

PRODUCTS
LINEUP
CATALOGUE



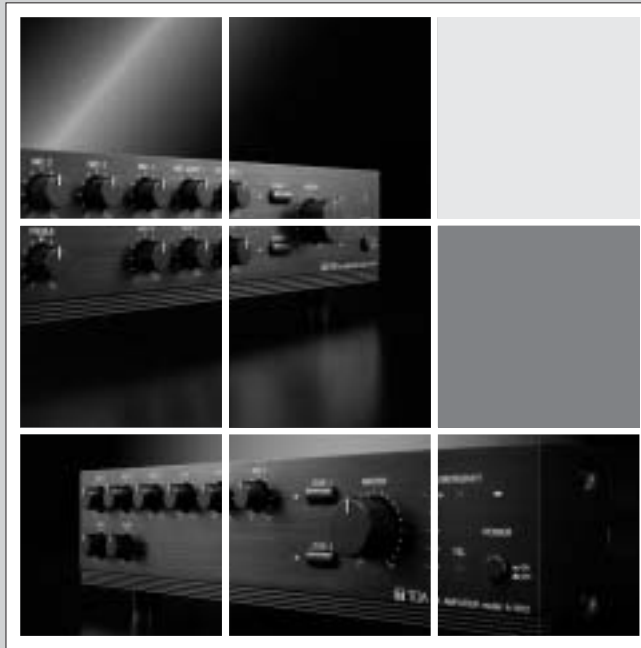
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Certificate No. 21896

* TOA has been granted the "ISO 9001 (BS 5750)" registration in the 9000 Series of Quality Assurance Standards by the International Organization for Standardization (ISO).



Amplifiers

TOA amplifiers are available in various series, each tailored to fulfill specific application requirements. However they share the same high engineering standards that TOA is known for, providing high quality sound reinforcement for any environment with outstanding reliability even under the most demanding conditions for extended service periods.

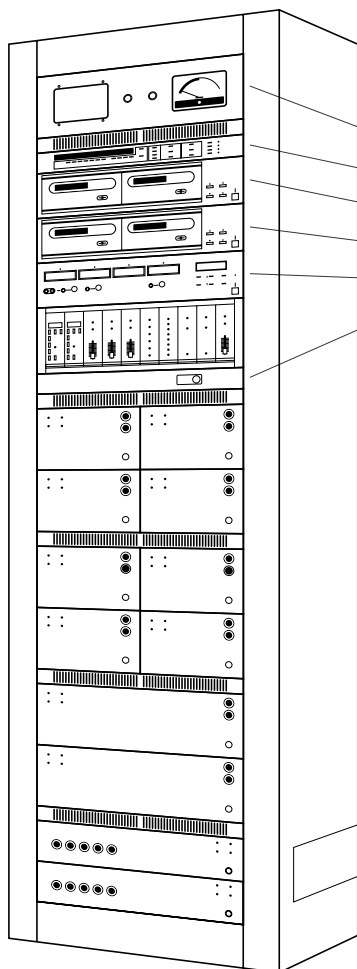
The versatile V-1000 Series Amplifiers offer remarkably convenient operation in a range of different power ratings. New additions to this category are the A-1800 Series and A-1700 Series mixing amplifiers. These are expressly designed to be all-in-one PA solutions for intermediate-sized locations such as schools, offices, places of worship and similar-sized locations. Featuring multiple mic inputs as well as dual zone operation, phantom powering, EQ and assorted other useful functions such as chime, input priority overriding and muting, these new series represent exceptional cost-effectiveness along with high performance in the most requested configurations. Several V-1000 Series Amplifier models conveniently operate on both AC and DC power. A wide range of system peripherals including a mixer preamp, remote microphones, an AC power line junction panel, a

temperature-stabilizing blower unit and many other useful components are available for use with V-1000 Series Amplifiers. System units and peripherals are designed to complement each other and racks are also available to complete an attractive installation.

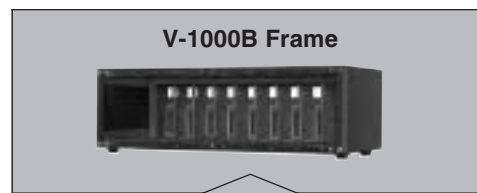
The 900 Series Amplifiers include integrated mixer power amplifiers and power amplifiers whose scope of operation makes them particularly well-suited for use in places of worship, restaurants, boutiques, hotels and similar locations. Focusing on flexible use, these amplifiers accept various plug-in function modules such as compression, muting, voice gating and bridging. With different power outputs to fill different needs, the 900 Series Amplifiers share superb performance characteristics with wide frequency response, low noise operation as well as total reliability.

In terms of cost-effectiveness, TOA's amplifiers such as the A-1000, A-1500 and A-500A are unequalled to meet general PA needs with AC/DC operation and flexible input and power output choices. Other TOA amplifiers include dedicated power amplifiers including the PA-3640 and PA-2440 and amplifier control units RU-2001 and RU-2002.

V-1000 Series Amplifiers



- Monitor Panel (MP-032B)
- Program Timer (TT-104B)
- BGM Unit (BA-800)
- BGM Unit (BA-800)
- Digital Announcer (EV-100RB)
- Power Switch Panel (PS-011B)



INPUT MODULES

MICROPHONE

- V-1051B
Mic Input Module with
- V-1151B
- V-1251B
Mic Input Module with
Transformer Isolated Input
- V-1005B
- V-1022B
Preamplifier Module for

EQUALIZER MODULE

- V-1501B
- LINE AMPLIFIER
- V-1071B/1072B

SIGNAL ROUTING

- V-1061B
- V-1062B
- V-1068B

PROGRAM SOURCE

- V-1054B
- V-1254B

FAULT DETECTION

- V-1901B
Ground Leakage Monitoring
- YA-1000A
Fault Detection Circuit

SOURCE MODULES

- V-1014B
- V-1016B
- V-1015B
- V-1034B

ACCESSORY

- V-1082B
- V-1090B
- V-1001B/1002B
- V-1069B

AMPLIFIERS



Power Amplifier VP-1240B(240W)



Power Amplifier PA-2440B(240W)/3640B(360W)



Power Amplifier VP-1060B(60W)/1120B(120W)



Power Amplifier PA-3640VB(360W)

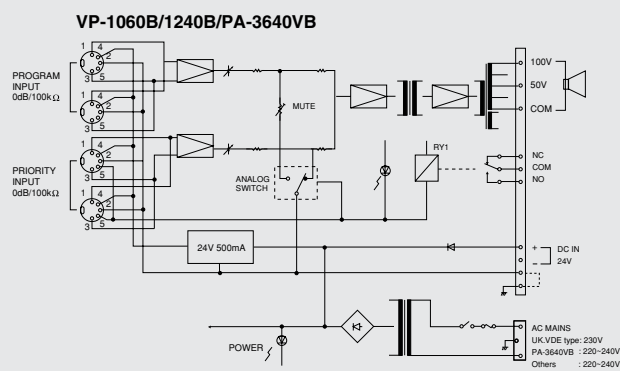


Power Amplifier PA-1230B(120W)



Mixer Preamplifier PP-025B

BLOCK DIAGRAM



Amplifiers

VP-1060B (60W)
VP-1120B (120W)
VP-1240B (240W)
Power Amplifier



VP-1060B/1120B



VP-1240B

- **Output Power:** VP-1060B: 60W RMS/VP-1120B: 120W RMS/VP-1240B: 240W RMS
- **Frequency Response:** 40 – 16,000Hz, ± 2 dB (at 1/3 rated output)
- **Distortion:** Less than 1% (at rated output, $f=1$ kHz sine wave)
- **Inputs:** 2 program inputs (parallel); 0dB 100k ohms (balanced)/2 priority inputs (parallel); 0dB 100k ohms (balanced)
- **S/N (20 – 20,000Hz):** 80dB
- **Indicators:** Green LED for power indicator/Red LED for priority indicator
- **Impedance:** 100V/42 ohms, 70V/21 ohms, 50V/10 ohms
- **Power Consumption:** At no signal; 35VA/At rated output; 650VA
- **Power Requirements:** 220 – 240V AC, 50/60Hz, 24V DC
- **Dimensions (W x H x D):** VP-1060B/VP-1120B: 216 x 144 x 340mm/VP-1240B: 433.5 x 144 x 340mm
- **Weight:** VP-1060B: 8.8kg/VP-1120B: 10.3kg/VP-1240B: 20.8g
- **Color:** Black

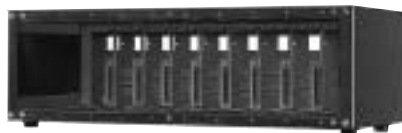
PA-3640VB (360W)
Power Amplifier



- **Output Power:** 360W RMS
- **Frequency Response:** 40 – 16,000Hz, ± 3 dB (at 1/3 rated output)
- **Distortion:** Under 1% at rated output, $f=1$ kHz
- **Inputs:** 2 program inputs (parallel), 0dB*, 100k ohms, balanced/2 priority inputs (parallel), 0dB*, 100k ohms, balanced
- **S/N Ratio:** Over 80dB
- **Output and Load Impedance:** 100V/27.8 ohms, 50V/6.9 ohms, (70V/13.9 ohms)
- **Indicators:** Green LED lamp for power/Red LED lamp for priority
- **Power Consumption:** 780VA at rated output
- **Power Source:** 230/240V AC, 50/60Hz, 24V DC
- **Dimensions (W x H x D):** 483 x 177 x 315.5mm
- **Weight:** 22.2kg
- **Color:** Black

*0dB=1V

V-1000B
Frame



- **Input Capacity:** Space for 10 modules max.
- **Dimensions (W x H x D):** 433.5 x 143 x 204mm
- **Weight:** 3.62kg
- **Color:** Black

Input Modules

Microphone Input Modules

V-1051B
Mic Input Module with Programming Function



- **Input Sensitivity and Impedance:** -60 dBm, 600 ohms, balanced/0dBm, 100k ohms, balanced (switchable)
- **Output Level and Impedance:** -20 dBV, 10k ohms
- **Frequency Response:** 30 – 20,000Hz, ± 1 dB
- **Speech Filter:** -12 dB at 100Hz
- **Distortion:** Less than 0.3% ($f=1$ kHz sine wave)
- **Noise Level (20 – 20,000Hz, 200 ohms terminated):** -124 dBV
- **Power Requirements:** 24V DC
- **Current Consumption:** 40mA
- **Programming Functions:** Highest priority/1st-in-1st-served priority/Cascade priority/Speech filter/Busy indication/Chime distribution/Mic enable function
- **Connections:** Input; 5-pin DIN socket/Output and power received; 10-pin card edge connector
- **Dimensions:** 1-module size
- **Weight:** 151g
- **Color:** Black

V-1151B
Mic Input Module



- **Input Sensitivity and Impedance:** -60 dBm, 600 ohms, balanced
- **Output Level and Impedance:** -20 dBV 10k ohms
- **Frequency Response:** 30 – 20,000Hz, ± 1 dB
- **Speech Filter:** -12 dB at 100Hz
- **Distortion:** Less than 0.3% ($f=1$ kHz sine wave)
- **Noise Level (20 – 20,000Hz, 200 ohms terminated):** -125 dBV
- **Indicator:** Power indicator
- **Controls:** 1 x slide volume control
- **Power Requirements:** 24V DC
- **Current Consumption:** 30mA
- **Programming Functions:** Speech filter
- **Connections:** Input; 5-pin DIN socket/Output and power received; 10-pin card edge connector
- **Dimensions:** 1-module size
- **Weight:** 127g
- **Color:** Black

V-1251B
Microphone Input Module with Transformer Isolated Input and Programming Function



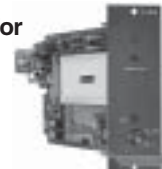
- **Input Sensitivity and Impedance:** -60 dBm, 600 ohms, balanced
- **Output Level and Impedance:** -20 dBV, 10k ohms
- **Frequency Response:** 30 – 20,000Hz, ± 1 dB
- **Speech Filter:** -12 dB at 100Hz
- **Distortion:** Less than 0.3% ($f=1$ kHz sine wave)
- **Noise Level (20 – 20,000Hz, 200 ohms terminated):** -126 dBV
- **Indicator:** In-use indicator (green LED)
- **Controls:** 1 x slide volume control
- **Power Requirements:** 24V DC
- **Current Consumption:** 34mA
- **Programming Functions:** Highest priority/1st-in-1st-served priority/Cascade priority/Speech filter/Busy indication/Chime distribution/Mic enable function
- **Connections:** Input; 5-pin DIN socket/Output and power received; 10-pin card edge connector
- **Dimensions:** 1-module size
- **Weight:** 162g
- **Color:** Black

V-1005B
Mic Input Module



- **Input:** One 5-pin DIN jack and one phone jack (parallel)
- **Output:** 10-pin card edge connector
- **Control:** Talk switch button
- **Dimensions:** 1-module size
- **Weight:** 120g
- **Color:** Black

V-1022B
Preamplifier Module for Wireless Tuner



- **Output Level:** -20 dBV
- **Output Impedance:** 10k ohms
- **Frequency Response:** 50 – 15,000Hz, ± 2 dB
- **Distortion:** Less than 1% at 1kHz, rated output
- **S/Noise Ratio:** Better than 90dB
- **Speech Filter:** -12 dB at 100Hz
- **Indicator:** In-use lamp (green LED)/Goes off; When the power switch is turned off or when other functions with higher priority are operated./Goes on and off; at ho signal/Lights; When receiving a signal from the wireless microphone
- **Controls:** 1. Power switch/2. Output level control/3. Carrier squelch level control
- **Programming Function:** 1. Highest priority/2. 1st-in-1st-Served priority/3. Cascade priority/4. speech filter/5. Busy indication/6. Chime distribution
- **Connections:** Antenna inputs: F-type socket for coaxial cable/Output and Power: 10-pin card/Received: Connector
- **Power Requirements:** 24V DC
- **Current Consumption:** Power switch off; 10mA, Power switch on; 90mA
- **Dimensions:** 1-module size
- **Weight:** 151g
- **Color:** Black
- **Adaptable Tuner:** WTU-761 (optional)

Program Source Input Modules

V-1054B
Auxiliary Input Module



- **Input Sensitivity:** -20 dBV/0dBV (switchable)
- **Input Impedance:** 100k ohms, balanced
- **Output Level:** -20 dBV
- **Output Impedance:** 10k ohms
- **Frequency Response:** 30 – 20,000Hz, ± 1 dB
- **Distortion:** Less than 0.3% ($f=1$ kHz sine wave)
- **Noise Level (20 – 20,000Hz):** -94 dBV
- **Indicator:** In-use lamp (green LED)
- **Controls:** 1 slide-type volume control/1 muting level control
- **Power Requirements:** 24V DC
- **Current Consumption:** 22mA
- **Programming Function:** Muting
- **Connections:** Input; 5-pin DIN socket/Output and power received; 10-pin card edge connector
- **Dimensions:** 1-module size
- **Weight:** 132g
- **Color:** Black

V-1254B
Line Input Module



- **Input Sensitivity:** 0dBV
- **Input Impedance:** 50k ohms (balanced)
- **Output Level:** -20 dBV
- **Output Impedance:** 10k ohms
- **Frequency Response:** 30 – 20,000Hz, ± 1 dB
- **Distortion:** Less than 0.3% ($f=1$ kHz sine wave)
- **Indicator:** In-use lamp (green LED)
- **Controls:** 1 slide-type volume control/1 muting level control
- **Power Requirements:** 24V DC
- **Current Consumption:** 17mA
- **Programming Function:** Muting
- **Connections:** Input; 5-pin DIN socket/Output and power received; 10-pin card edge connector
- **Dimensions:** 1-module size
- **Weight:** 143g
- **Color:** Black

Source Modules

V-1014B

Alarm Signal Module



- **Signal:** Siren, yelp or buzzer (switchable) • **Frequency Response:** Siren: 400 – 750Hz/Yelp; 500 – 750Hz/Buzzer; 400Hz • **Sounding Time:** Approx. 5 × 60sec. (variable) • **Output Level:** 100mV • **Output Impedance:** 10k ohms • **Power Requirements:** 24V DC • **Current Consumption:** 35mA • **Indicators:** Siren/Yelp/Buzzer; Red LED/Speech; Green LED • **Controls:** 1 output level control, 1 sounding time control • **Connections:** Indication output; 5-pin DIN socket/Signal output and power received; 10-pin card edge connector • **Dimensions:** 1-module size • **Weight:** 140g • **Color:** Black

V-1016B

Alarm Signal Module



- **Signal:** 2-tone alarm • **Frequency:** 440Hz and 554Hz in sequence • **Sounding Time:** Cycle length; 5~45sec. • **Output Level:** 280mV (p–p) • **Output Impedance:** 10k ohms • **Power Requirements:** 24V DC • **Current Consumption:** 27mA • **Indicators:** Alarm; 1 red LED, Speak + Outputs; 1 green LED • **Controls:** 1 volume, 1 speed; 2 frequencies, duration selector • **Connections:** 5-pin DIN socket; Indications + Remote control; 10-pin card connector; Power supply – Output control • **Dimensions:** 1-module size • **Weight:** 130g • **Color:** Black

V-1015B

Chime Module



- **Signal:** 2-tone chime or gong (switchable) • **Frequency Response:** Chime: 440Hz, 554Hz//Gong: Mixer frequency of 440Hz, 554Hz • **Sound Time:** Chime: Appros. 2.5sec. • **Output Level:** 280mV (p–p) • **Output Impedance:** 10k ohms • **Current Consumption:** 33mA • **Indicators:** Chime/Gong; Red LED/Speech; Green LED • **Controls:** 1 output level control, 2 frequency controls, 1 speed control • **Connections:** Indication output; 5-pin DIN socket/Signal output and power received; 10-pin card edge connector • **Dimensions:** 1-module size • **Weight:** 140g • **Color:** Black

V-1034B

AM/FM Radio Tuner Module



- **Tuning Range:** FM; 87.5 – 108MHz (50kHz increment)/AM; 522 – 1620kHz (9kHz increment) • **Sensitivity:** FM; 2.5µV/98MHz for 30dB quieting/AM; 20µV/999kHz for 20dB quieting • **IF Frequency:** FM; 10.7MHz/AM; 450kHz • **Antenna Impedance:** 75 ohms, unbalanced • **Tuning Control:** Auto (manual mode available) • **Preset Frequencies:** FM; 5/AM; 5 • **Memory Backup Period:** 7 days (after DC power off) • **Output Level:** –20dBV/0dBV (switchable) • **Output Impedance:** –20dBV; 10k ohms, unbalanced/0dBV; 600 ohms, unbalanced • **Distortion:** Less than 1% • **S/N Ratio (20 – 20,000Hz):** FM; Better than 70dB/AM; Better than 45dB • **Power Requirements:** 20 – 24V DC • **Current Consumption:** Max. 150mA • **Dimensions:** 1-module size • **Weight:** 160g • **Color:** Black

Equalizer Module

V-1501B

1/1 Octave Equalizer Module

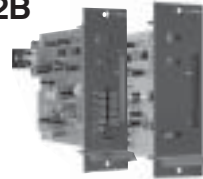


- **Input Sensitivity:** –20dBV • **Output Level:** –20dBV • **Frequency Response:** 20 – 20,000Hz, ±1dB (EQ IN, Flat) • **Distortion:** Less than 0.3% (f=1kHz) • **Equalizer Control:** Center frequencies; 125/250/500/1k/2k/4k/8kHz (variable range; ±12dB) • **Indicator:** Equalizer IN/OUT LED (green) • **Power Requirements:** 24V DC • **Current Consumption:** Under 55mA • **Dimensions:** 1-module size • **Weight:** 125g • **Color:** Black

Line Amplifier Modules

V-1071B/1072B

Line Amplifier Module



- **Input Sensitivity:** –20dBV • **Output Level:** 0dBV • **Output Impedance:** 600 ohms, balanced • **Frequency Response:** 30 – 20,000Hz, ±1dB • **Distortion:** Less than 0.3% at 1kHz • **Tone Controls:** Bass; ±10dB at 100Hz/Treble; ±10dB at 10kHz • **Noise Level (Equivalent Input Noise):** –102dBV (20 – 20,000Hz) • **Power Requirements:** 24V DC • **Current Consumption:** 85mA • **Controls:** Output level control (Slide volume), Tone control • **Connections:** Inputs; 10-pin card edge connector, Output/DC input; 5-pin DIN • **Indicator:** LED output level indicator • **Dimensions:** 1-module size • **Weight:** 145g • **Color:** Black

Signal Routing Modules

V-1061B

Program Selector Module



- **Inputs:** 4 inputs • **Outputs:** 1 balanced output/1 unbalanced output • **Switches:** 4 selector buttons/1 reset button • **Programming Function:** Muting: When priority function is activated, unbalanced output level of this module will be reduced automatically. • **Power Requirements:** 24V DC • **Current Consumption:** 4mA • **Controls:** 1 output level control/1 muting level control • **Connections:** Input; 10-pin terminal/Balanced output; 3-pin terminal/Unbalanced output; 10-pin card edge connector • **Dimensions:** 1-module size • **Weight:** 180g • **Color:** Black

V-1062B

5-Zone Selector Module



- **Inputs:** 2 inputs • **Outputs:** 5 outputs • **Switches:** 5 selector buttons • **Indications:** Zone selector lamp; Green LEDs/Interdiction lamp; Red LED • **Power Requirements:** 24V DC • **Current Consumption:** 160mA • **Connections:** Input/Output; 2 of 10-pin terminal, DC Input/Remote; 10-pin terminal • **Dimensions:** 2-module size • **Weight:** 420g • **Color:** Black

V-1068B

Multi-Purpose Relay Module



- **Input:** 6 inputs (Each; 250V AC 4A, 30V DC 5A, A₁A₂, –A₃A₃) • **Outputs:** 5 outputs (Each; 250V AC 4A, 30V DC 5A, L₁L₁, –L₂L₂) • **Switches:** 5 selector buttons/1 reset button • **Indications:** 5 red, green LEDs/1 red LED • **Power Requirements:** 24V DC • **Current Consumption:** 230mA • **Connection:** 44-pin card-edge connector • **Dimensions:** 1-module size • **Weight:** 250g • **Color:** Black

Fault Detection Modules

V-1901B Ground Leakage Monitoring Module



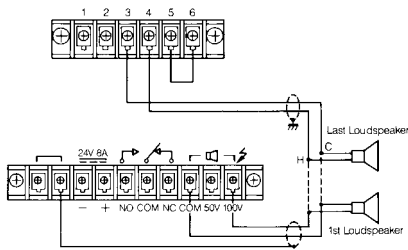
- **Power Requirements:** 24V DC • **Power Consumption:** 60mA max. • **Input:** 6 inputs (loudspeaker line)
- **Output:** 1 output with floating contact (1A, 30V DC)
- **Switches:** 6 test buttons • **Indicators:** 6 ground leakage LEDs (Red) • **Earth-Resistor:** Less than 50k ohms
- **Connection:** 44-pin card-edge connector
- **Dimensions:** 1-module size • **Weight:** 150g • **Color:** Black

YA-1000A Fault Detection Circuit Module



The YA-1000A module is designed for use with VP Series power amplifiers and VM Series mixer power amplifiers. It detects breakages in the speaker-amplifier line loop by means of a 20kHz pilot signal. If there is any breakage, the amplifier POWER LED indicator goes out, activating the unit's relay out

YA-1000A Connection Diagram



Accessory Modules

V-1082B Power Supply Module



- **Power Requirements:** 220~240V AC, 50/60Hz • **Output Voltage:** 24V DC • **Output Current:** 0.5A (regulated)
- **Regulation:** 2% max. • **Ripple:** 4mV max. at 0.5A (output current) • **Dimensions:** 2-module size • **Weight:** 1.4kg • **Color:** Black

V-1090B Interface Module



- **Connector:** 8-pin DIN • **Dimensions:** 1-module size
- **Weight:** 100g • **Color:** Black

V-1001B/1002B Blank Panel

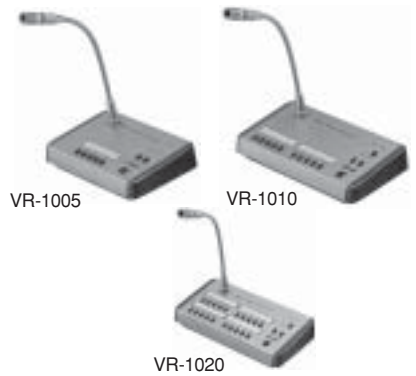


- **V-1001B**
- **Dimensions:** 1-module size • **Weight:** 40g • **Color:** Black

- **V-1002B**
- **Dimensions:** 2-module size • **Weight:** 80g • **Color:** Black

Remote and Paging Microphones

VR-1005/1010/1020 Remote Microphone



VR-1005

- **Power Requirements:** 24V DC • **Power Consumption:** 130mA • **Output:** 0dBV, 600 ohms, balanced
- **Microphone:** Gooseneck electret condenser mic with windscreen • **AUX Input:** -20dBV, 100k ohms, unbalanced • **Make-Contact:** 5 individual calls+all-call, max. 150mA DC • **Chime:** 4-tone chime, 2-tone chime, gong or 1-tone chime (selectable) • **Output Control:** 5-zone+all-call • **Dimensions (W x H x D):** 224 x 62 x 155mm, without microphone • **Weight:** 1.1kg • **Color:** Metallic gold • **Connection Cables:** 1 twin shielded cable (signal) and 2 twisted pair cables (Line resistance; 20 ohms or less, Cable length; 1,200m or less, Outer diameter; 10mm or less)

VR-1010/1020

- **Power Requirements:** 24V DC • **Power Consumption:** VR-1010; 90mA/VR-1020; 110mA • **Output:** 0dBV, 600 ohms, balanced • **Microphone:** Gooseneck electret condenser mic with windscreen • **AUX Input:** -20dBV, 100k ohms, unbalanced • **Chime:** V-1069's internal chime; 4-tone chime, 2-tone chime, gong or 1-tone chime (selectable) • **Output Control:** V-1010; 10-zone+all-call/V-1020; 20-zone+all-call • **Dimensions (W x H x D):** 274 x 62 x 155mm, without microphone • **Weight:** 1.3kg
- **Color:** Metallic gold • **Connection Cables:** 1 twin shielded cable (signal) and up to 17 cables (control and power) (Line resistance; 10 ohms or less, Cable length; 200m or less, Outer diameter; 10mm or less)

V-1069B Data Receiver Module For VR-1010/1020



- **Power Requirements:** 24V DC • **Power Consumption:** 150mA • **Output Control:** 20 zone+all-call • **Inputs:** 4 (0dBV, 600 ohms, balanced) • **Output (Signal):** 1 (0dBV, 600 ohms, balanced) • **Make-Contact:** 20 individual calls, max. 40mA DC • **Chime:** Internal; 4-tone chime, 2-tone chime, gong or 1-tone chime (selectable) • **Indicator:** 4 green LEDs/1 red LED
- **Connection:** 44-pin card-edge connector (accessory)
- **Connectable No. of VR-1010 or VR-1020:** Up to 4
- **Dimensions:** 1-module size • **Weight:** 220g • **Color:** Black
- **Connection:** 44-pin card-edge connector x 1, Binding head taplite screw (3 x 10) x 2

VR-1001B Paging Microphone



- **Microphone Element:** Dynamic (moving coil) type
- **Polar Pattern:** Cardioid (unidirectional) • **Output Impedance:** 600Ω, balanced • **Output Level:** -58dB (1kHz, 0dB=1V/Pa) • **Frequency Response:** 100 - 10,000Hz
- **Switch:** Press-to-talk switch • **Indicators:** Chime lamp; Red (LED)/Speech lamp; Green (LED) • **Finish:** Microphone head; Zinc plated steel wire; baked paint, gray/Main unit; ABS resin, gray • **Dimensions (W x H x D):** 100 x 215 x 150mm • **Weight:** 440g (cord excluded)

