm	ø 139 x 104.5 (D) mm
Weight	820 g	550 g

>>> Clean Room Ceiling Speaker
PC-5CL

- Sealed high-molecular speaker membrane to prevent floating dust particles from contaminating the environment
- Resistant against formalin
- Fits in ø98mm holes

>>> Splashproof Ceiling Speaker
PC-3WR

- Ideal for wet and humid locations
- IP64 certified weatherproof construction
- Fits in ø150 mm holes

Model	PC-5CL	PC-3WR
Rated Input (100V line)	5 W	3 W, 1 W
Rated Impedance	100 V line: 2 kΩ(5 W) / 70 V line: 2 kΩ(2.5W)	3.3 kΩ, 10 kΩ
Sensitivity (1W, 1m)	87 dB	88 dB
Frequency Response	150 Hz – 20 kHz	180 Hz – 20 kHz
Mounting Hole Diameter	ø 98 mm	ø 150 mm
Speaker Component	8 cm cone-type	8cm cone-type
Finish	Panel: Alloy-coated ABS resin/Enclosure: ABS resin, off-white/ Punching net: Stainless steel/Exposed fixing screw: Stainless steel	Frame: Alloy-coated ABS resin/Grille: Stainless steel punching net
Dimensions	ø 116 x 110 (D) mm	ø 116 x 110 (D) mm
Weight	620 g	700 g
Operating Temperature	-20 °C to +55 °C	-10 °C to +50 °C

>>> Ceiling Mount Fire Dome Speaker
PC-1860F
PC-1860BS

- Firedome construction prevents fire from spreading into ceiling in an emergency
- Easy installation with spring catches
- PC-1860BS complies to BS5839-8:2008 & EN 54-24:2008 certified

Model	PC-1860BS	PC-1860F
Speaker Component	12 cm (5") cone-type	
Rated Input	6 W (100 V Line), 3 W (70 V Line)	
Rated Impedance	100 V line: 1.7 kΩ (6 W), 3.3 kΩ (3 W), 6.7 kΩ (1.5 W), 13 kΩ (0.8 W) / 70 V line: 1.7 kΩ (3 W), 3.3 kΩ (1.5 W), 6.7 kΩ (0.8 W), 13 kΩ (0.4 W)	
Sensitivity (1 W, 1m)	95 dB (500 Hz - 5 kHz, pink noise) 93 dB / 81 dB (1 W, 4 m) (100 Hz - 10 kHz, pink noise)	95 dB (500 Hz - 5 kHz, pink noise)
Maximum Sound Pressure Level	100 dB (6 W, 1 m) (100 Hz - 10 kHz, pink noise) 88 dB (6 W, 4 m) (100 Hz - 10 kHz, pink noise)	-
Frequency Response	170 Hz - 20 kHz (peak -20 dB)	
Coverage Angle (-6 dB)	Horizontal and Vertical: 165°(500 Hz), 175°(1 kHz), 165°(2 kHz), 70°(4 kHz) according to EN 54-24	-
Dimensions for Fixing Hole	Mounting hole: ø 156 ±3 mm; Ceiling thickness: 5 - 25 mm	
Finish	Frame: Steel plate, white (RAL 9016 equivalent), paint / Grille: Steel net, white (RAL 9016 equivalent), paint; Fire dome: Steel plate, black, paint	
Dimensions (ø x D)	ø 180 x 5 (exposed section) + 100 mm	
Weight	1.1 kg	1 kg

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Music Horn Speakers

CS-760B / CS-760W
2-Way Weatherproof Speakers

⟫ 2-Way Weatherproof Speaker

CS-760B
CS-760W

- High power input handling capacity with excellent efficiency
- Ideal of Public Address and BGM application in fully outdoor environment with IP 66 certification
- Rotary switch facilitiates impedance change

Model	CS-760B	CS-760W
Rated Input	60 W (high impedance)	
Rated Impedance	100 V: 170 Ω (60 W), 330 Ω (30 W), 670 Ω (15 W), 1.3 kΩ (7.5 W) 70 V: 83 Ω (60 W), 170 Ω (30 W), 330 Ω (15 W), 670 Ω (7.5W)	
Sensitivity (1 W, 1 m)	100 dB	
Max. SPL (60 W, 1m)	117 dB	
Frequency Response	100 Hz – 20 kHz	
Crossover Frequency	2.5 kHz	
Directivity Angle	Horizontal: 90° ; Vertical: 80°	
Speaker Component	Low Freq: 16 cm cone-type; High Freq: 2.5 cm dome tweeter	
Dust/Water Protection	IP66	
Connection	Speaker cord (Hot: Black ; Com: White)	
Finish	Enclosure: ABS, black, paint Net: Surface-treated steel plate, black, paint Bracket: Stainless Steel, black, powder coating	Enclosure: ABS, white, paint Net: Surface-treated steel plate, white, paint Bracket: Stainless Steel, white, powder coating
Dimensions (W x H x D)	388 × 310 × 367 mm	
Weight	7.4 kg	

⟫ Wide Range Horn Speaker

CS-64

- Wide-range paging speaker for voice paging, background music and tone signaling distribution
- Exponential horn improves directivity characteristics and ensure uniform and clear sound dispersion
- Weatherproof polyurethane resin paint and impact-proof lightweight ABS resin enclosure
- Stainless steel hardware protects the speaker from corrosion

⟫ Wide Range Horn Speaker

CS-154
CS-304

- Wide-range paging speaker for voice paging, background music and tone signaling distribution
- Constant directivity horn improves directivity characteristics and ensure uniform and clear sound dispersion
- High sensitivity: up to 98 dB (1W/1m)
- IP65 certified weatherproof construction
- Weatherproof polyurethane resin paint and impact-proof lightweight ABS resin enclosure
- Stainless steel hardware protects the speaker from corrosion

Model	CS-64	CS-154	CS-304
Rated Input (100V line)	6 W	15 W	30 W
Rated Impedance	100 V line: 1.7 kΩ, 3.3 kΩ, 10 kΩ 70 V line: 830 Ω, 1.7 kΩ, 3.3 kΩ, 10 kΩ	100 V line: 670 Ω, 1 kΩ, 2 kΩ 70 V line: 330 Ω, 670 Ω, 1 kΩ, 2 kΩ	100 V line: 330 Ω, 500 Ω, 1 kΩ 70 V line: 170 Ω, 330 Ω, 500 Ω, 1 kΩ
Sensitivity (1W, 1m)	96 dB	97 dB	98 dB
Frequency Response	130 Hz – 13 kHz	150 Hz – 15 kHz	120 Hz – 15 kHz
Speaker Component	12 cm cone-type (Treated for splash proof)	12 cm cone-type	
Finish	Horn, cover: ABS resin, off-white, paint Bracket: Stainless steel Punched net: Surface treated steel plate, dark-gray, powder coating	Horn, cover: ABS resin, off-white, paint/Bracket: Stainless steel/Net: Aluminium, gray	
Dimensions (W x H x D)	233 x 224 x 208 mm	366 x 230 x 272 mm	
Weight	1.5 kg	2.8 kg	3.1 kg
Dust/Water Protection	Equivalent to IPX4	IP65	

**Please refer to specification sheet for detailed information.

Combination Type Reflex Horn Speakers

>>> Paging Horn Speaker
SC-610
SC-610M

>>> Paging Horn Speaker
SC-615
SC-615M

>>> Paging Horn Speaker
SC-630
SC-630M

- Both high-impedance (70V/100V lines) models and low impedance (8Ω) models available
- Stainless steel brackets and hardware (screws, bolts), and powder-coated horn ensure superb weatherproofing and corrosion-resistance
- Shock-resistant aluminum oval horn
- IP65 certified weatherproof construction

Model	SC-610	SC-610M	SC-615	SC-615M	SC-630	SC-630M
Rated Input (100V line)	10 W		15 W		30 W (8 Ω)	30 W
Rated Impedance	8 Ω	100V line: 1kΩ, 2kΩ, 3.3kΩ, 10kΩ / 70V line: 500Ω, 1kΩ, 2kΩ, 3.3kΩ, 10kΩ	8 Ω	100V line: 670Ω, 1kΩ, 2kΩ, 3.3kΩ / 70V line: 330Ω, 670Ω, 1kΩ, 2kΩ, 3.3kΩ	6 Ω	100V line: 330Ω, 670Ω, 1kΩ, 2kΩ / 70V line: 170Ω, 330Ω, 670Ω, 1kΩ, 2kΩ
Sensitivity (1W, 1m)	110 dB		112 dB		113 dB	
Frequency Response	315 Hz – 12.5 kHz		280 Hz – 12.5 kHz		250 Hz – 10 kHz	
Finish	Horn flare: Aluminum, off-white, powder coating/Reflector horn: ABS resin, off-white/Bracket holder: Aluminum, gray, powder coating/Bracket: Stainless steel					
Dimensions (W x H x D)	172 x 161 x 188 mm		222 x 179 x 234 mm		285 x 227 x 277 mm	
Weight	1 kg	1.2 kg	1.1 kg	1.3 kg	1.7 kg	2 kg
Dust/Water Protection	IP65					
Operating Temperature	-20 °C to +55 °C					

>>> Paging Horn Speaker
SC-632

- Newly developed polyimide diaphragm ensures durability during 50W output
- Paging horn speaker for voice paging and tone signaling distribution
- Weather-Resistant to withstand demanding environmental conditions

>>> Paging Horn Speaker
SC-651

- Shock-resistant aluminum oval horn
- IP65 certified weatherproof construction
- Wide temperature range: -20°C to 55°C

Model	SC-632	SC-651
Rated Input (100V line)	30 W	50 W
Rated Impedance	8 Ω	16 Ω
Sensitivity (1W, 1m)	113 dB	109 dB
Frequency Response	250 Hz – 10 kHz	250 Hz – 6 kHz
Finish	Horn A: HIPS, white / Reflector horn: ABS, white / Bracket holder: SPCC, white, powder coating	Horn flare: Aluminum, off-white, powder coating/ Reflector horn: ABS resin, off-white/ Bracket holder: Aluminum, grey, powder coating/ Bracket: Steel, grey, powder coating
Dimensions (W x H x D)	292 x 280 x 234 mm	430 x 297.5 x 327 mm
Weight	1.8 kg	3.4 kg
Dust/Water Protection	IP65	
Operating Temperature	-20 °C to +55 °C	

Optional Accessories

>>> Pole Mount Bracket
SP-131

>>> Pole Band
YS-60B

>>> Wall Mount Bracket
SP-301

>>> Wall and Pole Mount Bracket
SP-201

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Separate Type Horn Speakers

≫ Reflex Horn
TH-652

Model	TH-652
Sensitivity (1W, 1m)	110 dB*
Frequency Response	200 Hz – 6 kHz*
Finish	Horn and Flange: Aluminum, white, powder coating Reflector horn: HIPS, white Bracket: Steel, white, powder coating Screws and Bolts: Stainless Steel
Dimensions (ø x D)	ø 500 x 357 mm
Weight	2.7 kg

*When operated with TU-632/632M/652/652M driver unit.

≫ Driver Unit
TU-632
TU-652

≫ Driver Unit
TU-632M
TU-652M

- Both high-impedance (70V/100V lines) models and low-impedance (16 Ω) models available.
- Two power ratings: 30 W and 50 W.
- Input impedance selector on high-impedance models facilitates input impedance matching from the outside.
- IP65 certified weatherproof construction

Model	TU-632	TU-652	TU-632M	TU-652M
Rated Input (100V line)	30 W	50 W	30 W	50 W
Rated Impedance	16Ω		100 V line: 330 Ω, 670 Ω, 1 kΩ, 2 kΩ 70 V line: 170 Ω, 330 Ω, 670 Ω, 1 kΩ, 2 kΩ	100 V line: 200 Ω, 330 Ω, 670 Ω 70 V line: 100 Ω, 200 Ω, 330 Ω, 670 Ω
Sensitivity (1W, 1m)	110 dB*			
Frequency Response	150 Hz – 6 kHz *			
Finish	Flange: Aluminum, white, powder coating/Unit case: HIPS, white			
Dimensions (ø x D)	ø 139 x 106 mm		ø 139 x 149 mm	
Weight	1.5 kg	2 kg	1.8 kg	2.7 kg
Dust/Water Protection	IP65*			
Operating Temperature	-20 °C to +55 °C			

*When operated with TH-652..

≫ Driver Unit Cover
UC-200A

- Glass fiber-mixed unsaturated polyester resin to protect the driver unit from sever weather conditions

≫ Diaphgram
DG-30DB

**Please refer to specification sheet for detailed information.

Powered Speakers

>>> Powered Box Speakers

BS-P1030B
BS-P1030W

Model	BS-P1030B	BS-P1030W
Power Source	24 V DC, 1.5 A (DC Socket "+" Type A: 5.5 x 2.1 mm)	
Power Consumption	24 W (1 A) at rated output	
Input	5 kΩ, unbalanced (RCA plug); Max Input: +6 dB V (2 Vrms)	
Signal Gain	+30 dB	
Sensitivity (1 W, 1 m)	90 dB	
Dust/Water Protection	IPX4	
Frequency Response	80 Hz – 20 kHz	
Finish	Enclosure: ABS resin, black, paint Net and Bracket: Surface-treated steel plate, black, powder coating	Enclosure: ABS resin, white, paint Net and Bracket: Surface-treated steel plate, white, powder coating
Dimensions (W x H x D)	196 x 290 x 150 mm (unit only)	
Weight	2.5 kg (unit only)	

>>> Powered Horn Speaker

SC-P620

- Integrated 20W power amplifier which utilises latest Class D technology
- Switchable Gain: 8dB, 16dB, 24dB & 32dB
- Internal volume control to allow on-site tuning
- Integration to CCTV systems possible with the majority of IP CCTV systems equipped with an audio line output
- IP65 certified weatherproof construction

Model	SC-P620
Power Source	12 V DC, 2 A (DC Socket "+" Type A: 5.5 x 2.1 mm)
Power Consumption	15 W (1.25 A) at Rated output 25 W (2.10 A) at Maximum output
Input	0 dB*, 10 kΩ, Unbalanced (RCA plug)
Signal Gain	8, 16, 24 or 32 dB (Factory pre-set to 16 dB)
Volume Adjustment	Internal volume control (Factory pre-set to maximum position)
Sound Pressure Level	113 dB (1W, 1m at 500 Hz to 2.5 kHz peak level) Max. SPL (above 120 dB)
Frequency Response	250 Hz – 10 kHz
Finish	Horn: HIPS resin, white (RAL9010 equivalent) Reflector horn and case: ABS resin, white (RAL9010 equivalent) Bracket, screws and bolts: Stainless Steel
Cable Cord	Length: 2 m Flying Lead (RCA plug) and DC socket ("+")
Dimensions (W x H x D)	292 x 230 x 280 mm
Weight	1.8 kg
Dust/Water Protection	IP65
Operating Temperature	-20 °C to +55 °C (must be free from dew condensation)
Option	AD-5000-2 (LTE24E-S2-1) AC Adapter

