



AUDIO CATALOG

Asia Pacific

We supply sound, not equipment.



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



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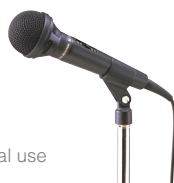
Microphones



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 (1k Hz 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 plated steel 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", W 3/8") | | Microphone holder (W 5/16") | |

»»» 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 caused 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

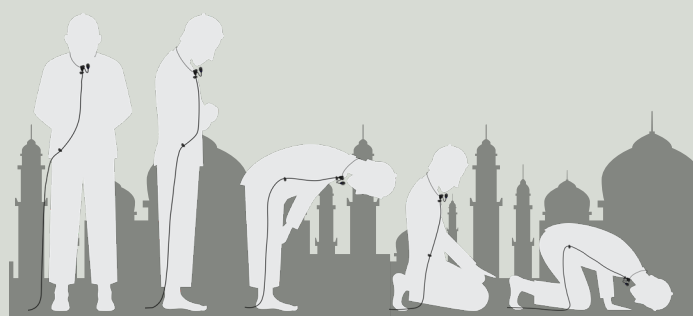
»»» Neck-worn Microphone EM-362

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 microphone.

- Microphone suspended in front of speaker's mouth for optimum speech pick up
- Flexible shaft 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 x 135 mm |
| Weight | 190 g (exclude batteries) |

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 x 28.6 mm (cord excluded) | ø 28 x 68 mm | 83 x 23 x 83 mm (cord excluded) |
| Weight | 140 g | 142 g | 100 g | 85 g | 290 g |
| Accessory | - | - | Windscreen x 1, Clip Holder x 1 | Rubber Isolation Ring x 2, M20 Nut x 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) x 532 (H) x 145 (L) mm | ø 12 x 420 mm |
| Weight | 550 g (exclude batteries) | 135 g |
| Accessory | Windscreen x 1, XLR to Phone Jack Cable (7.5m) x 1 | Windscreen x 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 x 532 x 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

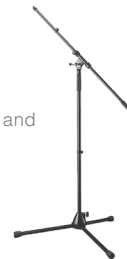
- Desk-top type
- Clip type microphone holder (U5/16" thread)
- Height adjustable from 225 to 340 mm



»» 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

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)

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.

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

| Microphones | | 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 dB SPL (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 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 | |
| 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

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 | Lambda / 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 x 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) x 44 (H) x 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) |



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 diversity (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 Selectable | 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 x 44 x 181 mm |
| Weight | 770 g (without receiver unit) |

*1 0dB = 1 V



TOA 5000 Series 16 Channel Wireless Solution

»» Wireless Portable Receiver

WT-5100



- 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 x 163.6 x 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.

Guided Tour Applications



»» 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 x 244 mm | ø 50 x 229 mm | ø 43.6 x 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



**Please refer to specification sheet for detailed information.

TOA Audio Catalog 11

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



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



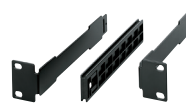
»»» Rack Mount Bracket MB-15B



»»» 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



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.

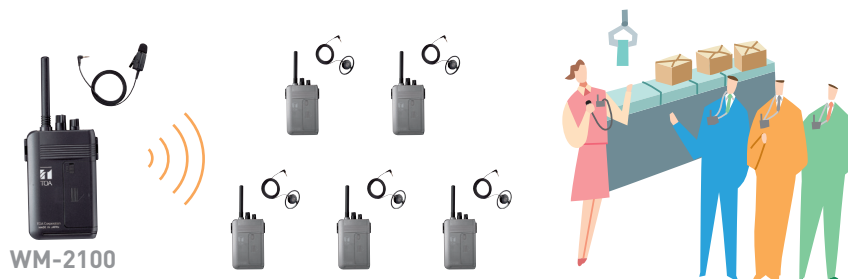
TOA Wireless Guide System

System Features

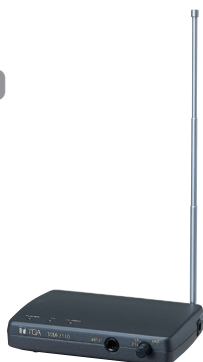
- Transmits and receives on five channels on the 470MHz frequency band
- The portable transmitter provides clear coverage over a 30-meter distance while the desk-top transmitter extends the distance to 70 meters
- Input sensitivity control with six settings on the desk-top transmitter and two-step mic 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-glance 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.



»» 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 x 31 x 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



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

Intercom System

Window Intercom System

NF-2 NF-2S



Compact & Lightweight

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



Receptions



Hospitalities



Retail Stores

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

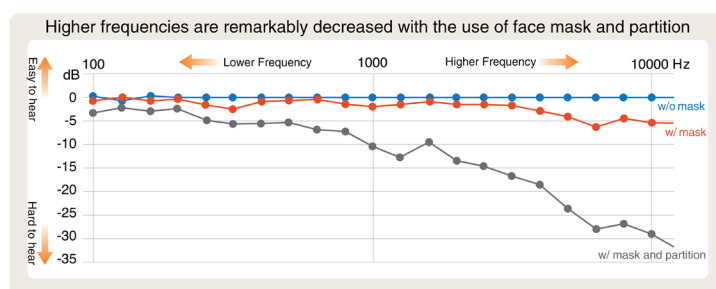


can be heard clearly



Sophisticated Audio Control

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



| 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) |
| Accessories | 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

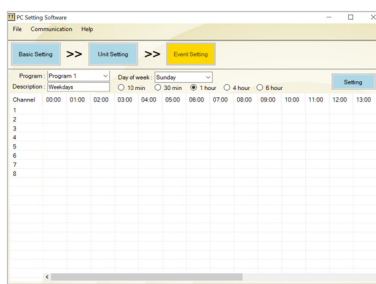


- 1U 19" rack type audio player
- Plays USB, SD/MMC card, FM Radio
- 3 stereo output terminals - Tuner Out, Priority Out and USB/SD out
- FM Radio with 30 preset stations and Sleep Timer

| | |
|---------------------------|---|
| 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

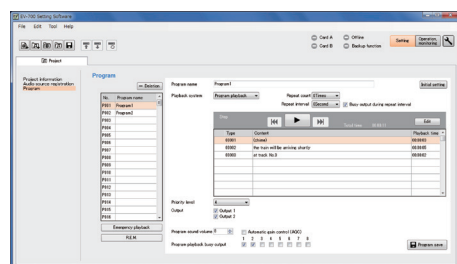
SS-2010 SS-1010 SS-1010R



- 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 background 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

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: $-55 \text{ dB}^{\ast 1}$ (microphone input volume control in maximum position), 600 Ω , unbalanced, ϕ 6.3 phone jack (2P) LINE(rear): $-20 \text{ dB}^{\ast 1}$ (line input volume control in maximum position), 10 k Ω , unbalanced, Removable terminal block (12 pins) LINE(front): $-29 \text{ dB}^{\ast 1}$ (line input volume control in maximum position), 10 k Ω , unbalanced, RCA pin jack |
| Audio Output | LINE 1, 2: 0 $\text{dB}^{\ast 1}$, 600 Ω , unbalanced, Removable terminal block (12 pins) / Headphones: 0 $\text{dB}^{\ast 1}$, 100 Ω , monaural, ϕ 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) |

$\ast 1$ 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

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

»» 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 Clippingguard enhance sound intelligibility
- Automatically eliminates unpleasant reverberation 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

For accessories and remote panels, see page 27



**Please refer to specification sheet for detailed information.

TOA Audio Catalog 19

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 x 100.9 x 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 |

»» 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: Speaker output in screw type terminal Direct Line (Selectable): 21 Ω (100 V) or 4 Ω Rec out: 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 x 100.9 x 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 |
| 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: Speaker output in screw type terminal Direct Line (Selectable): 42 Ω (100 V) or 4 Ω Rec out: 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 x 100.9 x 357 mm | |
| Weight | 4.9 kg | 5.0 kg |

»» Digital Booster Amplifier

P-3248D 480w



| | |
|-----------------------------|---|
| Model | P-3248D |
| 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 | Line In: 0 dB*, 10 kΩ, Balanced, Screw Terminal 100 V Line In: 40 dB*, 330 kΩ, Unbalanced, Screw Terminal |
| Output | Speaker out: Speaker output in screw type terminal Direct Line (Selectable): 21 Ω (100 V) or 4 Ω Loop out: 0 dB*, 10 kΩ, balanced, screw terminal |

| | |
|------------------------|---|
| Control | Remote power control, screw terminal Remote master volume bypass, screw terminal |
| S/N ratio | Over 70 dB |
| Tone Control | Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz |
| Ventilation | Fan Cooling |
| Finish | Panel: ABS resin, Black / Case: Steel Plate, Black |
| Dimensions (W x H x D) | 420 x 100.9 x 351.3 mm |
| Weight | 5.2 kg |