V-1000 Series Module Selection Chart

Type	Priority Functions					Other Functions				
	Model	Highest	1st-In-1st-Out	Cascade	Speech Filter	Busy Indication	Chime Distribution	Mic Enable	Input Sensitivity & Impedance	Others
Microphone	V-1051B	○	○	○	○	○	○	○	-60dBV, 600 ohms 0dBV, 100k ohms	Electrically balanced
	V-1151B				○					
	V-1251B	○	○	○	○	○	○	○	-62dBV, 600 ohms	Transformer-isolated, balanced
	V-1005B								Using with other mic. module Using with wireless tuner module	
Wireless	V-1022B	○	○	○	○	○	○	○		
Type	Model	Muting	Input Sensitivity & Impedance			Others				
	V-1054B	○	0dBV, 100 ohms			Electrically balanced				
	V-1254B	○	0dBV, 50 ohms			Transformer-isolated, balanced				
Source	Type	AM	FM	Chime	Alarm	Message	Others			
	V-1014B				○		Siren, Yelp, Buzzer			
	V-1016B				○		Alarm (2-tone)			
	V-1018B			○	○		Chime (4 speeds), Alarm (8-tone)			
	V-1015B			○			Chime, Gong			
	V-1034B	○	○				Radio tuner (AM: 552-1620kHz, FM: 87.5-108MHz)			
Data Receiver	V-1069B			○			Input sensitivity & Impedance: 0dBV, 600 ohms using with VR-1010/1020 remote mic., Electrically balanced, Chime (4-2/-1-tone), Gong			
Type	Model	Functions								
	Equalizer	V-1501B	1/1 Octave 7-point equalizer							
Line Amp.	V-1071B	Output: 0dBV, 600 ohms, balanced								
	V-1072B									
Program Selector	V-1061B	4 selectors, 1 reset, 1 muting								
Zone Selector	V-1062B	5 zone + all-call								
	V-1067B	Module: 5 zone (4 zone + all-call), Remote: 5 zone + all-call								
Relay	V-1068B	Amp. switchover, Program, 5 zone selectors								
Power Supply	V-1082B	Output: 24V DC, 0.5A (regulated)/1A (unregulated)								
Interface	V-1090B	Bus line connection using YR-1000								
Fault Detection	V-1901B	Ground leakage								
	YA-1000A	Fault detection circuit								
Blank Panel	V-1001B	1-unit size								
	V-1002B	2-unit size								

900 Series Amplifiers

M-900MK2 8-Channel Mixer Preamplifier



- **Output Power:** +4dBm, +20dBm (max.) • **Power Bandwidth:** 30 – 20,000Hz, +20dBm, 0.5% THD/250 – 20,000Hz, +18dBm, 0.5% THD • **Frequency Response:** 20 – 20,000Hz, ±1dB • **Input Sensitivity:** Eight input ports/ Input ports #1 – #8; (100mV) 10k ohms/Bridging input/output; (100mV) 3.3k ohms • **Outputs:** Main; Balanced, 150/600 ohms/Aux; Unbalanced, 10k ohms, 0dBm
- **Signal-to-Noise Ratio (Band Pass: 20 – 20,000Hz) with Tone Controls Centered:** Master volume min.; 90dB/ Master volume max.; 77dB • **Controls:** 8 input gain controls/1 power ON/OFF switch/1 master gain control/1 bass tone control/1 treble tone control/1 tone defeat switch
- **Protection:** Self-protection, with AC fuses (inside)
- **Power Consumption:** 120V AC, 50/60Hz, 18W
- **Dimensions (W x H x D):** 420 x 99.1 x 307mm • **Weight (without input modules):** 5.3kg • **Finish:** Black

A-903MK2 (30W) A-906MK2 (60W) A-912MK2 (120W) 8-Channel Mixer Power Amplifiers



- **Output Power:** A-903MK2: 30W RMS/A-906MK2: 60W RMS/A-912MK2: 120W RMS • **Power Bandwidth:** (D); 20 – 20,000Hz, 0.5% THD/(T); 50 – 20,000Hz, 0.5% THD • **Frequency Response:** (D); 20 – 20,000Hz, ±1dB/(T); 20 – 15,000Hz, ±1dB/(T); 20 – 20,000Hz, ±1dB/-3dB
- **T.H.D.:** 0.02% at 1kHz, rated output • **Inputs:** Eight input ports: Each port accepts any input modules./One bridging input/output • **Input Sensitivity/Impedance:** Input Port #1 to #8: 100mV/10kΩ / Bridging Input/Output: 100mV/3.3kΩ
- **Preamp OUT/Power Amp IN:** 100mV into 600Ω/1000mV, 10kΩ • **Outputs:** Main (T); 4Ω, 25V and 70V, balanced/ Main (D); 8Ω, unbalanced/Aux: 10kΩ, 1V • **Output Regulation (1kHz):** (D) Less than 0.5dB, no load to full load/(Y) Less than 1.0dB, no load to full load • **S/N Ratio (Band Pass: 20 – 20,000Hz) with Tone defeat switch on:** Master volume min.; 90dB/Master volume max.; 77dB/ Power amplifier only; 105dB • **Tone Controls:** Bass: ±10dB at 100Hz, Treble: ±10dB at 10kHz • **Controls:** 8 input gain control/1 power ON/OFF switch/1 master gain control/1 low-cut switch (60Hz, 6dB/octave)/1 bass tone control/1 treble tone control/1 tone defeat switch
- **Protection:** Self-protection, with AC fuse (inside) • **Power Requirements:** AC mains, 120V, 60Hz or A-906MK2/ A-912MK2: 220 – 230/240V AC (switchable), 50/60Hz
- **Dimensions (W x H x D):** A-903MK2: 420 x 99.1 x 318mm/A-906MK2: 420 x 99.1 x 358mm/A-912MK2: 420 x 99.1 x 358mm • **Weight (without input modules):** A-903MK2: 7.8kg/A-906MK2: 9.6kg/A-912MK2: 11.4kg
- **Finish:** Black

P-912MK2 (120W) Power Amplifier



- **Output Power:** 120W RMS • **Power Bandwidth:** (D); 20 – 20,000Hz, 0.5% THD/(T); 50 – 20,000Hz, 0.5% THD • **Frequency Response:** (D); 20 – 20,000Hz, ±1dB/(T); 20 – 15,000Hz, ±1dB/(T); 20 – 20,000Hz, ±1dB/-3dB • **Input Sensitivity:** One input port/Input port; 100mV or 1000mV (switchable)/10k ohms/One direct input/Direct input; 100mV or 1000mV (switchable)/10k ohms • **Outputs:** Main (T); 8 ohms, 25V and 70V, balanced/Main (D); 4 ohms, unbalanced • **Signal-to-Noise Ratio (Band Pass: 20–20,000Hz) with Tone Controls Centered:** Input level switch in 0dBV (100mV) position; 108dB/ Input level switch in -20dBV (100mV) position; 90dB
- **Controls:** 1 input gain control/1 power ON/OFF switch/1 input level switch/1 low-cut switch
- **Protection:** Self-protection, with AC fuse (inside) • **Power Consumption:** 120V AC, 50/60Hz, 460VA • **Dimensions (W x H x D):** 420 x 99.1 x 358mm • **Weight (without input modules):** 10.9kg • **Finish:** Black

YA-920 Volume Cover

P-924MK2 (240W) Power Amplifier



- **Output Power:** (D); 240W RMS, (T); 220W RMS
- **Power Bandwidth:** (D); 20 – 20,000Hz, 0.5% THD/(T); 50 – 20,000Hz, 0.5% THD • **Frequency Response:** (D); 20 – 20,000Hz, ±1dB/(T); 20 – 15,000Hz, ±1dB/(T); 20 – 20,000Hz, ±1dB/-3dB • **Input Sensitivity:** One input port/Input port; 100mV or 1000mV (switchable)/10k ohms/One direct input/Direct input; 100mV or 1000mV (switchable)/10k ohms • **Outputs:** Main (T); 8 ohms, 25 and 70V, balanced/Main (D); 4 ohms, unbalanced
- **Signal-to-Noise Ratio (Band Pass: 20 – 20,000Hz) with Tone Controls Centered:** Input level switch in 0dBV (100mV) position; 108dB/ Input level switch in -20dBV (100mV) position; 90dB • **Controls:** 1 input gain control/1 power ON/OFF switch/1 input level switch/1 low-cut switch
- **Protection:** Self-protection, with 2 AC fuses (1 inside) and 2 DC fuses • **Power Consumption:** 120V AC, 50/60Hz, 180W • **Dimensions (W x H x D):** 420 x 151.3 x 334.2mm • **Weight (without input modules):** 19.5kg
- **Finish:** Black

AX-1000A 8-Channel Modular Automatic Mixer











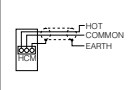
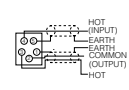

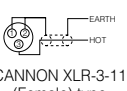

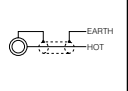
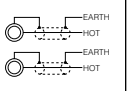
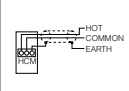
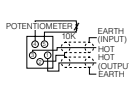
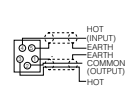









- **Power Requirement:** AC Mains 60Hz • **Power Consumption:** 24W • **Frequency Response:** 20 to 20,000Hz, ±1dB • **Distortion:** THD: Less than 0.1%, at 1kHz signal input • **S/N Ratio:** Better than 90dB, with all vol. min./Better than 77dB, with band pass 20 – 20,000Hz, input vol. min., master vol. max. • **Inputs:** 8 x Input port for TOA 900 Series modules: 100mV, 10kΩ/1 x Link in: 100mV, 10kΩ
- **Outputs:** 1 x Main output; 600Ω/150Ω, balanced, transformer isolated/8 x Direct outputs; 680Ω: Normal -20dBV (100mV), Maximum +16dBV (6.3V)/1 x Link out; 100mV, 1kΩ/8 x Logic output, isolated open collector (30mA, 24V DC max.) • **Controls:** 8 x Input volume/1 x Master volume/8 x Threshold controls/1 x NOM attenuation controls/8 x Off attenuation controls/1 x Master / slave switch/1 x Set of 8 Channel mute DIP switch/1 x INT/EXT mut function select switch • **Number of Max. Stacking:** 10 units (80 channels) • **Max. Attenuation Level:** 20dB
- **Attenuation System:** 10 log NOM (Number of open Mic.) typical (Continuous adjustable from 0dB to 20 log NOMdB)
- **Dimensions (W x H x D):** 420 x 151.2 x 331.5mm
- **Weight:** 7kg • **Finish:** Black

900 SERIES PLUG-IN MODULE SPECIFICATIONS & SELECTION GUIDE

TYPE	MODEL NAME	FUNCTION	Source Impedance	Input/Sensitivity for Rated output (-20dBV/100mV)	Gain	T.H.D.-N (1kHz)	Max. Before Clip into 10kohms load at less than 0.5% THD (1kHz)				
Balanced Line Input (Zin=10k ohms)	B-01	Balanced Line input	Balanced 10k ohms	-18dBV (125mV)	-1dB	—	—				
	B-11	Balanced Line input with Mute-Receive		Adjustable -20--+10dBV (100mV – 3.200mV)	-30-0dB	less than 0.05% at output 0dBV	+12dBV (4V)				
	B-21	Balanced Line input with Remote Volume Control			-18dBV (125mV)	-1dB	—				
	B-41	Balanced Line input with Mute-Send		-18dBV (125mV)	-1dB	—	—				
Speaker Processor	E-03	Processor Module for TOA F-121C/CM Speaker	Input, Unbalanced 50k ohms Output, Unbalanced 1k ohms	-14dBV (200mV) at 1kHz	-6dB at 1kHz	less than 0.05% at output 0dBV	+14dBV (5V) at 100Hz				
	E-04	Processor Module for TOA H-1 Speaker		-20dBV (100mV) at 1kHz	0dB at 1kHz		+14dBV (5V)				
	E-05	Processor Module for TOA H-2(WP) Speaker	-20dBV (100mV) at 1kHz	0dB at 1kHz	less than 0.1% at output 0dBV, 200Hz	+12dBV (5V) at 100Hz					
	E-06	Processor Module for TOA H-3(WP) Speaker	-20dBV (100mV) at 1kHz	0dB at 1kHz							
	E-07	Processor Module for TOA HB-1, FB-100 Subwoofer System	Output, Balanced 600 ohms	-18dBV (125mV) at 20Hz			-2dB at 20Hz				
Balanced Line Input (Zin=600 ohms)	L-01	Balanced Line Matching input	Balanced 600 ohms	-18dBV (125mV)	-2dB	—	—				
	L-11	Balanced Line Matching input with Mute-Receive		Nominal -60dBV (1.0mV) Adjustable -72--52dBV (0.25-2.5mV)	Nominal 40dB Adjustable 32-52dB	less than 0.2% at output 0dBV	+12dBV (4V)				
	L-41	Balanced Line Matching input with Mute-Send			Nominal 40dB Adjustable 32-52dB						
Microphone input	M-01	Balanced Low-Z Microphone input with High/Low cut filters, +22VDC Phantom Power	Balanced 200 ohms	Nominal -60dBV (1.0mV) Adjustable -72--52dBV (0.25-2.5mV)	Nominal 40dB Adjustable 32-52dB	less than 0.05% at output 0dBV	+12dBV (4V)				
	M-03	Unbalanced Hi-Z Microphone input with Low-cut and High Cut Filters		Nominal -60dBV (3.2mV) Adjustable -62--42dBV (0.8-8.0mV)	Nominal 30dB Adjustable 22-42dB						
	M-11	Balanced Low-Z Microphone input with High/Low cut filters, +22VDC Phantom Power, Mute-Receive	Balanced 200 ohms	Nominal -60dBV (1.0mV) Adjustable -72--52dBV (0.25-2.5mV)	Nominal 40dB Adjustable 32-52dB	less than 0.1% at output 0dBV	—				
	M-21	Balanced Low-Z Microphone input with High/Low cut filters, +22VDC Phantom Power, Remote Volume Control		Nominal -60dBV (1.0mV) Adjustable -71--47dBV (0.28-4.5mV)	Nominal 40dB Adjustable 27-51dB						
	M-41	Balanced Low-Z Microphone input with High/Low cut filters, +22VDC Phantom Power, Mute-Send		Nominal -60dBV (1.0mV) Adjustable -72--52dBV (0.25-2.5mV)	Nominal 40dB Adjustable 32-52dB						
	M-51	Balanced Low-Z Microphone input with Low cut filters, +22VDC Phantom Power, Voice-Gate		Nominal -60dBV (1.0mV) Adjustable -72--52dBV (0.25-2.5mV)	Nominal 40dB Adjustable 32-52dB						
M-61	Balanced Low-Z Microphone input with High/Low cut filters, +22VDC Phantom Power, Compressor	Nominal -60dBV (1.0mV) Adjustable -72--52dBV (0.25-2.5mV)	Nominal 40dB Adjustable 32-52dB								
Signal Generator	S-01	1kHz Sine-wave tone Signal Generator	—	Output, -6dBV (0.5V)	∞-0dB	0.5V (-6dBV) 0.5%THD	—				
	S-02	Buzzer/Help Tone signal Generator		Output, 0dBVp-p (1Vp-p)							
	S-04	Switch Selectable Tone Generator		Output, 3.5dBVp-p (1.5Vp-p)							
Output Module	T-01	Balanced Line output	Output Balanced 600 ohms	Output, Adjustable -22--6dBV (60-500mV) at 600 ohms terminated, input = 100mV	Nominal 20dB Adjustable 4-20dB	less than 0.1% at output 0dBV	+14dBV (5V) at 1% THD				
Line Input/ Output	T-02	Unbalanced Line Input with Music-On-Hold Output	AUX	Unbalanced 220k ohms	Nominal -20dBV (100mV) Adjustable -30-0dBV (100-1000mV)	Nominal 0dB Adjustable -20-0dB	less than 0.1% at output 0dBV	+12dBV (4V)			
			Line OUTPUT	Balanced 600 ohms	Nominal 0dB (1V) Adjustable -16-0dBV (160-1100mV) at 600 ohms terminated, input = 100mV	Nominal 20dB Adjustable 4-20dB					
	T-12	Unbalanced Line Input with Music-On-Hold Output & Input Mute-Receive	AUX	Unbalanced 220k ohms	Nominal -20dBV (100mV) Adjustable -20-0dBV (100-1000mV)	Nominal 0dB Adjustable -20-0dB					
Unbalanced Hi-Z Line input Module	U-01	Unbalanced Line Input	Unbalanced 220k ohms	Nominal -20dBV (100mV) Adjustable -20--+10dBV (100-3200mV)	Nominal 0dB Adjustable -30-0dB	less than 0.05% at output 0dBV	+12dBV (4V)				
	U-03	Unbalanced Line input with High/Low Cut Filters									
	U-11	Unbalanced Line Input with Mute-Receive									
	U-12	Unbalanced Line input with Variable Mute-Receive Depth									
	U-13	Unbalanced Line input with High/Low Cut Filters and Mute-Receive									
	U-14	Input Priority Module ([LUKE] input with Compressor has priority over [BGM] input.)						Unbalanced 47k ohms	[BGM] input, -34--14dBV [LUKE] input, -42--+10dBV	[BGM] input, Nominal 0dB Adjustable -14+6dB	+14dBV (5V)
	U-21	Unbalanced Line input with Remote Volume control						Unbalanced 220k ohms	Nominal -20dBV (100mV) Adjustable -20--+10dBV (100-3200mV)	Nominal 0dB Adjustable -30-0dB	+12dBV (4V)
U-43	Unbalanced Line input with High/Low cut Filters and Mute-Send	Unbalanced 220k ohms	Nominal -20dBV (100mV) Adjustable -20--+10dBV (100-3200mV)	0--30dB							
U-61	Unbalanced Line input with Compressor	Unbalanced 10k ohms	-20--+10dBV (100mV-3.200mV)	Output Level, -30-0dB, Input Level Fixed.	less than 0.05% at output -6dBV	—					
VCA	V-01	Voltage Controlled Amplifier	Unbalanced 10k ohms	—	-80-0dB	less than 0.03% at output 0dBV	+14dBV (5V)				

TOA 900 SERIES PLUG-IN MODULE CONNECTIOIN CHART *

			Connectors							
Plug-Connection	Balanced Connection	M-01 Series M-11 M-21 M-41 M-51 Series	M-61 Series B-01 Series B-11 Series B-21 B-41	L-01 Series L-11 L-41 T-01 T-12				—		
	Unbalanced Connection	M-03 U-01 Series U-03 U-11 Series	U-13 U-12 U-43							
	Input, Output Connection	U-21 U-61			—	—	—	—	—	
	Input, Output Connection	T-02			—	—	—	—	—	

Frequency Response	Noise Level (with 20-20kHz BPF)	TONE Control	Signal Activating Mute Sensitivity	Signal Muting Level at 1kHz	Remote Control Range	Compress. Range [Threshold]	Power Requirement [24VDC]	Controls [Pre-settable]	Weight (max.)									
20-20kHz ±1.5dB	—	—	—	—	—	—	—	—	110g	B-01F	—	—	—	—	—	B-01S	—	
20-20kHz ±1.0dB	-86dBV (50µV max.)	—	—	60dB	—	—	5mA	—	80g	—	—	—	—	—	—	B-11S	—	
20-20kHz ±1.5dB	—	—	-42~-36dBV (8-15mV)	—	0-55dB	—	27mA	1-GAIN	90g	—	—	—	—	—	—	—	B-21S	
20-20kHz ±1.5dB	—	—	—	—	—	—	9mA	1-GAIN (Muting sens.)	90g	—	—	—	—	—	—	—	B-41S	
appropriate for F-121C,CM speaker	—	—	—	—	—	—	25mA	—	55g	—	—	—	E-03R	—	—	—	—	
appropriate for H-1 speaker	—	—	—	—	—	—	25mA	—	55g	—	—	—	E-04R	—	—	—	—	
appropriate for H-2(WP) speaker	-86dBV (50µV max.)	—	—	—	—	—	25mA	—	55g	—	—	—	E-05R	—	—	—	—	
appropriate for H-3(WP) speaker	—	—	—	—	—	—	25mA	—	55g	—	—	—	E-06R	—	—	—	—	
appropriate for HB-1FW-100 LPF (-12dB/oct), f _c =100Hz, Q=1.0	—	—	—	—	—	—	35mA	—	95g	—	—	—	—	—	—	—	E-07S	
20-20kHz ±1.5dB	—	—	—	60dB	—	—	5mA	—	80g	L-01F	—	—	—	—	—	L-01S	—	
20-20kHz ±1.5dB	—	—	-42~-36dBV (8-15mV)	—	—	—	9mA	1-Sensitivity	85g	—	—	—	—	—	—	—	L-41S	
25-20kHz ±2.0dB at GAIN=40dB	-86dBV (50µV max.) Input Equivalent Noise: -126dBV	—	—	—	—	—	9mA	—	110g	M-01F	M-01M	M-01P	—	—	—	—	M-01S	—
20-20kHz ±1.5dB	-86dBV (50µV max.) Input Equivalent Noise: -116dBV	—	—	—	—	—	9mA	—	65g	—	—	M-03P	—	—	—	—	—	
25-20kHz ±1.5dB	—	100Hz 0~-10dB 10kHz 0~-10dB	—	60dB	—	—	14mA	1-GAIN 2-LOW cut 3-HIGH cut	85g	—	—	—	—	—	—	—	M-11S	—
25-20kHz ±2.0dB	-86dBV (50µV max.) Input Equivalent Noise: -126dBV	—	-70~-62dBV (0.3-0.8mV)	—	0-55dB	—	30mA	—	90g	—	—	—	—	—	—	—	M-21S	
25-20kHz ±1.5dB	—	100Hz 0~-10dB 10kHz 0~-10dB	-76~-57dBV (0.15-1.4mV)	40dB	—	—	15mA	—	80g	—	—	—	—	—	—	—	M-41S	
25-20kHz ±1.5dB	—	100Hz 0~-10dB 10kHz 0~-10dB	—	—	—	—	27mA	1-Gain 2-LOW cut 3-SENSITIVITY	110g	M-51F	—	—	—	—	—	—	M-51S	
—	-80dBV (0.1mV max.) -100dBV (10µV max.)	—	—	—	—	—	33mA	1-THRESHOLD 2-LOW cut 3-HIGH cut	110g	M-61F	—	—	—	—	—	—	M-61S	
—	-80dBV (0.1mV max.)	Selectable; 1/2/4 Tone chime, Westminster chime, Gong Tone	—	—	—	—	7mA	1-Gain	60g	—	—	—	—	—	—	—	S-01S	
—	—	—	—	—	—	—	11mA	1-Gain	65g	—	—	—	—	—	—	—	S-02S	
—	—	—	—	—	—	—	20mA	1-Gain 2-Tone select DIP-SW	70g	—	—	—	—	—	—	—	S-04S	
20-20kHz ±2.5dB	-90dBV (30µV max.)	—	—	—	—	—	35mA	1-Gain	95g	—	—	—	—	—	—	—	T-01S	
20-20kHz ±2.5dB	-90dBV (30µV max.)	—	—	—	—	—	38mA	1-OUTPUT Gain 2-INPUT Gain	105g	—	—	—	—	—	—	—	T-02S	
20-20kHz ±2.5dB	-86dBV (50µV max.)	—	—	55dB	—	—	38mA	1-OUTPUT Gain 2-INPUT Gain	95g	—	—	—	—	—	—	—	T-12S	
20-20kHz ±1.0dB	-106dBV (5µV max.) -100dBV (10µV max.)	100Hz 0~-10dB 10kHz 0~-10dB	—	—	—	—	4mA	1-Gain	75g	U-01F	—	U-01P	U-01R	—	—	—	U-01S	
20-20kHz ±1.5dB	-100dBV (10µV max.)	—	—	60dB	—	—	8mA	1-GAIN 2-LOW cut 3-HIGH cut	50g	—	—	—	—	U-03R	—	—	U-03S	
20-20kHz ±1.0dB	-100dBV (10µV max.)	—	—	0-60dB Adjustable	—	—	9mA	1-Gain	55g	—	—	—	—	U-11R	—	—	U-11S	
20-20kHz ±1.0dB	-106dBV (5µV max.)	—	—	—	—	—	27mA	1-Gain 2-Mute Level	60g	—	—	—	—	—	—	—	U-12S	
20-20kHz ±1.5dB	-100dBV (10µV max.)	100Hz 0~-10dB 10kHz 0~-10dB	—	50dB	—	—	11mA	1-GAIN 2-LOW cut 3-HIGH cut	50g	—	—	—	—	—	U-13R	—	U-13S	
20-20kHz ±1.0dB	-100dBV (10µV max.)	—	Adjustable -60~-30dBV (1-32mV)	—	—	—	-30dBV	1-GATE 2-BGM 3-JUKE	64g	—	—	—	—	—	—	—	U-14R	
20-20kHz ±1.5dB	-106dBV (5µV max.)	—	—	—	0-55dB	—	27mA	1-Gain	65g	—	—	—	—	—	—	—	U-21S	
20-20kHz ±1.5dB	-100dBV (10µV max.)	100Hz 0~-10dB 10kHz 0~-10dB	-44~-36dBV (6-15mV)	—	—	—	15mA	1-GAIN 2-LOW cut 3-HIGH cut	50g	—	—	—	—	—	U-43R	—	U-43S	
20-20kHz ±1.0dB	-90dBV (30µV max.)	—	—	—	—	—	30mA	1-Gain	60g	—	—	—	—	—	—	—	U-61S	
20-20kHz ±1.0dB	-86dBV (50µV max.)	—	—	—	0-80dB	—	25mA	—	51g	—	—	—	—	V-01S	—	—	—	

A-1000 Series Mixer Power Amplifiers

LH Version

A-1031(30W)

A-1061(60W)

110~120V AC/220-240V AC, 12V DC

A-1121(120W)

110~120V AC/220-240V AC, 24V DC



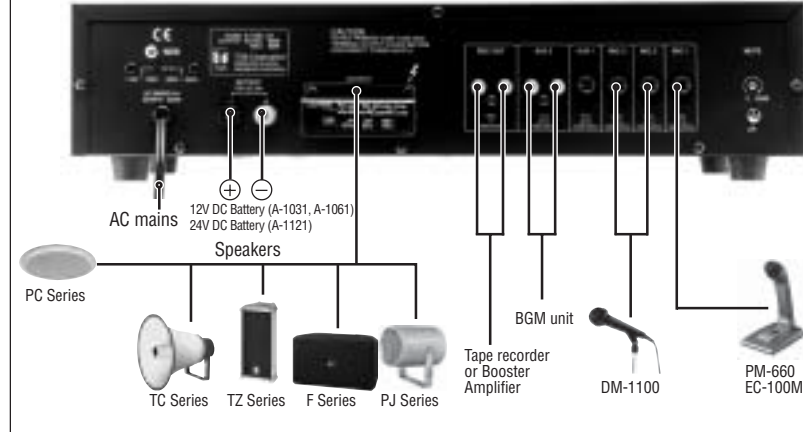
- **Power Output:** A-1031: Max. 45W, rated 30W/A-1061: Max. 90W, rated 60W/A-1121: Max. 180W, rated 120W
- **Output Regulation:** Less than 3dB, no load to full load
- **Speaker Output:** A-1031: High impedance; 170 ohms (70V), 330 ohms (100V), balanced/Low impedance; 4 ohms, balanced/A-1061: High impedance; 85 ohms (70V), 170 ohms (100V), balanced/Low impedance; 4 ohms, balanced/A-1120: High impedance; 42 ohms (70V), 85 ohms (100V), balanced, Low impedance; 4 ohms, balanced
- **Recording Output:** 0dBV, 600 ohms, unbalanced, RCA pin jack (when using both L and R)
- **Input:** A-1031: MIC1; -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/MIC 2&3; -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/AUX1; -20dBV (100mV), 10k ohms, unbalanced, phone jack 6.3mm/AUX2; -20dBV (100mV), 10k ohms, unbalanced, RCA pin jack (when using both L and R)/A-1061: MIC1; -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/MIC 2&3; -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/AUX1; -20dBV (100mV), 10k ohms, unbalanced, phone jack 6.3mm/AUX2; -20dBV

(100mV), 10k ohms, unbalanced, RCA pin jack (when using both L and R)/A-1120: MIC1 -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/MIC2&3 -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/AUX1 -20dBV (100mV), 10k ohms, unbalanced, phone jack 6.3mm/AUX2 -20dBV (100mV), 10k ohms, unbalanced, RCA pin jack (when using both L and R)