Wall Mount Box Speakers

BS-634   BS-634T   BS-1034   BS-1034S

- Low profile, beautiful design due to the Golden Ratio (1: 1.618)
- Easy and quick installation
- Creates a distinctly different impression depending on whether it is installed horizontally or vertically
- Two colors selectable: off-white, which matches any interior style, and silver, which adds a quality appearance
- Ideally suited for BGM and announcements
- Equipped with an attenuator (BS-634T)

Model	BS-634	BS-634T	BS-1034	BS-1034S
Rated Input (100V line)	6 W		10 W	
Rated Impedance	100 V line: 1.7 kΩ, 3.3 kΩ / 70 V line: 1.7 kΩ, 3.3 kΩ		100 V line: 1 kΩ, 2 kΩ, 3.3 kΩ, 10 kΩ / 70 V line: 500 Ω, 1 kΩ, 2 kΩ, 3.3 kΩ, 10 kΩ	
Sensitivity (1W, 1m)	90 dB			
Frequency Response	120 Hz – 18 kHz		120 Hz – 20 kHz	
Speaker Component	12 cm cone-type		Low: 12 cm cone-type, High: Balance dome-type	
Finish	Enclosure: HIPS resin, off-white/Grille: Surface-treated steel plate net, off-white		Enclosure: HIPS resin, off-white Grille: Steel plate net, off-white	Enclosure: HIPS resin, silver Grille: Steel plate net, silver
Dimensions (W x H x D)	208 x 327 x 79 mm			
Weight	1.3 kg		1.4 kg	

**Please refer to specification sheet for detailed information.

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Wall Mount Box Speakers

BS-678
BS-678B

BS-678T
BS-678BT

BS-680F
BS-680FC

- Stylish, compact and unobtrusive design
- Quick and easy installation, which saves time on setting-up
- Horizontal / vertical installation
- A push-type input terminal allows easy cable connections and bridge wiring
- Ideally suited for BGM and announcements
- Equipped with an attenuator (BS-678T/678BT)

- Innovative design based on the Golden Ratio (1:1.618)
- Quick and easy installation
- Strong all-metal body
- Horizontal / vertical installation
- Wall / in-wall mounting
- Ideally suited for voice alarm system application

  (BS-680FC)
- Two steatite screw terminal blocks and thermal fuse
- EN 54-24 certified in 2010 (Certificate No.: 1438/CPD/0178)
- In accordance with British Standard BS5839 (Part 8)

Model	BS-678 / BS-678B	BS-678T / BS-678BT	BS-680F	BS-680FC
Rated Input (100V line)	6 W			
Rated Impedance	100 V line: 1.7 kΩ, 3.4 kΩ, 6.7 kΩ, 13 kΩ 70 V line: 1 .7 kΩ, 3.4 kΩ, 6.7 kΩ, 13 kΩ		100 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ 70 V line: 1.7 kΩ, 3.3 kΩ, 6.7 kΩ, 13 kΩ	
Sensitivity (1W, 1m)	94 dB			
Frequency Response	150 Hz – 20 kHz			
Speaker Component	16 cm double cone-type			
Finish	Enclosure: Wood, off-white or black/Grille: Surface-treated steel plate net, off-white or black		Enclosure: Steel plate, off-white/Grille: Stainless steel punching net, off-white	
Dimensions (W x H x D)	250 x 190 x 110 mm		310 x 190 x 90 mm	
Weight	1.7 kg		2.6 kg	

Box Speakers

>>> Wall Mount Box Speaker
BS-633A

>>> Wall Mount Box Speaker
BS-633AT

- Compact and unobtrusive design
- Quick and easy installation
- High cost-effectiveness
- A push-type input terminal allows easy cable connections and bridge wiring
- Ideally suited for BGM and announcements

Model	BS-633A	BS-633AT
Rated Input (100V line)	6 W	
Rated Impedance	100 V line: 1.7 kΩ, 3.3 kΩ, 10 kΩ 70 V line: 1.7 kΩ, 3.3 kΩ, 10 kΩ	100 V line: 1.7 kΩ, 3.3 kΩ 70 V line: 1.7 kΩ, 3.3 kΩ
Sensitivity (1W, 1m)	91 dB	
Frequency Response	120 Hz – 15 kHz	
Speaker Component	12 cm cone-type	
Finish	Enclosure: ABS resin, off-white/Grille: ABS resin, off-white	
Dimensions (W x H x D)	173 x 195 x 101 mm	
Weight	780 g	810 g

>>> Universal Speaker
BS-1030B
BS-1030W

- Aesthetically pleasing design blends in modern buildings and other facilities, such as boutique, restaurant and amusement park
- Cost-effective high power PA box speaker
- 2-Way bass reflex speaker
- Low impedance (8Ω) or high impedance (100V) selectable by rotary switch
- Splashproof construction in compliance with IPX4

Model	BS-1030B	BS-1030W
Rated Input (100V line)	30 W	
Rated Impedance	8 Ω/100 V line: 330 Ω, 500 Ω, 670 Ω, 1 kΩ, 2 kΩ/ 70 V line: 170 Ω, 250 Ω, 330 Ω, 500 Ω, 1kΩ	
Sensitivity (1W, 1m)	90 dB	
Frequency Response	80 Hz – 20 kHz	
Speaker Component	12 cm dynamic cone-type + dome-type	
Finish	Enclosure: ABS resin, black or white/ Grille: Surface treated steel plate, black, powder coating	Enclosure: ABS resin, white/ Grille: Surface treated steel plate, white, powder coating
Dimensions (W x H x D)	196 x 290 x 150 mm	
Weight	2.5 kg	

>>> Wall Mount Bracket
SP-410

**Please refer to specification sheet for detailed information.

Box Speakers

⟫⟫ Box Speaker
BS-4W

The BS-4W is a compact speaker with a closed-cabinet design, featuring a 10 cm (4") full range speaker unit (plastic cone). Compliant with IPX2 water protection standards, the speaker can be installed in such locations as rooms with high humidity, as well as under eaves and connecting corridor.

Model	BS-4W
Enclosure Type	Sealed type
Rated Input	5 W
Rated Impedance	100 V line: 2 kΩ (5 W)
Sensitivity	87 dB (1 W, 1 m)
Frequency Response	100 Hz – 12 kHz
Speaker Component	10 cm (4") cone type (plastic cone)
Water Protection	IPX2
Operating Temperature Range	-20 °C to +55 °C
Finish	Enclosure: Polypropylene, gray, paint Grille: Aluminum punching net, silver gray, paint Mounting bracket: Rolled steel plate, gray, paint
Dimensions (W x H x D)	196 x 177 x 160 mm
Weight	1.5 kg

Pendant/Projection Speakers

⟫⟫ Pendant Speaker
PE-64
PE-304

- Paintable
- Stylish and outstanding design inspired by the finest lighting fixtures
- Sturdy cable extendable up to 5 meters
- Input impedance easily changeable
- Ideally suited for BGM and announcements

⟫⟫ Projection Speaker
PJ-64
PJ-304

- Stylish and outstanding design inspired by the finest lighting fixtures
- Flexible speaker direction adjustment with accessory brackets
- Paintable
- Input impedance easily changeable
- Ideally suited for BGM and announcements

⟫⟫ Projection Speaker
PJ-100W

⟫⟫ Projection Speaker
PJ-200W

- Wide range projection speaker
- 2 rated input model 10W and 20W available

Model	PE-64	PE-304	PJ-64	PJ-304	PJ-100W	PJ-200W
Rated Input (100V line)	6 W	30 W	6 W	30 W	10 W	20 W
Rated Impedance	100V line: 1.7kΩ, 3.3kΩ, 10kΩ 70V line: 1.7kΩ, 3.3kΩ, 10kΩ	100V line: 330Ω, 500Ω, 670Ω, 1kΩ, 2kΩ 70V line: 170Ω, 250Ω, 330Ω, 500Ω, 1kΩ	100V line: 1.7kΩ, 3.3kΩ, 10kΩ 70V line: 1.7kΩ, 3.3kΩ, 10kΩ	100V line: 330Ω, 500Ω, 670Ω, 1kΩ, 2kΩ 70V line: 170Ω, 250Ω, 330Ω, 500Ω, 1kΩ	50V line: 250Ω, 500Ω, 1kΩ, 2kΩ, 4kΩ/ 70V line: 500Ω,1kΩ, 2kΩ, 4kΩ/ 100V line: 1kΩ, 2kΩ, 4kΩ	50 V line: 125Ω, 250Ω, 500Ω, 1kΩ, 3kΩ/ 70V line: 250Ω,500Ω, 1kΩ, 2kΩ/ 100V line: 500Ω, 1kΩ, 2kΩ
Sensitivity (1W, 1m)	90 dB	91 dB	90 dB	91 dB	92 dB	95 dB
Frequency Response	100 Hz – 18 kHz	70 Hz – 20 kHz	100 Hz – 18 kHz	70 Hz – 20 kHz	65 Hz – 18 kHz	50 Hz – 20 kHz
Speaker Component	12 cm cone-type	12 cm cone-type + balanced dome tweeter	12 cm cone-type	12 cm cone-type + balanced dome tweeter	12 cm	16 cm
Finish	Enclosure: HIPS resin, off-white/ Grille: Surface-treated steel plate net, off-white				Cabinet, Cover: ABS Resin, off-white/ Bracket: SPCC, off-white	
Dimensions	ø 186 x 251(H) mm (unit only)		ø 186 x 369 (H) mm		160 (W) x 200 (H) x 195 (D) mm	200 (W) x 255 (H) x250 (D) mm
Weight	1.5 kg	2.1 kg	1.5 kg	2.1 kg	1.8 kg	2.5 kg

Column Speakers

⟫⟫ Slim Array Speaker
TZ-S60W

⟫⟫ Stacking Bracket
HY-S60W
(For TZ-S60W)

- 90° horizontal x 0° vertical directivity angle
- Low and high impedance selectable by rotary switch
- Stackable up to 2 units for wider coverage

- 2-way speaker, with tweeters aligned at the foreground to the side, enabling less disruption to the sound quality of the woofers while maintaining the unit slim
- 100° horizontal x 5° vertical directivity angle
- Use with MT-S0601 matching transformer for high impedance applications when driven with a single amplifier
- Stackable up to 2 units for wider coverage

⟫⟫ Slim Array Speaker
TZ-S240W
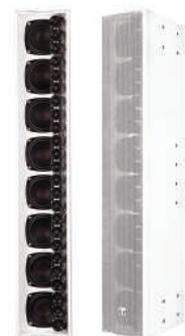
Model	TZ-S60W	TZ-S240W
Rated Input	60 W	240 W
Rated Impedance	100 V line: 167 Ω (60 W), 330 Ω (30 W), 500 Ω (20 W), 1 kΩ (10 W) 8 Ω (low impedance)	8 Ω
Sensitivity (1W, 1m)	95 dB	94 dB
Frequency Response	180 Hz– 15 kHz	95 Hz – 20 kHz
Speaker Component	8 cm cone type x 9	Low Frequency: 10 cm cone woofer x 8 High Frequency: 2.5 cm balanced dome tweeter x 24
Finish	Enclosure: MDF, White paint Punched net, wall bracket, side, panel, metal cover: SECC, White paint	Enclosure: White painted MDF Board Net Grille: White painted SPCC Punched Net
Dimensions (W x H x D)	100 x 883 x 130 mm	160 x 950 x 262 mm
Weight	8.2 kg	17 kg

**Please refer to specification sheet for detailed information.

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Column Speakers

≫ Column Speaker
TZ-206B/W
TZ-206BWP/WWP

≫ Column Speaker
TZ-406B/W
TZ-406BWP/WWP

≫ Column Speaker
TZ-606B/W
TZ-606BWP/WWP

- Enhance directivity of sound waves
- Highly effective in reducing howling and echo
- Allows clear, good-quality sound amplification with minimal reverberation and feedback

Model	TZ-206B	TZ-206W	TZ-206BWP	TZ-206WWP
Rated Input	20 W			
Rated Impedance	100 V line: 500 Ω (20 W), 1 kΩ (10 W), 2 kΩ (5 W), 4 kΩ (2.5 W) 70 V line: 500 Ω (10 W), 1 kΩ (5 W), 2 kΩ (2.5 W), 4 kΩ (1.3 W)			
Sensitivity (1W, 1m)	90 dB		89 dB	
Frequency Response	150 Hz – 16 kHz		150 Hz – 13 kHz	
Speaker Component	10 cm cone type x 2		10 cm cone type x 2, waterproof	
Finish	Enclosure: HIPS, black or white paint Punched net: Surface-treated steel plate net, black or white paint Speaker bracket: Aluminum die-cast, black or white paint Joint and wall bracket: Steel plate, t1.6, black or white paint		Enclosure: HIPS, black or white paint Punched net: Surface-treated steel plate net, black or white anti-rust paint Speaker bracket: Aluminum die-cast, black or white paint Joint and wall bracket: Steel plate, t1.6, black or white paint (ED coating)	
Dimensions (W x H x D)	135 x 250 x 128 mm			
Weight	1.9 kg			
Dust/Water Protection	-		IP65	

Model	TZ-406B	TZ-406W	TZ-406BWP	TZ-406WWP
Rated Input	40 W			
Rated Impedance	100 V line: 250 Ω (40 W), 500 Ω (20 W), 1 kΩ (10 W), 2 kΩ (5 W) 70 V line: 250 Ω (20 W), 500 Ω (10 W), 1 kΩ (5 W), 2 kΩ (2.5 W)			
Sensitivity (1W, 1m)	93 dB		92 dB	
Frequency Response	150 Hz – 16kHz		150 Hz – 13 kHz	
Speaker Component	10 cm cone type x 4		10 cm cone type x 4, waterproof	
Finish	Enclosure: HIPS, black or white paint Punched net: Surface-treated steel plate net, black or white paint Speaker bracket: Aluminum die-cast, black or white paint Joint and wall bracket: Steel plate, t1.6, black or white paint		Enclosure: HIPS, black or white paint Punched net: Surface-treated steel plate net, black or white anti-rust paint Speaker bracket: Aluminum die-cast, black or white paint Joint and wall bracket: Steel plate, t1.6, black or white paint (ED coating)	
Dimensions (W x H x D)	135 x 498 x 128 mm			
Weight	3.5 kg			
Dust/Water Protection	-		IP65	