A-3500D Series Digital Mixer Amplifiers

Key Features

- TOA class D amplifiers for maximum efficiency
- 2 - channel Zone Selector
- 4 microphone inputs and 1 auxiliary 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) |
| Frequency Response | 200 mHz or less (when power switch is OFF) | | | |
| Distortion | 50 Hz – 20 kHz ±3 dB (1/8 rated output) | | | |
| Tone Control | 1 % or less at 1 kHz, rated power (20 kHz LPF (AUX-0025)) | | | |
| S/N Ratio | Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz 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, ø6.3 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 °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 x 96.1 x 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 | | | |

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) |
| Frequency Response | 200 mA or less (when power switch is OFF) 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). INPUT 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) Rec out: 0 dBV, 600 Ω, unbalanced, RCA pin jack Line out 1, 2: 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 x 96.1 x 313.1 mm | | | |
| Weight | 5.0 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 | | | |



A-5000 Series Digital Mixer Amplifiers

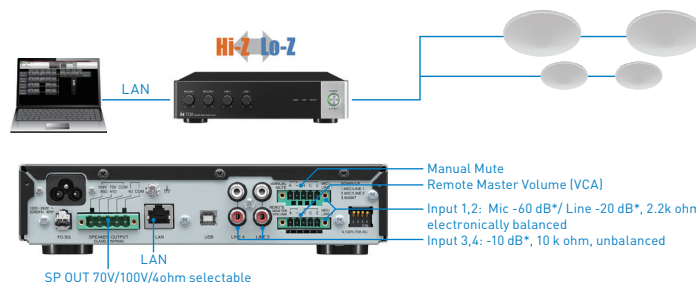
»» Digital Mixer Amplifier

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



| 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 k Ω , electronically-balanced, removable terminal block (5 pins) INPUT 3, 4: LINE -20 dB*, 10 k Ω , unbalanced, RCA pin jack | |
| Output | SPEAKER: 4 Ω , 70 V (83 Ω), 100 V (170 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 \pm 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: Surface-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 control for bass and treble adjustment on each input
- Output speaker with 100 V line and 4 Ω low impedance
- AC/DC compliant
- Current limiter 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 (\pm 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 k Ω , 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 k Ω 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: \pm 10 dB at 100 Hz; Treble: \pm 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 x 144 x 361 mm |
| Weight | 19.3 kg |

*0dB = 1V

**Please refer to specification sheet for detailed information.



»» 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 limiter 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 |
| Frequency Response | (AC operation at 1/8 maximum output without clip) 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: | Balanced (Floating) | Balanced (Floating) | Balanced (Floating) | Balanced (Floating) | Balanced (Floating) | Balanced (Floating) |
| High Impedance: | 330 Ω (100 V) | 170 Ω (100 V) | 83 Ω (100 V) | 42 Ω (100 V) | 83 Ω (100 V) | 42 Ω (100 V) |
| Rec out: | 0 dB*, 600 Ω, Unbalanced, RCA pin jack | 0 dB*, 600 Ω, Unbalanced, RCA pin jack | 0 dB*, 600 Ω, Unbalanced, RCA pin jack | 0 dB*, 600 Ω, Unbalanced, RCA pin jack | 0 dB*, 600 Ω, Unbalanced, RCA pin jack | 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 |



- 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

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

»» Power Amplifier

| | |
|---------------|-------------|
| P-2240 | 240w |
|---------------|-------------|



- 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)

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

| 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)



**Please refer to specification sheet for detailed information.

Digital Mixer Amplifier and Remote Controller

»» Digital Mixer Amplifier

MX-6224D 240W X2

(1CE/4CE version)



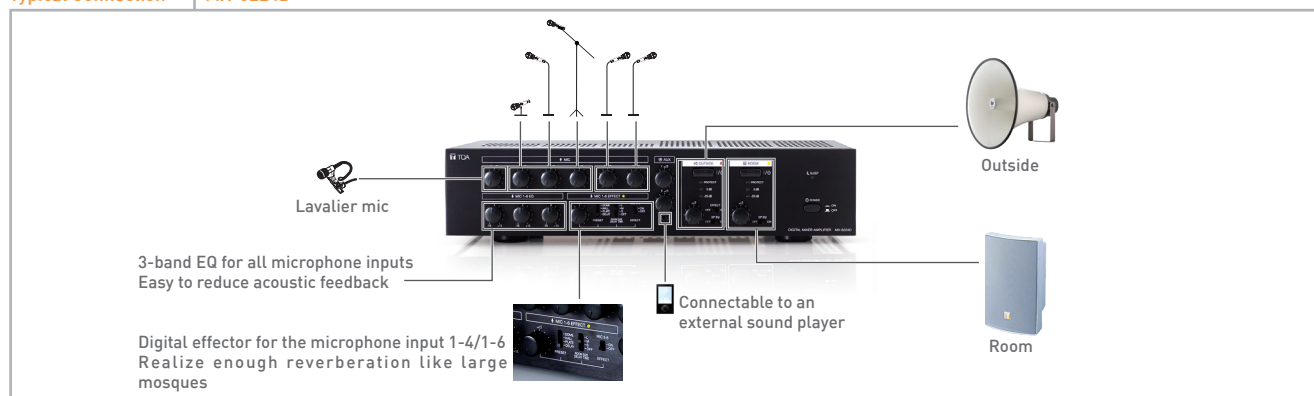
- Digital mixer amplifier designed specifically for mosques
- Incorporates DSP function and a two-channel class-D amplifier
- Superior Sound Quality - Built-in digital amp module + DSP module, designed with state-of-the-art TOA technology.
- Easy Operation - Simply designed, compactly installed.
- Standardized 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



| 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 | <p>MIC 1: -50 dB* (24 V phantom powered)/ -60 dB* (phantom power OFF) 600 Ω, electronically-balanced, ø 6.3 mm phone jack</p> <p>MIC 2 – 4: -66 dB*, 200 Ω, electronically-balanced, XLR-3-31 type and ø 6.3 mm phone jack (either one usable)</p> <p>MIC 5 – 6: -60 dB*, 600 Ω, electronically-balanced, XLR-3-31 type and ø 6.3 mm phone jack (either one usable)</p> <p>AUX 1: -10 dB*, 10 kΩ mixed monaural, unbalanced, RCA pin jacks (1 pair)</p> <p>AUX 2: -20 dB*, 10 kΩ mixed monaural, unbalanced, ø 3.5 mm mini jack (3P: stereo)</p> |
| Output | <p>Power amplifier input: 0 dB*, 10 kΩ, unbalanced, RCA pin jacks (1 each for ROOM and OUTSIDE outputs)</p> <p>Speaker output: 2 zones, 100 V (42 Ω), galvanic isolated balanced, M4 screw terminal</p> <p>Recording output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair)</p> <p>Effect bus output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 pair)</p> <p>Preamplifier output: 0 dB*, 600 Ω monaural, unbalanced, RCA pin jacks (1 each for ROOM and OUTSIDE outputs)</p> |
| 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 | <p>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)</p> |
| Indicators | <p>SLEEP indicator</p> <p>Output Level meters (2 points, -20 dB and 0 dB) for ROOM and OUTSIDE</p> <p>Protection indicators for ROOM and OUTSIDE amplifier</p> <p>Output indicators for ROOM and OUTSIDE</p> <p>EFFECT indicator for MIC 1 – 6</p> |
| Ventilation | Natural air cooling |
| Ambient Temperature | 0 °C to 40 °C |
| 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

**Please refer to specification sheet for detailed information.



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 resistor 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 x 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
WTU-M9800



»» Dual Mic/ Line Input Module with DSP
D-001T



»» Line Input Module
D-001R



»» Input/Output Control Module
C-001T



»» Dual Line Output Expansion Module with DSP
T-001T



»» Remote Control Module
RC-001T



»» Ambient Noise Control Module
AN-001T



»» Telephone Zone Paging Module
ZP-001T



»» Speaker Selector
SS-9001



»» Ambient Noise Sensing Microphone
AN-9001



9000 Series Remote Panels

ZM-9001



ZM-9002



ZM-9011



ZM-9012



ZM-9013



ZM-9014



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 auxiliary line output to deliver audio to other systems.
- Browser-based smart control