- **Frequency Response:** 100 - 10,000Hz (±3dB)
- **Distortion:** Less than 1% at 1kHz (1/3 rated power)
- **S/N ratio:** Better than 92dB (all volume controls c.c.w.)/Better than 75dB (MASTER volume c.w., all input volume c.c.w.)/Better than 75dB (MIC 1, 2, 3; better than 70dB/AUX 1, 2)
- **Tone Controls:** Over -10dB at 100Hz and

10,000Hz • **Indicators:** Power indicator LED, LED output level meter • **Protection Circuit:** Current limiter, thermal protection, AC and DC fuse • **Muting Function:** MIC1 overrides other input signals with 0-30dB attenuation (activated by voice signal) • **AC Power Supply:** 110 - 120V or 220 - 240V AC selectable • **DC Power Supply:** A-1031, A-1061: 12V DC/A-1121: 24V DC • **AC Power Consumption (rated output):** A-1031: 120W/A-1061: 220W/A-1121: 380W • **DC Power Consumption:** A-1031: 5A/A-1061, A-1121: 9A • **Dimensions (W × H × D):** 420 × 103 × 262mm • **Weight:** A-1031: 5kg/A-1061: 7kg/A-1120: 10kg • **Finish:** Panel; ABS resin, Black/ Case; steel plate, Black

Connection Diagram (LH version)



AS Version

A-1031(30W)

A-1061(60W)

110~120V AC/220-240V AC, 12V DC

A-1121(120W)

110~120V AC/220-240V AC, 24V DC



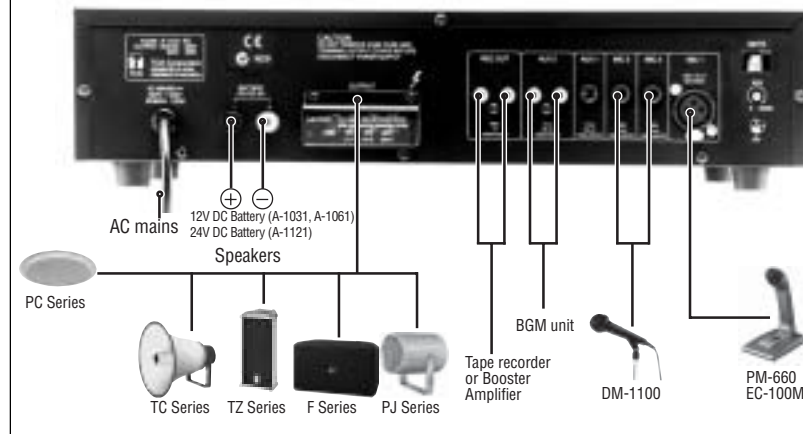
- **Power Output:** A-1031: Max. 45W, rated 30W/A-1061: Max. 90W, rated 60W/A-1121: Max. 180W, rated 120W
- **Output Regulation:** Less than 3dB (no load to full load)
- **Speaker Output:** A-1031: High impedance; 170 ohms (70V), 330 ohms (100V), balanced/Low impedance; 4 ohms, balanced/A-1061: High impedance; 85 ohms (70V), 170 ohms (100V), balanced/Low impedance; 4 ohms, balanced/A-1120: High impedance; 42 ohms (70V), 85 ohms (100V), balanced, Low impedance; 4 ohms, balanced
- **Recording Output:** 0dBV, 600 ohms, unbalanced, RCA pin jack (when using both L and R)
- **Input:** A-1031: MIC1; -55dBV (1.8mV), 600 ohms, electrically balanced, 3P XLR type/ MIC 2&3; -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/AUX1; -20dBV (100mV), 10k ohms, unbalanced, phone jack 6.3mm/AUX2; -20dBV (100mV), 10k ohms, unbalanced, RCA pin jack (when using both L and R)/A-1061: MIC1; -55dBV (1.8mV), 600 ohms, electrically balanced, 3P XLR type/ MIC 2&3; -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/AUX1; -20dBV

(100mV), 10k ohms, unbalanced, phone jack 6.2mm/AUX2; -20dBV (100mV), 10k ohms, unbalanced, RCA pin jack (when using both L and R)/A-1121: MIC1; -55dBV (1.8mV), 600 ohms, electrically balanced, 3P XLR type/ MIC 2&3; -55dBV (1.8mV), 600 ohms, unbalanced, phone jack 6.3mm/AUX1; -20dBV (100mV), 10k ohms, unbalanced, phone jack 6.3mm/AUX2; -20dBV (100mV), 10k ohms, unbalanced, RCA pin jack (when using both L and R) • **Frequency Response:** 100 - 10,000Hz (±3dB)

- **Distortion:** Less than 1% at 1kHz (1/3 rated power)
- **S/N ratio:** All volume controls c.c.w.; better than 92dB/MASTER volume c.w., all input volume c.c.w., better than 75dB/MIC 1, 2, 3; better than 70dB/AUX 1, 2; better than 75dB
- **Tone Controls:** Over -10dB at 100Hz and

10,000Hz • **Indicators:** Power indicator LED, LED output level meter • **Protection Circuit:** Current limiter, thermal protection, AC and DC fuse • **Muting Function:** MIC1 overrides other input signals with 0 - 30dB attenuation (activated by external make contact) • **AC Power Supply:** 110 - 120V or 220 - 240V AC • **DC Power Supply:** 12V DCA-1031, A-1061: 12V DC/A-1121: 24V DC • **AC Power Consumption (rated output):** A-1031: 120W/A-1061: 220W/A-1121: 380W • **DC Power Consumption:** A-1031: 5A/A-1061, A-1121: 9A • **Dimensions (W × H × D):** 420 × 103 × 262mm • **Weight:** A-1031: 5kg/A-1061: 7kg/A-1120: 10kg • **Finish:** Panel; ABS resin, Black/ Case; steel plate, Black

Connection Diagram



A-1500 Series Mixer Power Amplifiers

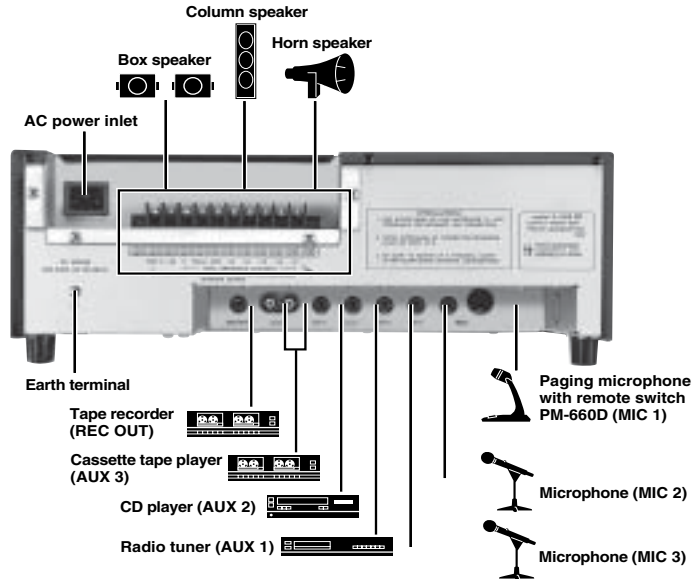
A-1503 (30W)
A-1506 (60W)
A-1512 (120W)
 220V~240V AC, 50/60Hz



- **Power Output:** A-1503: 30W (max. 45W), A-1506: 60W (max. 90W), A-1512: 120W (max. 180W)
- **Speaker Output:** High Impedance 100V Line: A-1503: 330 ohms, A-1506: 167 ohms, A-1512: 83 ohms/Low Impedance: 4 ohms
- **Frequency Response:** 50 – 20,000Hz (3W output, AUX input)
- **Distortion:** Less than 3% at 1kHz
- **Tone Control:** Bass: $\pm 10\text{dB}$ at 100Hz/Treble: $\pm 10\text{dB}$ at 10kHz
- **S/N Ratio:** MIC 1, 2, 3; 54dB below rated output/AUX 1, 2, 3; 60dB below rated output
- **Speaker Selection:** 5 individual-zone selection buttons & all-zone call button
- **Recording Output:** 0dBV, 10k ohms, unbalanced, phone jack
- **Mic Input:** MIC 1: -65dBV , 600 ohms, unbalanced, phone jack x 1, 5P DIN socket x 1 (Phone jack takes precedence over 5P DIN socket.)/MIC 2: -65dBV , 600 ohms, unbalanced, phone jack/MIC 3: -65dBV , 600 ohms, unbalanced, phone jack
- **AUX Input:** AUX 1 (Selectable): -22dBV , 10k ohms, unbalanced, phone jack/AUX 2 (Selectable): -22dBV , 10k ohms, unbalanced, phone jack/AUX 3 (Selectable): -22dBV , 10k ohms, unbalanced, RCA pin jacks (for stereo L & R inputs)
- **Chime:** Single tone, 500Hz (Remotely controlled by PM-660D's talk switch)
- **Muting Circuit:** Automatic muting & release operation to other inputs (MIC 2, MIC 3, AUX 1, AUX 2 & AUX 3) by MIC 1 input/Muting Level: 0 ~ 30dB/Release Time: Approx. 7 seconds
- **Power Consumption:** At rated output: A-1503A: 73W, A-1506: 130W, A-1512: 234W
- **Dimensions (W x H x D):** 420 x 150 x 300mm
- **Weight:** A-1503: 7.9kg, A-1506: 9.8kg, A-1512: 12.6kg
- **Finish:** Front Panel; ABS resin, Metallic gray/Case; Leatherette steel plate, Black

* With only a minimum of modification, two microphone inputs (MIC 2 & 3) may be converted to additional auxiliary inputs (AUX 4 & 5).

Typical Connection (A-1500 Series)



Accessories

Balance Input Units for A-1500 Series Amplifiers

U-1500D (DIN Type)

- Transformer-isolated balance input.
- 600Ω : 600Ω



U-1500C (XLR Type)

- Transformer-isolated balance input.
- 600Ω : 600Ω



A-1700 Series Microphone Mixing Amplifiers

A-1706 (60W)
A-1712 (120W)
A-1724 (240W)
 AC mains 50/60Hz model



- **Rated Output:** A-1706: 60W, A-1712: 120W, A-1724: 240W
- **Power Consumption:** A-1706: 150W (rated output), 60W (EN60065), A-1712: 258W (rated output), 105W (EN60065), A-1724: 532W (rated output), 220W (EN60065)
- **Frequency Response:** 50 – 20,000Hz ($\pm 3\text{dB}$)
- **Distortion:** Under 2% at 1kHz, rated power
- **Input:** MIC 1 – 6; -60dB^* , 600Ω, electronically-balanced, combined type of XLR-3-31 equivalent and phone jack/AUX 1 – 2; -20dB^* , 600Ω, electronically-balanced, combined type of XLR-3-31 equivalent and phone jack (Either MIC 5 or AUX 1, and either MIC 6 or AUX 2 selectable)/AUX 3 – 4; -20dB^* , 10kΩ, unbalanced, RCA pin jack/AUX 5; -20dB^* , 10kΩ, unbalanced, combined type of XLR-3-31 equivalent and phone jack/PWR AMP IN; 0dB*, 600Ω, unbalanced, RCA pin jack (An equalizer or other signal processor connectable between LINE OUT and PWR AMP IN terminals)
- **Output:** REC: 0dB*, 600Ω, unbalanced, RCA pin jack/LINE: 0dB*, 600Ω, unbalanced, RCA pin jack/SPEAKER SELECTOR: 2 zone, high impedance (A-1706; 100V line/167Ω, A-1712; 100V line/83Ω, A-1724; 100V line/42Ω), individual selector key, M4 screw terminal/DIRECT SPEAKER OUT; High impedance (A-1706; 100V line/167Ω, A-1712; 100V line/83Ω, A-1724; 100V line/42Ω), M4 screw terminal/Low impedance (4 – 16Ω), M4 screw terminal/(Both Low and High impedance terminals cannot be used at the same time.)
- **Phantom Power:** ON or OFF for each MIC 1 – 6 with switch setting
- **S/N ratio (Band Pass: 20 – 20,000Hz):** Over 100dB (Master volume: min)/Over 76dB

(Master volume: max)/Over 60dB (MIC 1 – MIC 4)/Over 53dB (MIC 5, 6)/Over 76dB (AUX 1 – AUX 5)

- **Tone Control:** Bass: $\pm 10\text{dB}$ at 100Hz, Treble: $\pm 10\text{dB}$ at 10kHz
- **Control Input:** REMOTE VOLUME; M3 screw terminal/POWER REMOTE; No-voltage make contact input, short-circuit: under 10mA, M3 screw terminal
- **Indicator:** 5 point LED output level meter, Power indicator LED, Zone indicator LED
- **Operating Temperature:** -10°C to $+40^\circ\text{C}$
- **Finish:** Panel; ABS resin, black, hair line/Case; Steel plate, black
- **Dimensions:** 420 (W) x 107.7 (H) x 367 (D)mm
- **Weight:**

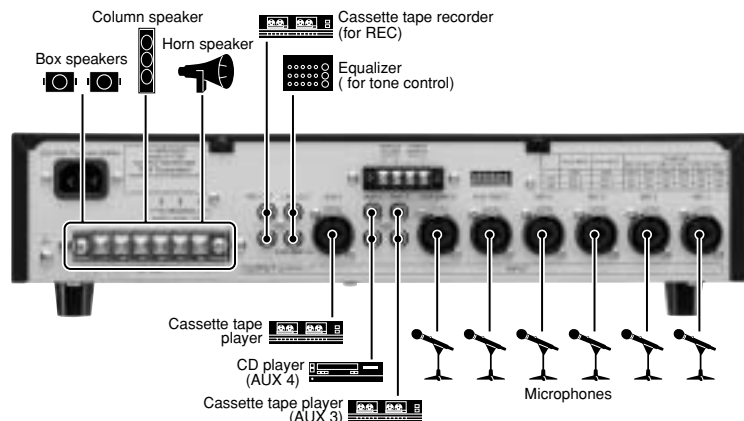
A-1706: 9.3kg, A-1712: 12.6kg, A-1724: 13.5kg

- **Accessory:** Power cord x 1, Terminal block cover x 1, Terminal block cover mounting screw x 2
- **Option:** Rack mounting bracket, MB-25B, Volume control cover, YA-920

Note: Distance between barriers on the above screw terminals: M3 = 7mm, M4 = 9mm

* 0dB = 1V

Typical Connection (A-1700 Series)



A-1800 Series Mixer Power Amplifiers

A-1803 (30W)

A-1806 (60W)

A-1812 (120W)

AC mains 50/60Hz, or 24V DC model



• **Rated Output:** A-1803; 30W, A-1806; 60W, A-1812; 120W • **Power/Current Consumption:** AC operation; A-1803; 80W (rated output), 37W (EN60065), A-1806; 158W (rated output), 66W (EN60065), A-1812; 260W (rated output), 110W (EN60065)/24V DC operation; A-1803; 2.0A (rated output), 1.0A (EN60065), A-1806; 3.8A (rated output), 1.6A (EN60065), A-1812; 7.0A (rated output), 2.8A (EN60065) • **Frequency Response:** 50 – 20,000Hz (± 3 dB) • **Distortion:** Under 2% at 1kHz, rated power • **Input:** MIC 1; -60 dB^{*1}, 600 Ω , electronically-balanced, combined type of XLR-3-31 equivalent and phone jack, DIN socket (5 pins)/MIC 2-3; -60 dB^{*1}, 600 Ω , electronically-balanced, combined type of XLR-3-31 equivalent and phone jack/AUX 1(MOH); -20 dB^{*1}, 10k Ω , unbalanced, RCA pin jack/AUX 2; -20 dB^{*1}, 10k Ω , unbalanced, RCA pin jack/AUX 3; -20 dB^{*1}, 10k Ω , unbalanced, combined type of XLR-3-31 and phone jack/TEL^{*2}; -20 dB^{*1}, 10k Ω , electronically-balanced, M3 screw terminal/EMERGENCY; 0dB^{*1}, 600 Ω , unbalanced, M3 screw terminal • **Output:** REC; 0dB^{*1}, 600 Ω , unbalanced, RCA pin jack/LINE 1, 2^{*3}; 0dB^{*1}, 600 Ω , unbalanced, RCA pin jack/MOH; 0dB^{*1}, 600 Ω , transformer balanced, M3 screw terminal/SPEAKER SELECTOR; 2 zone, high impedance (A-1803; 100V line/330 Ω , A-1806; 100V line/167 Ω , A-1812; 100V line/83 Ω), individual selector switch, M4 screw terminal/DIRECT SPEAKER OUT; High impedance (A-1803; 100V line/330 Ω , A-1806; 100V line/167 Ω , A-1812; 100V line/83 Ω), M4 screw terminal/Low impedance (4 – 16 Ω), M4 screw terminal/(Both Low and High impedance terminals cannot be used at the same time.) • **Phantom Power:** ON or OFF for each MIC 1 – 3 with switch setting • **S/N ratio (Band Pass; 20 – 20,000Hz):** Over 100dB (Master volume: min)/Over 76dB (Master volume: max)/Over 60dB (MIC 1 – MIC 3)/Over 76dB (AUX 1 – AUX 3)/Over 90dB (TEL)/Over 96dB (EMERGENCY) • **Tone Control:** Bass; ± 10 dB at 100Hz, Treble; ± 10 dB at 10kHz • **Control Input:** TEL; No-voltage make contact input, short-circuit: under 5mA, M3 screw terminal/EMERGENCY^{*4}; No-voltage make contact input, short-circuit: under 10mA, M3 screw terminal • **Control Output:** Power remote; Open collector output, withstand voltage; 35V DC, control current; under 50mA, M3 screw terminal • **Chime:** 1-tone, 2-tone, or ascending 4-tone chime, or None selectable with switch setting, activated at MIC 1's DIN or CONTROL TEL terminal • **Indicator:** 5 point LED output level meter, Power indicator LED, Zone indicator LED, Emergency LED, TEL LED • **Priority:** EMERGENCY; Overrides other inputs/TEL; Overrides other inputs except "EMERGENCY", ON/OFF selectable with switch setting/MIC 1; Overrides other inputs except "EMERGENCY & TEL", ON/OFF selectable with switch setting • **Operating Temperature:** -10°C to $+40^{\circ}\text{C}$ • **Finish:** Panel; ABS resin, black, hair line/Case; Steel plate, black • **Dimensions:** 420 (W) \times 107.7 (H) \times 367 (D)mm • **Weight:** A-1803; 8.1kg, A-1806; 9.4kg, A-1812; 12.6kg • **Accessory:** Power cord \times 1, Terminal block cover \times 1, Terminal block cover mounting screw \times 2 • **Option:** Rack mounting bracket; MB-25B/Volume control cover; YA-920/Input transformer; IT-453A

Note: Distance between barriers on the above screw terminals: M3 = 7mm, M4 = 9mm

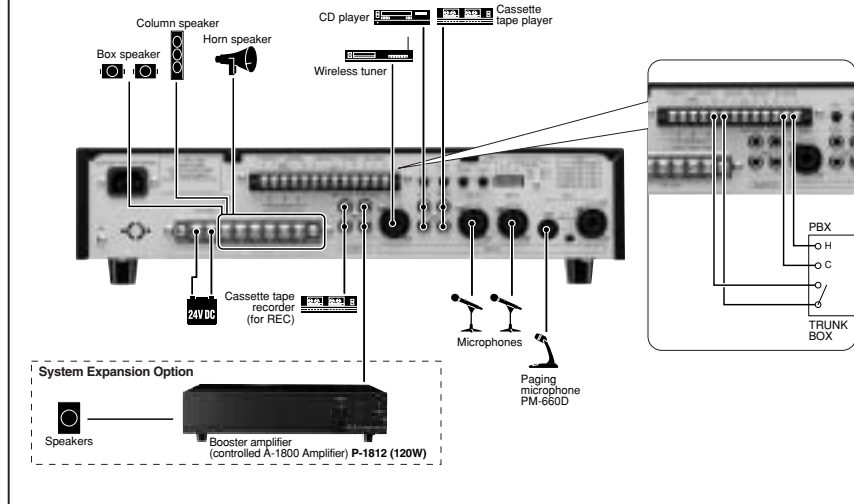
^{*1} 0dB = 1V

^{*2} Can be transformer-balanced with the addition of optional IT-453A input transformer.

^{*3} LINE 1 and LINE 2 outputs can be interlocked with ZONE 1 and ZONE 2 speaker selectors, respectively. (This function needs internal modification.)

^{*4} Operation when activated can be selected from the following: Turning ON the unit's power (factory-preset) or OFF. (The OFF function needs internal modification.)

Typical Connection (A-1800 Series)



P-1812 120W Power Amplifier

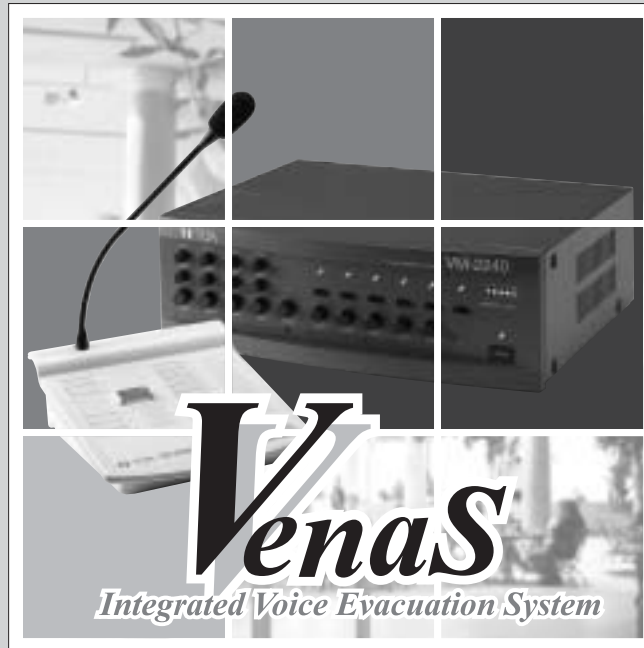


• **Power Source:** AC mains 50/60Hz, or 24V DC (M4 screw terminal) • **Rated Output:** 120W • **Power/Current Consumption:** AC operation: 258W (rated output), 94W (EN60065)/24V DC operation: 7.0A (rated output), 2.7A (EN60065) • **Frequency Response:** 50 – 20,000Hz (± 3 dB) • **Distortion:** Under 2% at 1kHz, rated power • **Input:** LINE: 0dB^{*1}–10dB^{*1} (switchable), 10k Ω , transformer balanced, RCA pin jack • **Output:** LINE: 0dB^{*1}, 600 Ω , unbalanced, RCA pin jack/SPEAKER; High impedance (100V line/83 Ω), M4 screw terminal, Low impedance (4 – 16 Ω), M4 screw terminal (Both Low and High impedance terminals cannot be used at the same time.) • **S/N ratio (Band Pass; 20 – 20,000Hz):** Over 100dB (Master volume: min)/Over 97dB (Master volume: max, INPUT LEVEL switch; 0dB)/Over 90dB (Master volume: max, INPUT LEVEL switch; -10 dB) • **Control Input:** POWER REMOTE; No-voltage make contact input, open voltage; 24V DC, short-circuit; under 1mA, M3 screw terminal/EMERGENCY^{*2}; No-voltage make contact input, open voltage; 24V DC, short-circuit; under 1mA, M3 screw terminal • **Indicator:** 5 point LED output level meter, Power indicator LED • **Operating Temperature:** -10°C to $+40^{\circ}\text{C}$ • **Finish:** Panel; ABS resin, black, hair line/Case; Steel plate, black • **Dimensions:** 420 (W) \times 107.7 (H) \times 367 (D)mm • **Weight:** 12.2kg • **Accessory:** Power cord \times 1, Terminal block cover \times 1, Terminal block cover mounting screw \times 2 • **Option:** Rack mounting bracket; MB-25B/Volume control cover; YA-920

Note: Distance between barriers on the above screw terminals: M3 = 7mm, M4 = 9mm

^{*1} 0dB = 1V

^{*2} Operation when activated can be selected from the following: Turning ON the unit's power (factory-preset) or OFF. (The OFF function needs internal modification.)



Integrated Voice Evacuation System

This important new category is added to the catalogue because it reflects the growing demand for increased safety and evacuation measures in various environments. TOA's Venas (Integrated Voice Evacuation System) presently includes several amplifier series. The top ranked series is the VX-2000 Integrated Voice Evacuation System for both general purpose and emergency broadcasts. It is composed of a System Manager, Surveillance Frame, Power Amplifiers, Power Supply Unit, Emergency Power Supply and a number of Remote Mics. Featuring a microprocessor controlled signal bus matrix system, multiple and versatile inputs, surveillance modes, software-driven system configuring and parameter setting, weekly program timer function and many other useful functions, the VX-2000 is fully EN60849-

compliant and can be expanded as requirements dictate. Complete with failure detection circuitry, this system easily fulfills all broadcast requirements for hotels, department stores, schools and similar locations.

Also noteworthy is the VM-2000 Series, a cost-effective solution for building management and owners that is designed specifically for providing effective communications in medium-sized facilities including shopping malls, hospitals and transportation terminals. In keeping with TOA's design requirement of unit expandability, various options are available for growing a system. An attractive appearance allows installation anywhere, and will even complement reception desks.

VX-2000 Series Integrated Voice Evacuation Systems

VX-2000 System Manager



- **Power Source:** 24V DC (operating range: 20 – 40V DC)/ M3.5 screw terminal, distance between barriers: 8.8m
- **Current Consumption:** Under 650mA (20V DC) • **Input:** –20dB*, unbalanced, Number of module slots: 8/Usable module: VX-200XR, VX-200XI, 900 series plug-in modules (M-01F, M-01M, M-01P, M-01S, M-03P, M-51F, M-51S, M-61F, M-61S, U-01F, U-01P, U-01R, U-01S, M-03R, U-03S, U-61S) • **Audio Link Output:** Number of audio buses: 4/ 0dB*, electronically balanced, RJ45 female connector/ Twisted-pair straight cable (TIA/EIA-568A standard)
- **Monitor Output:** 0dB*, electronically balanced, XLR receptacle (3 pins) • **Frequency Response:** 20 – 20,000Hz • **S/N Ratio:** Over 60dB • **Distortion:** Under 0.5% • **Cross Talk:** Under –60dB (1kHz, 0dB*) • **Control Input:** 16 inputs, no-voltage make contact, open voltage; 17V DC, Short circuit current; Under 5mA, RJ45 connector x 2 • **Control Output:** 16 outputs, open collector output, withstand voltage; 30V DC, Control current; Under 5mA, RJ45 connector x 2 • **Chime Tone:** Built-in chime; 4-tone chime (up)/4-tone chime (down)/2-tone chime/Gong
- **Communication System:** PC (Setting software to be installed): D-sub connector (9 pins), cross cable, RS-232C/ VX-2000SF; RJ45 female connector, Twisted-pair straight cable (TIA/EIA-568A standard), LONWORKS RS-485
- **Operating Temperature:** 0° C to +40° C • **Finish:** Panel; Surface-treated steel plate, black, 30% gloss, paint
- **Dimensions:** 482 (W) x 132.6 (H) x 337 (D)mm • **Weight:** 6.4kg • **Accessory:** Rack mounting bracket (preinstalled on the unit) x 2, Rack mounting screw x 4, Fiber washer x 4, Blank panel x 7, Blank panel mounting screw x 14, Setting software installation CD x 1, Fuse (T1.6A L) x 1/(T6.3A L) x 1 • **Option:** Voice announcement board; EV-200, Isolation transformer; IT-450 (audio link output)

* 0 dB = 1 V

Note: LONWORKS is a trademark of Echelon Corporation.