Model	TZ-606B	TZ-606W	TZ-606BWP	TZ-606WWP
Rated Input	60 W			
Rated Impedance	100 V line: 170 Ω (60 W), 330 Ω (30 W), 670 Ω (15 W), 1.3 kΩ (7.5 W) 70 V line: 170 Ω (30 W), 330 Ω (15 W), 670 Ω (7.5 W), 1.3 kΩ (3.8 W)			
Sensitivity (1W, 1m)	95 dB		94 dB	
Frequency Response	150 Hz – 16 kHz		150 Hz – 13 kHz	
Speaker Component	10 cm cone type x 6		10 cm cone type x 6, waterproof	
Finish	Enclosure: HIPS, black or white paint Punched net: Surface-treated steel plate net, black or white paint Speaker bracket: Aluminum die-cast, black or white paint Joint and wall bracket: Steel plate, t1.6, black or white paint		Enclosure: HIPS, black or white paint Punched net: Surface-treated steel plate net, black or white anti-rust paint Speaker bracket: Aluminum die-cast, black or white paint Joint and wall bracket: Steel plate, t1.6, black or white paint (ED coating)	
Dimensions (W x H x D)	135 x 746 x 128 mm			
Weight	5.5 kg			
Dust/Water Protection	-		IP65	

≫ Metal-case Column Speaker
TZ-105

≫ Metal-case Column Speaker
TZ-205

- Narrow sound dispersion along a vertical axis, wide sound dispersion along a horizontal axis
- Splashproof metal body meets IPX3 requirements

≫ Mount Bracket
YS-301

Model	TZ-105	TZ-205
Rated Input	10 W (max. 15 W)	20 W (max. 30 W)
Rated Impedance	100 V line: 1 kΩ (10 W), 2 kΩ (5 W)	100 V line: 500 Ω (20 W), 1 kΩ (10 W)
Sensitivity (1W, 1m)	90 dB	93 dB
Frequency Response	150 Hz – 10 kHz	
Speaker Component	12 cm cone type x 2	12 cm cone type x 4
Finish	Enclosure: Extruded aluminum, silver gray, full-glazed, baked paint Grille: Punched aluminum net, black, matte, baked paint Mounting bracket: Steel plate, silver gray, fully-glazed, baked paint	
Dimensions (W x H x D)	167 x 335 x 141 mm	167 x 580 x 141 mm
Weight	3.4 kg	5.1 kg
Water Resistance	IPX3 equivalent	

**Please refer to specification sheet for detailed information.

Column Speakers

>>> Universal Speaker
BS-1110W

>>> Universal Speaker
BS-1120W

- Column speakers with speakers arrayed in a vertical line
- Create unique sound spaces featuring a wide horizontal spread of sound that remains tightly focused in the vertical plane

Model	BS-1110W	BS-1120W
Rated Input (100V line)	10 W	20 W
Rated Impedance	100 V line: 1 kΩ (10 W), 2 kΩ (5 W) 70 V line: 500 Ω (10 W), 1 kΩ (5 W) 4 Ω (10 W)	100 V line: 500 Ω (20 W), 1 kΩ (10 W) 70 V line: 250 Ω (20 W), 500 Ω (10 W) 8 Ω (20 W)
Sensitivity (1W, 1m)	92 dB	95 dB
Frequency Response	150 Hz – 14k Hz	150 Hz – 14k Hz
Speaker Component	12 cm cone type x 2	12 cm cone type x 4 +balanced dome type x 1
Finish	Enclosure:Plywood vinyl coating, white/ Grille: ABS resin, white	
Dimensions (W x H x D)	180 x 360 x 100 mm	180 x 720 x 100 mm
Weight	2.9 kg	5.1 kg

F Series   Wide-dispersion Speakers

- Compact box speaker for music and voice paging distribution
- Octagonal horn design for smooth coverage
- Adjustable high frequency dispersion (F-2000 models)
- Extruded cabinet design improves low frequency performance
- Splashproof design in compliance with IPX4, available on models "BTWP/WTWP"
- Great variety of brackets available
- Paintable enclosure and front grille

F-1000BT/WT
F-1000BTWP/WTWP

- LF Driver: 4" cone woofer
- HF Driver: balanced dome tweeter
- Dispersion: 90°H x 90°V

F-1300BT/WT
F-1300BTWP/WTWP

- LF Driver: 5" cone woofer
- HF Driver: 1" dome tweeter
- Dispersion: 110°H x 100°V

F-2000BT/WT
F-2000BTWP/WTWP

- LF Driver: 8" cone woofer
- HF Driver: 1" hard-dome dome tweeter
- Dispersion (adjustable): 110°H x 100°V; 80°H x 80°V

Model	F-1000BT	F-1000WT	F-1000BTWP	F-1000WTWP	F-1300BT	F-1300WT	F-1300BTWP	F-1300WTWP	F-2000BT	F-2000WT	F-2000BTWP	F2000WTWP
Rated Input (100V line)	15 W				30 W				60 W			
Rated Impedance	8 Ω / 100 V line: 670 Ω, 2 kΩ, 3.3 kΩ, 10 kΩ 70 V line: 330 Ω, 670 Ω, 2 kΩ, 3.3 kΩ, 10 kΩ				8 Ω / 100 V line: 330 Ω, 1kΩ, 3.3 kΩ, 10 kΩ 70 V line: 170 Ω, 330 Ω, 1kΩ, 3.3 kΩ, 10 kΩ				8 Ω / 100 V line: 170 Ω, 330 Ω, 670 Ω, 3.3 kΩ 8 Ω / 100 V line: 83 Ω, 170 Ω, 330 Ω, 670 Ω, 3.3 kΩ			
Sensitivity (1W, 1m)	87 dB				90 dB				92 dB			
Frequency Response	85 Hz – 20 kHz				80 Hz – 20 kHz				65 Hz – 20 kHz			
Speaker Component	Low: 10 cm cone-type, High: Balanced dome tweeter				Low: 13 cm cone-type, High: 2.5cm dome tweeter				Low: 20 cm cone-type, High: 2.5cm dome tweeter			
Finish	Enclosure: HIPS resin, black or white/ Punched net: Surface-treated steel plate, black or white, paint				Enclosure: HIPS resin, black or white/ Punched net: Surface-treated steel plate, black or white, paint				Enclosure: HIPS resin, black or white/ Punched net: Surface-treated steel plate, black or white, paint			
Dimensions (W x H x D)	130 x 202 x 131 mm				162 x 250 x 161 mm				244 x 373 x 235 mm			
Weight	1.8 kg		2 kg		3.6 kg				7.4 kg			
Dust/Water Protection	—		IPX4		—		IPX4		—		IPX4	

F Series   Optional Brackets

>>> Cluster Bracket
HY-CL10B*

>>> Ceiling Mounting Bracket
HY-CM10B*

>>> Ceiling Mounting Bracket
HY-CM10W*

>>> Board Hanger Bracket
HY-BH10B*

>>> Cluster Bracket
HY-CL20B*

>>> Ceiling Mounting Bracket
HY-CM20B*

>>> Ceiling Mounting Bracket
HY-CM20W*

>>> Pole Mounting Bracket
SP-131

>>> Pole Mounting Bracket
YS-60B

*Indoor use only.

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F Series   Wide-dispersion Ceiling Speakers

- Expanded listening coverage area through extra-wide dispersion characteristics
- Minimal high frequency rolloff allows clear and well-balanced sound reproduction over a wide listening area
- 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)

F-2852C

- 2-way speaker for high power
- Applications e.g. for high ceilings (3 to 6 m) Diffusor for wide dispersion of high frequencies
- Metal back can

F-2322C

- Full range speaker for medium ceiling height (2 to 4 m)
- Metal back can

F-2352C

- 2-way speaker for medium ceiling height (2 to 4 m)
- Diffusor for wide dispersion of high frequencies
- Metal back can

F-122C

- Equalizing controlled type full range speaker for medium ceiling height (2 to 4 m)
- Cost effective if many speakers are installed
- Heat-resistant back can
- Optimized for use with optional digital processors
- Diffusor for wide dispersion of high frequencies

F-2352SC

- 2-way wide range speaker with diffusor for low power applications and medium ceiling height(2 to 4m)
- Easy installation
- Diffusor for wide dispersion of high frequencies
- For use in ceilings with minimal depth

F-1522SC

- Cost-effective compact full range speaker for medium ceiling height (2 to 4 m)
- Only 117 mm mounting depth
- Flat front panel

Model	F-2852C	F-2322C	F-2352C	F-122C	F-2352SC	F-1522SC
Rated Input (100V line)	60 W	30 W			6 W	
Rated Impedance	100 V line: 170 Ω, 330 Ω, 670 Ω, 3.3 kΩ 70 V line: 83Ω, 170 Ω, 330 Ω, 670 Ω, 3.3 kΩ 25 V line: 83Ω, 170 Ω, 330 Ω, 670 Ω, 3.3 kΩ 8Ω	100 V line: 330 Ω, 1 kΩ, 3.3 kΩ, 10 kΩ 70 V line: 170 Ω, 330 Ω, 1 kΩ, 3.3 kΩ, 10 kΩ 25 V line: 170 Ω, 330 Ω, 1 kΩ, 3.3 kΩ, 10 kΩ 8Ω			100 V line: 1.7 kΩ, 3.3 kΩ, 10 kΩ, 20 kΩ 70 V line: 830 Ω, 1.7 kΩ, 3.3 kΩ, 10 kΩ, 20 kΩ 25 V line: 830Ω, 1.7 kΩ, 3.3 kΩ, 10 kΩ, 20 kΩ 8Ω	100 V line: 1.7 kΩ, 3.3 Ω 70 V line: 830 Ω, 1.7 kΩ, 3.3 kΩ 25 V line: 830Ω, 1.7 kΩ, 3.3 kΩ 8Ω
Sensitivity (1W, 1m)	91 dB	90 dB			89 dB	88 dB
Frequency Response	80 Hz – 20 kHz	70 Hz – 20 kHz		40 Hz – 20 kHz	80 Hz – 20 kHz	65 Hz – 18 kHz
Mounting Hole Diameter	ø 250 mm	ø 200 mm				ø 135 mm
Speaker Component	Low: 16 cm cone-type, High: Dome-type	12 cm cone-type	Low: 12 cm cone-type, High: Balanced dome-type	12 cm cone-type	Low: 12 cm cone-type, High: Balanced dome-type	10 cm cone-type
Finish	Enclosure: Steel plate, plating/Baffle: Fire-resistant ABS resin, black/Rim: Fire-resistant ABS resin, white/Punched net: Steel plate, white, paint					Baffle: Fire-resistant ABS resin, black/Rim: Fire-resistant ABS resin, white/Punched net: Steel plate, white, paint/Dust proof bag: Artificial fiber, black
Dimensions (ø x D)	ø 280 x 227 mm	ø 230 x 200 mm	ø 230 x 229 mm		ø 230 x 154 mm	ø 155 x 117 mm
Weight	5.1 kg	3.7 kg			1.5 kg	1 kg

F Series   Optional Brackets

>>> Back Can
HY-BC1
Applicable Models:
F-2322C, F-2352C, F-2352SC

>>> Trim Ring
HY-TR1

>>> Tile Bar Bridge
HY-TB1

>>> Anchor Hanging Bracket
HY-AH1

>>> Reinforcement Ring
HY-RR1

>>> Reinforcement Ring
HY-RR2

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Coaxial Array Speakers

HS-120B
HS-120W

HS-1200BT
HS-1200WT

HS-150B
HS-150W

HS-1500BT
HS-1500WT

- For mobile or fixed installation e.g. in clubs banquet rooms or schools, etc
- Can be used as a floor monitor
- 2-way unit system equipped with a large diameter woofer (12"/15") and array tweeter
- Twin input terminal connectors (Speakon and screw terminals)
- Well-controlled sound coverage: 90°horizontal x 40°vertical
- A model with a built-in matching transformer, for use in high-impedance applications
- A wide variety of optional mounting bracket is available

Model	HS-120B/HS-120W	HS-1200BT/HS-1200WT	HS-150B/HS-150W	HS-1500BT/HS-1500WT
Rated Input	—	60 W (High impedance)	—	60 W (High impedance)
Power Handling Capacity	Continuous pink noise: 100 W, Continuous program: 300 W			
Rated Impedance	8 Ω	8 Ω/100 V line; 170 Ω, 330 Ω, 670 Ω/ 70 V line; 83 Ω, 170 Ω, 330 Ω, 670 Ω	8 Ω	8 Ω/100 V line; 170 Ω, 330 Ω, 670 Ω/ 70 V line; 83 Ω, 170 Ω, 330 Ω, 670 Ω
Sensitivity (1W, 1m)	97 dB		98 dB	
Frequency Response	80 Hz – 20 kHz	70 Hz– 20 kHz		60 Hz – 20 kHz
Speaker Component	Low: 30 cm cone-type, High: Balanced dome tweeter x 6		Low: 38 cm cone-type, High: Balanced dome tweeter x 6	
Finish	Enclosure: Polypropylene, black or white/Punched net: Surface-treated steel plate, black or white			
Dimensions (W x H x D)	361 x 448 x 320 mm		451 x 560 x 400 mm	
Weight	8.5 kg	10 kg	12 kg	14 kg

Optional Brackets

≫ For wall/ceiling
HY-1200HB

≫ For wall/ceiling
HY-1200HW

≫ For wall/ceiling
HY-1200VB

≫ For wall/ceiling
HY-1200VW

≫ For wall/ceiling
HY-1500HB

≫ For wall/ceiling
HY-1500HW

≫ For wall/ceiling
HY-1500VB

≫ For wall/ceiling
HY-1500VW

≫ For ceiling
HY-C0801*

≫ For ceiling
HY-C0801W*

≫ For wall
HY-W0801*

≫ For wall
HY-W0801W*

*in combination with HY-1200/HY-1500 series brackets

Optional Speaker Accessories

≫ Speaker Stand
ST-16A

≫ Speaker Stand
ST-34B

≫ Attenuator
AT-063AP
AT-303AP
AT-603AP

≫ Wall Mounting Back Box
YS-11A
For AT-063AP
   AT-303AP
   AT-603AP

≫ Impedance Meter
ZM-104A

≫ Attenuator
AT-4012*
AT-4030
AT-4060
AT-4120
AT-4200
* Back Box not included

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Compact Ceiling Subwoofer

⋙ Ceiling Subwoofer
FB-2862C

- Attractive exterior design to blend naturally to any architectual space
- Provide low frequency range and high-quality sound output
- Ideal for locations with high ceiling or places that requires true-to-live sounds.
- Rotating grille for quick and convenient installation