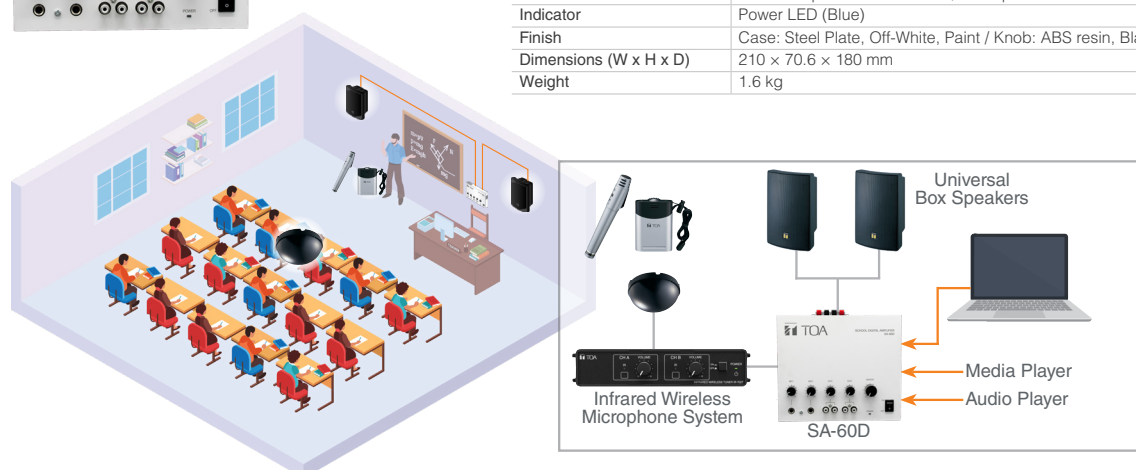
| Model | MA-725F |
|---------------------------|--|
| Power Source | 100 – 240V AC, 50/60Hz |
| Power Consumption | 1350W (rated output) |
| Frequency Response | 20Hz – 20kHz (-3 dB / +1 dB, LPF OFF) |
| Total Harmonic Distortion | 1 % or less, at 1 kHz, rated output |
| Input | Priority 1-2 Mic -60 dB/Line -10 dBV selectable, 2.2k Ω , electronically-balanced, removable terminal block Line In 1-4 -10 dBV, 10k Ω , unbalanced, 2 RCA jacks (Stereo summing) Speaker 1-4 70V (20 Ω), 100V (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 |
| Output | |
| 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 | 7.6kg |
| Accessories | Power cord (2m) 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, ϕ 6.3 phone jack (2P) AUX 1, 2: -20 dBV, 10 k Ω , 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 x 70.6 x 180 mm |
| Weight | 1.6 kg |



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 x 105 x 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 - Extension Type file is: MP3, WMA, WAV, AAC, FLAC | |
| MP3 Player | - 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 x 460 x 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

For optional wireless accessories and tuner, see page 10

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-658R



PC-668R 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 | | 100 V line: 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 | | 70 V line: 330 Ω, 670 Ω, 1 kΩ, 2 kΩ, 3.3 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) | | | | Frame: Fire-resistant HIPS resin | |
| | Grille: Surface-treated steel plate net, traffic-white (RAL9016), paint | | | | Grille: Fire-resistant HIPS resin | |
| Dimensions (ø x D) | ø 168 x 77 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-1860F | PC-1860BS |
|------------------------------|--|---------------------------------------|
| 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 |

Music Horn Speakers

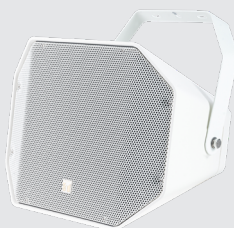
CS-760B / CS-760W

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 facilitates 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 (7.5 W) | |
| Sensitivity (1W, 1m) | 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 x 310 x 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 | |

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



»» Paging Horn Speaker

SC-651



- 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

- 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



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

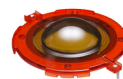
UC-200A



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

»» Diaphragm

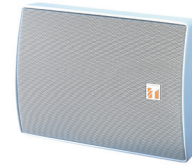
DG-30DB



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 | |

Wall Mount Box Speakers

BS-678 BS-678B



BS-678T BS-678BT



- 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)

BS-680F BS-680FC



- 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 seatite 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 »» Wall Mount Box Speaker

BS-633A



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



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) x 250 (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

| 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 |

- 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



Column Speakers

» Column Speaker

TZ-206B/W
TZ-206BWP/WWP

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

» Column Speaker

TZ-406B/W
TZ-406BWP/WWP

» Column Speaker

TZ-606B/W
TZ-606BWP/WWP



| 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 | | Enclosure: HIPS, black or white paint | |
| | Punched net: Surface-treated steel plate net, 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 | | Speaker bracket: Aluminum die-cast, black or white paint | |
| | Joint and wall bracket: Steel plate, t1.6, 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 | |

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

F-1300BT/WT

F-1300BTWP/WTWP

F-2000BT/WT

F-2000BTWP/WTWP



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



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



- 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 | F-2000WTWP |
|-------------------------|---|----------|------------|------------|---|----------|------------|------------|---|----------|------------|------------|
| 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.



**Please refer to specification sheet for detailed information.

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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



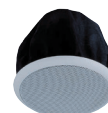
F-2352SC

- 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 | 100 V line: 330 Ω, 1 kΩ, 3.3 kΩ, 10 kΩ | | | 100 V line: 1.7 kΩ, 3.3 Ω, 10 kΩ, 20 kΩ | 100 V line: 1.7 kΩ, 3.3 Ω |
| | 70 V line: 83Ω, 170 Ω, 330 Ω, 670 Ω, 3.3 kΩ | 70 V line: 170 Ω, 330 Ω, 1 kΩ, 3.3 kΩ, 10 kΩ | | | 70 V line: 830 Ω, 1.7 kΩ, 3.3 kΩ, 10 kΩ, 20 kΩ | 70 V line: 830 Ω, 1.7 kΩ, 3.3 kΩ |
| | 25 V line: 83Ω, 170 Ω, 330 Ω, 670 Ω, 3.3 kΩ | 25 V line: 170 Ω, 330 Ω, 1 kΩ, 3.3 kΩ, 10 kΩ | | | 25 V line: 830Ω, 1.7 kΩ, 3.3 kΩ, 10 kΩ, 20 kΩ | 25 V line: 830Ω, 1.7 kΩ, 3.3 kΩ |
| | 8Ω | 8Ω | | | 8Ω | 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

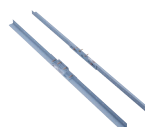
Applicable Models:
F-2322C, F-2352C,
F-2352SC



» Trim Ring HY-TR1



» Tile Bar Bridge HY-TB1



» Anchor Hanging Bracket HY-AH1



» Reinforcement Ring HY-RR1



» Reinforcement Ring HY-RR2



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



Compact Ceiling Subwoofer

»» Ceiling Subwoofer

FB-2862C



- Attractive exterior design to blend naturally to any architectural 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 | Continuous: 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 mm ² (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 x 1 set, Satellite speaker mounting bracket (black or white) x 6, Satellite speaker mounting screw and plain washer and spring washer x 1 set, Sticker for satellite speaker (black or white) x 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 | |

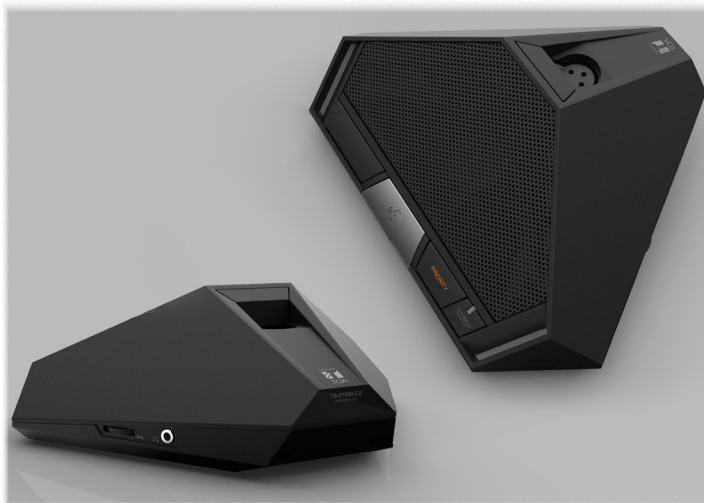
* Satellite speaker can be purchased separately in a set of 2 satellite speakers

**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.



» Chairman Unit TS-D1000-CU

» Delegate Unit TS-D1000-DU



» Standard Microphone Unit TS-D1000-M1

» Long Microphone Unit TS-D1000-M2



| 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) | |

| 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 x 45.8 x 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 x 100.3 x 35 mm |
| Weight | 150 g |
| Accessory | AC adapter (Cord length: 1.8m) DC Cord and 2 m detachable AC Cord x 1 |

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

TS-921



»» Infrared Delegate Unit

TS-922



»» Infrared Chairman Unit

TS-821



»» Infrared Delegate Unit

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 indicator | |
| Function | Monitor volume control, Headphone volume control, Voting, Monitor selector switch (MAIN/SUB) | | Monitor volume control, Headphone volume control | |
| | Priority speech | - | Priority 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 | | | |