VX-2000SF Surveillance Frame



- **Power Source:** 24V DC (operating range: 20 – 40V DC)/ M3.5 screw terminal, distance between barriers: 8.8m
- **Current Consumption:** Under 2A (40V DC) • **Number of Module Slot:** 10, usable modules: VX-200SZ, VX-200SP, VX-200SI, VX-200SO • **Frequency Response:** 20 – 20,000Hz (when use VX-200SZ; 120 – 20,000Hz) • **S/N Ratio:** Over 60dB • **Distortion:** Under 0.5% • **Cross Talk:** Under –60dB (1kHz, 0dB*) • **Audio Link Input/Output:** Number of audio buses; 4/0dB*, electronically balanced, RJ45 female connector/Twisted-pair straight cable (TIA/EIA-568A standard) • **Standby Amplifier Link:** RJ45 female connector for connecting the VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier/Twisted-pair straight cable (TIA/EIA-568A standard) • **Communication System:** VX-2000, VX-2000SF; RJ45 female connector x 2, LONWORKS RS-485/VX-2000DS; RJ45 female connector x 2, Twisted-pair straight cable (TIA/EIA-568A standard) • **Operating Temperature:** 0° C to +40° C • **Finish:** Panel; Surface-treated steel plate, black, 30% gloss, paint • **Dimensions:** 482 (W) x 132.6 (H) x 337 (D)mm • **Weight:** 5.6kg
- **Accessory:** Rack mounting bracket (preinstalled on the unit) x 2, Rack mounting screw x 4, Fiber washer x 4, Blank panel x 9, Blank panel mounting screw x 18, Standby amp. cable (3m) x 1 • **Option:** Isolation transformer; IT-450 (audio link output)

* 0 dB = 1 V

Note: LONWORKS is a trademark of Echelon Corporation.

RM-200XF Fireman's Microphone



- **Power Source:** 24V DC (operating range: 16 – 40V DC)
- **Current Consumption:** Under 200mA (RM-200XF), 850mA (with 10 RM-210s connected) • **Audio Output:** 0dB*, 600Ω, balanced • **Hand-Held Microphone:** Dynamic microphone, Function switch (default; Press-to-talk), Microphone element fault detection • **Distortion:** Under 1% • **Frequency Response:** 200 – 15,000Hz • **S/N Ratio:** Over 55dB • **Internal Monitor Speaker:** 200mW
- **Volume Control:** Microphone volume control, Monitor speaker volume control • **Number of Function Keys:** 5 (including Hand-held microphone's switch), extendable up to 105 (with 10 RM-210s connected) • **Key Extension:** 10 keys extension per RM-210, EXTENSION connector
- **Number of Connectable Units:** 4 • **Communication System:** LONWORKS twisted pair free topology transceiver • **Connection Cable and Connector:** Category 5 STP cable, plug-in screw connector
- **Communication Distance:** 500m (Free topology wiring)
- **Finish:** ABS resin, blueish gray (PANTONE 538 or its equivalent) • **Dimensions:** 200 (W) x 215 (H) x 82.5 (D) mm (excluding the coiled cord) • **Weight:** 1.2kg
- **Accessory:** Plug-in screw terminal x 1, Wall mounting bracket x 1, Wall mounting screw x 2, Box mounting screw x 2 • **Applicable Box:** YC-301, YS-11A

* 0 dB = 1 V

Note: LONWORKS is a trademark of Echelon Corporation.

RM-200X Remote Microphone



- **Power Source:** 24V DC (operating range: 16 – 40V DC), supplied from RJ45 connector or power input jack (non-polarity type)/Usable power input plug; 5.5mm outer diameter, 2.1mm inner diameter, and 9.5mm long
- **Current Consumption:** Under 200mA (RM-200X), 750mA (with 9 RM-210s connected) • **Audio Output:** 0dB*, 600Ω, balanced, RJ45 connector • **Gooseneck Microphone:** Unidirectional electret condenser microphone • **External Microphone Input:** –40dB*, 2.2kΩ, unbalanced, mini jack, phantom powering • **Distortion:** Under 1% • **Frequency Response:** 100 – 20,000Hz
- **S/N Ratio:** Over 60dB • **Internal Monitor Speaker:** 200mW • **Volume Control:** Microphone volume control, Monitor speaker volume control • **Number of Function Keys:** 15, extendable up to 105 (with 9 RM-210s connected) • **Key Extension:** 10 keys extension per RM-210, EXTENSION connector • **Number of Connectable Units:** 8 (include RM-200XF) • **Communication System:** LONWORKS twisted pair free topology transceiver
- **Connection Cable and Connector:** Category 5 STP cable, RJ45 connector • **Communication Distance:** 500m (Free topology wiring) • **Finish:** ABS resin, blueish gray (PANTONE 538 or its equivalent) • **Dimensions:** 190 (W) x 76.5 (H) x 215 (D)mm (gooseneck microphone excluded)
- **Weight:** 850g

* 0 dB = 1 V

Note: LONWORKS is a trademark of Echelon Corporation.

RM-210 Remote Microphone Extension



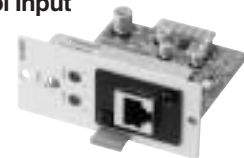
- **Current Consumption:** 20mA max. (in terms of RM-200M's DC power input)/75mA max. (in terms of DC power inputs of RM-200X and RM-200XF) • **Connection:** Connection to RM-200M, RM-200X or RM-200XF by way of dedicated cable • **Number of Function Keys:** 10
- **Function:** When used to expand the RM-200M; Selects and activates the Voice Announcement Board messages/ When used to expand the RM-200X and RM-200XF (PC software setting); Emergency activation, emergency reset, BGM pattern selection, EV message activation, broadcast zone selection, monitor zone selection, chime activation, Talk switch activation, control output activation, input volume adjustment, zone volume adjustment, and failure output indication and reset. • **Finish:** ABS resin, blueish gray (PANTONE 538 or its equivalent) • **Dimensions:** 110 (W) x 76.5 (H) x 215 (D)mm • **Weight:** 350g • **Accessory:** Extension cable x 1, Linkage bracket A x 2, Linkage bracket B x 1, Screw for linkage bracket x 12

WB-RM200 Wall Mounting Bracket



- **Finish:** Surface-treated steel plate, black paint • **Weight:** 100g • **Set Composition:** Mount bracket x 1 • **Accessory:** Rack mounting screw x 1 set • **Usable Unit:** RM-200X, RM-200M, RM-210

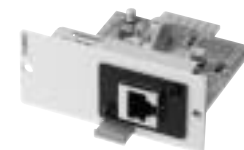
VX-200XI Audio Input Module with Control Input



- **Power Source:** Supplied from VX-2000 • **Current Consumption:** Under 30mA • **Input Sensitivity (Rated Output –20dB):** MIC; –70 to –42.5dB* (adjustable)/LINE; –20 to +7.5dB* (adjustable)/MIC or LINE selectable by the built-in switch • **Low Cut Filter (100Hz):** 9 to 15dB attenuation (adjustable) • **High Cut Filter (10kHz):** 8 to 14dB attenuation (adjustable) • **Distortion:** Under 0.5%
- **Frequency Response:** 50 – 20,000Hz • **Phantom Power:** 15V (open), 6V (current consumption; 3.3mA)
- **Control Input:** No-voltage make contact, open voltage; 17V DC, short-circuit current; Under 5mA • **Input Connector:** RJ45 female connector/Twisted-pair straight cable (TIA/EIA-568A standard) • **Finish:** Panel; Alumite finished aluminum, white • **Dimensions:** 35 (W) x 78 (H) x 88 (D)mm • **Weight:** 70g • **Accessory:** Mounting screw x 2
- **Option:** Isolation transformer; IT-450 • **Applicable Model:** VX-2000

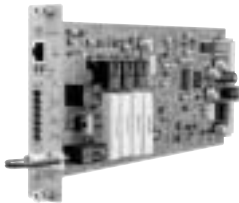
* 0 dB = 1 V

VX-200XR Remote Microphone Input Module



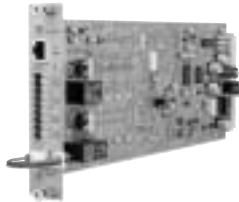
- **Power Source:** Supplied from VX-2000 • **Current Consumption:** Under 15mA • **Connectable Remote Microphone:** RM-200X and RM-200XF • **Input Connector:** RJ45 female connector/Twisted-pair straight cable (TIA/EIA-568A standard) • **Finish:** Panel; Alumite finished aluminum, white • **Dimensions:** 35 (W) x 78 (H) x 88 (D)mm • **Weight:** 70g • **Accessory:** Mounting screw x 2
- **Applicable Model:** VX-2000

VX-200SZ Impedance Detection Module



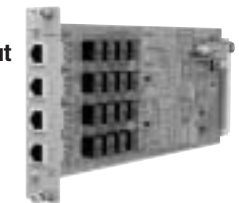
- **Power Source:** Supplied from VX-2000SF
- **Current Consumption:** Under 150mA
- **Power Amplifier Link:** RJ45 female connector for connecting the VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier/Twisted-pair straight cable (TIA/EIA-568A standard)
- **External Attenuator Control Output:** Plug-in screw connector, relay, no-voltage make contact output, transfer type, with stand voltage; 30V DC, 250V AC, contact current; Under 7A (DC), under 7A (AC)/Applicable cable diameter; AWG24 – AWG 22
- **Speaker Output:** Plug-in screw connector/Applicable cable diameter; AWG24 – AWG 22
- **Power Amplifier Input:** Plug-in screw connector for connecting the VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier/Applicable cable diameter; AWG24 – AWG 22
- **Fault Detection System:** Short circuit, open circuit (impedance detection method), ground fault
- **Finish:** Panel; Surface-treated steel plate
- **Dimensions:** 30.5 (W) × 132.6 (H) × 290.3 (D)mm
- **Weight:** 320g
- **Accessory:** Plug-in screw terminal × 1
- **Option:** Equaliser card; VX-200SE
- **Applicable Model:** VX-2000SF

VX-200SP Pilot Tone Detection Module



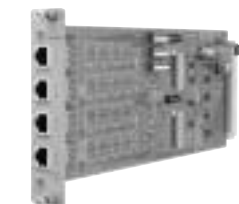
- **Power Source:** Supplied from VX-2000SF
- **Current Consumption:** Under 100mA
- **Power Amplifier Link:** RJ45 female connector for connecting the VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier/Twisted-pair straight cable (TIA/EIA-568A standard)
- **Line Monitor:** Plug-in screw connector/Applicable cable diameter; AWG24 – AWG 22
- **External Attenuator Control Output:** Plug-in screw connector, relay, no-voltage make contact output, transfer type, withstand voltage; 30V DC, 250V AC, contact current; Under 7A (DC), under 7A (AC)/Applicable cable diameter; AWG24 – AWG 22
- **Speaker Output:** Plug-in screw connector/Applicable cable diameter; AWG24 – AWG 22
- **Power Amplifier Input:** Plug-in screw connector for connecting the VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier/Applicable cable diameter; AWG24 – AWG 22
- **Fault Detection System:** Short circuit, open circuit (pilot tone detection method), ground fault
- **Finish:** Panel; Surface-treated steel plate
- **Dimensions:** 30.5 (W) × 132.6 (H) × 290.3 (D)mm
- **Weight:** 240g
- **Accessory:** Plug-in screw terminal × 1
- **Option:** Equaliser card; VX-200SE
- **Applicable Model:** VX-2000SF

VX-200SO Control Output Module



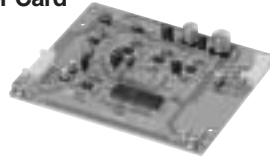
- **Power Source:** Supplied from VX-2000SF
- **Current Consumption:** Under 150mA
- **Control Output:** 16 outputs, no-voltage make contact, contact capacity; 28V DC, 1A, RJ45 connector
- **Finish:** Panel; Surface-treated steel plate
- **Dimensions:** 30.5 (W) × 132.6 (H) × 290.3 (D)mm
- **Weight:** 250g
- **Applicable Model:** VX-2000SF

VX-200SI Control Input Module



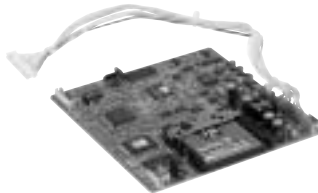
- **Power Source:** Supplied from VX-2000SF
- **Current Consumption:** Under 100mA
- **Control Input:** 16 inputs, no-voltage make contact, open voltage; 24V DC, short circuit current; under 10mA, RJ45 connector
- **Finish:** Panel; Surface-treated steel plate
- **Dimensions:** 30.5 (W) × 132.6 (H) × 290.3 (D)mm
- **Weight:** 200g
- **Applicable Model:** VX-2000SF

VX-200SE Equaliser Card



- **Power Source:** Supplied from VX-200SZ, VX-200SP
- **Current Consumption:** Under 50mA
- **Equaliser Centre Frequency:** 80Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz, 12kHz
- **Gain Range:** ±12dB, adjustable in 2dB steps
- **Dimensions:** 110 (W) × 90 (H) × 11.7 (D)mm
- **Weight:** 50g
- **Applicable Model:** VX-200SZ, VX-200SP

EV-200 Voice Announcement Board



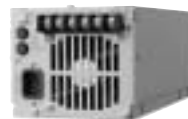
- **Power Source:** 24 V DC, 0.2 A
- **Power Consumption:** 5 W
- **Output:** 0 dB^{*1}
- **Frequency Response:** 20 – 20,000 Hz (44.1 kHz sampling)/20 – 14,000 Hz (32 kHz sampling)
- **Distortion:** Under 0.3% (44.1 kHz, recording method: Extremely High)
- **Memory Card:** SanDisk^{*2} CompactFlash^{®2} card is optionally required/Number of mountable card; 1
- **Playback Mode:** Single source playback
- **No. of Playback Program:** 8 programs
- **Operating Temperature:** 0°C to +50°C
- **Operating Humidity:** Less than 90% (must be free from dew condensation)
- **Dimensions:** 120 (W) × 18.6 (H) × 121 (D) mm
- **Weight:** 110 g
- **Accessory:** Mounting screw...2

*1 0 dB = 1 V

*2 Trademark of SanDisk Corporation.

Note: Use the CompactFlash card adapter on the market for recording by the EV-350R.

VX-200PS Power Supply Unit



- **Power Source:** 230V AC, 50/60Hz
- **Power Consumption:** 580W
- **PS OUT:** Rated output; 210W (29V, 7.25A) × 2/Peak output; 400W × 2/M4 screw terminal, distance between barriers; 11mm
- **Operating Temperature:** 0° to +40°C
- **Applicable Frame:** VX-2000PF
- **Finish:** Surface-treated steel plate
- **Dimensions:** 135 (W) × 118.2 (H) × 333.8 (D)mm
- **Weight:** 13.2kg
- **Accessory:** Fuse (T3.15A L) × 1, Power cable × 1

VX-2000PF Power Supply Frame



- **Finish:** Panel; Surface-treated steel plate, black, 30% gloss, paint
- **Dimensions:** 483 (W) × 132.6 (H) × 324.8 (D)mm
- **Weight:** 5.5kg
- **Product Composition:** Side panel × 2, Chassis × 1, Front panel × 1
- **Accessory:** Rack mounting screw × 4, Fiber washer × 4
- **Usable Unit:** VX-200PS (up to 3)

VP-200VX Power Amplifier Input Module



- **Power Source:** Supplied from VP-2064, VP-2122, VP-2241 or VP-2421
- **Current Consumption:** Under 30 mA
- **Power Amplifier Link:** RJ45 female connector for connecting the VX-200SP or VX-200SZ Audio Output module/Twisted-pair straight cable (TIA/EIA-568A standard)
- **Finish:** Panel; Surface-treated steel plate
- **Dimensions:** 88 (W) × 25.8 (H) × 73.2 (D) mm
- **Weight:** 50g
- **Applicable Model:** VP-2064, VP-2122, VP-2241, VP-2421

VP-2064 (60W × 4) VP-2122 (120W × 2) VP-2241 (240W) VP-2421 (420W) Power Amplifier



- **Power Source:** 28V DC (operating range; 20 – 40V DC)/M4 screw terminal, distance between barriers; 12mm
- **Current Consumption (EN60065):** VP-2064, VP-2122: 4.8A in total/VP-2241: 4.8A/VP-2421: 7.6A
- **Rated Output Power:** VP-2064: 60W × 4/VP-2122: 120W × 2/VP-2241: 240W/VP-2421: 420W
- **Output Voltage/Impedance:** VP-2064: 100V/167Ω, 70V/83Ω, 50V/41Ω (selectable by the internal wiring change)/VP-2122: 100V/83Ω, 70V/41Ω, 50V/21Ω (selectable by the internal wiring change)/VP-2241: 100V/41Ω, 70V/21Ω, 50V/10Ω (selectable by the internal wiring change)/VP-2421: 100V/24Ω, 70V/12Ω, 50V/6Ω (selectable by the internal wiring change)
- **Number of Channels:** VP-2064: 4/VP-2122: 2/VP-2241, VP-2421: 1
- **Input:** Specified by input module VP-200VX
- **Number of Module Slots:** VP-2064: 4, usable module; VP-200VX/VP-2122: 2, usable module; VP-200VX/VP-2241, VP-2421: 1, usable module; VP-200VX
- **Output:** Power amplifier output (speaker line); M3.5 screw terminal, distance between barriers; 8.8mm
- **Frequency Response:** 40 – 16,000Hz, ±3dB (at 1/3 rated output)
- **Distortion:** Under 1% (at rated output, 1kHz)
- **S/N Ratio:** Over 80dB
- **Panel Indicator:** VP-2064: Channel power indicator; 4 channels, dual colour LED/Overheat indicator; Yellow LED/VP-2122: Channel power indicator; 2 channels, dual colour LED/Overheat indicator; Yellow LED/VP-2241, VP-2421: Channel power indicator; 1 channels, dual colour LED/Overheat indicator; Yellow LED
- **Operating temperature:** 0° to +40°C
- **Finish:** Panel; Surface-treated steel plate, black, 30% gloss, paint
- **Dimensions:** 482 (W) × 88.4 (H) × 340.5 (D)mm
- **Weight:** VP-2064: 11.2kg/VP-2122: 9.1kg/VP-2241: 8.1kg/VP-2421: 9.5kg
- **Accessory:** Rack mounting screw × 4, Fiber washer × 4

VX-2000DS Emergency Power Supply



- **Power Source:** 230V AC, 50/60Hz
- **Power Consumption:** 240W max.
- **Applicable Battery:** YUASA NP series (12V × 2 or 4)
- **Charging Method:** Trickle charging
- **Charging Current:** 5A max
- **Charging Output Voltage:** 27.3V ± 0.3V (at 25°C)/Temperature correction coefficient; -40mV/°C
- **Power Supply Input:** 6 M4 screw terminal, distance between barriers; 11mm
- **DC Power Output:** 6 (25A max. each) M4 screw terminal, distance between barriers; 11mm
- **Control Connector:** RJ45 female connector for connecting the VX-2000SF Surveillance Frame/Twisted-pair straight cable (TIA/EIA-568A standard)/Type of control signal; Battery check, AC power status, DC power status, charging circuit failure, and battery failure
- **Battery Connection:** 1 pair of positive and negative terminals/Applicable cable diameter; AWG 6 – AWG 1/0
- **Operating Temperature:** 0° to +40°C
- **Finish:** Panel; Surface-treated steel plate, black, 30% gloss, paint
- **Dimensions:** 482 (W) × 88.4 (H) × 377.6 (D)mm
- **Weight:** 10.5kg
- **Accessory:** Rack mounting screw × 4, Fiber washer × 4, Blade fuse (40A) × 3, Fuse (T3.15A L) × 1, Power cable × 1

VM-2000 Series Integrated Voice Evacuation Systems

VM-2120 (120W) VM-2240 (240W) System Management Amplifier



• **Power Requirement:** VM-2120: AC: mains, 50/60 Hz DC: 24 V DC/7.5 A, M3.5 screw terminal, Barrier distance: 8 mm, Applicable cable diameter: AWG22 – AWG1/ VM-2240: AC: mains, 50/60 Hz DC: 24 V DC/15 A, M3.5 screw terminal, Barrier distance: 8 mm, Applicable cable diameter: AWG22 – AWG1 • **Power Consumption on AC Mains:** VM-2120: With no signal present: 37 W Under normal operating conditions according to EN60065: 1998 sec. 4.2: 107 W With rated output signal: 201 W/ VM-2120: With no signal present: 54 W Under normal operating conditions according to EN60065: 1998 sec. 4.2: 255 W With rated output signal: 549 W

• **Current Consumption on 24V DC Power Input:** VM-2120: With no signal present: 0.7 A Under normal operating conditions according to EN60065: 1998 sec. 4.2: 2.1 A With rated output signal: 5.2 A/ VM-2400: With no signal present: 1 A Under normal operating conditions according to EN60065: 1998 sec. 4.2: 5 A With rated output signal: 14 A

• **Rated Output:** VM-2120: 120 W, VM-2240: 240 W • **Output Voltage/Impedance:** VM-2120: 100 V/83 Ω, 70 V/42 Ω, 50 V/21 Ω (selectable by the internal wiring change)/ VM-2240: 100 V/42 Ω, 70 V/21 Ω, 50 V/10 Ω (selectable by the internal wiring change) • **Frequency Response:** 50 – 16,000 Hz • **Distortion:** Under 1% • **Signal-to-Noise Ratio:** Over 60 dB • **Tone Control:** Bass: 100 Hz ± 10 dB, Treble: 10 kHz ± 10 dB (Inputs 1 – 3 and BGM individually adjustable.) • **Remote Microphone/Expansion Amplifier Connection:** 2 RJ45 female connectors for connecting the RM-200M Remote Microphone and the VM-2120 or VM-2240 unit used as an expansion amplifier. Maximum distance: 800 m in total, Link cable: Category 5 shielded Number of connectable RM-200M's: Up to 4 Twisted-Pair straight cable (TIA/EIA-568A standard) • **Input:** Inputs 1 – 3: –60 dB*1 (MIC)–10 dB*1 (LINE) (changeable), 600 Ω, electronically balanced*2, combined XLR connector (female)/phone jack (Only Input 1 is additionally equipped with DIN connector*3.)/Telephone paging input: Push-in terminal block*4 Voice sound: –10 dB*1, 10 kΩ, electronically-balanced input with shield terminal*2

Control: No-voltage make contact input, open voltage: 30 V DC, short-circuit current: under 0.1 A/BGM 1 - 2: –20 dB*1, 10 kΩ, RCA pin jack, monaural (internally mixed)/Power amplifier input: 0 dB*1, 10 kΩ, RCA pin jack/ External speaker line input: 100 V line, for All-Zone Broadcast (This input is selected when the "Unit's broadcast cutoff" control is activated.) • **Output:** Speaker output: Plug-in screw connector*5 5-zone selector with attenuator (all zones simultaneously selectable)/Direct speaker line output: Direct output from the power amplifier output transformer (attenuator bypassed), Plug-in screw connector*5/Line output: 0 dB*1, 10 kΩ, RCA pin jack/Recording output: 0 dB*1, 10 kΩ, RCA pin jack/Pre-amplifier output: 0 dB*1, 10 kΩ, RCA pin jack • **Control Input:** For controlling Inputs 1 – 3, Push-in terminal block No-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA • **Control Input and Output:** D-sub connector (25-pin, female) Input: No-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA Output: Open collector output, withstand voltage: 30 V DC, control current: under 10 mA

(1) External control input

• Activation of messages*6

• Activation of power

• Activation and stop of Emergency Broadcast

• Unit's broadcast cutoff (when activated by an external emergency equipment)

(2) Status output

• Irregularity of communications with the Remote Microphone and an expansion amplifier

• AC power condition

• DC power condition

• Irregularity of the sound source of the Voice Announcement Board

• Failure (FAULT) indication on

• Power switch on

• External Attenuator Control Output: Plug-in screw connector*5, relay, no-voltage make contact output,

transfer type, withstand voltage: 30 V DC, 125 V AC, contact current: under 7 A (DC), under 7 A (AC) • **Surveillance Input and Output*7:** D-sub connector (25-pin, female) Input: No-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA Output: Open collector output, withstand voltage: 30 V DC, control current: under 10 mA • **Power Supply:** 24 V DC/0.1 A, for supplying power to an optional Amplifier Control Unit RU-2001/2002, push-in terminal block*4 • **Chime**

Tone: Built-in chime: 2-tone chime/2-tone chime (fast repeat)/4-tone chime (Up)/Single-tone chime/4-tone chime (Up & Down)/Gong/off Voice Announcement Board sound source: Pre-recorded chime*6 • **Function:** Two units stacking (VM-2120 or VM-2240) Emergency broadcast (sequential control) Broadcast priority control Surveillance (failure detection) function*7 Power supply to only one Remote Microphone (RM-200M) Line resistance: Under 24 Ω (one way) • **Operating Temperature:** 0°C to +40°C • **Finish:** Panel: ABS resin, dark gray, paint Case: Steel plate, dark gray, paint • **Dimensions:** 419 (W) × 143.3 (H) × 355.7 (D) mm • **Weight:** 12.5 kg • **Accessory:** Power cable (2m) ...1, Miniature type time-lag fuse...1, Name label...1, Volume cover...4 • **Option:** Rack mounting bracket: MB-36, Input transformer: IT-450, Voice announcement board: EV-200, Surveillance board: SV-200M

*1 0 dB = 1 V

*2 Can be transformer-balanced with the addition of an optional IT-450 input transformer.

*3 For connection of the Paging Microphone PM-660D with a remote control switch.

*4 Usable cable diameter: AWG26 – AWG20, 0.5 mm2.

*5 Usable cable diameter: AWG24 – AWG12, 2.5 mm2.

*6 An optional EV-200 Voice Announcement Board is required.

The chime sound source must be pre-recorded into CF (CompactFlash) card to be inserted into the EV-200 Board. *7 An optional SV-200M Surveillance Board is required.

RM-200M Remote Microphone

RM-210 Remote Microphone Extension Unit



RM-200M • **Power Requirement:** 24 V DC (Operating range: 14 – 28 V DC) Power input jack: Non-polarity type Usable power input plug*5: Outer diameter ø5.5 mm, inner diameter ø2.1 mm, length 9.5 mm • **Current Consumption:** 100 mA maximum • **Distortion:** Under 1% • **Frequency Response:** 100 – 20,000 Hz • **Signal-to-Noise Ratio:** Over 60 dB • **Audio Output:** 0 dB*1, 600 Ω, balanced • **Microphone:** Unidirectional electret condenser microphone • **Speaker Control:** Zones 1 – 5 or Zones 1 – 10 (2 stacked amplifiers connection), Groups 1 – 2, and All-Zone Broadcast • **Emergency Broadcast:** Activation of Emergency Broadcast (pre-recorded announcement*3 or live microphone announcement) by Emergency Broadcast Switch • **Voice Message Control:** Activation of 5 messages*3 • **Volume Control:** Microphone volume control • **Connection Cable and Connector:** Category 5 STP cable, RJ45 connector • **Finish:** ABS resin, bluish gray • **Dimensions:** 190 (W) × 76.5 (H) × 215 (D) mm (Gooseneck microphone excluded) • **Weight:** 750 g • **Accessory:** Link cable (3 m) ...1

*1 dB = 1 V

*2 Use the AC adapter AD-4800 optionally available as our service component.

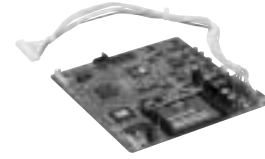
*3 An optional EV-200 Board must be mounted in the VM-2120 or VM-2240 Amplifier.

The voice messages must be pre-recorded into a CF (CompactFlash) card to be inserted into the EV-200 Board.

RM-210

• **Current Consumption:** 20 mA maximum (in terms of RM-200M's DC power input) • **Connection:** Connection to RM-200M by dedicated cable • **Function:** Activation of Voice Announcement Board's voice messages when controlling speakers in 10 zones at RM-200M • **Finish:** ABS resin, bluish gray • **Dimensions:** 110 (W) × 76.5 (H) × 215 (D) mm • **Weight:** 350 g • **Accessory:** Extension cable ...1, Linkage bracket A...2, Linkage bracket B...1, Screw for linkage bracket...12

EV-200 Voice Announcement Board

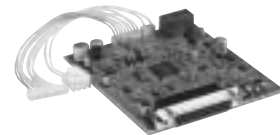


• **Power Requirement:** 24 V DC, 0.1 A • **Power Consumption:** 3 W • **Output:** 0 dB* • **Frequency Response:** 20 – 20,000 Hz (44.1 kHz sampling) 20 – 14,000 Hz (32 kHz sampling) • **Distortion:** Under 0.3% (44.1 kHz, recording method: Extremely High) • **Memory Card:** SanDisk*2 CompactFlash*2 card is optionally required. Number of mountable card: 1 • **Playback Mode:** Single source playback • **No. of Playback Program:** 8 programs • **Operating Temperature:** 0°C to +50°C • **Operating Humidity:** Less than 90% (must be free from dew condensation) • **Dimensions:** 120 (W) × 18.6 (H) × 121 (D) mm • **Weight:** 110 g • **Accessory:** Mounting screw...2

*1 0 dB = 1 V

*2 Trademark of SanDisk Corporation. Note: Use the CompactFlash card adapter on the market for recording by the EV-350R.