Model	FB-2862C
Enclosure	Bass reflex type
Rated Input	60 W (High Impedance)
Power Handling Capacity	Continous: 60 W (8 Ω) (IEC60268-5), Program: 120 W (8 Ω)
Impedance	100 V line: 170 Ω (60 W), 330 Ω (30 W), 670 Ω (15 W), 3.3 kΩ (3 W) 70 V line: 83 Ω (60 W), 170 Ω (30 W), 330 Ω (15 W), 670 Ω (7.5 W), 3.3 kΩ (1.5 W) 25 V line: 83 Ω (7.5 W), 170 Ω (3.7 W), 330 Ω (1.9 W), 670 Ω (0.9 W), 3.3 kΩ (0.2 W) 8 Ω (120 W)
Sound Pressure Level	87 dB (1W,1m) installation in ½ free sound field (Measured by installing the unit in the center of a ceiling or wall) 81 dB (1W,1m) installation in free sound field (Measured in anechoic chamber)
Frequency Response	60-250Hz (-10dB) Installation in ½ free sound field (Measured by installing the unit in the center of a ceiling or wall)
Speaker Component	Low frequency: 16 cm cone-type
Mounting Hole	ø 250 mm (Maximum ceiling thickness: 37mm)
Input Terminal	Removable locking connector with screw-down terminals (2 input terminals & 2 bridge terminals)
Usable Cable	Solid copper wire: ø 0.5 - ø 1.6 mm (equivalent to AWG No. 24-14) Stranded copper wire: 0.2 - 2.5 mm² (equivalent to AWG No. 24-14)
Finish	Enclosure: Steel plate, plating, Baffle: Fire-resistant ABS resin (UL-94 V-0), black, Rim: Fire-resistant ABS resin (UL-94- V-0), white (RAL9016), Punched net: Steel plate, white (RAL9016), paint
Dimensions (ø x D)	ø 280 x 198 mm
Weight	6.3 kg (including mounting accessory)
Accessory	Grille x 1, Ceiling reinforcement x 1, Safety wire x 1, Paper pattern x 1
Option	Anchor hanging bracket: HY-AH1, Tile Bar Bridge: HY-TB1

Compact Satellite Speaker System

⋙ Compact Satellite Speaker System
BS-301B

⋙ Compact Satellite Speaker System
BS-301W

- Consists of a set of 4 satellite speakers and a subwoofer, which are individually fitted with its own mounting brackets
- Compact and highly efficient in performance
- The mounting brackets fitted onto the satellite speakers can be for 1 speaker or 2 speakers installation

Model	BS-301B (Black) / BS-301W (White)
Power Handling Capacity	Continuous program: 160 W* x 2 channels/Continuous pink noise: 80 W* x 2 channels
Sensitivity	81 dB (1W, 1m)* x 2 channels
Frequency Response	40 Hz – 20 kHz* x 2 channels
Weight	13.9 kg (excluding mounting bracket)
Subwoofer	Speaker component: 16 cm cone-type x 2 channels / Finish: Front panel; ABS resin, Enclosure; Wood, Speaker bracket; steel plate
Dimensions (W x H x D)	210 x 390 x 563 mm / Weight: 11.5 kg (excluding mounting bracket)
Satellite Speaker	Speaker component: 8 cm cone-type / Finish: Enclosure, Front panel; HIPS resin, Speaker bracket; steel plate
Dimensions (W x H x D)	92 x 97.5 x 100 mm / Weight: 600 g (excluding mounting bracket)
Product Composition	Subwoofer x 1, Satellite speaker x 4
Accessory	Subwoofer mounting bracket (black or white) x 4, Rubber foot and fixing screw for subwoofer x 4, Subwoofer mounting screw × 1 set, Satellite speaker mounting bracket (black or white) × 6, Satellite speaker mounting screw and plain washer and spring washer x 1 set, Sticker for satellite speaker (black or white) × 8

* Overall characteristics measured in a set configuration of a subwoofer (L or R channel) and 2 satellite speakers

Subwoofer*	FB-601B	FB-601W
Sensitivity	85 dB (1W, 1m) (L ch or R Channel)	
Frequency Response	40 Hz – 190 Hz (-10dB below SPL) (L ch or R Channel)	
Speaker Component	16 cm 2-speaker	
Connection	Push-in Terminals (8 connected terminal poles)	
Finish	Speaker Cabinet: Particle board with vinyl, black, Front Cover: ABS Resin (black) Speaker Bracket: Steel plate, black paint	Speaker Cabinet: Particle board with vinyl, white, Front Cover: ABS Resin (white) Speaker Bracket: Steel plate, white paint
Dimensions / Weight	210 (W) x 390 (H) x 563 (D) mm / 11.5 kg (without bracket)	
Accessory	Rubber foot x 4, Speaker mounting bracket x 4, Taping Screws (3x14) x 4	

* Subwoofer can be purchased separately

Satellite Speaker*	BS-S20B	BS-S20W
Sensitivity	85 dB (Pink noise 330~3.3 kHz, 1W, 1m)	
Frequency Response	150 Hz – 20 kHz (-20 dB below SPL)	
Speaker Component	8 cm cone-type	
Connection	Push-in Terminals (2 connected terminal poles)	
Finish	Speaker Cabinet and Front Cover: HIPS (Black) Speaker Bracket: Steel plate, black paint	Speaker Cabinet and Front Cover: HIPS (White) Speaker Bracket: Steel plate, white paint
Dimensions / Weight	92 (W) x 97.5 (H) x 100 (D) mm / 600 g (without bracket)	
Accessory	Speaker Bracket x 1, Hexagonal bolts M5 x 12 (with ring and spring ring) x 2	

* Satellite speaker can be purchased separately in a set of 2 satellite speakers

**Please refer to specification sheet for detailed information.

Conference System

TS-D1000 Series Digital Conference System
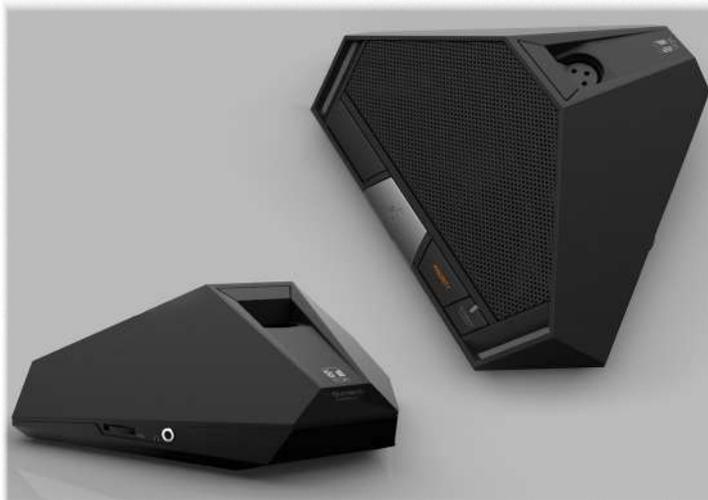
Key features:
- Visual Noise-less design making it's presence felt only through the voice of the user
- Connectable up to 246 Chairman/Delegate units
- Operation-less meetings can be conducted, thanks for the Voice Activation feature
- Recording function available, using internal memory (1 GB) or USB memory up to 32GB
- New microphone unit and built-in speaker ensuring exceptional sound quality
- Built-in 7-point automatic feedback suppresser.
- Easy connection with CAT5e STP cable, auto ID assignment
- Remote protocol control function is available for 3rd party control.
- TOA free software is provided for control of external IP camera and activation of microphones.

⟫ Master Unit
TS-D1000-MU

Model	TS-D1000-MU
Power Source	100 - 240 V AC, 50/60 Hz (use of the supplied AC adapter)
Power Consumption	60 W or less
Audio Transmission System	Time division multiplexing (TDM), 10 channels, 16-bit PCM, 32 kHz sampling frequency
MIC Input	-54 dBV, 600 Ω, unbalance, ø 6.3 mm phone jack (2P)
Frequency Response	100 Hz - 13 kHz
Total Harmonic Distortion	0.5 % or less
Signal to Noise Ratio	80 dB or more (A-weighted)
Output	LINE: -10 dBV, 10 kΩ, unbalanced, ø 6.3 mm phone jack (2P) REC: -10 dBV, 10 kΩ, unbalanced, RCA pin jack, monaural HEADPHONES: ø 3.5 mm mini jack, monaural
EQ Insert Input/Output Terminal	-10 dBV, 10 kΩ, unbalanced, RCA pin jack
Video Conference System Input/Output Terminal	-10 dBV, 10 kΩ, unbalanced, RCA pin jack
No. of Connectable units	32 units (Chairman / Delegate Units)
No. of Connectable Sub Control Units	5 units
Max. Cable Distance	50 m (between Master Control Unit and terminal Chairman/Delegate unit at end of daisy chain)*[1] 1 m (between Master Control Unit and Sub Control Units) (Use the cable supplied with the Sub Control Unit)
Max. No. of Open Microphones	2 Chairman units, 8 Delegate units
Chairman/Delegate Unit Terminal	RJ45 connector x 2
Sub Control Units Terminal	RJ45 connector
LED Indicator	Power indicator, Conference mode indicator, No. of open microphone indicators, Microphone auto off indicator, Monitor speaker of conference units volume indicators, Connection test indicator, External control indicator, Setting lock indicator, Recording status indicator, USB Access status indicator, USB memory status indicator, Internal memory status indicator, Remaining USB memory capacity warning indicator, Remaining internal memory capacity warning indicator, LINK/ACT indicator, 10BASE-T/100BASE-TX indicator
Function Key	Conference mode selector key: Standard/Override/Voice Activation/Chairman Only Number of opne microphones selector key: 1 / 2 / 8 Microphone auto off setting key: ON / OFF Monitor speaker of conference units volume setting key: - / + Setting lock key: ON / OFF Headphone volume setting key: - / +
Operation Key	Connection test, Rec start, Rec stop
Record Ports	USB-A
Record Function	Recordings can be made to a USB memory device*[2] or the internal memory. Recording format: MP3 (MPEG-1 Audio Layer-3), monaural Sampling Frequency: 32 kHz, Bit rate: 128 kbps
Network I/F	10BASE-T/100BASE-TX (Automatic-negotiation)
Network Protocol	TCP. HTTP, DHCP, ARP (APIPA), UDP (mDNS)
Network Connector	RJ45 connector
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint
Weight	2.2 kg
Accessory	AC Adapter (Cord Length: 1.8 m) DC Cord, and 2 m detachable AC Cord x 1
Option	Rack Mounting Bracket: MB-TS920

(*1) Cable length can be extended to a maximum of 100 m with the use of the Extension Unit, TS-D1000-EX.
(*2) A USB 2.0 compatible FAT32-formatted flash memory device of up to 32 GB in capacity can be used.
There may be cases in which a USB flash drive cannot be used with the TS-D1000-MU, depending on the drive's attributes or recording conditions.

**Please refer to specification sheet for detailed information.

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⫸ Chairman Unit
TS-D1000-CU

⫸ Delegate Unit
TS-D1000-DU

Model	TS-D1000-CU	TS-D1000-DU
Power Source	24 V DC (supplied from TS-D1000-MU Master Control Unit (optional), TS-D1000-SU Sub Control Unit (optional), TS-D1000-EX Extension Unit (optional))	
Power Consumption	1.5 W or less	
Signal to Noise Ratio	65 dB or more (A-weighted)	
Input	Microphone terminal: XLR-3-31 type	
Output	Monitor Speaker: 8 Ω, 0.4 W Earphone: ø 3.5 mm mini jack (3P: monaural) x 2	
Speaker Output	75 dB SPL	
Connecting Terminal	RJ45 connector x 2	
LED Indicator	Power indicator, Speech indicator	
Function	Speech, Priority Speech, Earphone Volume Control (x2)	Speech, Earphone Volume Control (x2)
Finish	Case: ABS resin, black, matte finish, paint Speaker Net: Steel plate, black, matte finish, paint	
Dimensions (W x H x D)	208.9 x 71.3 x 160.5 mm	
Weight	880 g	875 g
Option	Microphone: TS-D1000-M1 (Standard), TS-D1000-M2 (Long)	

⫸ Standard Microphone Unit
TS-D1000-M1

⫸ Long Microphone Unit
TS-D1000-M2

Model	TS-D1000-M1	TS-D1000-M2
Type	Electret Condenser Microphone	
Directivity	Unidirectional	
Rated Impedance	1.4 kΩ	
Rated Sensitivity	-37 dB (1 kHz 0 dB = 1V/Pa)	
LED Indicator	Speech Indicator (ring type) Red	
Frequency Response	100 Hz - 13 kHz	
Output Connector	Combined type of XLR-3-12C	
Finish	Gooseneck: Stainless steel, black / Other: ABS resin, black	
Length	518 mm	668 mm
Weight	110 g	125 g
Applicable Models	Chairman unit: TS-D1000-CU. Delegate Unit: TS-D1000-DU	

TS-D1000 Series Optional Accessories

⫸ Sub Control Unit
TS-D1000-SU

Model	TS-D1000-SU
Power Source	100 - 240 V AC, 50 / 60 Hz (use of the supplied AC adapter)
Power Consumption	80 W or less
No. of Connectable Units	48 units (Chairman / Delegate Units)
Chairman/Delegate Units Terminal	RJ45 connector x 3
Master/Sub Control Units Terminal	RJ45 connector x 2
Max. Cable Distance	50 m (between Sub Control Unit and terminal Chairman/Delegate Unit at end of daisy chain) *[1]
LED Indicator	Power indicator
Finish	Panel: Aluminum, black, 30% gloss, paint Case: Surface-treated Steel plate, black, 30% gloss, paint
Dimensions (W x H x D)	210 × 45.8 × 294.8 mm
Weight	1.6 kg
Accessory	AC adapter (Cord length: 1.8m) DC Cord and 2 m detachable AC Cord x 1, Connection cable (CAT5e STP, 1 m) x 1
Option	Rack mounting bracket: MB-15B-BK (to mount one unit) MB-15B-J (to mount two units)

(*1) Cable length can be extended to a maximum of 100 m with the use of the Extension Unit, TS-D1000-EX.