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



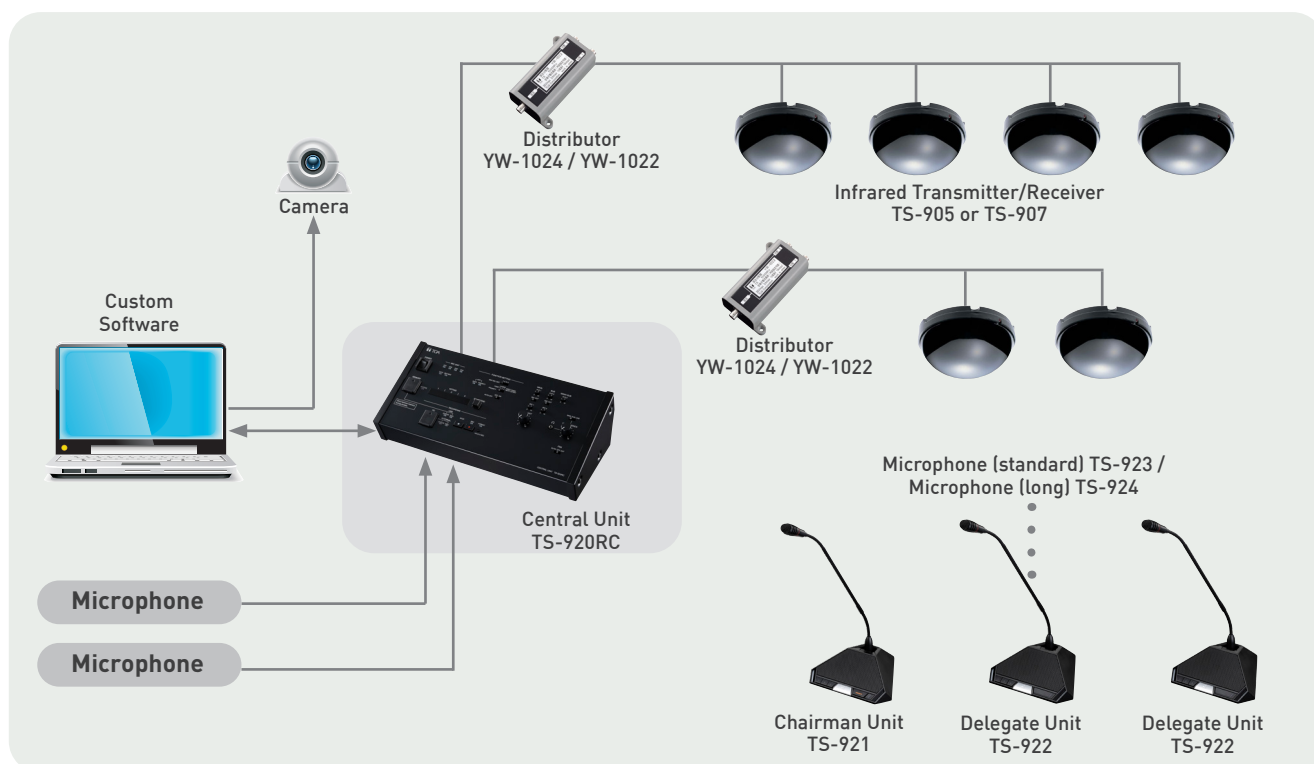
» Distributor
YW-1024



» Rack Mount Bracket
MB-TS920



TS-920 Series System Configuration



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 chairman 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



- 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

»» Delegate Unit TS-782



»» Standard Microphone TS-773



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

»» Long Microphone TS-774



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 chairman 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