SV-200M Surveillance Board



• **Power Requirement:** 24V DC • **Current Consumption:** 0.1 A • **Control Input and Output:** Input: No-voltage make contact input, open voltage: 3.3 V DC, short circuit current: under 1 mA (1) Speaker line initial setting activation signal (2) Speaker line surveillance activation signal Output: Open collector output, withstand voltage: 30 V DC, control current: under 10 mA (1) Monitoring short or open of individual speaker line (zone 1 – 5) (2) Ground fault (insulation resistance: under 50 kΩ) (3) Power amplifier failures Connector: D-sub connector (25-pin, female) • **Failure Detection:** Power amplifier failure: 20 kHz pilot tone detection Speaker line failure: 40 Hz impedance detection • **Speaker Line Surveillance:** Speaker lines are automatically monitored at set time intervals • **Set Time:** (10 – 60 min, at 10 min intervals) • **Operating Temperature:** 0°C to +50°C • **Operating Humidity:** Less than 90% (must be free from dew condition) • **Weight:** 70 g

Accessories

IT-450 Input Transformer



• Impedance: 600Ω ± 10%
• Frequency Response: 200 - 10,000Hz

Others

PA-1230B (120W) Power Amplifier



- **Output Power:** 120W RMS • **Frequency Response:** 70~10,000Hz (+1 to -2 dB), 50Hz (-3dB), 15,000Hz (-5dB) • **Distortion:** Less than 1% (1 kHz, rated output)
- **Power Requirements:** 110/220 V AC, 50/60Hz or 24V DC • **Power Consumption:** AC 400VA at rated output, 26.4V DC 7.6A at rated output • **Input:** 0dBV, 10k ohms (adjustable), balanced, phone jack • **S/N Ratio:** 85dB or better • **Output impedance:** 83 ohms, 41 ohms (high impedance line), 4 ohms (low impedance) • **Dimensions (W x H x D):** 483 x 132.6 x 316 • **Weight:** 14.95kg • **Color:** Gray

PA-2440B (240W) PA-3640B (360W) Power Amplifier



PA-2440B

- **Output Power:** 240W RMS • **Frequency Response:** 70~10,000Hz (+1~-2dB), 50Hz (-3dB), 15,000Hz (-5dB)
- **Distortion:** Less than 2% THD at rated output • **Power Requirements:** 110/220V AC, 50/60Hz, 26.4V DC • **Power Consumption:** 640VA at rated output • **Input:** 0dBV (adjustable), phone jack, balanced • **S/N Ratio:** 80dB
- **Output Impedance:** 42 ohms (100V), 21 ohms (70V), 10 ohms (50V) • **Dimensions (W x H x D):** 483 x 177 x 315.5mm • **Weight:** 20.3kg • **Color:** Black

PA-3640B

- **Output Power:** 360W RMS • **Frequency Response:** 70~10,000Hz (+1~-2dB), 50Hz (-3dB), 15,000Hz (-5dB)
- **Distortion:** Less than 2% THD at rated output • **Input:** 0dBV (adjustable), phone jack, balanced • **S/N Ratio:** 80dB
- **Output Impedance:** 28 ohms (100V), 14 ohms (70V) • **Power Consumption:** 820VA at rated output
- **Power Requirements:** 110/220V AC, 50/60Hz, 26.4V DC
- **Dimensions (W x H x D):** 483 x 177 x 315.5mm

RU-2001

Amplifier Control Unit for PM-660D



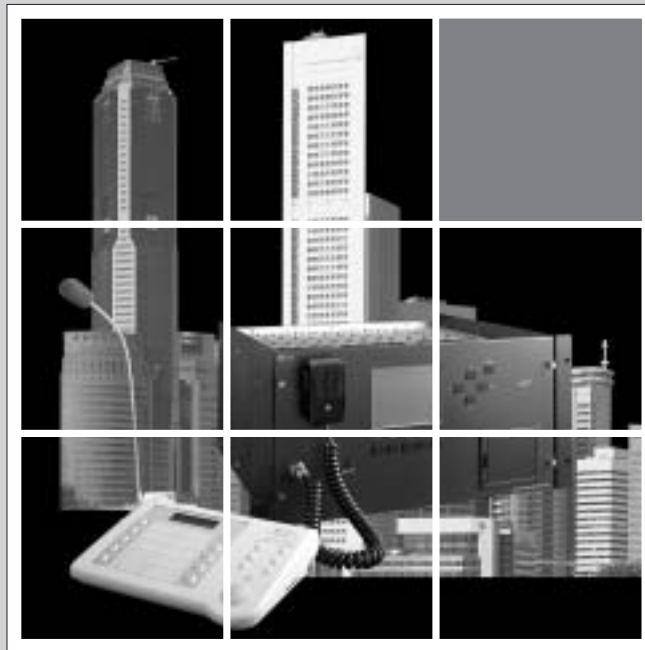
- **Power Requirements:** 12~24V DC or 12V AC adaptor
- **Current Consumption:** 60mA • **Mic Input:** -62dBV, 600 ohms, unbalanced • **Output:** 0dBV, 600 ohms, balanced
- **Dimensions (W x H x D):** 124 x 42.5 x 159mm
- **Weight:** 700g • **Finish:** Steel color plate, Black

RU-2002

Amplifier Control Unit for PM-660D with Signal



- **Power Requirements:** 12~24V DC or 12V AC adaptor
- **Current Consumption:** 60mA • **Mic Input:** -62dBV, 600 ohms, unbalanced • **Output:** 0dBV, 600 ohms, balanced
- **Signal:** 4-tone/2-tone/Single tone chime or gong sound (selectable) • **Dimensions (W x H x D):** 124 x 42.5 x 159mm • **Weight:** 700g • **Finish:** Steel color plate, Black



Audio Management Systems

Masterfully combining flexible configurations and easy software-controlled multiple audio inputs and outputs, the TOA SX-1000/1000M and its system peripherals such as the SX-1100 Remote Input Panel, SX-1110 Remote Output, SX-1200 Remote Microphone and RN-032 Remote I/O Board Panel allow creating a versatile public address system that handles BGM, paging and emergency tasks with the flexibility to quickly adapt to changing conditions. As such, the SX Series is recommended for use within and between facilities in offices, hospitals, convention centers, airports and other large locations while AC/DC compatibility allows use in any location. Expandable to a 128 input/output configuration (SX-1000) from a basic 4x4 or 8x8 configuration, other plug-in boards for functions such as audio input, remote microphone, control input/output may be added as desired. Software-driven operation allows using the SX-1000/1000M Series with its built-in CPU, LCD and function keys or with an onsite or remote PC through PC-compatible software.

Set-ups are simplified, with matrix setting information downloadable from a computer and all operation menu-driven including remote parameter setting and monitoring. Up to 1000 events can be logged to memory and uploaded to a computer for analysis. The SX-1000/1000M Series also features self diagnostics to monitor remote microphone status, audio signals, data communications, memory contents and power voltage and generally enhance overall system reliability. Specifically for emergency situations, the EP-0510 Emergency Control Panel is an option that provides processor-controlled emergency PA system control capable of manual operation or automatic operation in conjunction with a fire alarm system.

Matrix Controllers

SX-1000/SX-1000M Matrix Controller



- **Power Source:** 100 – 120V AC or 220 – 240V AC, 50/60Hz • **Power Consumption:** Max. 100W • **Operating Temperature:** 0 – 40°C • **Display:** 320 x 240 dot LCD
- **Operation:** Function keys/Cursor movement keys/Circle entry key • **Audio Input:** Input Level; 0dBV/Input Impedance; 10k ohms, electronically-balanced/Number of Inputs; Max. 64 • **Audio Output:** Output Level; 0dBV/Output Impedance; 600 ohms, transformer-isolated balance/Number of Outputs; Max. 64 • **Audio I/O Characteristics (Line Level):** Frequency Characteristics; 20~20,000Hz (0dB, -3dB)/Sampling Frequency; 48kHz/ Dynamic Range; Over 85dB/AD Converter; 18 bits/DA Converter; 20 bits • **Buses:** 16 digital buses • **Remote Microphone Interface:** Number of Connectable Microphones; Max. 18 • **Host PC Interface:** 1 x RS-232C
- **Control Input:** No-Voltage Make-Contact Input; Photocoupler (Release Voltage: 24V DC/Short Circuit Current: 5mA)/Number of Control Inputs; Max. 128 • **Control Output:** No-Voltage Make-Contact Output; Relay contact output (Withstand Voltage: 30V DC/Control Current: 250mA)/Number of Control Outputs; Max. 128 • **Self-Diagnostic Output:** No-Voltage Make-Contact Output; Relay contact output (Withstand Voltage: 30V DC/Control Current: 250mA), Make contact/Break contact (Selectable by jumper setting change) • **Finish:** Front Panel; Colored steel plate, Black • **Dimensions (W x H x D):** Main Panel; 482 x 221.4 x 366.3mm (Screws and projections excluded)

SX-1001/SX-1001M Expansion Frame



- Frame holds up to 10 plug-in boards for expanding capacity of SX-1000 system.
- Built-in expansion board for connecting to SX-1000 power supply, CPU board and frame.

SX-110 Remote Output Panel



- **Power Source:** 100 – 240V AC, 50/60Hz, 24V DC max. 150mA • **Current Consumption:** 6W • **Data Line:** 2-wire system, non-polarized • **Control Output:** 16 outputs, Relay contact output (Withstand voltage: 30V DC, Withstand current: 250mA) • **Ambient Temperature:** 0°C – +50°C • **Finish:** Panel; Colored steel plate, mat black • **Dimensions (W x H x D):** 482 x 44 x 201.3mm • **Weight:** 2.25kg

SX-110 Remote Input Panel



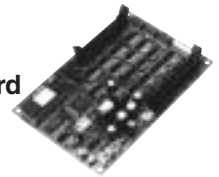
- **Power Source:** 100 – 240V AC, 50/60Hz, 24V DC max. 110mA • **Current Consumption:** 6W • **Data Line:** 2-wire system, non-polarized • **Control Input:** 16 inputs, Photocoupler input (Open Voltage: 24V DC, short-circuit current: 5mA) • **Ambient Temperature:** 0°C – +50°C
- **Finish:** Panel; Colored steel plate, mat black
- **Dimensions (W x H x D):** 482 x 44 x 201.3mm
- **Weight:** 2.25kg

SX-1200 Remote Microphone



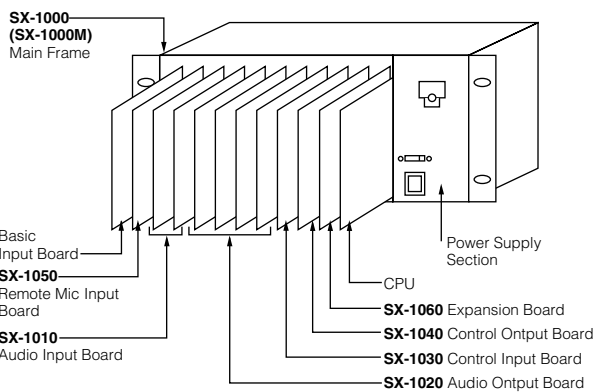
- **Power Source:** 24V DC (operating voltage range: 16 – 33V DC) • **Power Consumption:** Under 140mA (24V DC of power voltage) • **Output:** 0dBV, 600Ω, balanced
- **Microphone:** Uni-directional electret condenser microphone • **Chime:** Built-in PCM sound source, 4 different tone types, can be monitored with internal speaker • **Controls:** Microphone sensibility control, monitor speaker volume control, and chime volume control • **Optional Connection Cable:** YR-2010 (in coils of 200m) • **Maximum Connection Distance:** 1000m
- **Operating Temperature:** 0–40°C • **Finish:** ABS resin, Bright gray • **Dimensions (W x H x D):** 241 x 51 x 151mm • **Weight:** 600g

RN-032 Remote I/O Board



- **Power Source:** 24V DC (operating voltage range: 16 – 33V DC) • **Current Consumption:** Under 50mA • **Data Transmission:** Non-polar 2-wire system • **Control Input:** 32 inputs (TTL level input with built-in 10k ohms pull-up resistor) • **Control Output:** 32 outputs (open collector output, Driving current capacity: 100mA, Withstand voltage: 30V DC) • **Connection Capacity:** Max. 8 • **Operating Temperature:** 0 – 50°C • **Finish:** Printed Circuit Board; Glass epoxy resin • **Weight:** 120g
- **Standard Accessory:** 80cm connection cable...7

Matrix Controller Configuration



Dedicated computer boards may be combined for optimal system configuration

	SX-1000 Series	SX-1000M Series
Matrix Main Frame (4-IN/4-OUT)	SX-1000-4	SX-1000-4M
Matrix Main Frame (8-IN/8-OUT)	SX-1000-8	SX-1000-8M
Audio Input Board (4-IN)		SX-1010
Remote Microphone Input Board (4-IN)		SX-1050
Audio Output Board (4-OUT)	SX-1020	SX-1020M
Control Input Board (16-IN)		SX-1030
Control Output Board (16-OUT)		SX-1040
Expansion Frame	SX-1001	SX-1001M
Expansion Board		SX-1060
Expansion Memory Card		M-F2048

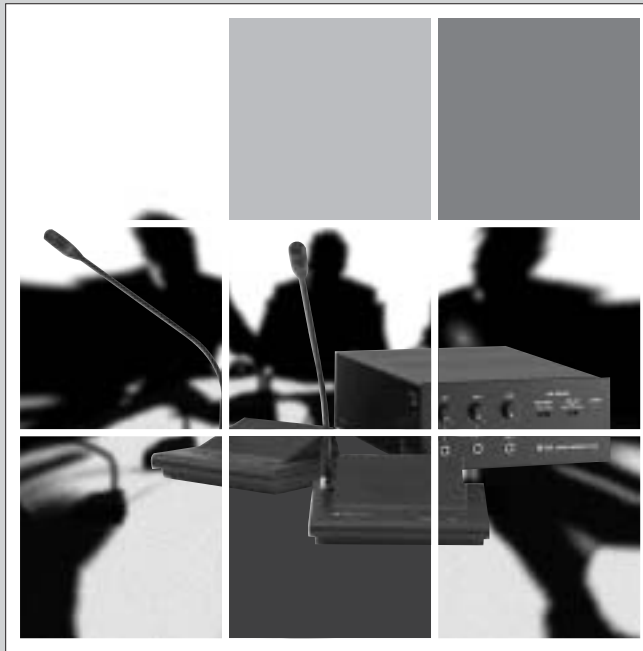
Emergency Control Panel

EP-0510 Emergency Control Panel



- Processor-controlled emergency PA system control panel.
- Controls over 10 individual speaker lines, plus 5 line groups.
- Manual operation or automatic operation in conjunction with a fire alarm system.
- Sends warning or evacuation message from a digitally stored message file.
- Large LCD panel for operation guide and output status.

- **Input:** Mic. input (supplied)/Time signal input/Pre-amplifier input • **Output:** Line output/Mic. output
- **Power Requirements:** DC 24V, 300mA • **Finish:** Panel: ABS resin, black • **Dimensions (W x H x D):** 482 x 221 x 135.5mm

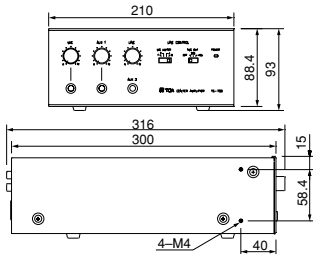


Conference Systems

Designed from the viewpoint of satisfying the requirements of both conference organizers and participants, TOA's open conference products have gained an excellent reputation. The system comprises the TS-700 Center Amplifier Unit, the TS-701 Chairman's Unit with Gooseneck Microphone, the TS-702 Delegate's Unit with Gooseneck Microphone, and the AR-71 Alternate Tape Recorder. The TS-701 and TS-702 are compact units featuring advanced microphones designed specifically for clear speech requirements as well as built-in high-quality speakers. The TS-701 also incorporates a priority speech override function to allow for interrupting delegate microphones. The units mute the speaker during speech and a recording output is provided. A single TS-700 Center Amplifier will operate up to 70 microphone units and may be combined with other amplifiers to allow up to 140 units to be used.

Compact and space-saving, a full system can easily be transported and stored. Assembly and set-up is a snap as is system take-down, making the TOA Open Conference System a valuable tool for any organization.

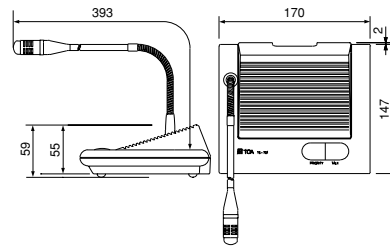
TS-700 Center Amplifier Unit



- Supplies DC power to all units, with lamp indicator.
- Jack for microphone input, and AUX 1 & 2 input jacks for access to PA and BGM system.
- Microphone, AUX 1, line (for conference unit's built-in speaker) and chime (on chairman's unit) volume controls.
- Delegate's unit simultaneous operation (1, 2, 4 or 6) and automatic mic-off setting (OFF/20-sec/40-sec) switches.
- Line 1 & 2 output connection terminals for 35 conference units each.
- RCA pin-jack and phone-jack recording output terminals.
- System expandable to 140 units by connection of 2 additional center amplifiers as expansion amplifiers (35 units per expansion amplifier).

• **Power Requirements:** 220/230V AC, 50/60Hz (selectable) • **Power Consumption:** Max. 135W
 • **Input:** Microphone; 600 ohms, -60dBV, unbalanced, phone jack/AUX 1; 10k ohms, -20dBV, unbalanced, phone jack/AUX 2; 600 ohms, 0dBV, unbalanced, phone jack/Line 1 & 2; 0dBV, 8P quick-lock type mini connector
 • **Output:** Recording; 10k ohms, -20dBV, unbalanced, phone jack, 2 x RCA jack/Line 1 & 2; 0dBV, unbalanced, 8P quick-lock type mini connector/Power Requirements; 35V DC 1A/line, 2 lines, 2A in total • **Control:** Priority Speech Chime; Operation of TS-701's priority button activates a single-tone chime./Speaker Restriction; Number of simultaneously usable TS-702s can be set to 1, 2, 4, or 6./Automatic Mic-Off; Function off, 20sec., 40sec. (selectable) • **Number of Connectable Conference Units:** Max. 70 units/Max. 35 units per line (max. 140 units when 2 expansion amplifiers connected.) • **Operating Temperature Range:** 0°C to +40°C • **Dimensions (W x H x D):** 210 x 93 x 316mm • **Finish:** Colored steel plate, Semi-mat black • **Weight:** 3.9kg • **Standard Accessory:** Power cord x 1

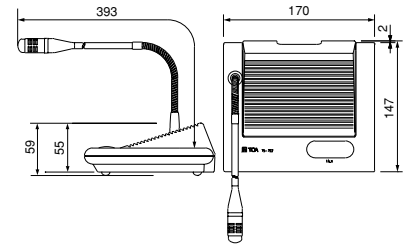
TS-701 Chairman's Unit with Gooseneck Microphone



- Removable gooseneck microphone and built-in speaker.
- A ring-shaped LED on the microphone indicates that the microphone is on.
- To prevent howling, the built-in speaker is turned off while the microphone is on.
- Press-to-talk priority speech button activates chime and overrides delegate's units.
- Press-on/off talk button.
- Recording output mini-jack for connection to a recording device.
- 8P quick-lock type mini socket.
- Multiple simultaneous chairman's units operation possible.
- Connection cord supplied.

• **Power Requirements:** 35V DC, under 30mA supplied from center amplifier • **Input:** Gooseneck Microphone; Unidirectional electret condenser microphone, -60dBV, with LED, detachable type/Line; 0dBV, unbalanced, 8P quick-lock type mini socket • **Output:** Recording; 10k ohms, -20dBV, unbalanced, mini-jack/Line; 0dBV, unbalanced, 8P quick-lock type mini connector/Internal Speaker; 130 ohms, 200mW • **Control:** Speech Button; Microphone, speaker on-off control by speech switch/Priority Button; Microphone, speaker on-off control, other microphone cut-off, and single-tone chime activation • **Operating Temperature:** 0°C to +40°C • **Dimensions (W x H x D):** 170 x 59 x 147mm (microphone excluded) • **Finish:** Base; ABS resin, Semi-mat black/Speaker; Metallic brown • **Weight:** 560g • **Standard Accessory:** Connection cord 1m x 2m (with 2 8P quick-lock type mini plugs and 1 socket) x 1

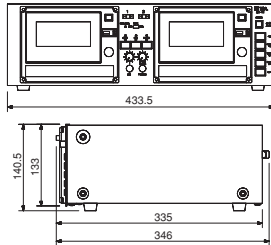
TS-702 Delegate's Unit with Gooseneck Microphone



- Removable gooseneck microphone and built-in speaker.
- A ring-shaped LED on the microphone indicates that the microphone is on.
- To prevent howling, the built-in speaker is turned off while the microphone is on.
- Press-on/off talk button.
- Recording output mini-jack to connect a device for individual recording.
- 8P quick-lock type mini socket.
- Connection cord supplied.

• **Power Requirements:** 35V DC, under 30mA supplied from center amplifier • **Input:** Gooseneck Microphone; Unidirectional electret condenser microphone, -60dBV, with LED, detachable type/Line; 0dBV, unbalanced, 8P quick-lock type mini socket • **Output:** Recording; 10k ohms, -20dBV, unbalanced, mini-jack/Line; 0dBV, unbalanced, 8P quick-lock type mini connector/Internal Speaker; 130 ohms, 200mW • **Control:** Speech Button Microphone, speaker on-off control by speech switch • **Operating Temperature:** 0°C to +40°C • **Dimensions (W x H x D):** 170 x 59 x 147mm (microphone excluded) • **Finish:** Base; ABS resin, Semi-mat black/Speaker; Metallic brown • **Weight:** 560g • **Standard Accessory:** Connection cord 1m x 2m (with 2 8P quick-lock type mini plugs and 1 socket) x 1

AR-71 Alternate Tape Recorder



- Long-term recording without a break is possible
- Uses C-60 or C-90 type tapes.
- Built-in AGC keeps recording level constant.
- External mic input.
- Headphone recording monitoring.
- Mountable on EIA-standard rack using optional YM-003B kit.
- Buzzer/LED tape end warning signals.

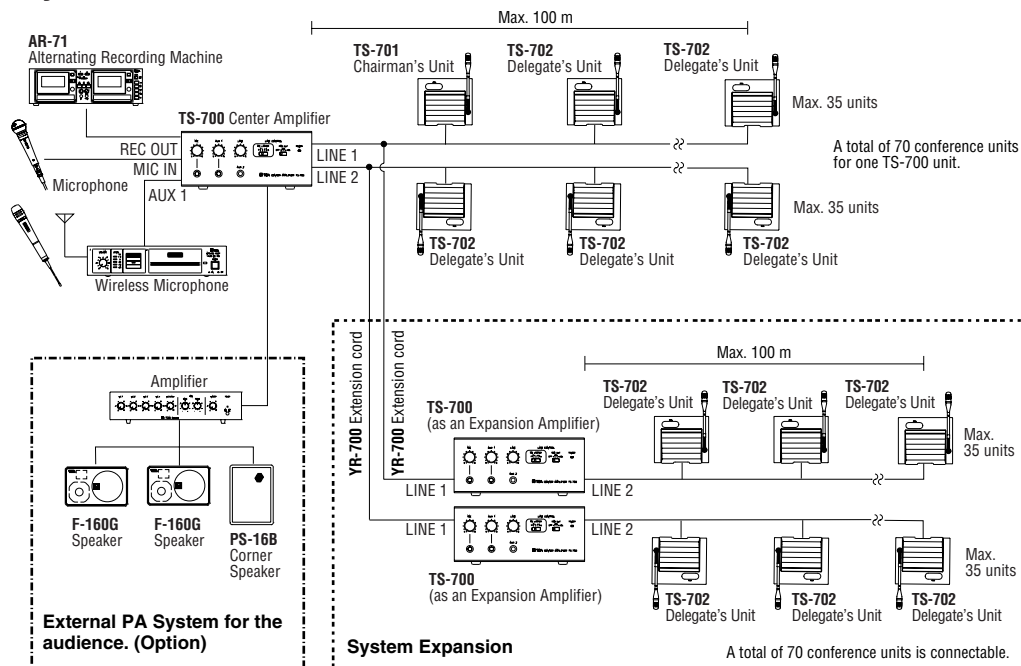
- **Power Requirements:** 110/120V AC or 220/240V AC, 50/60Hz (selectable) • **Power Consumption:** Max. 25VA
- **Input:** Microphone; -62dBV, 600 ohms, unbalanced/ Line; -20dBV, 50k ohms, unbalanced • **Output:** Line; 0dBV, 600 ohms, unbalanced/Headphone; 8 ohms
- **Frequency Response:** Microphone; 100 - 15,000Hz, ± 3 dB (at 1kHz)/Tape (at playback); 100 - 7,000Hz, -5dB - +2dB (at 1kHz) • **Distortion:** Less than 2% (at rated output from MIC input) • **S/N Ratio:** Better than 50dB • **Cassette Function:** Deck Section; Deck 1 for recording only, Deck 2 for recording and playback/Track System; 2 tracks and 1ch (monaural)/Usable Tape; Normal/Recording System; AC via system/Erasing System; AC erasing system/Tape Speed; 4.8cm/sec./Wow & Flutter; Less than 0.3% WRMS/Fast Forward, Rewind Time; Approx. 100 seconds (C-60 tape)
- **Remote Terminals:** Input; REC, PAUSE (One shot makes contact with no voltage.)/Output; REC LED, PAUSE LED, LINK and TAPE END (Open collector: 50V DC, 0.1A) • **Double Recording Duration:** 70 \pm 5 seconds • **Tape Link Time:** 30min. (C-60)/45min. (C-90) • **Dimensions (W x H x D):** 433.5 x 140.5 x 346.0mm • **Weight:** 8.0kg

YR-700 Extension Cable



- Linked 1-meter and 10-meter cord with 8P quick-lock mini-DIN connector plug at junction unit.
- May be used to connect additional center amplifiers as expansion amplifiers, or additional conference units.

System Chart





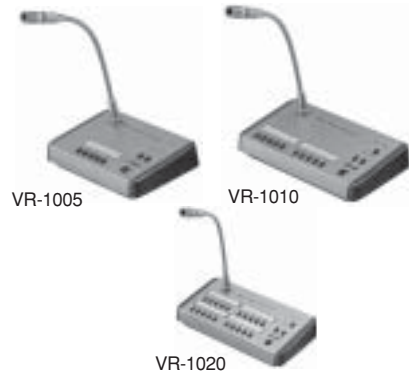
Microphones

TOA enjoys as good a reputation for its wide range of microphones as for its amplifiers. Microphones and peripheral products are offered in many different choices to perfectly suit any miking requirement. Unidirectional dynamic microphones include professional microphones with cardioid patterns as well as hand-held mics with swivel mount adaptors and flexible gooseneck mics. The desktop microphones may be used with remote units incorporating built-in preamps and several paging microphones incorporating background and noise suppression are offered. For unobtrusive miking, a miniature electret condenser omnidirectional microphone delivers superb performance and extended battery life. An assortment of accessories is available, including floor and desk mike stands, microphone connectors and mounting hardware.