⫸ Extension Unit
TS-D1000-EX

Model	TS-D1000-EX
Power Source	100 - 240 V AC, 50 / 60 Hz (use of the supplied AC adapter)
Power Consumption	25 W or less
Connecting Terminal	RJ45 connector x 2
LED Indicator	Power indicator
Finish	ABS resin, white (RAL 9003 equivalent)
Dimensions (W x H x D)	124.3 × 100.3 × 35 mm
Weight	150 g
Accessory	AC adapter (Cord length: 1.8m) DC Cord and 2 m detachable AC Cord x 1

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TS-920/820 Series – Easy Cable-Free Installation

≫ Central Units

TS-920RC
TS-820RC
TS-820

Model	TS-920RC	TS-820RC	TS-820
Input	MIC 1 (Base language) & MIC 2 (Translation language): -60 dB (*2), 600 Ω, unbalanced, ø6.3 mm phone jack (2P) AUX 1 (Base language), AUX 2 (Translation language) & AUX 3 (Base and Translation Language): -20 dB (*2), 10 kΩ, unbalanced, ø 6.3 mm phone jack (2P)	MIC: -60 dB (*2), 600 Ω, unbalanced, ø 6.3 mm phone jack (2P) AUX: -20 dB (*2), 10 kΩ, unbalanced, ø 6.3 mm phone jack (2P)	
Output	LINE: -10 dB (*2), 10 kΩ, unbalanced, ø 6.3 mm phone jack (2P) / REC: -10 dB (*2), 10 kΩ, unbalanced, RCA pin jack HEADPHONES: ø 3.5 mm mini jack (3P; monaural)		
Equalizer Input/Output	Input: -20 dB (*2), 10 kΩ, unbalanced, RCA pin jack / Output: -20 dB (*2), 10 kΩ, unbalanced, RCA pin jack		
No. of Connectable units	192 units (Chairman / Delegate Units)	64 units (Chairman / Delegate Units)	
No. of Connectable Infrared Transmitter / Receiver Units	Up to 4 units (with the use of distributor, up to 16 units connectable when they are all TS-905 and up to 12 units when they are all TS-907 or TS-905 & TS-907 are used in combination)		
External Control Terminal	D-sub connector (9P, male) / USB-B selectable		
LED Indicator	Audio signal receiving 1-4CH, Data signal receiving, External control priority, External control communication, Battery (flashes when unit's battery nears complete discharge), Short-circuit		
	Voting result indicators 1-3 (7-segment LED, 3 digits), Recording status, Format in-progress, Access, Internal memory status, USB memory status, Remaining internal memory capacity warning, Remaining USB memory capacity warning	-	
Record Switch	Recording start button, Recording stop button, Format button	-	
Record Ports	USB-A (for USB memory devices) and USB mini-B (for PCs)	-	
Record Function	Recordings can be made to a USB memory device (*1) or the internal memory. Recording format: MP3 (MPEG-1 Audio Layer-3), monaural Sampling Frequency: 32 kHz, Bit rate: 128 kbps	-	
Function Switch	Number of open microphones setting switch: 1 / 2 / 3 / 4 Mic-off setting switch: TIME Out ON / OFF Speech priority selector switch: FIRST / LATEST / FIRST:FIXED NEXT:LATEST FBS switch: AUTO / OFF / TEXT		
Weight	2.8 kg	2.7 kg	

(*1) A USB 2.0 compatible FAT32-formatted flash memory device of up to 32 GB in capacity can be used.
 There may be cases in which a USB flash drive cannot be used with the TS-920RC, TS-820RC, depending on the drive's attributes or recording conditions.
(*2) 0 dB = 1 V

≫ Infrared Chairman Unit	≫ Infrared Delegate Unit	≫ Infrared Chairman Unit	≫ Infrared Delegate Unit
## TS-921	## TS-922	## TS-821	## TS-822

Model	TS-921	TS-922	TS-821	TS-822
Power Source	Supplied from optional lithium-ion battery or AC adapter)			
Input	Microphone Terminal XLR-4-31 type			
Output	Monitor speaker: 8 Ω, 0.2 W / Headphone: ø 3.5 mm mini jack (3P: Monaural) x 2			
LED Indicator	Speech, Voting status 1-3, Power		Speech, Power indictor	
Function	Monitor volume control, Headphone volume control, Voting, Monitor selector switch (MAIN/SUB)		Monitor volume control, Headphone volume control	
	Priority speech	-	Prority speech	-
Battery Life	Approx. 10 hours			
Finish	Case: PC resin, black / Speaker Net: Steel plate, black, matte finish, paint			
Dimension (W x H x D)	205.7 x 70.3 x 164.2 mm			
Weight	525 g			

**Please refer to specification sheet for detailed information.

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Key features:

- No worries about radio interference, eavesdropping, or information leakage, thanks to wireless system's IR communication method.
- Suitable for either permanent or temporary installation.
- Failure in one terminal unit does not affect other units.
- System can be controlled by external equipment via RS-232C and USB port.
- Individual control of units possible by assigning unit addresses.
- Built-In audio recording on internal or external USB memory (TS-820RC/TS-920RC)
- Triple choice vote function for TS-920RC
- Bilingual conference capability.
- Built-In feedback suppressor for more efficient reduction of acoustic feedback.
- When speaker is on, chairman/delegate unit mic is turned off automatically to avoid feedback, and vice versa.

Other System Components

Microphone (470mm)
TS-923

Microphone (620mm)
TS-924

Microphone (368mm)
TS-903

Microphone (518mm)
TS-904

Infrared Transmitter/Receiver
TS-905

Infrared Transmitter/Receiver
TS-907

Rechargeable Lithium-Ion Battery
BP-920

Battery Charger
BC-920

AC Adapter
AD-0910

Distributor
YW-1022

Distributor
YW-1024

Rack Mount Bracket
MB-TS920

TS-920 Series System Configuration

Camera

Custom Software

Distributor
YW-1024 / YW-1022

Infrared Transmitter/Receiver
TS-905 or TS-907

Distributor
YW-1024 / YW-1022

Central Unit
TS-920RC

Microphone

Microphone

Microphone (standard) TS-923 /
Microphone (long) TS-924

Chairman Unit
TS-921

Delegate Unit
TS-922

Delegate Unit
TS-922

**Please refer to specification sheet for detailed information.

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TS-780 Series – Simple and Compact Wired Conference System

- Maximum 64 Chairman and Delegate Units are connectable to one Central Unit
- Expandable to maximum 192 units by connecting 2 additional Central Units
- The chariman unit's priority key activates a single-tone chime
- Number of simultaneously usable delegate units can be selected (0 - 4 units)
- Automatic Mic-Off function (OFF / 30s)
- Feedback Suppressor function (FBS): EXT, OFF, AUTO, MANUAL mode
- The Test Function feature enables easy checking of the connection status of all connected units

≫ Central Unit
TS-780

- Jack for microphone input, and AUX input
- Microphone, AUX, line (for conference unit's built-in speaker) and chime (on chairman's unit) volume controls
- Equalizer input
- Recording output

≫ Chairman Unit
TS-781

≫ Delegate Unit
TS-782

- To prevent feedback, the built-in speaker is turned off while the microphone is on
- Press-to-talk priority speech button activates chime and overrides delegate unit (TS-781 only)
- Headphone/recording output

≫ Standard Microphone
TS-773

≫ Long Microphone
TS-774

- TS-773: length 368 mm
- TS-774: length 518 mm

TS-690 Series – Plug and Play Wired Conference System

- Suitable for small-scale corporate boardroom and meeting room applications
- Connectable up to 24 unit of Chairman and delegate to one Central Unit (with the use of Booster Unit, TS-690BS, max. 30 units can be connected.)
- The chariman unit's priority key activates a single-tone chime
- Number of simultaneously usable delegate units can be selected (0 - 3 units)
- Automatic Mic-Off function (OFF / 30s)
- The Test Function feature enables easy checking of the connection status of all connected units

≫ Central Unit
TS-690

- Jack for microphone input, and AUX input
- Microphone, AUX, line (for conference unit's built-in speaker) and chime(on chairman's unit) volume controls
- Recording output

≫ Chairman Unit with Long Microphone
TS-691L

≫ Delegate Unit with Long Microphone
TS-692L

- To prevent feedback, the built-in speaker is turned off while the microphone is on
- Press-to-talk priority speech button activates chime and overrides delegate unit (TS-691L only)
- Headphone output and internal speaker volume adjustable
- Headphone / recording output

≫ Booster Unit
TS-690BS

Other System Components for TS-780 and TS-690 Series

≫ Extension Cord
YR-780-2M

≫ Extension Cord
YR-780-10M

≫ Rack Mount Bracket
MB-23B

**Please refer to specification sheet for detailed information.
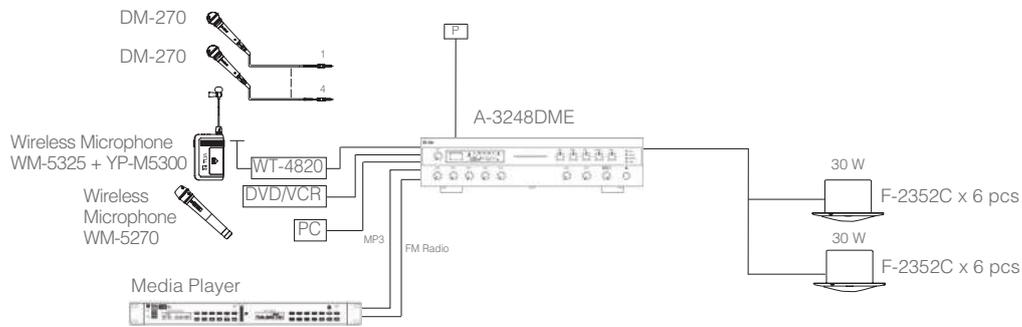
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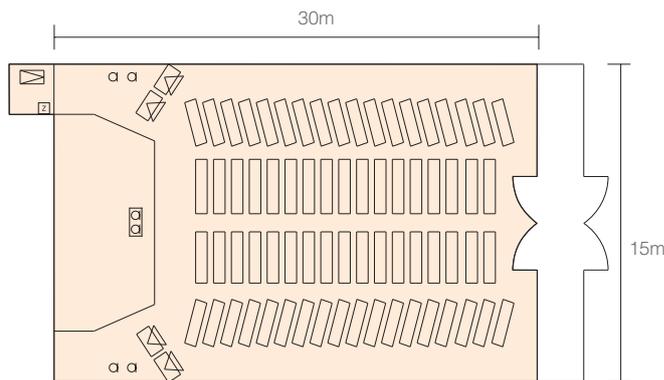11 Technical Column
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System Example for TS-820 Series

Camera

Custom Software

Microphone

Distributor
YW-1024 / YW-1022

Infrared Transmitter/Receiver
TS-905 or TS-907

Central Unit
TS-820RC

OR

Central Unit
TS-820

Microphone (standard) TS-923 /
Microphone (long) TS-924

Chairman Unit
TS-821

Delegate Unit
TS-822

Delegate Unit
TS-822
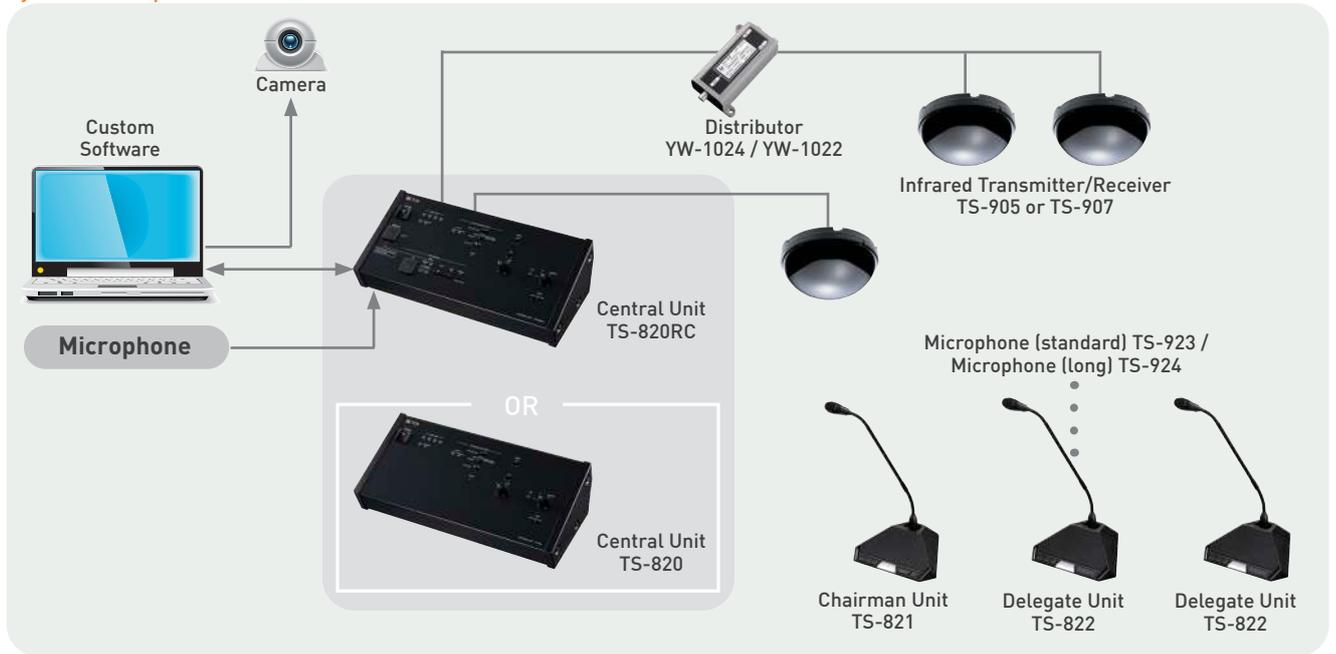
System Example for TS-780 Series

Central Unit
TS-780

Chairman Unit
TS-781

Delegate Unit(s)
TS-782

Central Unit
TS-780

Delegate Unit(s)
TS-782

Central Unit
TS-780

Delegate Unit(s)
TS-782
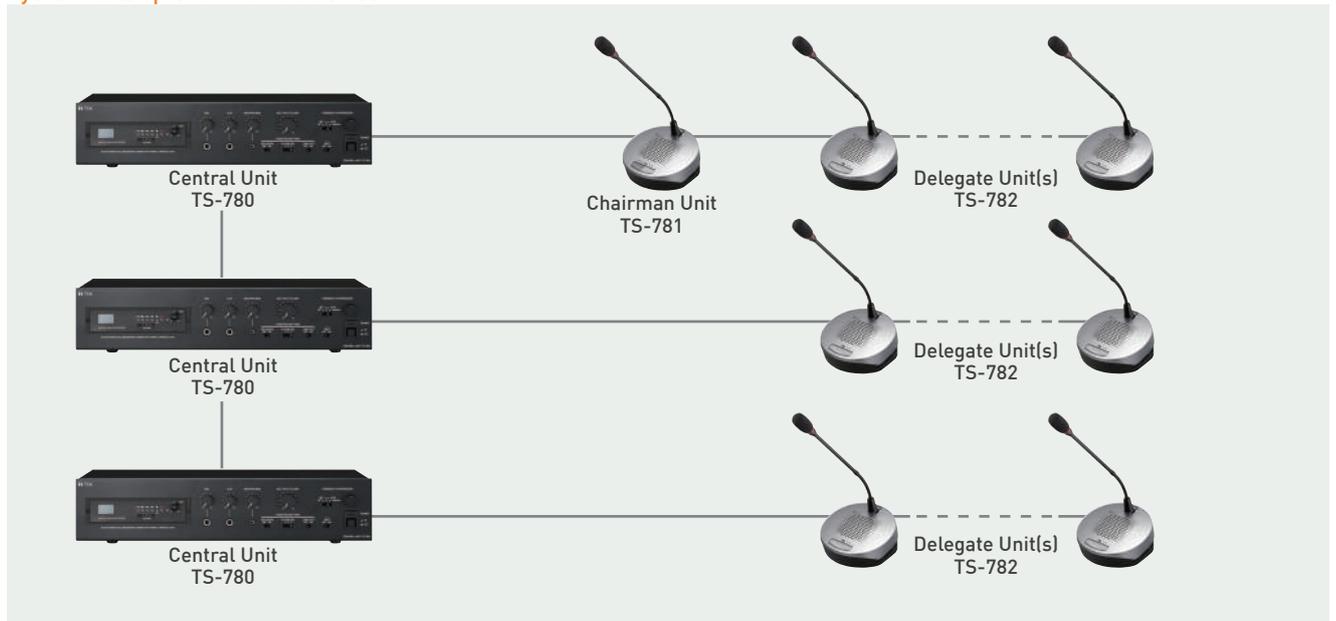
System Example for TS-690 Series