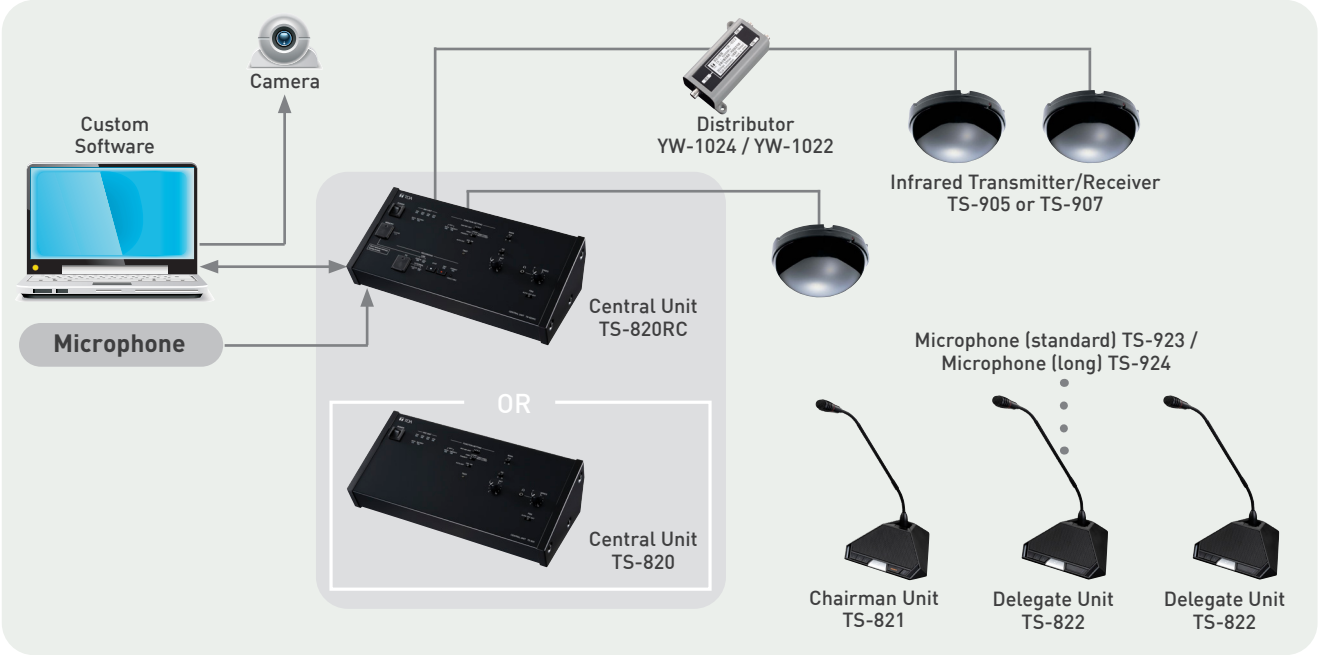
»» Extension Cord YR-780-10M



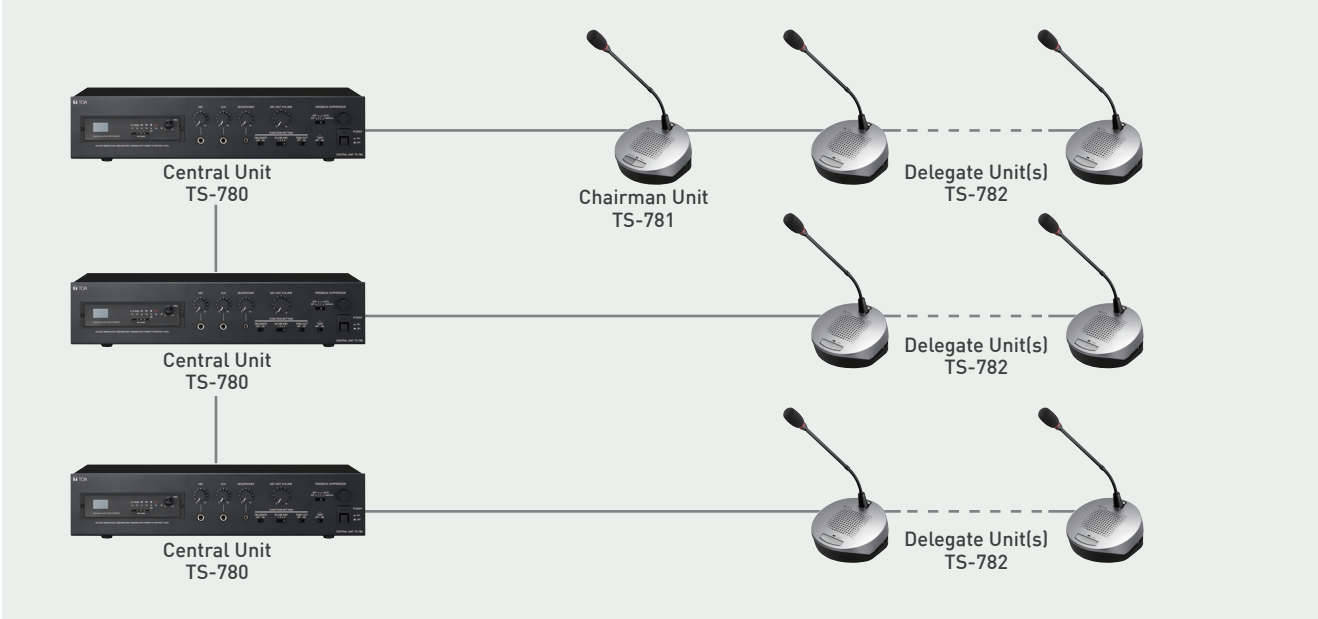
»» Rack Mount Bracket MB-23B



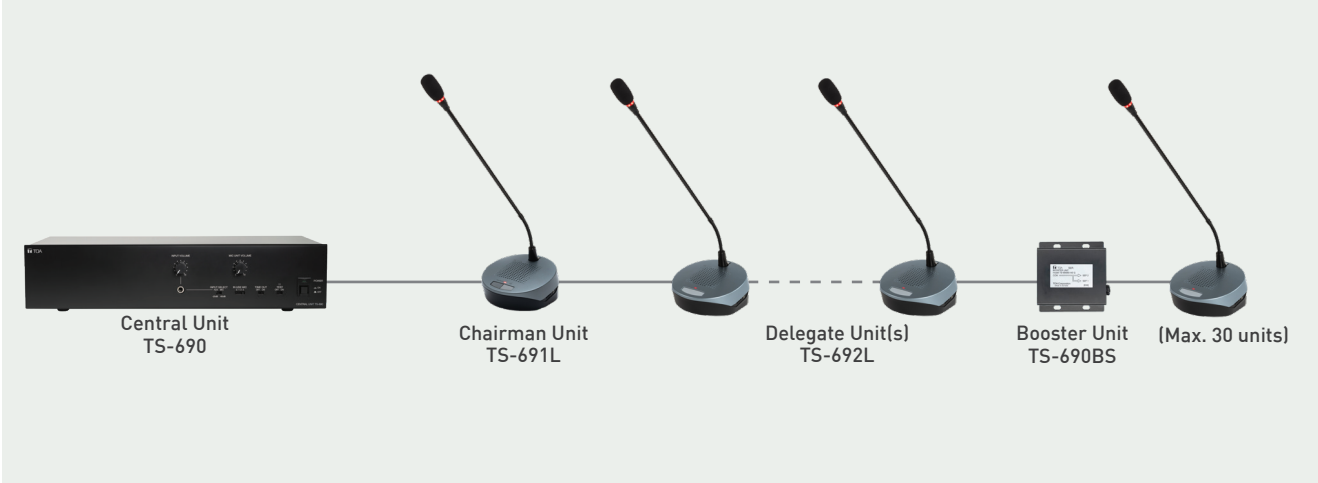
System Example for TS-820 Series



System Example for TS-780 Series



System Example for TS-690 Series



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)



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



EN 54

EN 50121

FV-200 Series



VM-3000 Series



EN 54

UL CERTIFIED

IP Network Intercom System



Audio Intercom System

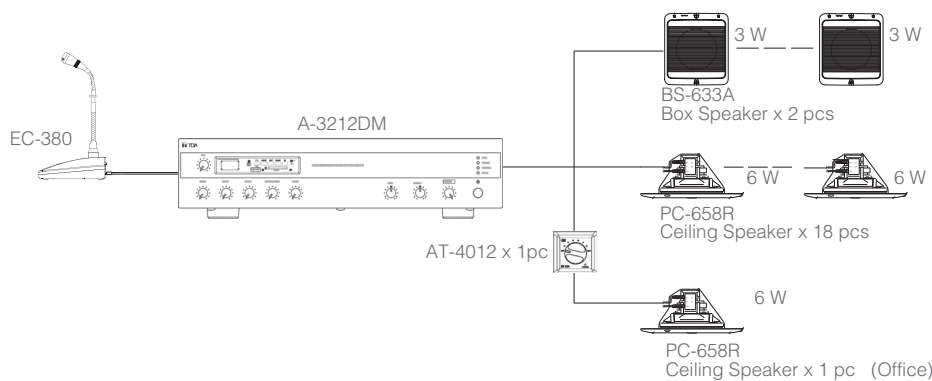
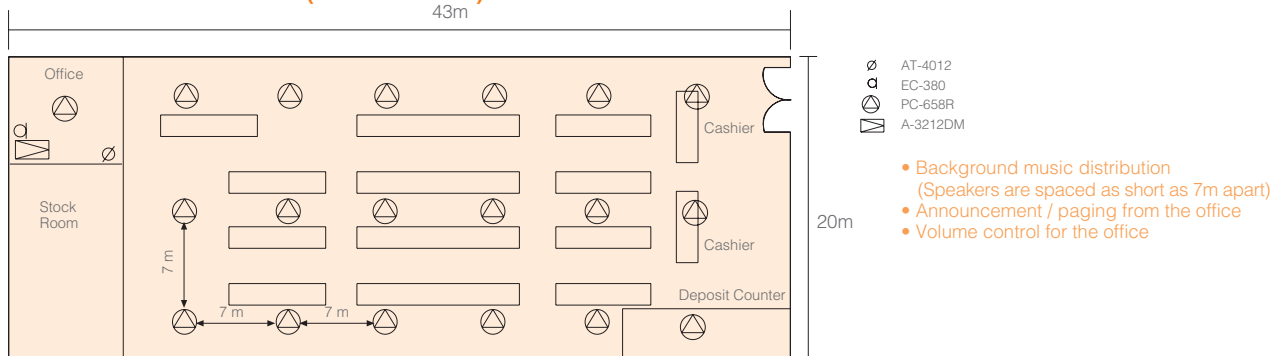
N-8000 Series

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.

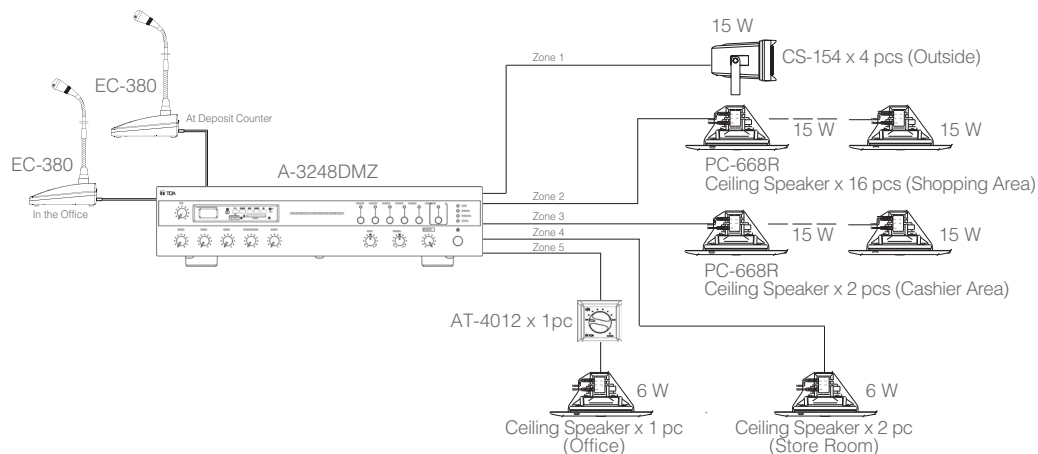
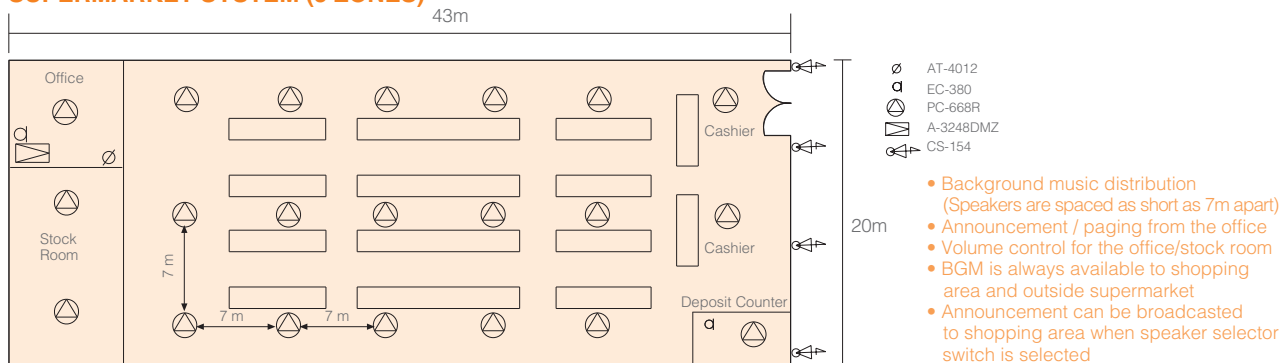
System Application 1

SUPERMARKET SYSTEM (SINGLE ZONE)