Desktop Type Microphones

VR-1005/1010/1020

Remote Microphone



VR-1005

- **Power Requirements:** 24V DC • **Power Consumption:** 130mA • **Output:** 0dBV, 600 ohms, balanced
- **Microphone:** Gooseneck electret condenser mic with windscreen • **AUX Input:** -20dBV, 100k ohms, unbalanced • **Make-Contact:** 5 individual calls+all-call, max. 150mA DC • **Chime:** 4-tone chime, 2-tone chime, gong or 1-tone chime (selectable) • **Output Control:** 5-zone+all-call • **Dimensions (W x H x D):** 224 x 62 x 155mm, without microphone • **Weight:** 1.1kg • **Color:** Metallic gold • **Connection Cables:** 1 twin shielded cable (signal) and 2 twisted pair cables (Line resistance; 20 ohms or less, Cable length; 1,200m or less, Outer diameter; 10mm or less)

VR-1010/1020

- **Power Requirements:** 24V DC • **Power Consumption:** VR-1010; 90mA/VR-1020; 110mA • **Output:** 0dBV, 600 ohms, balanced • **Microphone:** Gooseneck electret condenser mic with windscreen • **AUX Input:** -20dBV, 100k ohms, unbalanced • **Chime:** V-1069's internal chime; 4-tone chime, 2-tone chime, gong or 1-tone chime (selectable) • **Output Control:** V-1010; 10-zone+all-call/V-1020; 20-zone+all-call • **Dimensions (W x H x D):** 274 x 62 x 155mm, without microphone • **Weight:** 1.3kg • **Color:** Metallic gold • **Connection Cables:** 1 twin shielded cable (signal) and up to 17 cables (control and power) (Line resistance; 10 ohms or less, Cable length; 200m or less, Outer diameter; 10mm or less)

V-1069B

Data Receiver Module For VR-1010/1020



- **Power Requirements:** 24V DC • **Power Consumption:** 150mA • **Output Control:** 20 zone+all-call • **Inputs:** 4 (0dBV, 600 ohms, balanced) • **Output (Signal):** 1 (0dBV, 600 ohms, balanced) • **Make-Contact:** 20 individual calls, max. 40mA DC • **Chime:** Internal; 4-tone chime, 2-tone chime, gong or 1-tone chime (selectable) • **Indicator:** 4 green LEDs/1 red LED • **Connection:** 44-pin card-edge connector (accessory) • **Connectable No. of VR-1010 or VR-1020:** Up to 4 • **Dimensions:** 1-module size • **Weight:** 220g • **Color:** Black • **Connection:** 44-pin card-edge connector x 1, Binding head taprite screw (3 x 10) x 2

VR-1001B

Paging Microphone



- **Microphone Element:** Dynamic (moving coil) type
- **Polar Pattern:** Cardioid (unidirectional) • **Output Impedance:** 600Ω, balanced • **Output Level:** -58dB (1kHz, 0dB=1V/Pa) • **Frequency Response:** 100 - 10,000Hz
- **Switch:** Press-to-talk switch • **Indicators:** Chime lamp; Red (LED)/Speech lamp; Green (LED) • **Finish:** Microphone head; Zinc plated steel wire; baked paint, gray/Main unit; ABS resin, gray • **Dimensions (W x H x D):** 100 x 215 x 150mm • **Weight:** 440g (cord excluded)

RM-820

Compatible Microphone for AM-821



- **Output Level:** -66dBV, unbalanced • **Power Source:** 6V DC (fed from the AM-821) • **Connections:** 2m long cable with 8-pin DIN plug • **Dimensions (W x H x D):** Base; 155 x 95 x 38mm/Length of gooseneck; 273mm • **Weight:** 850g (with cable) • **Color:** Black

SX-1200

Remote Microphone



- **Power Source:** 24V DC (Operating Range: 16-33V DC)
- **Current Consumption:** 140mA • **Audio Output:** 0dBV, 600 ohms, balanced • **Microphone:** Uni-directional electret condenser type • **Chime:** 4 kinds of built-in chime with PCM sound source, monitored by built-in speaker
- **Controls:** Microphone sensibility control/Monitor speaker volume control/Chime volume control • **Optional Connection Cable:** YR-2010 (in coils of 200m)
- **Maximum Connection Distance:** 1000m
- **Operating Temperature:** 0-40°C • **Finish:** ABS resin, Bright gray • **Dimensions (W x H x D):** 241 x 51 x 151mm • **Weight:** 0.6kg

PM-660

Paging Microphone



- **Type:** Dynamic (moving coil) • **Polar Pattern:** Cardioid
- **Rated Impedance:** 600 ohms, unbalanced • **Output Level:** -58dB (1kHz, 0dB=1V/pa) • **Frequency Range:** 100 - 10,000Hz • **Output:** ø5.0, 2-core shielded cable (2.5m) with stereo phone plug • **Switch:** 1-push-to-talk switch, 1-locking lever, short-off type • **Remote Control:** Less than 500mA at 30V DC • **Dimensions (W x H x D):** 100 x 215 x 150mm • **Weight:** 440g (cord excluded)
- **Finish:** Microphone head; Zinc plated steel wire, baked paint, gray/Main unit; ABS resin, gray

PM-660D

Paging Microphone



- **Type:** Dynamic (moving coil) • **Polar Pattern:** Cardioid
- **Rated Impedance:** 600 ohms, balanced • **Output Level:** -58dB (1kHz, 0dB=1V/pa) • **Frequency Range:** 100 - 10,000Hz • **Output:** ø5.0, 4-conductor (2-core shielded) cable (2.5m) with 5-pin DIN plug • **Switch:** 1-push-to-talk switch, 1-locking lever, short-off type
- **Remote Control:** Less than 500mA at 30V DC
- **Dimensions (W x H x D):** 100 x 215 x 150mm • **Weight:** 440g (cord excluded) • **Finish:** Microphone head; Zinc plated steel wire, baked paint, gray/Main unit; ABS resin, gray

PM-660U

Paging Microphone



- **Type:** Dynamic (moving coil) • **Polar Pattern:** Cardioid
- **Rated Impedance:** 600 ohms, balanced • **Output Level:** -58dB (1kHz, 0dB=1V/pa) • **Frequency Range:** 100 - 10,000Hz • **Output:** ø5.0, 4-conductor (2-core shielded) cable (2.5m) without plug • **Switch:** 1-push-to-talk switch, 1-locking lever, short-off type
- **Remote Control:** Less than 500mA at 30V DC
- **Dimensions (W x H x D):** 100 x 215 x 150mm • **Weight:** 440g (cord excluded) • **Finish:** Microphone head; Zinc plated steel wire, baked paint, gray/Main unit; ABS resin, gray

RU-2001

Amplifier Control Unit for PM-660D



- **Power Requirements:** 12 - 24V DC or 12V AC adaptor
- **Current Consumption:** 60mA • **Mic Input:** -62dBV, 600 ohms, unbalanced, 5-pin DIN socket • **Output:** 0dBV, 600 ohms, balanced, screw terminal • **Applicable Microphone:** PM-660D • **Dimensions (W x H x D):** 124 x 42.5 x 159mm • **Weight:** 700g • **Finish:** Steel color plate, Black

RU-2002

Amplifier Control Unit for PM-660D with Signal



- **Power Requirements:** 12 - 24V DC or 12V AC adaptor
- **Current Consumption:** 60mA • **Mic Input:** -62dBV, 600 ohms, unbalanced 5-pin DIN socket • **Output:** 0dBV, 600 ohms, balanced, screw terminal • **Chime:** 4-tone/2-tone/Single tone chime or gong sound (selectable)
- **Applicable Microphone:** PM-660D • **Dimensions (W x H x D):** 124 x 42.5 x 159mm • **Weight:** 700g • **Finish:** Steel color plate, Black

EC-100M

Chime Microphone



- **Power Source:** 3V DC (SUM-2 x 2 pcs) • **Current Consumption:** 2mA in an operation of mike and chime 10µA in no operation • **Chime Tones:** Ascending and descending 4-tone chime/Frequencies; 442, 553, 660 and 883Hz • **Microphone:** Unidirectional dynamic type
- **Microphone Frequency Response:** 200 - 10,000Hz
- **Output:** Chime Signal; -45dB*, 600 ohms unbalanced (chime volume control set to maximum position)/Microphone; -53dB, 600 ohms unbalanced (1kHz, 0dB=1V/Pa) • **Finish:** Case: Zinc die casting, metallic gold
- **Weight:** 770g • **Dimensions (W x H x D):** 112 x 293 x 150mm • **Accessory:** Connecting cord (2m) x 1, Slotted head screwdriver x 1, Windscreen x 1

*0dB=1V

Handheld Type Microphones

DM-1100 Unidirectional Microphone



(For Lecture, Speech Use)

- **Type:** Moving coil microphone (Dynamic microphone)
- **Directivity:** Unidirectional • **Rated Impedance:** 600 ohms, unbalanced • **Rated Sensitivity (1kHz 0dB=1V/Pa):** -55dB • **Frequency Response:** 100 – 12,000Hz
- **Connection Cable:** 1-core shielded cable • **Cable Length:** 7.5m • **Terminal of Cable:** 1/4" unbalanced phone plug • **Weight:** 155g • **Dimensions:** ø55 × 178mm
- **Talk Switch:** Short-off type slide ON/OFF switch
- **Finish:** Body; Aluminum-diecast, Black/Head; ABS resin, Black/Zinc plated steel wire, Black
- **Standard Accessory:** Microphone holder (W5/16", W5/8")

DM-1200 Unidirectional Microphone



(For Speech Use)

- **Type:** Moving coil microphone (Dynamic microphone)
- **Directivity:** Unidirectional • **Rated Impedance:** 600 ohms, unbalanced • **Rated Sensitivity (1kHz 0dB=1V/Pa):** -55dB • **Frequency Response:** 50 – 12,000Hz
- **Connection Cable:** 1-core shielded cable • **Cable Length:** 10m • **Terminal of Cable:** 1/4" unbalanced phone plug • **Weight:** 298g without connection cable
- **Dimensions:** ø39.5 × 163mm • **Talk Switch:** Short-off type slide ON/OFF switch • **Finish:** Body; Zinc-diecast, Metallic gray/Head; Diecast aluminum, zinc plated steel wire, Metallic gray • **Standard Accessory:** Microphone holder (W5/16", W5/8", W3/8")

DM-1300 Unidirectional Microphone



(For Speech, Vocal Use)

- **Type:** Moving coil microphone (Dynamic microphone)
- **Directivity:** Unidirectional • **Rated Impedance:** 600 ohms, balanced • **Rated Sensitivity (1kHz 0dB=1V/Pa):** -54dB • **Frequency Response:** 70 – 15,000Hz
- **Connection Cable:** 1-core shielded cable • **Cable Length:** 10m • **Terminal of Cable:** 1/4" unbalanced phone plug • **Weight:** 245g without connection cable
- **Dimensions:** ø51 × 170mm • **Talk Switch:** Short-off type slide ON/OFF switch • **Finish:** Body; Zinc-diecast, Metallic gray/Head; Aluminum-diecast and zinc plated steel wire, Metallic gray • **Standard Accessory:** Microphone holder (W5/16")

DM-1500 Unidirectional Microphone



(For Vocal Use)

- **Type:** Moving coil microphone (Dynamic microphone)
- **Directivity:** Unidirectional • **Rated Impedance:** 600 ohms, balanced • **Rated Sensitivity (1kHz 0dB=1V/Pa):** -56dB
- **Frequency Response:** 70 – 15,000Hz • **Connection Cable:** 2-core shielded cable • **Cable Length:** 10m
- **Terminal of Cable:** 1/4" unbalanced phone plug
- **Weight:** 175g without connection cable • **Dimensions:** ø40.5 × 173mm • **Talk Switch:** Short-off type slide ON/OFF switch • **Finish:** Body; Zinc-diecast, Metallic gold/Head; Aluminum-diecast and zinc plated steel wire, Metallic gold
- **Standard Accessory:** Microphone holder (W5/16")

PM-306D Omnidirectional Paging Microphone



(For Paging Use)

- **Type:** Moving coil microphone • **Directivity:** Omnidirectional • **Rated Impedance:** 500 ohms, unbalanced • **Rated Sensitivity (1kHz 0dB=1V/Pa):** -50dB • **Frequency Range:** 80 – 16,000Hz
- **Cables:** Coiled cable 6ømm × 2m (at a max. extended length) • **Switch:** Short-off type talk-switch with open-off type extra switch contact cable with 5-pin DIN plug
- **Mounting:** W 5/16" 18-thread • **Dimensions (W × H):** ø40 × 134mm • **Weight:** 350g (without connection cable)

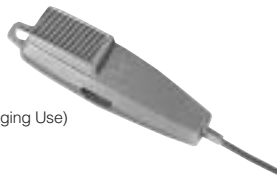
PM-120 Unidirectional Paging Microphone



(For Paging Use)

- **Type:** Dynamic microphone • **Directivity:** Unidirectional
- **Frequency Range:** 50 – 12,000Hz • **Output Level at 1kHz:** -76dB ±3dB (0dB=1V/0.1Pa) / -56dB ±3dB (0dB=1V/Pa) • **Nominal Impedance:** 250 ohms ±20% unbalanced • **Recommended Load:** 150 – 5,000 ohms
- **Cables:** Coiled cable ø6 × 2.5m (at a max. extended length) • **Talk Switch:** Push-to-talk switch with lock
- **Mounting:** Optional mike-hanger model 2202 is available • **Dimensions (W × H × D):** 46 × 157 × 33mm
- **Weight:** 230g • **Finish:** ABS resin, embossed, champagne gold (front), black (rear)

PM-222 Unidirectional Paging Microphone



(For Paging Use)

- **Type:** Moving coil microphone • **Directivity:** Unidirectional • **Rated Impedance:** 600 ohms, unbalanced • **Rated Sensitivity:** -47dB (1kHz 0dB=1V/Pa) • **Frequency Response:** 100–10,000Hz • **Cable:** 1-core shielded cable • **Cable Length:** 2m (when extended) • **Terminal:** Phone plug • **Talk Switch:** Short-off type with lock • **Finish:** ABS resin, Gray
- **Dimensions (W × H × D):** 44 × 160 × 38mm • **Weight:** 200g

Others

EM-400 Omnidirectional Microphone



- **Type:** Electret condenser microphone • **Power Source:** Mercury battery (Mallory H-C) • **Outgoing Cord:** 5m long with phone plug • **Dimensions:** ø14 × 52mm • **Weight:** 140g (with battery) • **Accessories:** 1 piece of battery, 1 piece of holder clip • **Frequency Response:** 50–13,000Hz • **Directivity:** Omnidirectional • **Sensitivity:** -68dB • **Impedance:** 2k ohms • **Standard Operating Voltage:** 1.3V • **Min. Operating Voltage:** 0.8V • **Current Consumption:** 200µA • **Continuous Duration:** 100 hrs
- **S/N Ratio:** Better than 40dB (1kHz 1µ bar) • **Max. Input Sound Pressure Level:** 120dB SPL • **Switch:** Power ON/OFF switch

DM-524B Fixed Lo-Z Gooseneck Microphone



(specifications)

- **Type:** Moving coil microphone • **Polar Pattern:** Cardioid pattern • **Rated Impedance:** 600 ohms, balanced
- **Rated Sensitivity:** -56dB (1kHz, 0dB=1V/Pa)
- **Frequency Range:** 100 – 10,000Hz • **Mounting:** Fixed with male connector • **Dimensions:** ø40 × 532mm
- **Weight:** 465g • **Built-in Connector:** ø21 3-pin connector (equivalent to BTS 21P3B) • **Required Mating Connector:** ø21 3-pin connector receptable (equivalent to BTS 21R3A)

DM-524S Fixed Lo-Z Gooseneck Microphone with Switch



- **Type:** Moving coil microphone • **Polar Pattern:** Cardioid pattern • **Rated Impedance:** 600 ohms, balanced
- **Rated Sensitivity:** -56dB (1kHz, 0dB=1V/Pa)
- **Frequency Range:** 100 – 10,000Hz • **Mounting:** Fixed with male connector • **Dimensions:** ø40 × 557mm
- **Weight:** 475g • **Built-in Connector:** ø21 3-pin connector (equivalent to BTS 21P3B) • **Required Mating Connector:** ø21 3-pin connector receptable (equivalent to BTS 21R3A)

Accessories

Gooseneck

ST-506

- Length: 15cm.
- 5/16" thread (male, female).

ST-507

- Length: 30cm.
- 5/16" thread (male, female).

YM-121

- Length: 36.7cm.
- Flexible shaft for ST-73.
- Input Receptacle: Equivalent to XLR-3-11C.
- Output Receptacle: BTS21P3B (3-pin).



Desk Stands

ST-73A

For DM-524B/524S

- Output Receptacle: Equivalent to XLR-3-14
- Input Receptacle: BTS21R3A



ST-65

- Height: 120 ~ 175mm.
- W5/16" thread.
- Clip type microphone holder (W5/16" thread).



ST-66

- Height: 220 ~ 347mm.
- W5/16" thread.
- Clip type microphone holder (W5/16" thread).



Floor Stands

ST-301B

Floor Stand with Boom

- Tripot base.
- Height 101~172cm adjustable.
- Boom effective length 6.5~69.3cm adjustable.
- 3/8" stand thread for microphone holder, plus adaptor for 5/16".



ST-302B

Microphone Stand

- Tripot base.
- Height 91~162cm adjustable.
- 3/8" stand thread for microphone holder, plus adaptor for 5/16".

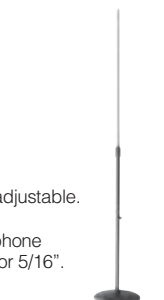


ST-303

- 2 sections
- Height 93.5~158cm adjustable.
- Weight: 2.1kg
- 5/8" thread for microphone holder, plus adaptor for 5/16".

ST-304

- 2 sections
- Height 85.5~152cm adjustable.
- Weight: 2.1kg
- 5/8" thread for microphone holder, plus adaptor for 5/16".



Free-Stop Microphone Stand

ST-310F

- The upper shaft of the free-stop stand can be freely raised and lowered without the use of a clutch or pins.
- A handy cord clamp is provided for use with wired microphones.
- Height: 86~150cm.
- 3/8" stand thread for microphone holder, plus adaptor for 5/16".



Microphone Connections

YM-1J

- Double Pole Jack.



- **Jack:** Double pole jack • **Usable Cable:** Microphone vinyl cable with sectional areas of 0.75~2.0mm² • **Usable Plate:** YP-1AF • **Usable Plug:** Single or double pole plug
- **Finish:** Cover: ABS resin (off-white)/Frame: Steel plates (11.2) • **Dimensions (W x H x D):** 45 x 110 x 48.1mm
- **Weight:** 75g

YM-3CF

- XLM-3-31PCH-R Connector.



- **Connector:** XLM-3-31PCH-R • **Current Capacity:** 3A AC
- **Usable Cable:** Microphone vinyl cable with sectional areas of 0.75~2.0mm² • **Usable Plate:** YP-1AF • **Usable Plug:** XLR-3-12C • **Finish:** Cover: ABS resin (off-white)/Frame: Steel plates (11.2) • **Dimensions (W x H x D):** 45 x 110 x 53mm • **Weight:** 950g

YM-3CM

- XLM-3-32PCH-R Connector.



- **Connector:** XLM-3-32PCH-R • **Current Capacity:** 3A AC
- **Usable Cable:** Microphone vinyl cable with sectional areas of 0.75~2.0mm² • **Usable Plate:** YP-1AF • **Usable Plug:** XLR-3-11C • **Finish:** Cover: ABS resin (off-white)/Frame: Steel plates (11.2) • **Dimensions (W x H x D):** 45 x 110 x 52mm • **Weight:** 950g

Plate

YP-1AF

- Cover plate for YM-1J, YM-3CF and YM-3CM.
- **Finish:** Aluminum hairline • **Dimensions (W x H x D):** 70 x 120 x 6mm • **Weight:** 25g



Blank Plate

YP-1BF

- Cover plate
- **Finish:** Aluminum hairline • **Dimensions (W x H x D):** 70 x 120 x 6mm • **Weight:** 50g

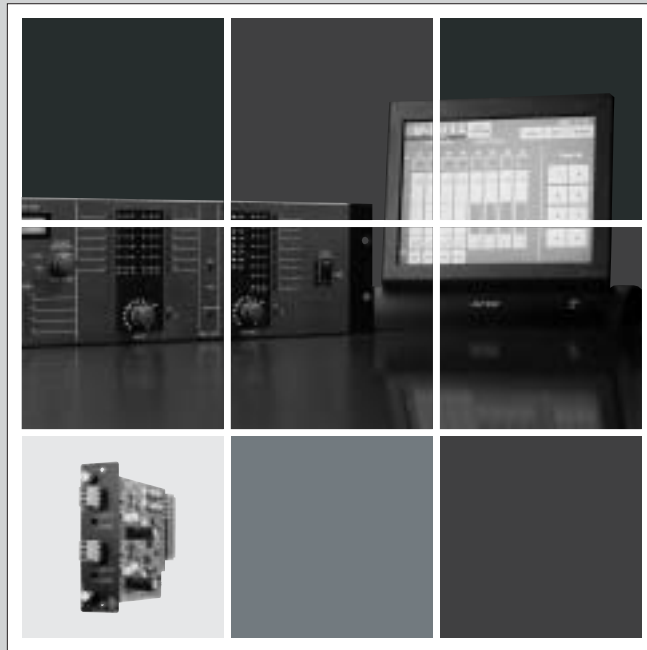


Wall Mounting Box

YS-11A

- **Finish:** High-impact sterol resin, milk-white (Munsell 5Y8/1 approx.) • **Dimensions (W x H x D):** 70 x 120 x 40mm
- **Weight:** 60g





Mixers

For most of its 70 plus year history, TOA has been building mixers to fulfill various audio-related requirements. Today, TOA mixers are available in many different shapes, sizes and configurations. From compact yet full-featured mixers to modular automatic mixers to large mixing consoles and digital mixers, all share TOA's advanced audio technology and acclaimed reliability as well as high quality sound and easy operation. Whatever the location, a TOA mixer can be relied on to provide the right solution for any application.

The D-901 is a digital mixer that is optimized for use in sophisticated AV-based presentation systems. Compact but with a modular design that allows for system expansion as well as specific configuration demands, the D-901 focuses on automated processing for easier operation even in complex mixing situations. This includes automixing, automatic feedback suppression, and EQ along full remote capability. A range of specific-use modules is available.

The AX-1000A is a modular mixer that gates on automatically and quietly as well prevents feedback by automatically adjusting overall system gain. Up to ten

units may be linked, expanding this units scope from small to large installations . The modular CX Series are professional mixing consoles for live music applications in halls and theaters that offer outstanding audio quality with flexible processing. Featuring 12 to 16 inputs with full EQ and versatile signal routing demanded by professional applications, the CX Series also has useful accessories such as mic level input transformers and line level input transformers and a convenient console stand.

For smaller venues, several compact stereo mixers are available. For instance, the M-1264/1212E with 12 assignable mic/line inputs and the ability to link two units to accommodate more inputs. The M-110 featuring slide faders with 100mm travel and M-243 are simpler units that also share the same high performance associated with TOA mixers. Another useful product is the M-66 Multi-Route Unit which can perform as a mixer, 6-input/6-output splitter or microphone head amplifier. In this category are also the cost-effective 8-channel M-900MK2 and 3-channel PP-025B Mixer Preamplifiers.

Mixer Preamplifiers

PP-025B

Mixer Preamplifier



- **Power Requirement:** 24V DC • **Current Consumption:** Less than 200mA • **Input:** Input-1A; -2/-62dBV 600 ohms, balanced phone jack/Input-1B; -2dBV 600 ohms balanced phone jack/Input-2A; -2/-62dBV 600 ohms balanced phone jack/Input-2B; -2dBV 600 ohms balanced phone jack/Input-3A; -2dBV 20k ohms unbalanced phone jack/Input-3B; -2dBV 20k ohms unbalanced phone jack/Input-3C; -2/-22dBV 50k ohms unbalanced phone jack, pin jack • **Output:** Line out 1; 0dBV 600 ohms balanced (All inputs) (When Line out 1 is used, only input 1 & 2 are sent out.)/Line out 2; 0dBV 600 ohms unbalanced (Input-3)/REC out; -10dBV 5k ohms unbalanced (Same as Line out 1) • **Frequency Response:** 50-15,000Hz \pm 3dB • **Tone Control:** \pm 10dB at 100Hz & 10,000Hz • **S/N:** Better than 60dB • **Distortion:** Less than 1% • **Priority Function:** From higher priority; Input-1 > Input-2 > Input-3 • **Color:** Panel; Black • **Weight:** 3kg • **Accessories:** 1 x Connection cable with phone plug (balanced), 1 x In/Out indication label

CK-025

Optional Chime Unit for PP-025B



- **Power Supply:** 24V DC (supplied from PP-025B)
- **Chime:** Ascending 4-tone, 2-tone chime, Gong, 1-tone chime, Descending 4-tone chime • **Accessories:** 1 x Chime connection cord

M-900MK2

8-Channel Mixer Preamplifier



- **Output Power:** +4dBm, +20dBm (max.) • **Power Bandwidth:** 30-20,000Hz, +20dBm, 0.5% THD/250-20,000Hz, +18dBm, 0.5% THD • **Frequency Response:** 20-20,000Hz, \pm 1dB • **Input Sensitivity:** Eight input ports/Input ports #1-#8; (100mV) 10k ohms/Bridging input/output; (100mV) 3.3k ohms • **Outputs:** Main; Balanced, 150/600 ohms/Aux; Unbalanced, 10k ohms, 0dBm • **Signal-to-Noise Ratio (Band Pass: 20-20,000Hz) with Tone Controls Centered:** Master volume min.; 90dB/Master volume max.; 77dB • **Controls:** 8 input gain controls/1 power ON/OFF switch/1 master gain control/1 bass tone control/1 treble tone control/1 tone defeat switch • **Protection:** Self-protection, with AC fuses (inside) • **Power Consumption:** 120V AC, 50/60Hz, 18W • **Dimensions (W x H x D):** 420 x 99.1 x 307mm • **Weight (without input modules):** 5.3kg • **Finish:** Black

* Requires 900 Series plug-in modules.

900 Series plug-in modules



Automatic Mixer

AX-1000A

8-Channel Modular Automatic Mixer



- **Power Requirement:** AC Mains 60Hz • **Power Consumption:** 24W • **Frequency Response:** 20 to 20,000Hz, \pm 1dB • **Distortion:** THD: Less than 0.1%, at 1kHz signal input • **S/N Ratio:** Better than 90dB, with all vol. min./Better than 77dB, with band pass 20 - 20,000Hz, input vol. min., master vol. max. • **Inputs:** 8 x Input port for TOA 900 Series modules: 100mV, 10k Ω /1 x Link in: 100mV, 10k Ω • **Outputs:** 1 x Main output; 600 Ω /150 Ω , balanced, transformer isolated/8 x Direct outputs; 680 Ω : Normal -20dBV (100mV), Maximum +16dBV (6.3V)/1 x Link out; 100mV, 1k Ω /8 x Logic output; isolated open collector (30mA, 24V DC max.) • **Controls:** 8 x Input volume/1 x Master volume/8 x Threshold controls/1 x NOM attenuation controls/8 x Off attenuation controls/1 x Master / slave switch/1 x Set of 8 Channel mute DIP switch/1 x INT/EXT mut function select switch • **Number of Max. Stacking:** 10 units (80 channels) • **Max. Attenuation Level:** 20dB • **Attenuation System:** 10 log NOM (Number of open Mic.) typical (Continuous adjustable from 0dB to 20 log NOMdB) • **Dimensions (W x H x D):** 420 x 151.2 x 331.5mm • **Weight:** 7kg • **Finish:** Black

* Requires 900 Series plug-in modules.