Central Unit
TS-690

Chairman Unit
TS-691L

Delegate Unit(s)
TS-692L

Booster Unit
TS-690BS

(Max. 30 units)

**Please refer to specification sheet for detailed information.
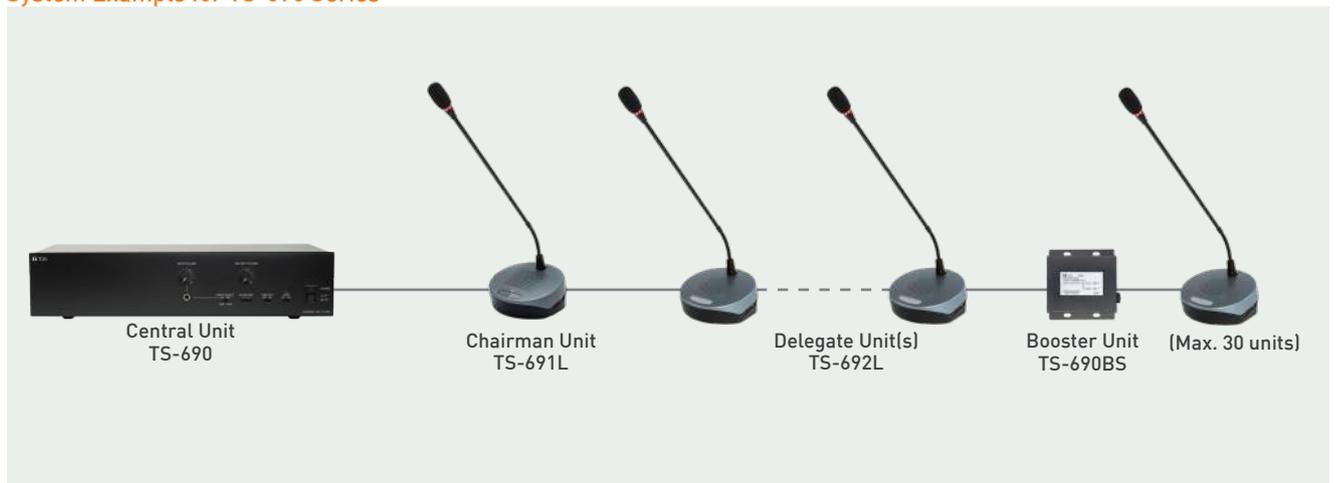
Megaphones

- Long-lasting battery life
- Compact and lightweight
- Neodymium magnets for high audio performance
- Extended audible range
- High durability ABS or ASA resin construction
- Wide frequency range for enhanced audio quality
- Polyimide speaker diaphragms
- Wireless Function (ER-2930W only)

Splashproof Hand Grip Type Megaphones

ER-1203
- 4 W max.
- IPX5*

ER-1206
- 10 W max.
- IPX5*

ER-1206W
- 10 W max.
- IPX5*
- with whistle

ER-1206S
- 10 W max.
- IPX5*
- with siren

⋙ Wall Mount Bracket
SP-1100
- Applicable models: ER-1203/ER-1206/ ER-1206S/ER-1206W

*Protected against water jets by a nozzle against the enclosure from any direction.

Hand Grip Type Megaphones

ER-520
ER-520W
- 10 W max.
- with whistle (ER-520W)

ER-520S
- 10 W max.
- with siren

ER-1215
- 23 W max.

ER-1215S
- 23 W max.
- with siren

ER-3215
- 23 W max.
- with shoulder strap & detachable microphone

ER-3215S
- 23 W max.
- with shoulder strap & detachable mic
- with siren

Shoulder Type Megaphones

ER-2215
- 23 W max.

ER-2215W
- 23 W max.
- with whistle

ER-2215S
- 23 W max.
- with siren

ER-2230W
- 45 W max.
- with whistle

ER-2930W
- 45 W max.
- with whistle and wireless function

⋙ UHF Wireless Tuner Unit
WTU-4800

⋙ Speaker Stand
ST-16A

Hands-Free Type Megaphones

⋙ Personal PA System

ER-1000A-BK
ER-1000A-WH
ER-1000A-YL

- Compact and lightweight
- Maximum output power of 6 W
- Can be worn round the waist
- Effective operation with 6 AA batteries
- Audible range up to 100 m

⋙ Compact Power Megaphone

ER-604W

- Compact and lightweight body
- Maximum output power of 10 W
- Supplied hand-held type microphone equipped with press-to-talk switch and volume control
- Built-in electronic whistle
- 2 mic inputs and 1 aux input
- Battery status indicator
- Approx. 10 hours of operation with 8 R6P manganese dioxide batteries (without use of whistle)

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Security & Safety

Integrated Voice Evacuation System

TOA's history with the development of emergency alert systems stretches back to 1969. Using our long standing experiences with Japan's exceptionally rigorous fire prevention laws as a basis, we were the forerunners in complying with the EN54* fire detection and fire alarm systems' standards that were enacted by the EU in April 2011 and also both American and Canadian standards UL 2572** and CAN/ULC-S576*** listings.

*EN 54... Standard of the European Union (EU) for fire alarm systems, ensuring high product quality and reliability, and enabling better integration of Voice Alarm (VA) and Public Address (PA)
**UL 2572...The American National Standard Institute and Underwriters Laboratories (ANSI/UL) 2572 standard for Mass Notification Systems
***CAN/ULC-S576 …Underwriters Laboratories of Canada. Standard for Mass Notification System Equipment and Accessories

VX-3000 Series   **FV-200 Series**   **VM-3000 Series**

IP Network Intercom System

Audio Intercom System

N-8000 Series

TOA's unique N-8000 IP Intercom System is an integrated audio communication system that employs IP network to achieve fast, accurate communications with optimal security and reliability.

NOTE: Further information of the above products is available on other brochures or on our website. https://toa.com.sg
Please contact our sales departments or the nearest distributor to find out more.

Technical Column

System Application 1

SUPERMARKET SYSTEM (SINGLE ZONE)

43m

Office

Stock Room

Cashier

Cashier

Deposit Counter

7 m

7 m   7 m   7 m

20m

∅	AT-4012
⊓	EC-380
△	PC-658R
⊳	A-3212DM

- Background music distribution
  (Speakers are spaced as short as 7m apart)
- Announcement / paging from the office
- Volume control for the office

EC-380

A-3212DM

AT-4012 x 1pc

3 W   3 W
BS-633A
Box Speaker x 2 pcs

6 W   6 W
PC-658R
Ceiling Speaker x 18 pcs

6 W
PC-658R
Ceiling Speaker x 1 pc   (Office)

System Application 2

SUPERMARKET SYSTEM (5 ZONES)

43m

Office

Stock Room

Cashier

Cashier

Deposit Counter

7 m

7 m   7 m

20m

∅	AT-4012
⊓	EC-380
△	PC-668R
⊳	A-3248DMZ
⊲	CS-154

- Background music distribution
  (Speakers are spaced as short as 7m apart)
- Announcement / paging from the office
- Volume control for the office/stock room
- BGM is always available to shopping area and outside supermarket
- Announcement can be broadcasted to shopping area when speaker selector switch is selected

EC-380
At Deposit Counter

EC-380
In the Office

A-3248DMZ

Zone 1
Zone 2
Zone 3
Zone 4
Zone 5

AT-4012 x 1pc

15 W
CS-154 x 4 pcs (Outside)

15 W   15 W
PC-668R
Ceiling Speaker x 16 pcs (Shopping Area)

15 W   15 W
PC-668R
Ceiling Speaker x 2 pcs (Cashier Area)

6 W
Ceiling Speaker x 1 pc
(Office)

6 W
Ceiling Speaker x 2 pc
(Store Room)

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System Application 3

MOSQUE (SYSTEM A)

18m

10m

ɑ	Dynamic Mircophone
	EM-361 / EM-370HS
	MX-6224D
RC	RC-03
	BS-1030
	TH-652 / TU-652M

MINARET
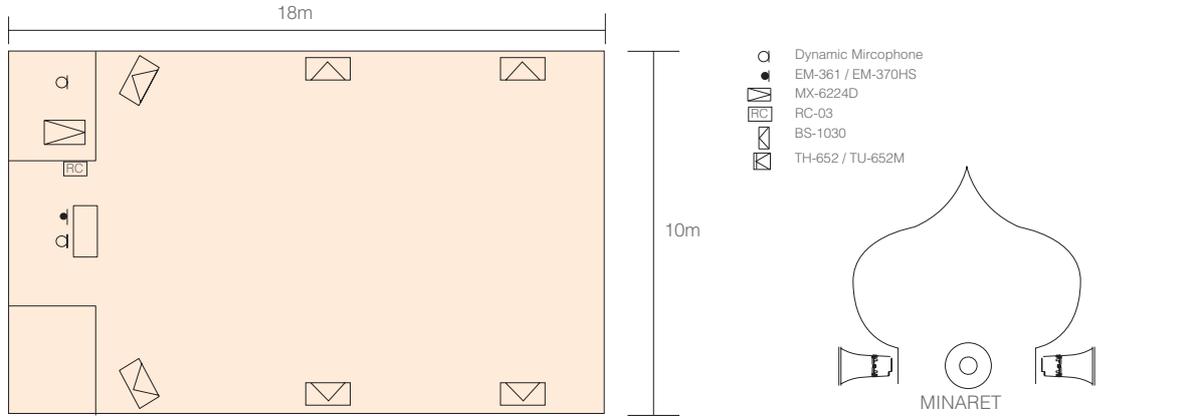
• Economic system that can meet the budget
• One amplifier with independent volume controls and DSP setting

RC-03

DM-270
DM-320
EM-361
EM-370HS

Media Player

MX-6224D

Room

BS-1030 x 6 pcs

Outside

MINARET
TH-652
TU-652M } x 4 pcs
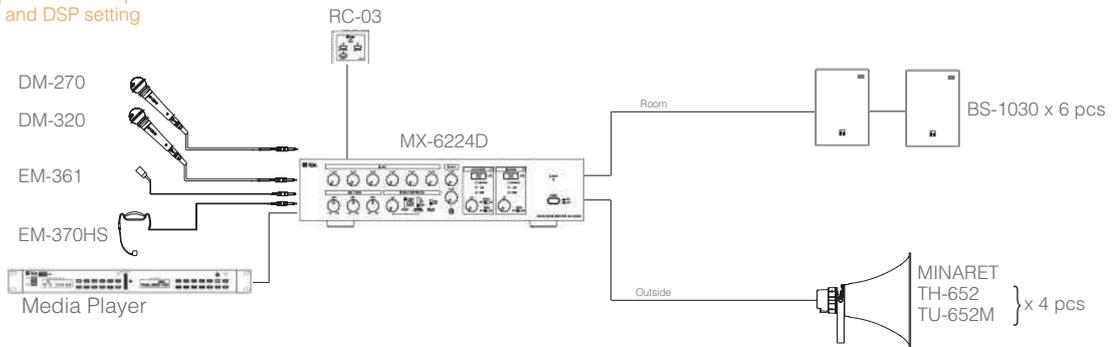
System Application 4

MOSQUE (SYSTEM B)

40m

30m

Right Corridor

Minaret

Court Yard

Left Corridor

ɑ	DM-520
	EM-361
	MX-6224D + WS-5300 + P-2240 + P-2240 + SS-1010
RC	RC-03
	BS-633A
	TZ-S60W
	CS-154
	TH-652 / TU-632M
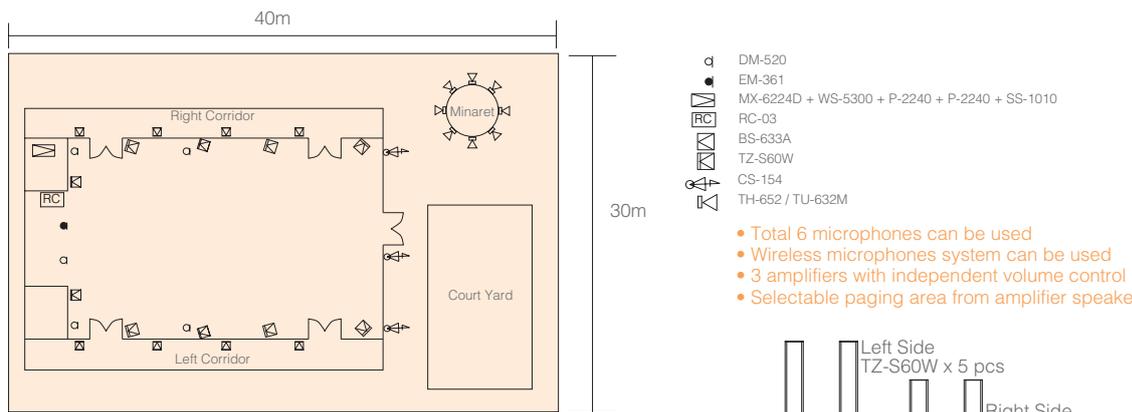
• Total 6 microphones can be used
• Wireless microphones system can be used
• 3 amplifiers with independent volume control
• Selectable paging area from amplifier speaker selector

Left Side
TZ-S60W x 5 pcs

Right Side
TZ-S60W x 5 pcs

DM-520 x 3 pcs

ZM-9011

A-9500D2

EM-361

EM-370HS

Corridor - Left
BS-663A x 4 (6W)

Corridor - Left
BS-663A x 4 (6W)

P-2240
AUX IN

MINARET
TH-652
TU-652M } x 4 pcs (30W)

P-2240
AUX IN

MINARET
TH-652
TU-652M } x 4 pcs (30W)

Wireless Microphone
WM-5325 + YP-M5300

Media Player

SS-1010
Zone 5
Zone 4
Zone 3
Zone 2
Zone 1

Court Yard
CS-154 x 3 (15W)