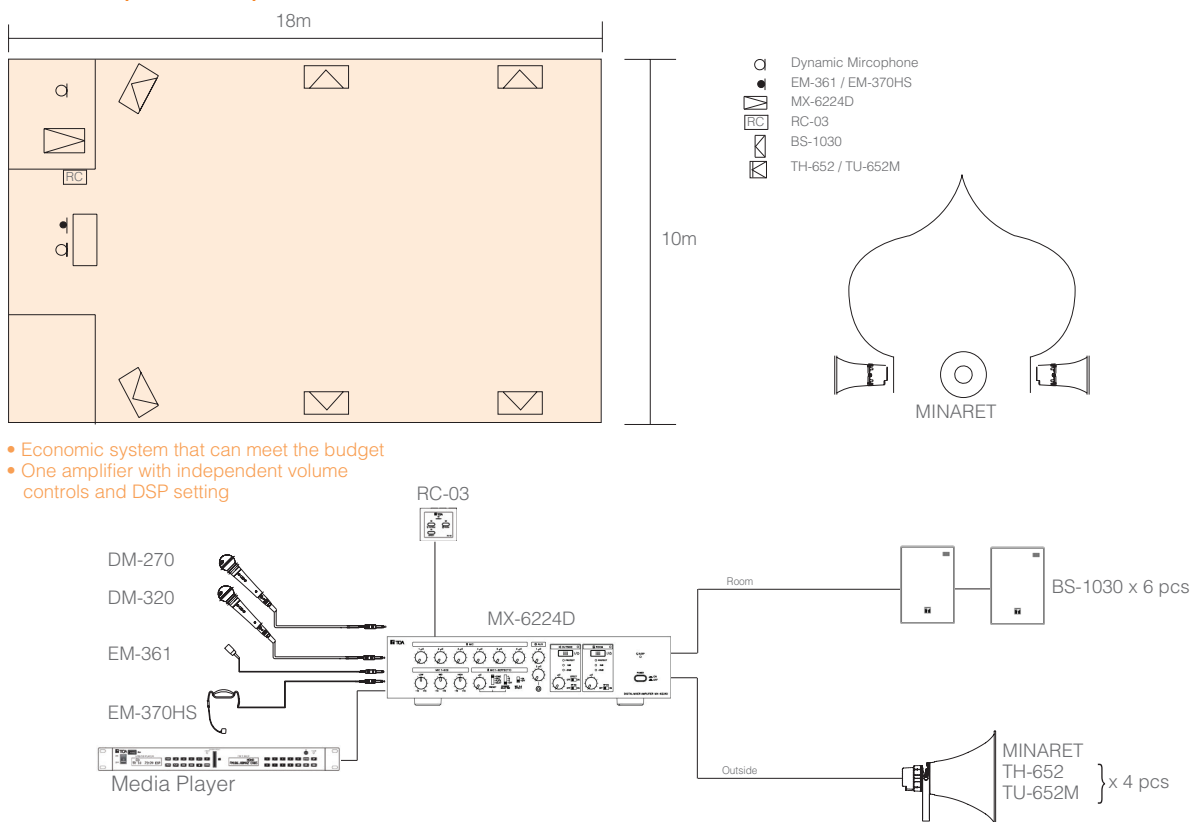
System Application 2

SUPERMARKET SYSTEM (5 ZONES)



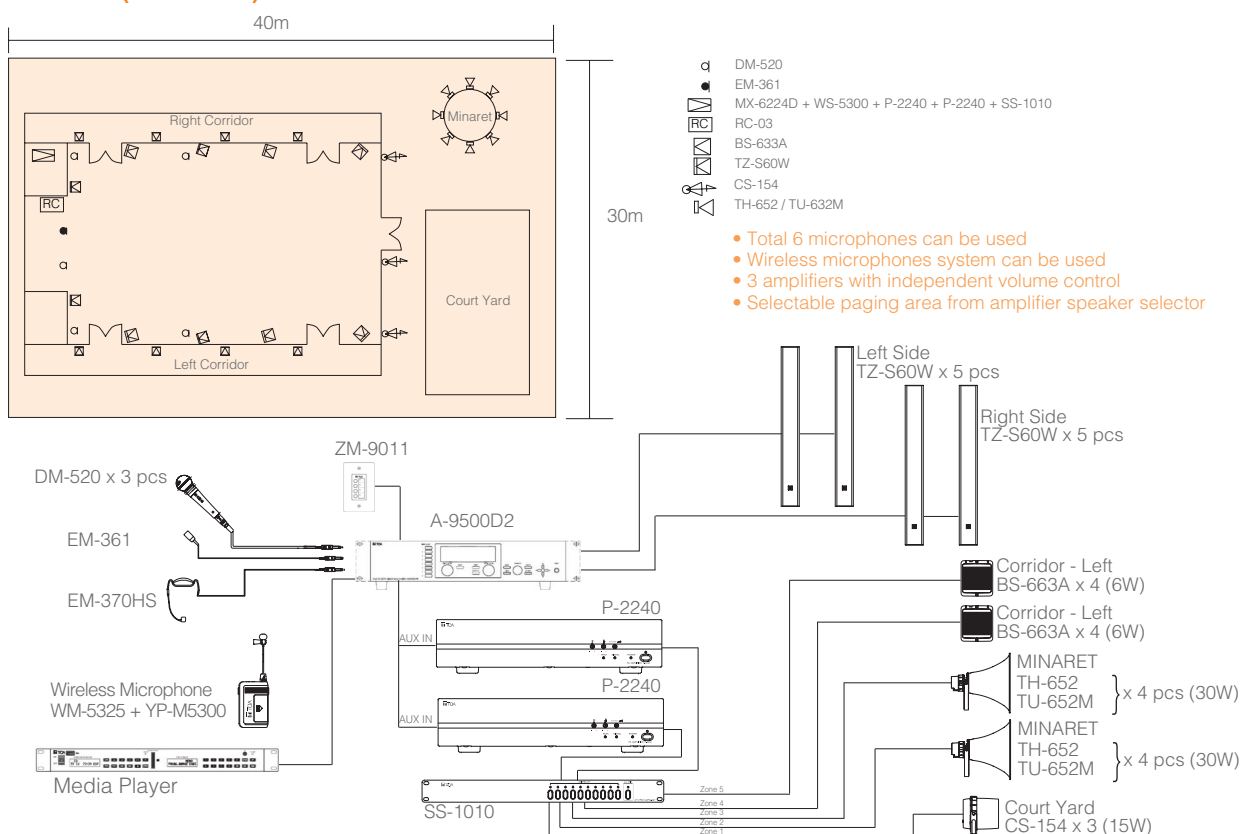
System Application 3

MOSQUE (SYSTEM A)



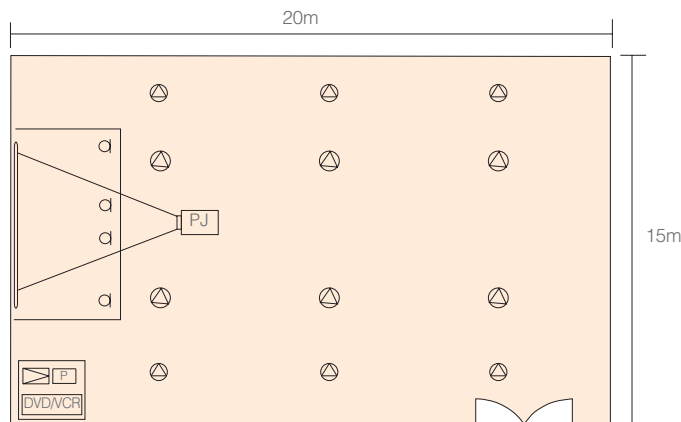
System Application 4

MOSQUE (SYSTEM B)



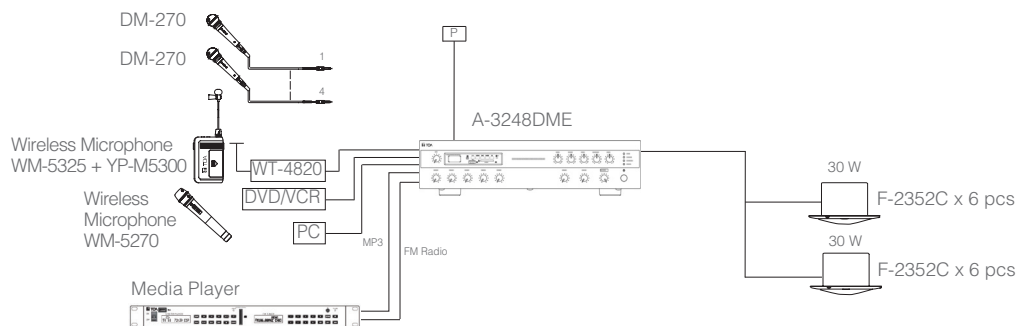
System Application 5

TRAINING / SEMINAR ROOM



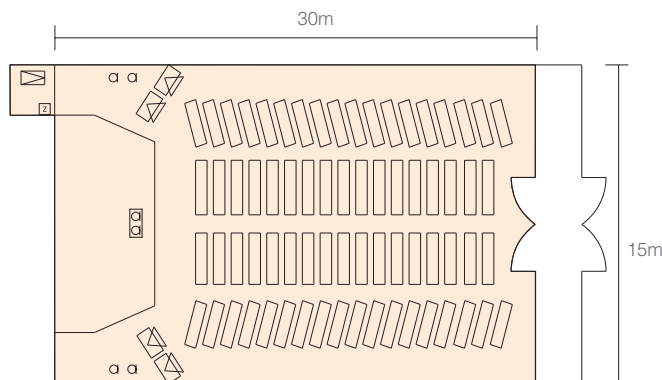
- α DM-270
- ⊖ F-2352C
- ⊖ A-3248DME
- P Power Control Panel