Mixer Consoles

CX-164/124

16/12-Input Mixing Consoles



- **Frequency Response:** +0.5dB, -1.0dB, 50Hz to 15kHz/+0.5dB, -30dB, 20Hz to 20kHz • **Total Harmonic Distortion:** 0.1% at +4dB 1kHz • **Equivalent Input Noise (Rs = 150 ohms):** -130dB (IHF-A) • **S/N (Rs = 150 ohms):** 69dB (20Hz to 20kHz) GROUP OUT or 70dB (IHF-A) STEREO OUT • **Crosstalk:** -60dB at 1kHz • **Maximum Voltage Gain:** 76dB INPUT to GROUP OUT/82dB INPUT to GROUP OUT to STEREO OUT/26dB STEREO IN to AUX SEND • **Channel Equalizer:** LOW; 20Hz, \pm 15dB Shelving/MID; 300Hz to 4kHz variable \pm 15dB Peaking/HIGH; 20kHz, \pm 15dB Shelving • **Peak Indicator:** LED turns on when the pre-fader and post EQ signal reaches 6dB before clip • **Phantom Power:** +24V DC AC Line Voltage AC Mains, 50/60Hz • **Power Consumption:** CX-124; 48W/CX-164; 52W • **Dimensions (W x H x D):** CX-124; 837x147x680mm/CX-164; 997x147x680mm • **Weight:** CX-124; 23kg/CX-164; 27kg

Accessories

IT-M4CX Microphone Level Input Transformer



IT-L4CX Line Level Input Transformer



CX-10T Mixing Console Stand



Digital Mixer

D-901

Main Unit (Installation rackmount only)



- **Power Source:** AC 100 – 120V, 230V, 50/60 Hz
- **Power Consumption:** 40W
- **Operating Temperature:** +5° C to +40°C
- **Frequency Response:** 20 – 20,000Hz, ±1dB (±4dB* Input)
- **Input:** Max. 12 channels, modular construction (modules optional)
- **Output:** Max. 8 channels, modular construction (modules optional)
- **Signal Processing:** Feedback Suppression Function; 12 filters (auto/dynamic)/Auto Mixing Function; 12 filters (auto/dynamic)/Equalizer/Filter; Parametric equalizer; 20 – 20,000Hz, ±15dB, Q; 0.267 – 69.249/Filtering; High-pass filter 20 – 20,000Hz, 6dB/oct, 12dB/oct, Low-pass filter 20 – 20,000Hz, 6 dB/oct, 12 dB/oct, Notch filter 20 – 20,000Hz, Q; 8.651 – 69.249, All-pass filter 20 – 20,000Hz, Q; 0.267 – 69.249, High shelving filter 6 – 20,000Hz, ±15dB, Low shelving filter 20 – 500Hz, ±15dB, Horn equalizer 20kHz, 0 to +18dB (1dB steps)/Crossover filter; 20 – 20,000Hz, 6dB/oct, 12 dB/oct, 18dB/oct, 24dB/oct/Compressor; Threshold: –20dB to +20 dB, Ratio; 1:1, 2:1, 3:1, 4:1, 8:1, 12:1, 20:1, ∞:1, Attack time; 0.2ms to 5s, Release time; 10ms to 5s, Gain; –∞ to +10dB/Delay; Delay time; 0 – 682.6 ms (0.021 ms steps)/Matrix; 12 x 8
- **Preset memory:** 16
- **Auxiliary Function:** System Locking function
- **Control:** RS-232C, D-sub connector (9 pins), Remote control module (option)
- **Front Panel Section:** Preset memory recall key; 8, LCD Screen, Screen shift key (up/down/left/right), setting knob/Input level indicator; Dual color LED/Output level indicator; Dual color LED/Channel selector key; 12 (input channel selection) 8 (output channel selection)/Channel volume control; 1 (input channel selection), 1 (output channel selection)
- **Rear Panel:** Input module slot; 6 (input/output module slot; 2)/Output module slot; 2/Remote control module slot; 1
- **Finish:** Panel; Aluminum, hair-line finish, black/Others; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 482.6 (W) x 132.6 (H) x 320 (D)mm (excluding projection)
- **Weight:** 6.9 kg
- **Accessory:** Power cord (2m) x 1, Rack mounting screw x 4, Rack mounting bracket (preinstalled on the unit) x 2, Module mounting screw (spare) x 4, Blank panel (preinstalled on the module slot) x 9, Fiber washer x 4

* When installing the unit, never block the intake vents provided in the unit's bottom near the rear.

D-921F

Mic/Line Input Module (24 bits Monaural Type)

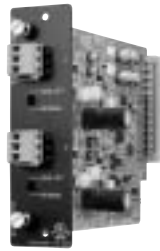


- **Input:** 2 channels, Mic/Line changeable/Mic: –50/–36dB*, 4.7kΩ, electronically-balanced, equivalent to XLR-3-31 type/Line: –10/+4dB*, 10kΩ, electronically-balanced, equivalent to XLR-3-31 type/Phantom power supply (+15V, can be used when set for the microphone)/Ground lift switch
- **A/D Converter:** 24 bits
- **Frequency Response:** 20–20,000Hz, ±1 dB (+4dB* input)
- **Sampling Frequency:** 48kHz
- **Dynamic range:** Over 100 dB (IHF-A weighted) (+4dB* input)
- **Total Harmonic Distortion:** Under 0.05% (+4dB* input)
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) x 119.5 (H) x 178.4 (D) mm
- **Weight:** 150 g

* 0dB = 0.775V

D-921E

Mic/Line Input Module (24 bits Monaural Type)

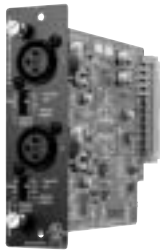


- **Input:** 2 channels, Mic/Line changeable/Mic: –50/–36dB*, 4.7kΩ, electronically-balanced, removable terminal block type connector/Line: –10/+4dB*, 10kΩ, electronically-balanced, removable terminal block type connector/Phantom power supply (+15V, can be used when set for the microphone)/Ground lift switch
- **A/D Converter:** 24 bits
- **Frequency Response:** 20 – 20,000Hz, ±1 dB (+4dB* input)
- **Sampling Frequency:** 48kHz
- **Dynamic range:** Over 100 dB (IHF-A weighted) (+4dB* input)
- **Total Harmonic Distortion:** Under 0.05% (+4dB* input)
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) x 119.5 (H) x 178.4 (D) mm
- **Weight:** 140 g
- **Accessory:** Removable terminal block type connector (preinstalled on the unit) x 2

* 0dB = 0.775V

D-922F

Mic/Line Input Module (20 bits Monaural Type)

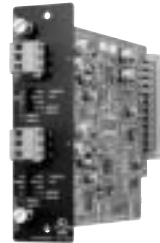


- **Input:** 2 channels, –50/–36/–10/+4dB* (Selectable with the DIP switch), 4.7kΩ, electronically-balanced, equivalent to XLR-3-31 type/Phantom power supply (15V, can be set with DIP switch)/Ground lift switch (can be set with the DIP switch)
- **A/D Converter:** 20 bits
- **Frequency Response:** 20 – 20,000Hz, ±1dB (+4dB* input)
- **Sampling Frequency:** 48 kHz
- **Dynamic range:** Over 85dB (IHF-A weighted) (+4dB* input)
- **Total Harmonic Distortion:** Under 0.2% (+4dB* input)
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) x 119.5 (H) x 178.4 (D) mm
- **Weight:** 135g

* 0dB = 0.775V

D-922E

Mic/Line Input Module (20 bits Monaural Type)

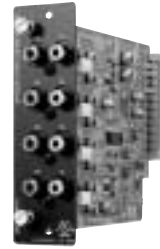


- **Input:** 2 channels, –50/–36/–10/+4dB* (Selectable with the DIP switch), 4.7kΩ, electronically-balanced, removable terminal block type connector/Phantom power supply (15V, can be set with the DIP switch)/Ground lift switch (can be set with the DIP switch)
- **A/D Converter:** 20 bits
- **Frequency Response:** 20 – 20,000Hz, ±1dB (+4dB* input)
- **Sampling Frequency:** 48 kHz
- **Dynamic range:** Over 85dB (IHF-A weighted) (+4dB* input)
- **Total Harmonic Distortion:** Under 0.2% (+4dB* input)
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) x 119.5 (H) x 178.4 (D) mm
- **Weight:** 125g
- **Accessory:** Removable terminal block type connector (preinstalled on the unit) x 2

* 0dB = 0.775V

D-936R

Mic/Line Input Module (Stereo Type)



- **Input:** 4 stereo inputs (selection of 1 stereo or mixing or all 4 stereo inputs)/–10dB*, 10Ω, RCA pin jack
- **A/D Converter:** 24 bits
- **Frequency Response:** 20 – 20,000Hz, ±1 dB (+4dB* input)
- **Sampling Frequency:** 48 kHz
- **Dynamic range:** Over 100dB (IHF-A weighted)
- **Total Harmonic Distortion:** Under 0.05%
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) x 119.5 (H) x 178.4 (D) mm
- **Weight:** 145g

* 0dB = 0.775V

D-971M

Line Output Module

* The D-901 accepts up to nine modules but only two line output modules may be used at the same time.



- **Output:** 4 channels, +4 dB*, adaptable load of over 600Ω, electronically-balanced, equivalent to XLR-3-32 type
- **D/A Converter:** 24 bits
- **Frequency Response:** 20 – 20,000 Hz, ±1 dB
- **Sampling Frequency:** 48kHz
- **Dynamic range:** Over 100dB (IHF-A weighted)
- **Total Harmonic Distortion:** Under 0.05%
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) x 119.5 (H) x 178.4 (D)mm
- **Weight:** 165 g

* 0dB = 0.775V

D-971E

Line Output Module

* The D-901 accepts up to nine modules but only two line output modules may be used at the same time.



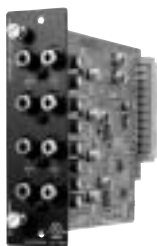
- **Output:** 4 channels, +4dB*, adaptable load of over 600Ω, electronically-balanced, removable terminal block type connector
- **D/A Converter:** 24 bits
- **Frequency Response:** 20 – 20,000 Hz, ±1 dB
- **Sampling Frequency:** 48kHz
- **Dynamic range:** Over 100dB (IHF-A weighted)
- **Total Harmonic Distortion:** Under 0.05%
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) x 119.5 (H) x 178.4 (D)mm
- **Weight:** 140 g
- **Accessory:** Removable terminal block type connector (preinstalled on the unit) x 4

* 0dB = 0.775V

D-971R

Line Output Module

* The D-901 accepts up to nine modules but only two line output modules may be used at the same time.

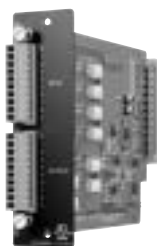


- **Output:** 4 channels (2 outputs for each channel), -10dB*, adaptable load of over 600Ω, RCA pin jack
- **D/A Converter:** 24 bits
- **Frequency Response:** 20 – 20,000 Hz, ±1 dB
- **Sampling Frequency:** 48kHz
- **Dynamic range:** Over 100dB (IHF-A weighted)
- **Total Harmonic Distortion:** Under 0.05%
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) × 119.5 (H) × 178.4 (D)mm
- **Weight:** 150 g

* 0dB = 0.775V

D-981

Remote Control Module

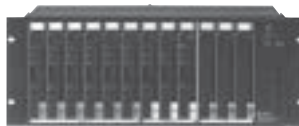


- **Control input:** COM + terminals 1 – 8; Open voltage; 5V DC, short-circuit current; 5mA removable terminal block type connector
- **Control:** Preset memory selection: Any preset memory can be recalled., Control method; No-voltage make of over 100ms, no-voltage make single pulse of over 100ms/Volume: Volume can be turned UP or Down for any input and output channels., Control system; 1 step variation for no-voltage make single pulse of over 100ms, 1 step continuous operation for every 70ms for no-voltage make of over 100ms. Can be reset when at break., Variable range; -∞dB to +10dB/Channel: Any input/output channels can be turned ON and OFF., Control method; No-voltage make of over 100ms/no-voltage make single pulse of over 100ms/Stereo selection: Any stereo input can be selected., Control method; No-voltage make of over 100ms/no-voltage make single pulse of over 100ms
- **Control output:** COM + terminals 1 – 8; No-voltage make contact input, contact capacity; 24V DC, 100mA removable terminal block type connector
- **Finish:** Panel; Pre-coated steel plate, black, 30% gloss
- **Dimensions:** 35 (W) × 119.5 (H) × 178.4 (D)mm
- **Weight:** 125g
- **Accessory:** Removable terminal block type connector (preinstalled on the unit) × 2

Stereo Mixer

M-110

Stereo Mixer



- **Power Requirements:** 100 to 240V AC, 50/60Hz
- **Power Consumption:** 33W
- **Frequency Response:** 20Hz to 20kHz, +1dB, -3dB
- **Distortion (T.H.D.):** Less than 0.05% (MONO IN to MONO OUT) at 1kHz: Input; -30dB*, Output; +4dB*/Less than 0.05% (STEREO IN to STEREO OUT) at 1kHz: Input; -20dB*, Output; +4dB*
- **Noise Level (IHF-A):** Less than -90dB* (MONO OUT/ STEREO OUT) (Fader in minimum position)
- **Inputs:** Input 1-6 (MONO); -20dB to +10dB*/1k ohm (Line), -60dB to -30dB*/1k ohm (Mic), XLR type 3P connector (balanced), Line/Mic changeable/Input 7-10 (STEREO); -20dB to +10dB*/10k ohms, pin jack (unbalanced) (Inputs 9 and 10 switchable)/Video Input 9/10; 1V p-p/75 ohms, pin jack (Inputs 9 and 10 switchable)/ Sub Input (MONO 1, 2); +4dB*/10k ohms, phone jack (unbalanced)/Sub Input (STEREO L, R); +4dB*/10k ohms, phone jack (unbalanced)
- **Outputs:** Output 1, 2 (MONO); +4dB*/600 ohms, XLR type 3P connector, phone jack (balanced)/ Output 3 (STEREO); +4dB*/600 ohms, XLR type 3P connector, phone jack (balanced)/REC Out; -10dB*/1k ohm, pin jack (unbalanced)/Video Output; 1Vp-p/75 ohms, pin jack
- **Functions:** Each Input; Signal indicator, Gain control, Channel ON/OFF switch, Output assign switch/ MONO Input; Low cut filter ON/OFF switch, Phantom power ON/OFF switch (+24V DC internal switch)/Each Output, Output level meter, Channel ON/OFF switch/ Remote Control Terminal; Make-contact outputs (2A) linking with the power switch
- **Finish/Color:** Panel, Alumite-coated aluminum, black/Case, Colored steel plate, black
- **Dimensions (W × H × D):** 420 × 77 × 138.6mm (excluding the protrusion)
- **Weight:** 5kg*0dB = 0.775Vrms

Multi-Route Unit

M-66

Multi-Route Unit



- **Power Source:** AC Mains, 50/60Hz
- **Power Consumption:** 12W
- **Input:** 6 inputs, mic/line changeable, 2k ohm, XLR-3-31 compatible (electrically balanced)/-60dB*(mic)/-10dB*(line)
- **Split Input:** -10dB*, 2k ohm, XLR-3-31 compatible (electrically balanced)
- **Mix Input:** +4dB*, 10k ohm, XLR-3-31 compatible (electrically balanced)
- **Output:** 6 outputs, +4dB* (appropriate impedance not less than 600 ohm), XLR-3-32 compatible (electrically balanced)
- **Mix Output:** +4dB* (appropriate impedance not less than 600 ohm), XLR-3-32 compatible (electrically balanced)
- **Other:** Bridging output; XLR-3-32 compatible/Input sensitivity selector switch; Input 1 to 6 (LINE, MIC)/Pad switch; Input 1 to 6, split input (20dB)/Function selector switch; 1 to 6 (MIX/H/A, SPLIT)
- **Frequency Response:** 20 - 20,000Hz (+1, -3dB)
- **Distortion:** Less than 0.01% (1kHz, line level nominal input, output)
- **Noise:** Output: Less than -100dB* (band pass filter, volume minimal)
- **Temperature Range:** 0°C to +40°C
- **Finish:** Panel, case; Pre-coated steel plate, black, 30% glossy/Rack mounting screw; Aluminum, alumite, black/Security cover; Acrylic, (smoke) gray
- **Dimensions:** 482.6(W) × 88.4(H) × 177.8(D)mm
- **Weight:** 3kg
- **Accessory:** Power cord (2m) × 1/Rack mounting screw × 4

* 0dB = 0.775Vrms

Powered Mixer

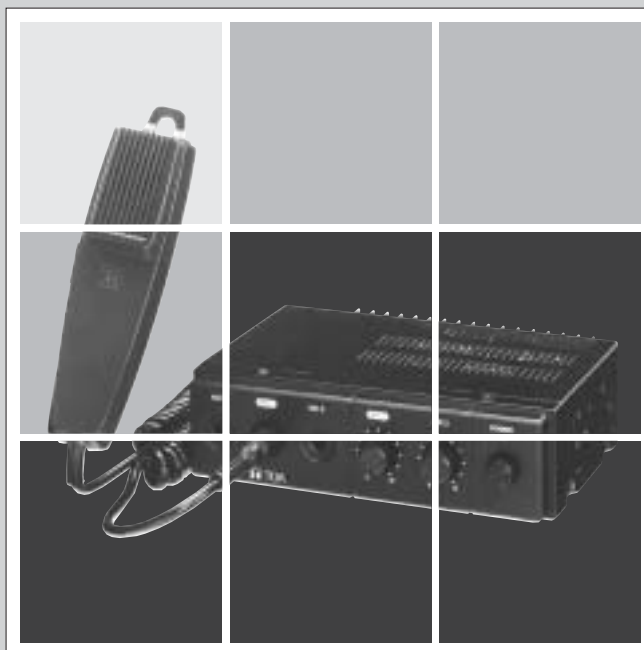
MX-628



- **Power requirements:** AC mains, 50/60 Hz
- **Power consumption:** 280W (rated output)
- **Rated output:** 60 W × 2, 4Ω [0.5% THD (1 kHz)]
- **Inputs:** MIC1-4; -66 to -30dB*, 600Ω, type of XLR-3-31 and 1/4" phone jack (balanced)/MIC5-6; -66 to -30dB*, 600Ω, 1/4" phone jack/wireless microphone changeable (balanced)/AUX1-2; -10dB*/10kΩ, RCA pin jack/EFF IN; -10dB*/10kΩ, 1/4" phone jack, TRS
- **Outputs:** SPEAKER OUT (L, R) 60W, 4Ω, push-in terminal/LINE OUT (L, R); +4dB*, 600Ω, 1/4" phone jack (unbalanced)/FB OUT; +4dB*, 600Ω, 1/4" phone jack (unbalanced)/REC OUT (L, R); -20dB*, 10kΩ, RCA pin jack (unbalanced)
- **Frequency response:** 20 – 20,000Hz (+1, -3dB) (AUX input)
- **Hum and Noise (Speaker Out):** Measured with TRIM & LEVEL controls for MIC1 and MASTER L & R controls set for maximum. Noise level calculated in terms of input: under -120dB* Output noise level: under -30dB* (S/N ratio: 54dB) Measured with LEVEL controls for AUX1 and MASTER L & R controls set for maximum. Output noise level: under -66dB* (S/N ratio: 90dB)
- **Maximum Voltage Gain:** 90dB (MIC1-6 inputs, SPEAKER OUT output)/34dB (AUX1-2 inputs, SPEAKER OUT output)/70dB (MIC1-6 inputs, FB OUT/EFF OUT/70dB LINE OUT/SPEAKER OUT outputs)/14dB (AUX1-2 inputs, FB OUT/EFF OUT/14dB LINE OUT/SPEAKER OUT outputs)
- **Equalizer Characteristics:** Treble: 10kHz, ±10dB Bass: 100Hz, ±10dB
- **Level Meter:** 7 segment LED (-20, -10, -6, -3, 0, +3, +6dB)
- **Finish:** Steel plate, gray painted
- **Dimensions:** 450 (W) × 169 (H) × 418 (D)mm
- **Weight:** 13kg
- **Options:** UHF wireless tuner unit (WTU-4800)/VHF wireless tuner unit (WTU-3800)/UHF/VHF Wireless antenna (YW-3510)

* 0dB = 1.0 V

* Specifications are subject to change without notice.



Mobile Amplifiers

For versatile and fully portable public address and sound reinforcement, TOA's mobile amplifiers prove the ideal solution. Six different mobile amplifiers are included. Two models may be supplied with a built-in autoreverse cassette deck and four units are equipped with an AUX input jack for connecting a music source whether CD portable player, cassette or even radio. The compact DIN sizes allow simple installation in vehicles and all controls are located on the front panel. Dedicated mobile amplifier-use microphones are standard equipment.

Mobile Amplifiers

Mobile Amplifiers

CA-115 (35W Max.)

Mobile Amplifier



- **Power Source:** Standard voltage: 14V DC/Usable voltage: 10 to 16V DC (12V battery used) • **Power Consumption:** 3A or less at rated output • **Rated Output:** 15W • **Output Impedance:** 4 Ω (BRN), 8Ω (ORG), Common (WHT)/Changeable by changing lead wire connections • **Distortion:** Less than 5% (at 1,000Hz rated output) • **Frequency Response:** 100 – 10,000Hz • **Input:** MIC1, 2; 600Ω, 4mV, phone jack/AUX; 10kΩ, 500mV, phone jack • **Finish:** Front panel; ABS resin, black/Case; zinc plated steel sheet • **Dimensions (W × H × D):** 178 × 50 × 132mm (mounting device excluded) • **Weight:** 900g

STANDARD MICROPHONE

- **Microphone:** Unidirectional dynamic type with Talk Switch • **Impedance:** 600Ω • **Sensitivity:** -53dB (1kHz, 0dB = 1V/Pa)

CA-130 (60W Max.)

Car Amplifier



- **Power Source:** Standard voltage: 14V DC/Usable voltage: 10 to 16V DC (12V battery used) • **Power Consumption:** 4.4A or less at rated output • **Rated Output:** 30W • **Output Impedance:** 4 Ω (BRN), 8Ω (ORG), Common (WHT)/Changeable by changing lead wire connections • **Distortion:** Less than 5% (at 1,000Hz rated output) • **Frequency Response:** 100 – 10,000Hz • **Input:** MIC1, 2; 600Ω, 4mV, phone jack/AUX; 10kΩ, 500mV, phone jack • **Finish:** Front panel; ABS resin, black/Case; zinc plated steel sheet • **Dimensions (W × H × D):** 178 × 50 × 144mm (mounting device excluded) • **Weight:** 1.1kg

STANDARD MICROPHONE

- **Microphone:** Unidirectional dynamic type with Talk Switch • **Impedance:** 600Ω • **Sensitivity:** -53dB (1kHz, 0dB = 1V/Pa)

CA-160 (120W Max.)

Car Amplifier



- **Power Source:** Standard voltage: 14V DC/Usable voltage: 10 to 16V DC (12V battery used) • **Power Consumption:** 9A or less at rated output • **Rated Output:** 60W • **Output Impedance:** 4 Ω (BRN), 8Ω (ORG), Common (WHT)/Changeable by changing lead wire connections • **Distortion:** Less than 5% (at 1,000Hz rated output) • **Frequency Response:** 100 – 10,000Hz • **Input:** MIC1, 2; 600Ω, 4mV, phone jack/AUX; 10kΩ, 500mV, phone jack • **Finish:** Front panel; ABS resin, black/Case; zinc plated steel sheet • **Dimensions (W × H × D):** 178 × 50 × 170mm (mounting device excluded) • **Weight:** 1.2kg

STANDARD MICROPHONE

- **Microphone:** Unidirectional dynamic type with Talk Switch • **Impedance:** 600Ω • **Sensitivity:** -53dB (1kHz, 0dB = 1V/Pa)

CA-107 (15W max.)

Mobile Amplifier with Cassette Deck



- **Power Requirements:** Standard voltage: 13.2V DC/ Usable voltage: 10 to 16V DC • **Power Consumption:** 1.8A or less at rated output • **Output Power:** Rated 10W, max. 15W • **Distortion:** Less than 5% (1kHz rated output) • **Output Impedance:** 4 Ω (BRN), 8Ω (ORG), Common (WHT) changeable • **Input Impedance Sensitivity:** Mic; 600 ohms, -48dBV (4mV) • **Frequency Response:** 100 – 10,000Hz (deviation: within 3dB) • **Muting Level:** -30dB

• **Cassette Player Unit:** Tape track; 2-track monaural reproduction (auto-reverse)/Tape speed; 4.76cm/sec./Wow & flutter; Less than 0.2% • **Usable Tapes:** Normal Tape only • **Dimensions (W × H × D):** 178 × 50 × 181.5mm • **Weight:** 1.3kg • **Finish:** Front panel; ABS resin, black/ Case; Zinc-quilt steel

STANDARD MICROPHONE

- **Microphone:** Unidirectional dynamic type with Talk Switch • **Impedance:** 600Ω • **Sensitivity:** -53dB (1kHz, 0dB = 1V/Pa)

CA-207 (30W max.)

Mobile Amplifier with Cassette Deck



- **Power Requirements:** Standard voltage: 13.2V DC/ Usable voltage: 10 to 16V DC • **Power Consumption:** 3.2A or less at rated output • **Output Power:** Rated 20W, max. 30W • **Distortion:** Less than 5% (1kHz rated output) • **Output Impedance:** 4 Ω (BRN), 8Ω (ORG), Common (WHT) changeable • **Input Impedance Sensitivity:** Mic; 600 ohms, -48dBV (4mV) • **Frequency Response:** 100 – 10,000Hz (deviation: within 3dB) • **Muting Level:** -30dB

• **Cassette Player Unit:** Tape track; 2-track monaural reproduction (auto-reverse)/Tape speed; 4.76cm/sec./Wow & flutter; Less than 0.2% • **Usable Tapes:** Normal Tape only • **Dimensions (W × H × D):** 178 × 50 × 181.5mm • **Weight:** 1.5kg • **Finish:** Front panel; ABS resin, black/Case; Zinc-quilt steel

STANDARD MICROPHONE

- **Microphone:** Unidirectional dynamic type with Talk Switch • **Impedance:** 600Ω • **Sensitivity:** -53dB (1kHz, 0dB = 1V/Pa)

CA-407 (60W max.)

Mobile Amplifier with Cassette Deck



- **Power Requirements:** Standard voltage: 13.2V DC/ Usable voltage: 10 to 16V DC • **Power Consumption:** 5.5A or less at rated output • **Output Power:** Rated 40W, max. 60W • **Distortion:** Less than 5% (1kHz rated output) • **Output Impedance:** 4 Ω (BRN), 8Ω (ORG), Common (WHT) changeable • **Input Impedance Sensitivity:** Mic; 600 ohms, -48dBV (4mV) • **Frequency Response:** 100 – 10,000Hz (deviation: within 3dB) • **Muting Level:** -30dB

• **Cassette Player Unit:** Tape track; 2-track monaural reproduction (auto-reverse)/Tape speed; 4.76cm/sec./Wow & flutter; Less than 0.2% • **Usable Tapes:** Normal Tape only • **Dimensions (W × H × D):** 178 × 50 × 181.5mm • **Weight:** 1.7kg • **Finish:** Front panel; ABS resin, black/ Case; Zinc-quilt steel

STANDARD MICROPHONE

- **Microphone:** Unidirectional dynamic type with Talk Switch • **Impedance:** 600Ω • **Sensitivity:** -53dB (1kHz, 0dB = 1V/Pa)

Matching Speakers

Horn Speaker	SC-610	SC-615	SC-630	SC-650	TC-615	TC-630
Mobile Amplifier	5W*1 (8Ω)	10W*1 (8Ω)	15W*1 (8Ω)	30W*1 (16Ω)	15W*1 (8Ω)	30W*1 (16Ω)
CA-115 15W*2 (4-8Ω)	4 pcs. (8Ω)*3	2 pcs. (4Ω)*4	1 pce. (8Ω)	—	1 pce. (8Ω)	—
CA-130 30W*2 (4-8Ω)	NG	4 pcs. (8Ω)*3	2 pcs. (4Ω)*4	—	2 pcs. (4Ω)*4	—
CA-160 60W*2 (4-8Ω)	NG	NG	4 pcs. (8Ω)*3	2 pcs. (8Ω)*4	4 pcs. (8Ω)*3	2 pcs. (8Ω)*4
CA-107 10W*2 (8Ω)	NG	1 pce. (8Ω)	1 pce. (8Ω)	—	1 pce. (8Ω)	—
CA-207 20W*2 (4-8Ω)	4 pcs. (8Ω)*3	2 pcs. (4Ω)*4	2 pcs. (4Ω)*4	—	2 pcs. (4Ω)*4	—
CA-407 40W*2 (4-8Ω)	NG	4 pcs. (8Ω)*3	4 pcs. (8Ω)*3	2 pcs. (8Ω)*4	4 pcs. (8Ω)*3	2 pcs. (8Ω)*4

*1 Rated input for mobile mount use.