**Please refer to specification sheet for detailed information.
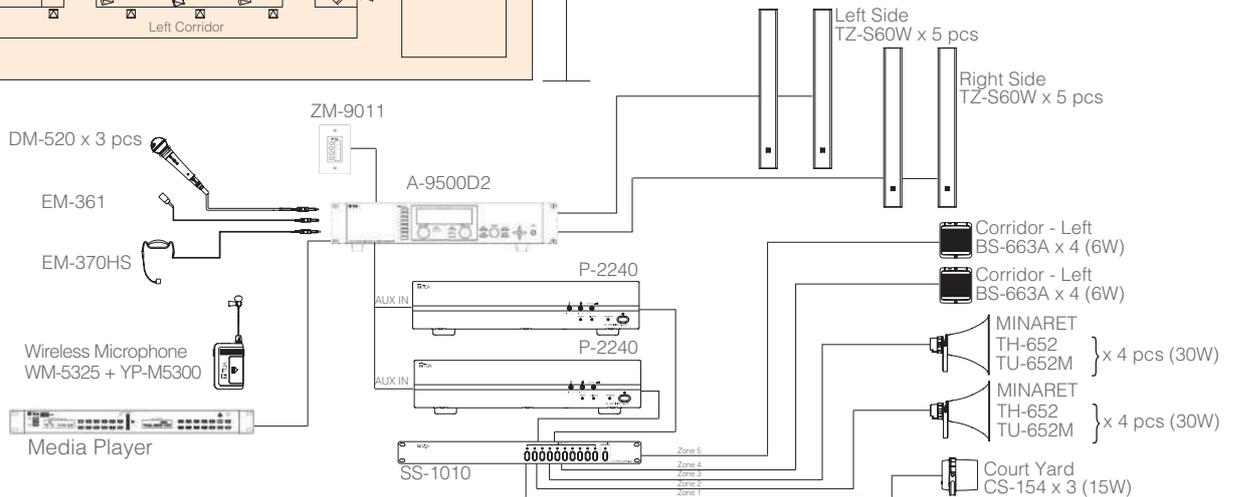
System Application 5

TRAINING / SEMINAR ROOM

20m
15m

ด	DM-270
◬	F-2352C
▷	A-3248DME
P	Power Control Panel
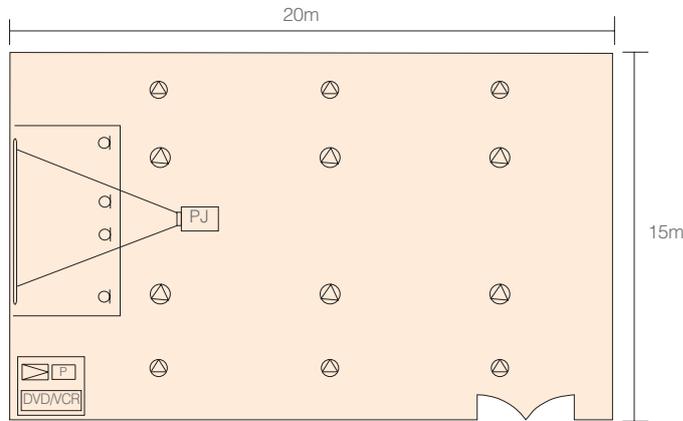
- Good Sound quality
  (Amplifier and speaker system)
- Wireless microphones makes speakers
  movement free
- Total 4 microphones can be used
- DVD/VCR and PC sound can be broadcasted

DM-270
DM-270
Wireless Microphone
WM-5325 + YP-M5300
Wireless
Microphone
WM-5270
Media Player

WT-4820
DVD/VCR
PC
MP3
FM Radio

A-3248DME

30 W F-2352C x 6 pcs
30 W F-2352C x 6 pcs

System Application 6

CHURCH

30m
15m

ด	DM-420 / EM-380
◁	SR-S4L and MT-S0601
▷	A-9500D2
z	ZM-9014

- DSP setting Digital Power Amplifier A-9500D2 and
  SR-S4L Slim Array Speaker
- High speech quality
- Wireless microphone makes priests' movement free

EM-380
DM-420
DM-420
Wireless Microphone
WM-5325 + YP-M5300
Media Player

WT-5810
MP3
FM Radio

ZM-9014
A-9500D2

SR-S4L and MT-S0601 x 4pcs
Zone 1
Zone 2

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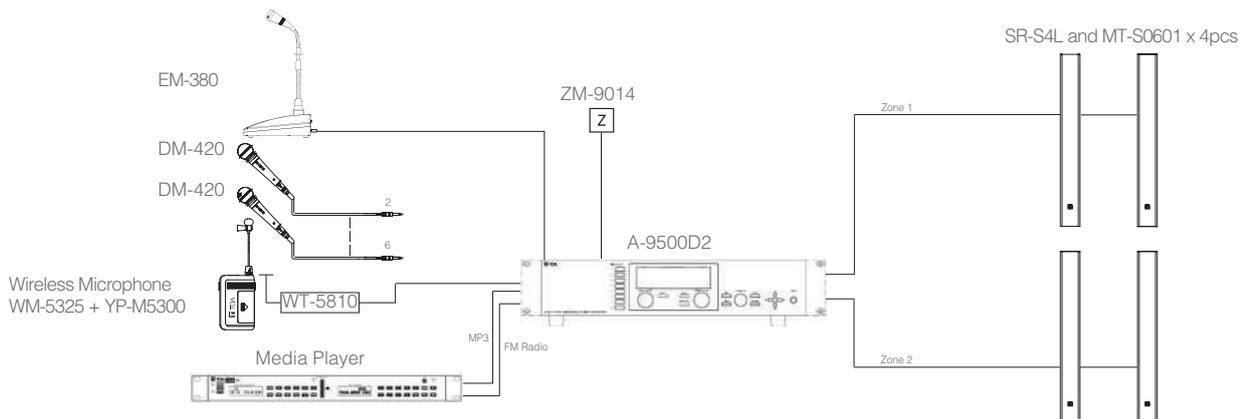
System Application 7

CAFE

20m

TV

15m
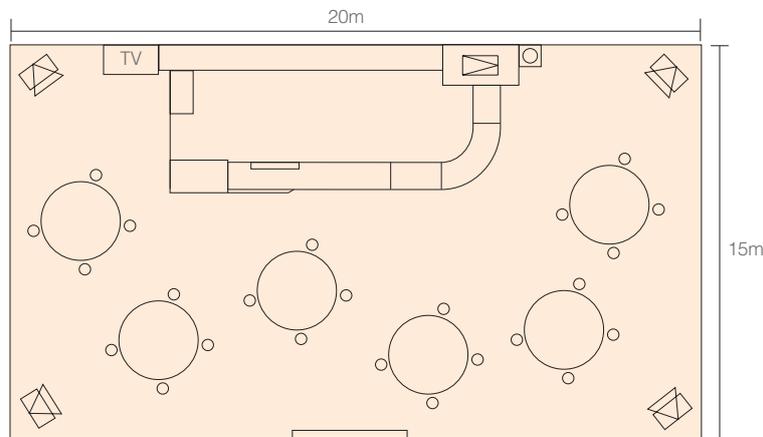
▷ A-5012
◁ BS-301 Satellite Speaker
◎ BS-301 Subwoofer

• Uniform background music distribution
• Speaker fit interior space design

TV Audio

A-5012

BS-301 Subwoofer

4Ω

CH 1

CH 2

BS-301 Satellite Speakers

Media Player

MP3

FM Radio
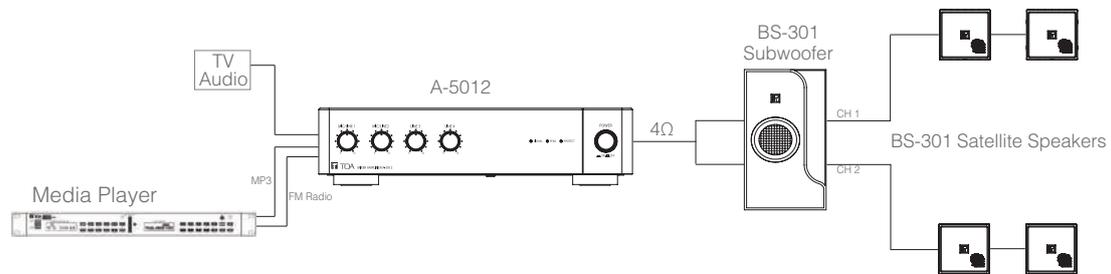
System Application 8

RETAIL SHOP

25m

Fitting Room

Men's Department

Fitting Room   Fitting Room

WP

Cashier

Ladies' Department

Store

20m
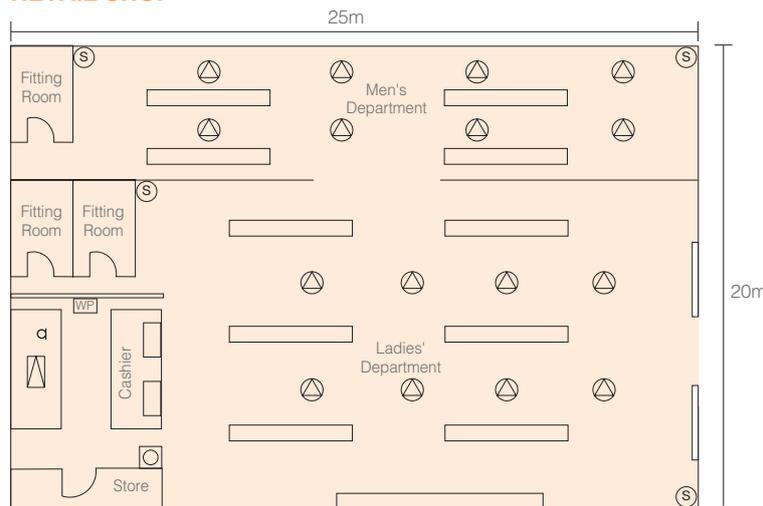
△ PC-2852
▷ MA-725F
Ⓢ FB-2682C
α EC-380
WP WP-700

• Economical system
• Announcement /paging can be made

Ceiling Speakers

WP

EC-380

MA-725F

Men's Department   15 W   15 W   PC-2852 x 8 pcs

Ladies' Department   15 W   15 W   PC-2852 x 8 pcs

Men's Department   FB-2682C x 2 pcs

Media Player

MP3   FM Radio

Ladies' Department   FB-2682C x 2 pcs

**Please refer to specification sheet for detailed information.
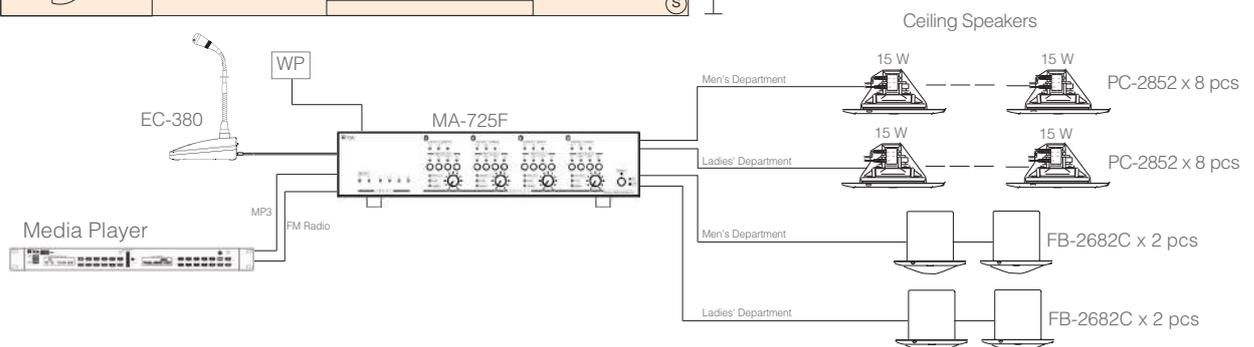
Microphone

Wiring of microphones

Output from a microphone is rather weak; therefore, it is important to use shielded cable for microphones to prevent line noise. The low impedance shielded cable intended for microphones are commercially available.The shielded cable is generally used to transmit the audio signals from microphones (-70dB/0.3mV) or source equipment (0dB/1V).

Balanced and unbalanced type
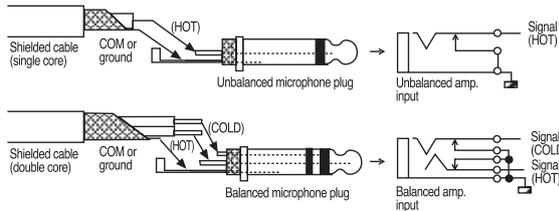
Balanced and unbalanced output

There are two kinds of output from a microphone: balanced and unbalanced. With balanced output, the audio signal appears between the hot (on·going audio signal) and cold (return audio signal), which are both independent of the ground. With unbalanced output, the audio signal appears between the hot and ground (connected to the cold). The connection between balanced output and balanced input (on the ampifier side) is virtually unaffected by external line noise, and it is used for wiring between long distances. Double·cored shielded cable is used for connecting

balanced output, and single-cored shielded cable is used for connecting unbalanced output.

(a) Balanced Connection

(b) Unbalanced Connection
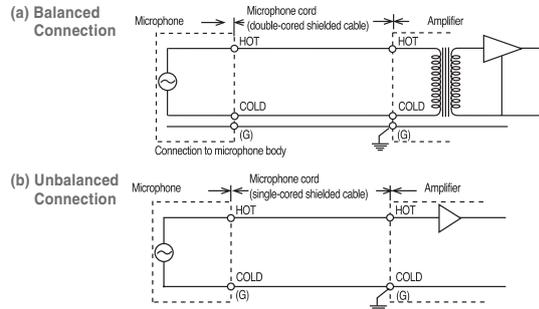
Distance of extension for microphone cords

The following table shows the maximum extension distance for microphone cords. when distance extends beyond the following figures, exessive noise will make the microphone impractical,and therefore it will be necessary to use a microphone mixer to boost the signal level to minimize the influence of noise.

Microphone output	Amplifier input	Microphone cord extension distance
Unbalanced	Unbalanced	20m
Balanced	Unbalanced	20m
Balanced	Balanced	80m

Speakers 1

Rough guide for noise levels and audio levels necessary for loudspeaker (for all types of speakers)

Noise levels are expressed in decibels (dB). Below are some typical examples..
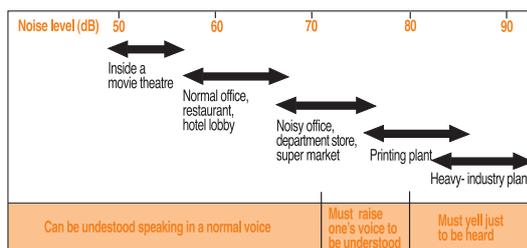
When transmitting voice or music through a speaker, it is necessary to transmit at a level that is higher than the ambient noise level. In the case of voice transmission, it should be transmitted at a level 5 to 10 dB higher than the noise level, background music 3 to 5 dB higher, and foreground music 15 to 20 dB higher.

Computation of intensity of sound

As an index to express the intensity of sound from a speaker, sound-pressure level (in dB) is generally used. The sound-pressure level rises as the electric input to the speaker increases, and falls as distance from the speaker increases. This relationship is shown by the following formula:

$$\text{SPL(dB)} = \boxed{\text{SPL(1W/1m)}} - \boxed{\begin{array}{c}\text{Attenuation of SPL}\\ \text{due to distance}\end{array}} + \boxed{\begin{array}{c}\text{Amount of increase of}\\ \text{SPL due to electric input}\end{array}}$$

The SPL(1W/1 m) indicates the sound pressure level at a point 1 meter away from a speaker when an electric input of 1 W is applied to that speaker. This is used to express comparative speaker efficiency, such as in a catalog.