- 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



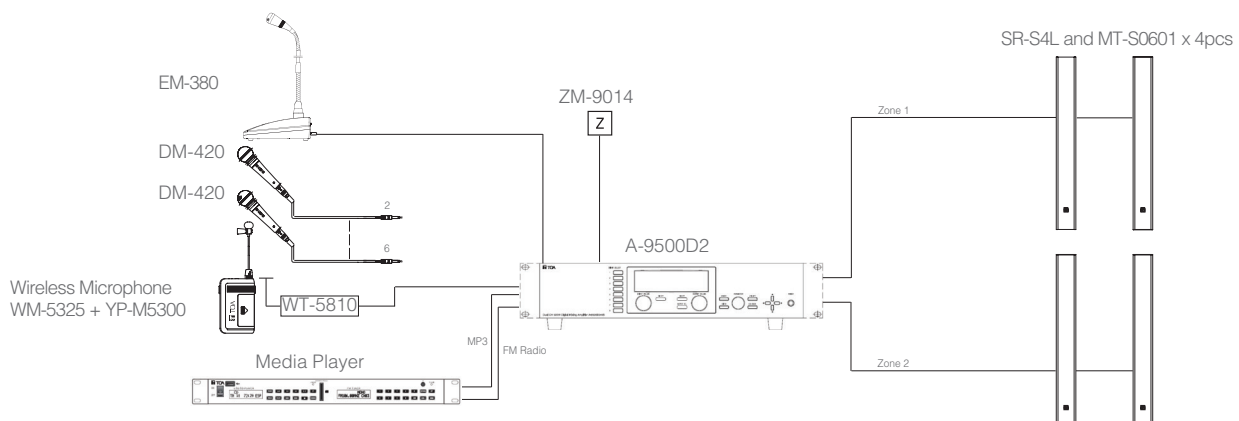
System Application 6

CHURCH



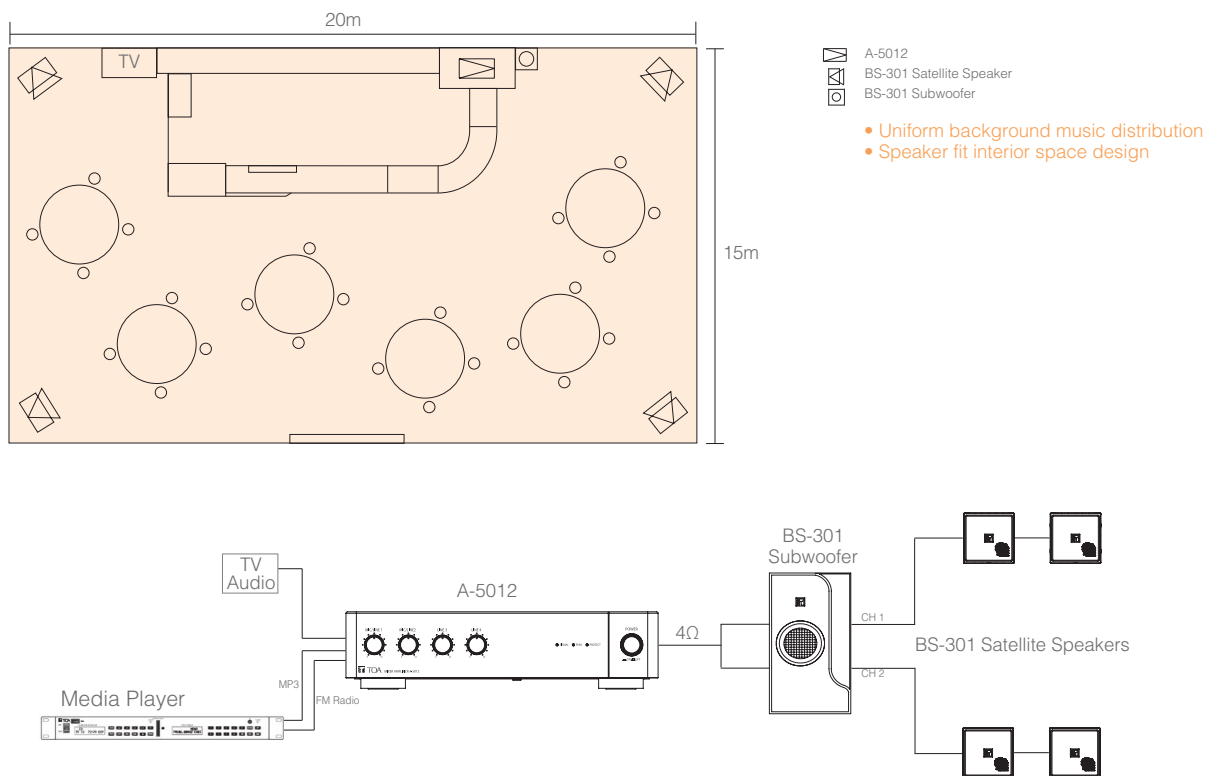
- α DM-420 / EM-380
- ⊖ SR-S4L and MT-S0601
- ⊖ A-9500D2
- Z ZM-9014

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



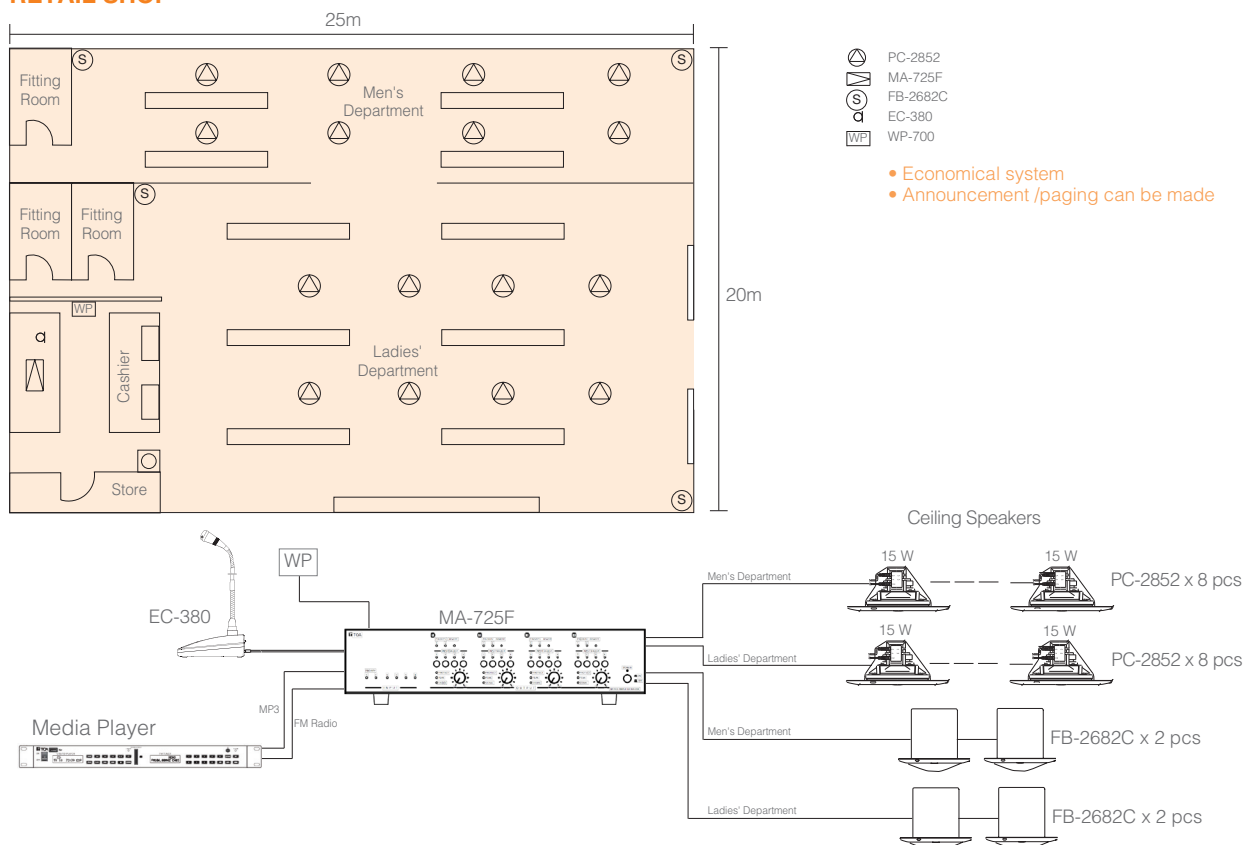
System Application 7

CAFE



System Application 8

RETAIL SHOP

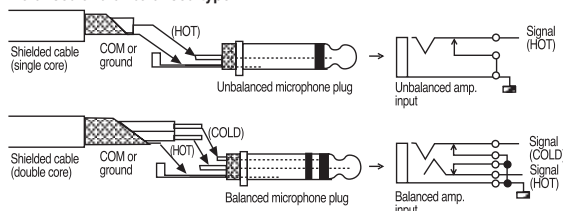


Microphone

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).

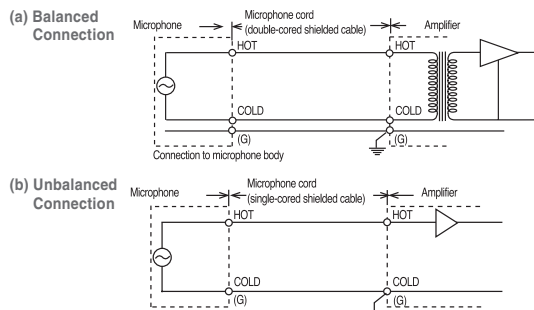
Balanced and unbalanced type



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 amplifier 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.



Distance of extension for microphone cords

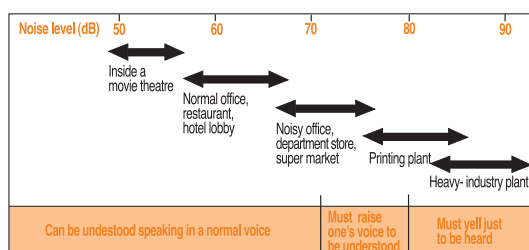
The following table shows the maximum extension distance for microphone cords. When distance extends beyond the following figures, excessive noise will make the microphone impractical, and therefore it will be necessary to use a microphone mixer to boost the signal level to minimize the influence of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

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

The SPL(1W/1m) 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:

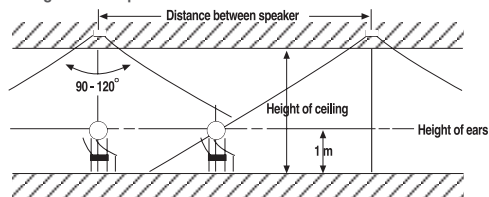
$$SPL = 112 \text{ dB} - 20 \text{ dB (10m)} + 10 \text{ dB (10W)} = 102 \text{ dB}$$

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.

Speakers 2

Arrangement of speakers

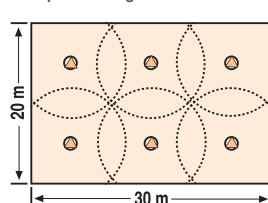


Area of coverage of one speaker

| Purpose | Height of ceiling | Distance between speakers | Area of coverage of one speaker |
|------------------|-------------------|---------------------------|---------------------------------|
| Background music | Less than 2.5m | 5m | About 25m ² |
| | 2.5 - 4.5m | 6m | About 36m ² |
| | 4.5 - 15m | 9m | About 81m ² |
| Announcement | | 9 to 12m | 81 to 144m ² |

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



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

Number of speakers necessary: 6 to 8

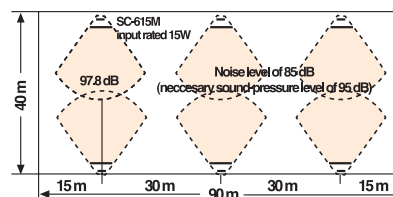
Arrangement of speakers in a factory (Horn speakers)

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 of 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:

$$[112 \text{ dB (1W/1m)} - 26.0 \text{ dB (20 m)} + 11.8 \text{ dB (15 W)}] = 97.8 \text{ dB}$$

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.



Speaker wiring

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

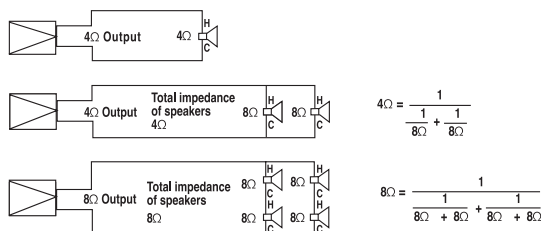
Speakers 3

High-impedance connection and low-impedance 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 efficiency.

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.



Example of high-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.



Speaker input impedance (10W/100V line)

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

Amplifier output impedance

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

Total impedance of speakers

$$Z = \frac{1}{\frac{1}{1 \text{ k}\Omega} + \frac{1}{1 \text{ k}\Omega} + \frac{1}{1 \text{ k}\Omega} + \frac{1}{1 \text{ k}\Omega} + \frac{1}{1 \text{ k}\Omega} + \frac{1}{1 \text{ k}\Omega}} = 167 \text{ (}\Omega\text{)}$$

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.



Amplifier output impedance

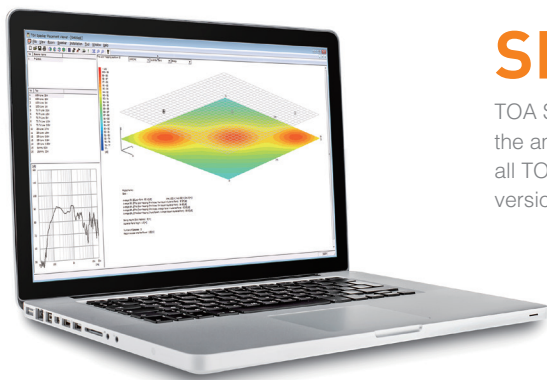
$$Z = \frac{100 \text{ (V)}^2}{120 \text{ (W)}} = 83 \text{ (}\Omega\text{)}$$

Total impedance of speakers

$$Z = \frac{1}{\frac{1}{1.7 \text{ k}\Omega} + \frac{1}{1.7 \text{ k}\Omega} + \frac{1}{1.7 \text{ k}\Omega} + \frac{1}{330 \text{ }\Omega} + \frac{1}{330 \text{ }\Omega}} = 128 \text{ (}\Omega\text{)}$$

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

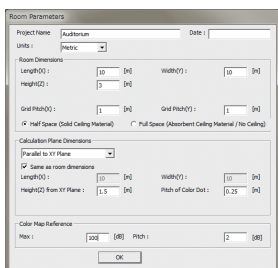
Set the room parameter. >>>

Step 2

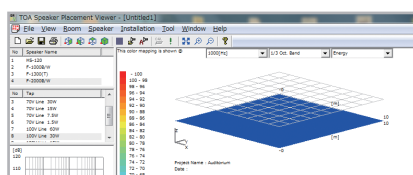
Select a speaker, drag and drop to the room. >>>

Step 3

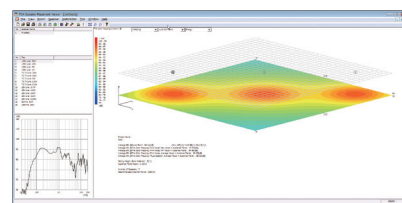
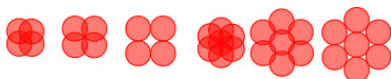
The result is shown immediately.



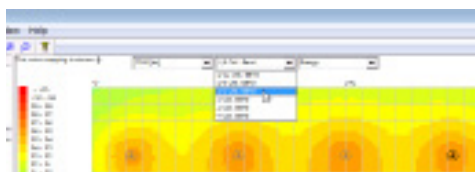
- Enter the size of the room.



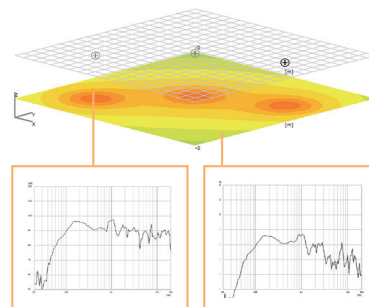
- Ceiling speakers are automatically placed by simply selecting your preferable placement from 6 layout patterns.



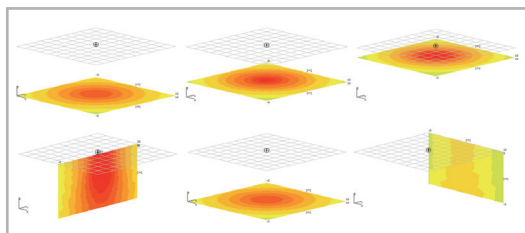
- You can check sound pressure level distribution by selected frequency and bandwidth.



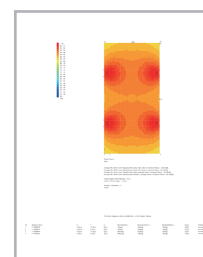
- Frequency characteristics graphs of any random point can be viewed by placing the mouse cursor over the simulation graphics.



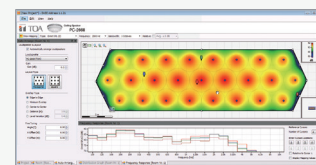
- Sound pressure level distribution from various faces



- 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"






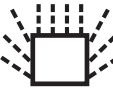
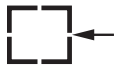
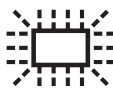

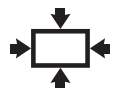

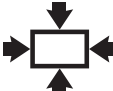




IP Grade Panel

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.

- 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.
- 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 \varnothing and greater | 1 |  | Protected against vertically falling water drops |
| 2 |  | Protected against solid foreign objects of 12.5mm \varnothing and greater | 2 |  | Protected against vertically falling water drops when enclosure tilted up to 15° |
| 3 |  | Protected against solid foreign objects of 2.5mm \varnothing and greater | 3 |  | Protected against spraying water |
| 4 |  | Protected against solid foreign objects of 1.0mm \varnothing 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



* 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 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 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.



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