Attenuation of SPL due to distance
(amount of attenuation = 20 log D   D: distance in meters from speaker)

Distance (m)	2	5	10	15	20	30	40	60	80	100
Amount of increase(dB)	6.0	14.0	20.0	23.5	26.0	29.5	32.0	35.6	38.1	40.0

Increase of SPL due to electric input
(amount of increase =10 log W   W: electric input)

Electric Input(W)	1	1.5	3	5	6	10	15	20	30	50
Amount of increase(dB)	0	2.6	4.8	7.0	7.8	10	11.8	13	14.8	17

■ Example of calculation:

The SPL(1w/1m) of the model SC-615M is shown as 112 dB. The sound-pressure level of this model at distance of 10 meters with an input of 10 W can be calculated as follows according to the above table:

SPL = 112 dB - 20 dB (10m) + 10 dB (10W) = 102 dB

Arrangement of speakers in a general office (Ceiling speakers)

Ceiling-mounted speakers are generally used, and their coverage angle is between 90 and 120 degrees. The smaller the distance between speakers, the better the sound quality and the more even the sound volume. The following table shows the area that can be covered by one speaker.

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Speakers 2

Arrangement of speakers

Distance between speaker

90 - 120°

Height of ceiling

Height of ears

1 m

Area of coverage of one speaker

Purpose	Height of ceiling	Distance between speakers	Area of coverage of one speaker
Background music	Less than 2.5m	5m	About 25m²
	2.5 - 4.5m	6m	About 36m²
	4.5 - 15m	9m	About 81m²
Announcement		9 to 12m	81 to 144m²

For general office use not to include background music, speakers should be arranged about 9 to 12 meters apart. Shown below is an example of speaker arrangement in a 30 m x 20 m office with ceiling height of 3 m, which indicates that this office requires about 6 speakers.

Example of arrangement

20 m

30 m
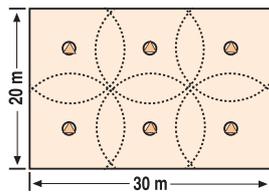
Office of 30 m x 20 m with 3 m ceiling without music

Number of speakers necessary: 6 to 8

Arrangement of speakers in a factory (Horn speakers)

Factories with high noise levels generally use horn speakers, which can produce high levels of sound. If you know where people are working in the factory, speakers are best arranged to cover such locations. If that is unknown, speakers should be arranged in accordance with the floor space.
Here is an example of a 40 m x 90 m room in factory with a noise level af 85 dB. In this factory, SC-615M speakers are installed; therefore, the sound pressure that can be obtained at a point 20 meters away with electric input of 15 W will be:
[112 dB (1W/1m) - 26.0 dB (20 m) + 11.8 dB (15 W)]=97.8 dB

This is a sufficient sound pressure level, 10 dB higher than the noise level. The speakers are installed 20 to 30 meters apart, and 6 speakers can generally cover the area. The sound pressure level near speakers is rather high, so it is necessary to install the speakers at a height of more than 4 meters.

SC-615M input rated 15W

97.8 dB

Noise level of 85 dB (neccesary sound-pressure level of 95 dB)

40 m

15 m   30 m   30 m   15 m

90 m
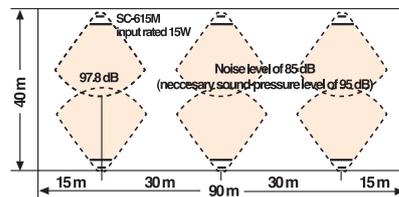
Speaker wiring

For speaker connections, use 600V vinyl (PVC) insulated wire of 1.2mm to 1.6mm in diameter (AWG17 to AWG 14)

Speakers 3

High-impedance connection and low-impedence connection

The PA amplifiers generally come with low-impedance speaker outputs (indicated as 4 Ω, 8 Ω, 16 Ω, etc) and high-impedance outputs (indicated as 70V, 100V, etc). Low-impedance output is used when a small number of speakers (1 to 4) is used and there is a short distance (10-some meters) between amplifiers and speakers. High-impedance output, is used with a large number of speakers and a longer distance of wiring. Speakers with transformers are used for high-impedance output. For a PA system, high impedance connection should be used if possible, in consideration of wrong speaker connections and transmission efiiciency.

■ **Example of low-impedance connection:**

It is necessary to design the total speaker input impedance to be larger than the amplifier output impedance. When the total speaker impedance is lower than the amplifier output impedance, unstable operation or amplifier malfunction may result. The wiring distance between amplifier and speaker should be less than 10-some meters. If the wiring distance is greater than this, the output power from the amplifier will be consumed as heat in the cables, and not be able to supply the speaker with sufficient power.

4Ω Output   4Ω

$$4\Omega \text{ Output} \quad \text{Total impedance of speakers } 4\Omega \quad 8\Omega \quad 8\Omega$$

$$4\Omega = \cfrac{1}{\cfrac{1}{8\Omega} + \cfrac{1}{8\Omega}}$$

$$8\Omega \text{ Output} \quad \text{Total impedance of speakers } 8\Omega \quad 8\Omega \quad 8\Omega \quad 8\Omega \quad 8\Omega$$

$$8\Omega = \cfrac{1}{\cfrac{1}{8\Omega + 8\Omega} + \cfrac{1}{8\Omega + 8\Omega}}$$
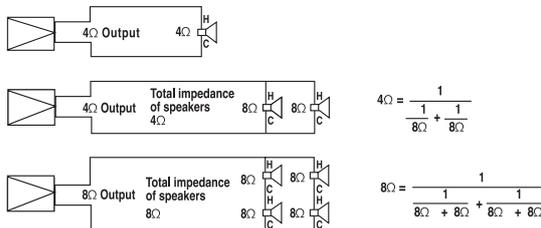
■ **Example of figh-impedance connection:**

In a PA system to cover a large area, the wiring distance will be greater, so high impedance connection is used predominantly. In high-impedance connection,all speakers (each with a transformer) will be connected in parallel. Avoid using these speakers together with those without transformers.

In high-impedance connection, as long as you have parallel connection. It will be sufficient to design the total speaker input to be lower than the amplifier output, and this will help eliminate complex impedance calculation.

100V Output   60W

10W   1kΩ   10W   1kΩ   10W   1kΩ
(10W/   (10W/   (10W/
100V line)   100V line)   100V line)
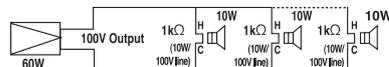
● Speaker input impedance (10W/100V line)

$$Z = \frac{100 \, (V)^2}{10 \, (W)} = 1k\Omega$$

● Amplifier output impedance

$$Z = \frac{100 \, (V)^2}{60 \, (W)} = 167 \, (\Omega)$$

● Total impedance of speakers

$$Z = \cfrac{1}{\cfrac{1}{1\,k(\Omega)} + \cfrac{1}{1\,k(\Omega)} + \cfrac{1}{1\,k(\Omega)} + \cfrac{1}{1\,k(\Omega)} + \cfrac{1}{1\,k(\Omega)} + \cfrac{1}{1\,k(\Omega)}} = 167 \, (\Omega)$$

Amplifier output 60W = total speaker input (60W)

Even when connecting speakers with different inputs, there will be no problem as long as the total wattage of the speakers does not exceed the amplifier output.

100V Output   120W

6W   1.7kΩ   6W   1.7kΩ   6W   1.7kΩ   30W   330Ω   30W   330Ω
(6W/   (6W/   (6W/   (30W/   (30W/
100V line)   100V line)   100V line)   100V line)   100V line)
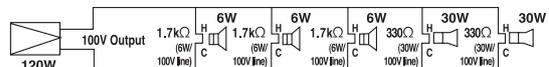
● Amplifier output impedance

$$Z = \frac{100 \, (V)^2}{120 \, (W)} = 83 \, (\Omega)$$

● Total impedance of speakers

$$Z = \cfrac{1}{\cfrac{1}{1.7\,k(\Omega)} + \cfrac{1}{1.7\,k(\Omega)} + \cfrac{1}{1.7\,k(\Omega)} + \cfrac{1}{330\,(\Omega)} + \cfrac{1}{330\,(\Omega)}} = 128 \, (\Omega)$$

Amplifier output 120W > total speaker input (78W)

Software for Acoustic Simulation: SPV
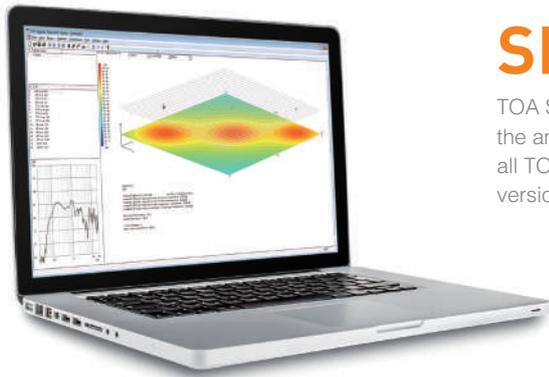
SPV (TOA Speaker Placement Viewer Software)

TOA Speaker Placement Viewer is the easy way to simulate the amount of speakers necessary in a room. In addition to all TOA Public Address and Pro Sound speakers, the latest version allows you to simulate the TOA Line Arrays as well.

TOA DATA LIBRARY

Download the latest version software and all speaker data here FOR FREE!
Go to http://www.toa-products.com/international/ and search "XZS_SPV". »»»

How to use

Step 1 Set the room parameter. »»» **Step 2** Select a speaker, drag and drop to the room. »»» **Step 3** The result is shown immediately.
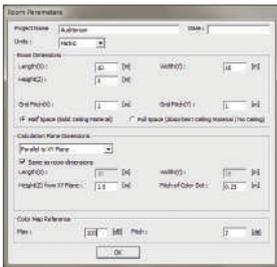
● Enter the size of the room.
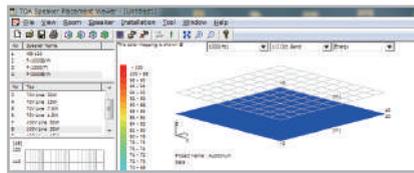
● Ceiling speakers are automatically placed by simply selecting your preferable placement from 6 layout patterns.
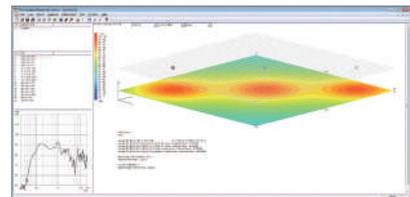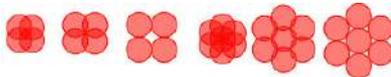
● You can check sound pressure level distribution by selected frequency and bandwidth.

● Frequency characteristics graphs of any random point can be viewed by placing the mouse cursor over the simulation graphics.
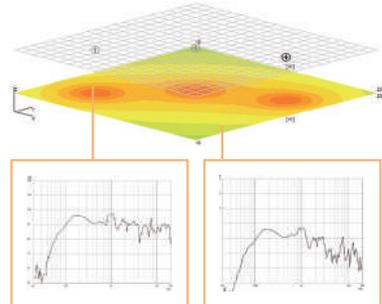
● Sound pressure level distribution from various faces
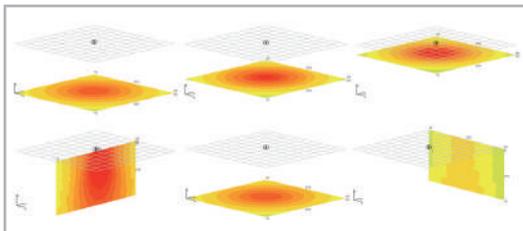
● The result of simulation can be printed out.
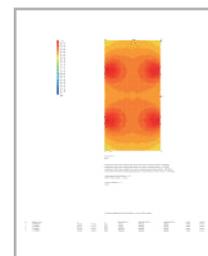
TOA is also supporter of EASE Software, which AMFG, a leading company in software for pro-audio industry, provides. Speaker simulation is also possible by using EASE ADDRESS.
Ease Address is available on http://address.afmg.eu/
To get TOA's speaker data in the GLL format, please go to
http://www.toaproducts.com/international/ and search "XZS_EASE"

»»»

**Please refer to specification sheet for detailed information.

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IP Grade Panel

This standard provides a system for classifying the degrees of protection provided by the enclosures of electrical equipment under the International Electrotechnical Commission (IEC) publication 529.

The type of protection covered by this system of classification is as follows.

a) Protection of persons against contact with or approach to live parts and against contact with moving parts inside the enclosure and protection of the equipment against ingress of solid foreign bodies.

b) Protection of the equipment inside the enclosure against harmful ingress of water.

1st Numeral: Protection against solid foreign objects			2nd Numeral: Protection against ingress of water		
0		Non-protected	0		Non-protected
1		Protected against solid foreign objects of 50mm ø and greater	1		Protected against vertically falling water drops
2		Protected against solid foreign objects of 12.5mm ø and greater	2		Protected against vertically falling water drops when enclosure tilted up to 15°
3		Protected against solid foreign objects of 2.5mm ø and greater	3		Protected against spraying water
4		Protected against solid foreign objects of 1.0mm ø and greater	4		Protected against splashing water
5		Dust-protected	5		Protected against water jets
6		Dust-light	6		Protected against powerful water jets
X		Non-tested	7		Protected against the effects of temporary immersion in water
			8		Protected against the effects of continuous immersion in water
			X		Non tested

ISO & European Standards

Certificate No. 21896

* TOA has been granted the "ISO 9001 (BS 575)" registration in the 9000 Series of Quality Assurance Standards by the International Organization for Standardization (ISO).

EN 54

EN 54 is a standard of the European Union (EU) for fire alarm systems, ensuring high product quality and reliability, and enabling better integration of Voice Alarm (VA) and Public Address (PA). EN 54 plays a significant role in the market for voice evacuation equipment, as the member states of the European Union replace their local standards with the EN 54 standard. All emergency voice evacuation systems marketed in the members states of the European Union are required to be certified to this standard.

EN 54-16 Fire detection and fire alarm systems: Components for fire alarm voice alarm systems. Voice alarm control and indicating equipment

EN 54-24 Fire detection and fire alarm systems: Voice alarms - Loudspeakers

EN 50121 4

EN 50121-4 is an European electromagnetic standards which applies to a signaling and telecommunication apparatus installed in railway environment.

EN 50121-4 specifies limits for emission and immunity and provides performance criteria for signalling and telecommunications apparatus which may interfere with other apparatus in the railway environment, or increase the total emissions for the railway environment beyond the limits defined in the appropriate standard and so risk causing electromagnetic interference to apparatus outside the railway system.

**Please refer to specification sheet for detailed information.

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* AS Models

TOA

Smiles for the Public

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