*2 Rated output power.

*3 Series and parallel connection.

*4 Parallel connection.

—: Not available

NG: Connection not possible

The SC Series specifications (43p) presume a connection with a paging horn speaker. Due to the greater possibility of fluctuations in the supply and strength of the electrical current when a mobile amplifier is used, there is a danger that the speaker's rated input capacity will be exceeded, causing damage to the speaker. To prevent such damage from occurring, when connecting a TOA speaker and mobile amplifier, be sure he listed "Rated Input for Mobile Mount Use" input ratings are not exceeded.



Network-Related Systems

The growing convergence of digital and audio technologies has naturally been quick to adopt computer technology as well as the internet as an ideal method of signal transmission. Providing excellent performance as well as cost-effectiveness, TOA has been developing new network-related products that help extend the effectiveness and operational scope of other TOA products.

The first product to feature in this new category is the NX-100 Network Audio Adapter. It allows taking advantage of IP networks to transmit high quality audio and control signals as serial data over networks in realtime. By making use of LANS and the internet, costs are greatly minimized in transmitting audio signals to remote locations without the need for expensive dedicated lines. This new category is sure to satisfy the demanding requirements of users for better and more dependable system performance over distance along with a reduction in costs.

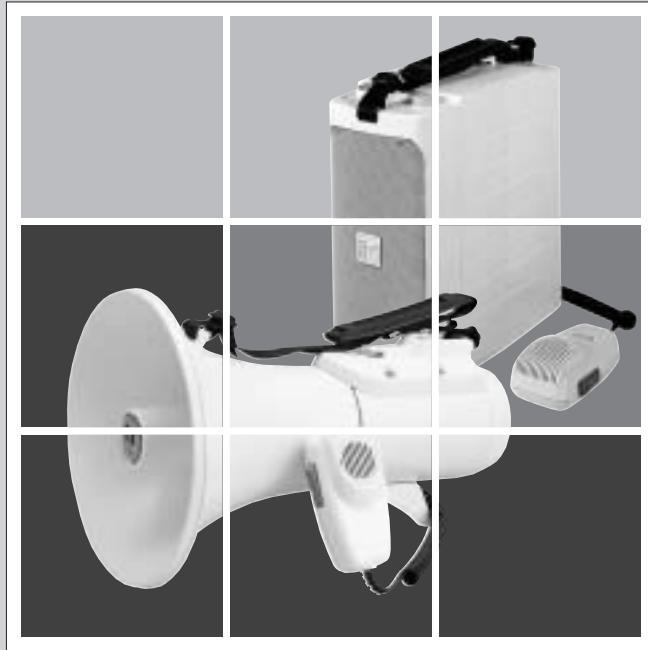
NX-100 Network Audio Adapter



- **Power Source:** 24V DC (plug-in screw connector) or AC adapter AD-246 (optional) or the equivalent
- **Current Consumption:** 200mA (DC operation)
- **Audio Input:** 1 channel (transformer-isolated), -58dB* to 0dB*, balanced (MIC/LINE changeable, volume adjustable with volume control), 2kΩ, plug-in screw connector
- **Audio Output:** 1 channel (transformer-isolated), balanced, 600Ω, plug-in screw connector
- **Frequency Response:** 50 – 14,000Hz (when sampling frequency is 32kHz)
- **Distortion:** Under 0.3% (1kHz, when sampling frequency is 32kHz)
- **Control Input:** 8 channels, no-voltage make contact input, open voltage: 12V DC, short-circuit current: 10mA, plug-in screw connector
- **Control Output:** 8 channels, open collector output, withstand voltage: 30V DC, control current: 50mA max., plug-in screw connector
- **Network I/F:** 10BASE-T/100BASE-TX, Auto-Negotiation
- **Network Protocol:** TCP/IP, UDP, HTTP, RTP
- **Audio packet Transmission System:** Unicast (up to 4 simultaneous transmissions), Multicast (up to 64 simultaneous transmissions)
- **Operating Temperature:** 0°C to +50°C (0°C to +40°C when AC adapter is in use)
- **Operating Humidity:** Under 90% RH (no dew condensation should be produced)
- **Finish:** Steel plate, black, 30% gloss
- **Dimensions:** 210 (W) × 46 (H) × 188 (D)mm
- **Weight:** 1.2kg
- **Accessory:** Bracket mounting screw × 8, CD (PC setting/operation software programme) × 1, Power supply screw connector plug × 1, Audio I/O screw connector plug × 2, Control I/O screw connector plug × 2, RS-232C connector cover × 1
- **Option:** Rack mounting bracket: MB-15B-BK (for rack mounting one NX-100 unit), MB-15B-J (for rack mounting two NX-100 units)/AC adapter: AD-246

* 0dB = 1V

Note: When you need the AC adapter, be sure to consult your TOA dealer.



Power Megaphones

TOA offers portable megaphones ranging from a high-power shoulder type to compact handheld types. Different power output ratings and special features depending on model allow selecting a model that is optimal for a specific location or for general use. If power is desired, the shoulder types with microphone are recommended. A special compact and lightweight shoulder type, the ER-604W is designed for versatility and offers hands-free operation as well as auxiliary input and a standmount option. With trumpet horns effectively carrying sound over an extensive distance (maximum 800m for the ER-77 and ER-69W) and generous power output, some models can also be mounted on a dedicated stand. The lightweight hand-held models may be compact but provide more than enough power for general PA applications. These models also have a special antibacterial finish for protection from germs. Special functions depending on the model include a whistle or siren signal. All models operate on batteries ranging from AA to C sizes.

Hand Grip Type Megaphones

ER-1015/1015S (23W max.) Hand Grip Type Megaphones

ER-1015



ER-1015S



ER-1015

- **Power Requirements:** 9V DC, R14P or "C" battery x 6
- **Output Power:** Rated 15W, max. 23W • **Battery Life:** Approx. 14hrs. (EIAJ) • **Audible Range:** Approx. 315m (EIAJ) • **Dimensions (W x H x L):** 210 x 291 x 319mm
- **Weight:** Approx. 0.97kg (without batteries) • **Finish:** Horn and Mouth; ABS resin, off-white/Amplifier Case and Handle; ABS resin, light-blue/Strap; Nylon, black
- **Antibacterial Treatment:** Grip and Microphone

ER-1015S

- **Power Requirements:** 9V DC, R14P or "C" battery x 6
- **Output Power:** Rated 15W, max. 23W • **Battery Life:** Voice; Approx. 14hrs. (EIAJ)/Siren; Approx. 20min. (EIAJ)
- **Audible Range:** Voice; Approx. 315m (EIAJ)/Siren; Approx. 500m (EIAJ) • **Dimensions (W x H x L):** 210 x 291 x 319mm
- **Weight:** Approx. 0.98kg (without batteries) • **Finish:** Horn, Mouth, Amplifier Case and Handle; ABS resin, red/Strap; Nylon, black
- **Antibacterial Treatment:** Grip and Microphone

ER-510/510W/510S (10W max.) Compact Power Megaphone



ER-510/ER-510W



ER-510S

ER-510

- **Power Requirements:** 12V DC, R6P (SUM-3) or "AA" 8 pcs.
- **Output Power:** Rated 6W, max. 10W • **Battery Life:** Approx. 10hrs.
- **Audible Range (City Areas):** Approx. 250m
- **Ambient Temperature:** -10~+40°C
- **Dimensions (W x H x D):** ø160 x 256 x 260mm
- **Weight:** Approx. 620g (without batteries)
- **Finish:** ABS-resin/Horn and Mic case; Off-white/Trigger switch; Orange/Strap; Black/Others; Gray

ER-510W (with whistle)

- **Power Requirements:** 12V DC, R6P (SUM-3) or "AA" 8 pcs.
- **Output Power:** Rated 6W, max. 10W • **Battery Life:** Talk; Approx. 10hrs./Whistle; Approx. 30min.
- **Audible Range (City Areas):** Talk; Approx. 250m/Whistle; Approx. 315m
- **Ambient Temperature:** -10~+40°C
- **Dimensions (W x H x D):** ø160 x 256 x 260mm
- **Weight:** Approx. 650g (without batteries)
- **Finish:** ABS-resin/Horn and Mic case; Off-white/Trigger switch; Orange/Strap; Black/Others; Gray

ER-510S (with siren)

- **Power Requirements:** 12V DC, R6P (SUM-3) or "AA" 8 pcs.
- **Output Power:** Rated 6W, max. 10W • **Battery Life:** Talk; Approx. 10hrs./Siren; Approx. 40min.
- **Audible Range (City Areas):** Talk; Approx. 250m/Siren; Approx. 315m
- **Ambient Temperature:** -10~+40°C
- **Dimensions (W x H x D):** ø160 x 256 x 260mm
- **Weight:** Approx. 650g (without batteries)
- **Finish:** ABS-resin/Horn, Mic case, Amp case and Handle; Red/Trigger switch; Orange/Strap; Black

Shoulder Type Megaphones

ER-2015/2015W (23W max.) Shoulder Type Megaphones

ER-2015



ER-2015W



ER-2015

- **Power Requirements:** 9V DC, R14P or "C" battery x 6
- **Output Power:** Rated 15W, max. 23W • **Battery Life:** Approx. 9hrs. (EIAJ) • **Audible Range:** Approx. 400m (EIAJ) • **Dimensions (W x H x L):** 210 x 210 x 310mm
- **Weight:** Approx. 1.12kg (without batteries) • **Finish:** Body and Microphone; ABS resin, off-white/Strap; Nylon, black
- **Antibacterial Treatment:** Microphone

ER-2015W

- **Power Requirements:** 9V DC, R14P or "C" battery x 6
- **Output Power:** Rated 15W, max. 23W • **Battery Life:** Voice; Approx. 9hrs. (EIAJ)/Whistle; Approx. 20min. (EIAJ)
- **Audible Range:** Voice; Approx. 400m (EIAJ)/Whistle; Approx. 500m (EIAJ)
- **Dimensions (W x H x L):** 210 x 291 x 310mm
- **Weight:** Approx. 1.13kg (without batteries)
- **Finish:** Body and Microphone; ABS resin, off-white/Whistle Switch; ABS resin, light-blue/Strap; Nylon, black
- **Antibacterial Treatment:** Microphone

ER-77 (35W max.) Shoulder Type Megaphone



- **Power Requirements:** 12V DC, "C" battery x 8
- **Output Power:** Rated 20W, max. 35W • **Battery Life:** Approx. 7hrs. (EIAJ) • **Signal Transmission Distance:** Approx. 900m (EIAJ)
- **Ambient Temperature:** -10~+40°C
- **Dimensions:** Mouth diameter; 298mm/Overall length; 445mm
- **Weight:** Approx. 2.5kg (without batteries)
- **Finish:** Front rubber ring; Gray/Horn flare; Aluminum, Off-white/Others; ABS-resin, Off-white

ER-69W (45W max.) Shoulder Type Megaphones



- **Power Requirements:** Battery; R20P or "D" 10 pcs./ External Power; DC 10~13.8V
- **Output Power:** Rated 30W, max. 45W (AUX input)
- **Battery Life:** Talk; Approx. 20hrs. (EIAJ)/Whistle sound; Approx. 2hrs. (EIAJ)
- **Audible Range:** Approx. 800m
- **AUX Input Sensibility:** -10dBV (300mV), 30k ohms
- **Dimensions:** Mouth diameter; 350mm/Overall length; 505mm
- **Weight:** Approx. 3.3kg (without batteries)
- **Finish:** Horn, Mic, Case and Amplifier case; Off-white

ER-604W Compact Power Megaphone



- **Power Source:** LR6 battery x 8 (12 V DC) 12 V DC / 0.8 A or more (AC adapter or DC power supply unit usable.)
- **Rated Output :** 6 W
- **Maximum Output:** 10 W
- **Battery Life :** Voice: Approx. 20 hours (LR6 alkaline battery use) Whistle: Approx. 90 minutes (continuous use)
- **Audible Range:** Voice: 160 m (under noise level of 55 dB) Whistle: 160 m (under noise level of 55 dB)
- **Microphone:** Close-talking type/press-to-talk switch,/volume control/Fixed to the microphone hanger on the unit's top panel.
- **Signal:** Whistle, push switch activation
- **Inputs:** MIC 1: -40 dB, 1.5 kΩ, ø6.3 mm (1/4") phone jack/MIC 2: -18 dB, 3 kΩ, ø3.5 mm mini jack, phantom powering/AUX (auxiliary): -12 dB, 18 kΩ, ø3.5 mm mini jack
- **External power supply:** 12 V DC
- Note: MIC 1, 2, and AUX inputs can be used at the same time. However, their individual volume cannot be adjusted as the unit's volume control is common to those inputs.

- **Other Functions:** Voice switch (functions to activate the unit with external input signals, and to make the unit in stand-by status with no external signal.) Battery check
- **Finish :** Body, microphone: ABS resin, off-white
- **Shoulder pad, belt:** Black
- **Weight:** 1.6 kg (without batteries)
- **Dimensions:** 102 (w) x 258 (h) x 216 (d) mm (excluding shoulder belt)
- **Accessories :** ø3.5 mini plug...1, External power supply cord (1m)...1
- **Options:** Headset microphone: WH-4000A, WH-4000H Dynamic microphone: DM series Speaker stand: ST-16

ST-16 Megaphone Stand





Program Timer & Others

In this section are included those TOA products that function in a supportive role for other products as well as help extend functionality and scope of performance. A noteworthy addition to this category is a Sound Repeater announcer that relies on digital technology to store announcements in memory for unlimited repeats without any sound quality deterioration. There is also a spot announcer with built-in cassette and mic input and dedicated music melody chime panels as well as other simpler digital announcers. Other products include stereo and monaural double cassette recorders as well as cassette player unit replacements, emergency power supplies and various function panels including monitors, DC power supplies, power switches, blowers and junctions. Here are also found a range of mic input modules and various matching transformers. Other installation hardware products such as cabinet racks and other options are also included.

Digital Announcers

EV-350R

Digital Record/Playback Announcer



EV-350P

Digital Playback-Only Announcer



EV-350R

• **Power Requirements:** 110 - 120V AC or 220-240V AC and 24V DC, 0.4A • **Power Consumption:** 12W
 • **Output:** Output 1, 2; 0dB*, 600 ohms, unbalanced, phone jack & screw terminal distance between barriers; 8.2mm/Headphone Output; 0dB*, 100 ohms, unbalanced, phone jack • **Input:** Microphone; -55dB*, 600 ohms, unbalanced, phone jack/AUX; -20dB*, 10k ohms, unbalanced, phone jack & RCA pin jack
 • **Frequency Response:** 20 - 20,000Hz \pm 3dB (44.1kHz sampling, 1kHz reference) / 20 - 14,000Hz (32kHz sampling, 1kHz reference) / 50 - 20,000Hz \pm 3dB (44.1kHz sampling, IT-450 mounted, 1kHz reference) / 50 - 14,000Hz (32kHz sampling, IT-450 mounted, 1kHz reference) • **Distortion:** Under 0.3% (44.1kHz, recording method: Extremely High) • **No. of Mountable Memory Card:** 2 (Ports A—B) (option) • **No. of Recording Sentence:** When 1 card is installed: 128 or 512 (changeable)/When 2 cards are installed: 256 or 1024 (changeable)/1 emergency sentence, other than the above sentences, can be recorded./When recorded by a control input; 8 (direct mode) or 256 (binary mode) (changeable) • **Recording Sound Quality:** Sampling Frequency; 32kHz, 44.1kHz/Recording grade; Long (bit rate: 64kbps), Normal (bit rate: 96kbps), High (bit rate: 128kbps), Extremely High (bit rate: 192kbps)
 • **Recording Time (When recording 128 sentences):** EV-F8M; Long; 16 min 26 sec, Normal; 10 min 57 sec, High; 8 min 13 sec, Extremely High; 5 min 29 sec/M-A20M; Long; 43 min 24 sec, Normal; 28 min 56 sec, High; 21 min 42 sec, Extremely High; 14 min 28 sec/M-A40M; Long; 1 hr 27 min 5 sec, Normal; 58 min 4 sec, High; 43 min 33 sec, Extremely High; 29 min 2 sec
 • **Playback Mode:** Single- and dual-source playback (changeable) • **No. of Playable Program:** Direct control; 8 programs or Binary control; 256 programs/1 emergency message takes precedence over the above programs and is played back • **Control Input:** Activation 1—8, playback, pause 1, pause 2, emergency, recording, erasure; No-voltage make-contact (over 50 mS), open voltage; 24V DC, short circuit current; 10mA, screw terminal, distance between barriers; 8.2mm/RS-232C Terminal; D-sub connector (9-pin) • **Control Output:** Output 1, 2, Error; screw terminal, distance between barriers; 8.2mm, contact capacity; 30V DC, 0.5A • **Operating Display:** LCD with backlight (16 characters \times 2) • **Operating Temperature:** 0°C to +50°C • **Operating Humidity:** Less than 90% (must be free from dew condensation) • **Finish:** Panel; Aluminum, black, 30% glossy, paint/Case; Surface treated steel plate, black 30% glossy • **Dimensions (W \times H \times D):** 482 \times 44 \times 315mm • **Weight:** 4kg

* 0dB = 1V

EV-F8M/M-1024

ATA Flash Memory Cards

• Flash memory cards for EV-350R/EV-350P Digital Announcers.



• **Type:** ATA (PCMCIA/JEIDA TYPE II) • **Memory Capacity:** 8M byte • **Dimensions (W \times H \times D):** 54 \times 85.6 \times 5.0mm • **Weight:** approx. 35g

EV-350P

• **Power Requirements:** 110-120V AC or 220-240V AC and 24V DC, 0.3A • **Power Consumption:** 9W • **Output:** Output 1, 2; 0dB*, 600 ohms, unbalanced, phone jack & screw terminal distance between barriers; 8.2mm/Headphone Output; 0dB*, 100 ohms, unbalanced, phone jack • **Input:** AUX; -20dB*, 10k ohms, unbalanced, phone jack & RCA pin jack • **Frequency Response:** 20-20,000Hz \pm 3dB (44.1kHz sampling, 1kHz reference) / 20-14,000Hz (32kHz sampling, 1kHz reference) / 50-20,000Hz \pm 3dB (44.1kHz sampling, IT-450 mounted, 1kHz reference) / 50-14,000Hz (32kHz sampling, IT-450 mounted, 1kHz reference) • **Distortion:** Under 0.3% (44.1kHz, recording method: Extremely High) • **No. of Mountable Memory Card:** 2 (Ports A—B) (option) • **Playback Mode:** Single- and dual-source playback (changeable) • **No. of Playable Program:** Direct control; 8 programs or Binary control; 256 programs/1 emergency message takes precedence over the above programs and is played back • **Control Input:** Activation 1—8, playback, pause 1, pause 2, emergency, recording, erasure; No-voltage make-contact (over 50 mS), open voltage; 24V DC, short circuit current; 10mA, screw terminal, distance between barriers; 8.2mm/RS-232C Terminal; D-sub connector (9-pin) • **Control Output:** Output 1, 2, Error; screw terminal, distance between barriers; 8.2mm, contact capacity; 30V DC, 0.5A • **Operating Display:** LCD with backlight (16 characters \times 2) • **Operating Temperature:** 0°C to +50°C • **Operating Humidity:** Less than 90% (must be free from dew condensation) • **Finish:** Panel; Aluminum, black, 30% glossy, paint/Case; Surface treated steel plate, black 30% glossy • **Dimensions (W \times H \times D):** 482 \times 44 \times 315mm • **Weight:** 4kg

* 0dB = 1V

Sound Repeater

EV-20R

Desktop Type



• **Power Source:** Supplied from an external 24V DC/400mA power supply or from an optional AD-246 AC adapter • **Power Consumption:** 10W (rated output)
 • **Wave Format:** 44.1kHz sampling frequency, 16-bit PCM (monaural) • **Frequency Response:** 20 - 20,000Hz, \pm 3dB (1kHz) • **Distortion:** Under 1% (1kHz, rated output)
 • **Recording System:** USB data transfer or analog recording • **Control Input:** Play 1 - 4, stop; No-voltage make contact input, pulse make length: 200ms, open voltage; 30V DC, short-circuit current: 10mA terminal block type connector • **Control Output:** Busy: Contact capacity; 30V DC/0.5A, terminal block type connector • **Input:** Input / Recording input: Mic: -60dB*, 2.2k Ω /Line: -20dB*, 10k Ω (Mic/Line changeable), unbalanced, phone jack/Line input: 0dB*, 10k Ω , unbalanced, terminal block type connector • **Output:** Line output: 0dB*, 600 Ω , unbalanced, terminal block type connector/Headphone output: 0dB*, 100 Ω , unbalanced, phone jack/Speaker output: 3W, 8 Ω , terminal block type connector • **LED Indicator:** POWER, USB, START/STOP 1-4 • **Maximum No. of Messages:** 4 • **Maximum Recording Time:** 3 min • **Messages Delay Time:** 0s, 2s or 4s (selectable)
 • **Messages Interval Time:** ∞ , 0s, 5s, 10s, 30s, 1 min, 4 min, 10 min, 30 min or 1 h (selectable) • **Finish:** Case: ABS resin, black • **Dimensions:** 210 (W) \times 44.2 (H) \times 181 (D) mm (excluding projection) • **Weight:** 730g • **Accessory:** CD-ROM (USB data transfer software and sample chimes recorded) \times 1, Unbalanced-phone plug \times 1, USB cable (1m) \times 1, Terminal block type connector (22 poles) \times 1, Rubber foot \times 4

USB Date Transfer Software Operation Environment

• **Personal Computer:** IBM-AT compatible type (equipped with the USB terminal) • **Main Specifications:** CPU: Pentium compatible CPU of 133MHz or more/Memory: Over 64MB (recommended: 128MB or more)/Free disk space: Over 10MB (space for message storage excluded) • **OS:** Windows 2000/XP

* 0dB = 1V

Notes: Pentium is a trademark of Intel Corporation. Windows is a trademark of Microsoft Corporation. Other company names and products are also trademarks of individual companies. Line input and line output can be converted to balanced type using an optional IT-450 transformer.

PM-20EV

Paging Microphone Type



• **Power Source:** Supplied from an external 24V DC/200mA power supply or from an optional AD-246 AC adapter • **Power Consumption:** 5W • **Wave Format:** 44.1kHz sampling frequency, 16-bit PCM (monaural)
 • **Frequency Response:** 50 - 20,000Hz, \pm 3dB (1kHz)
 • **Distortion:** Under 1% (1kHz, rated output) • **Recording System:** USB data transfer or analog recording • **Control Output:** Busy: Contact capacity; 30V DC/0.5A, terminal block type connect • **Input:** Unidirectional gooseneck microphone (preinstalled on the unit) / External microphone: -37dB*, 2.2k Ω , unbalanced, mini jack
 • **Output:** Line output: 0dB*, 600 Ω , balanced, phone jack, terminal block type connector / Monitor speaker (built inside): 0.2W • **LED Indicator:** USB, REC, MONITOR, PLAY, TALK • **Internal Chime Tone:** 2 tones (4-tone chime (Up) and 4-tone chime (Down)), ON/OFF operations
 • **Maximum No. of Messages:** 1 • **Maximum Recording Time:** 3 min (including chime playback) • **Messages Delay Time:** 0s, 2s or 4s (selectable) • **Finish:** Case: ABS resin, silver • **Dimensions:** 122 (W) \times 48.8 (H) \times 80 (D)mm (microphone and projections not included)
 • **Weight:** 710g • **Accessory:** CD-ROM (USB data transfer software and sample chimes recorded) \times 1, USB cable (1m) \times 1, Unbalanced-phone plug cord (2m) \times 1, Terminal block type connector (7 poles) \times 1

USB Date Transfer Software Operation Environment

• **Personal Computer:** IBM-AT compatible type (equipped with the USB terminal) • **Main Specifications:** CPU: Pentium compatible CPU of 133MHz or more/Memory: Over 64MB (recommended: 128MB or more)/Free disk space: Over 10MB (space for message storage excluded) • **OS:** Windows 2000/XP

* 0dB = 1V

Notes: Pentium is a trademark of Intel Corporation. Windows is a trademark of Microsoft Corporation. Other company names and products are also trademarks of individual companies.

Rack Mounting Bracket Kit

MB-WT3

• Two type brackets.
 • For rack-mounting one EV-20R unit.



MB-WT4

• Bracket (x2) with connector.
 • For rack-mounting two EV-20R units.



Program Timer

TT-104B

Program Timer



• **Power Requirements:** L-version; 110-120V AC, 50/60Hz, H-version; 220/240V AC, 50/60Hz
 • **Power Consumption:** 3W • **Power Outage Protection:** 100hrs. • **Program Capacity:** 30 steps per channel
 • **Programmable Items:** Day of the week, hour, minute, output channel • **Number of Channels:** 4 channels (A, B, C, D) • **Output System:** No-voltage (dry) make contact (5sec. make output) • **Output Capacity:** 24V DC, 0.5A
 • **Clock Accuracy:** \pm 5sec. per month (25°C) • **Items Indicated in Display:** Day of the week, hour and minute
 • **Special Functions:** Entire program cancellation/Output switchover/Pause mode/Warnings by tone and indication
 • **Dimensions (W \times H \times D):** 420 \times 47.5 \times 246mm
 • **Weight:** Approx. 2.5kg • **Operating Temperature:** 0-50°C • **Color:** Black

Spot Announcers

AM-821

Spot Announcer



- **Power Requirements:** AC 220~240V, 50/60Hz • **Power Consumption:** 12W • **Outputs:** Line; 0dBm (1V) 600 ohms, balanced, DIN plug/Phone; Stereo or monaural headphone phone jack • **Inputs:** Mic; -60dBm (1mV) 600 ohms, balanced, DIN plug/Remote mic; -60dBm (1mV) 600 ohms, unbalanced, DIN plug/BGM; 0dBm (1V) 600 ohms, balanced, DIN plug • **Frequency Response:** Mic; 100~15,000Hz, ± 3 dB/Tape; 100~7,000Hz, ± 3 dB • **Distortion:** Mic; Less than 2% at 1kHz/Tape; Less than 3% at 1kHz • **S/N Ratio:** Mic; Better than 55dB/Tape; Better than 50dB • **Wow and Flutter:** Less than 0.3% WRMS • **Control Terminals:** Input for external timer; accepts single pulse with no voltage/Output for muting; makes contact with no voltage • **Interval Timer:** 2, 5, 10, 15, 20min. and off (switchable) • **Missible Message:** Message No. 1 through No.9 • **Message Number Indication:** 1 through 99 • **Rack Mounting Bracket:** YM-003B (option) • **Dimensions (W x H x D):** 433.5 x 140.2 x 336.3mm • **Weight:** 6.5kg • **Color:** Panel; Black/Case; Dark gray

RM-820

Compatible Microphone for AM-821



- **Output Level:** -66dBV, unbalanced • **Power Source:** 6V DC (fed from the AM-821) • **Connections:** 2m long cable with 8-pin DIN plug • **Dimensions (W x H x D):** Base; 155 x 95 x 38mm/Length of gooseneck; 273mm • **Weight:** 850g (with cable) • **Color:** Black

BGM Systems

BA-800

Double Cassette Player (230~240V AC model)



- **Power Requirements:** 230~240V AC, 50/60Hz • **Power Consumption:** 12VA • **Output:** Mono line out; 600 ohms 1V, unbalanced/Stereo line output; 10k ohms 300mV, unbalanced L/R • **Distortion:** Less than 3% (Mono line out; 1,000Hz/1V) • **Frequency Response:** 50~15,000Hz • **S/N Ratio:** 50dB (Dolby NR: OFF), AGC OFF, 60dB (Dolby NR: ON), AGC OFF • **Usable Tape:** Compact cassette tapes • **Tape Speed:** 4.76cm/sec. • **Wow and Flutter:** Less than 0.2% (WRMS) • **Playing System:** Auto reverse • **Finish:** Front Panel; Aluminum, almitite process (black)/ABS resin/Case; Steel color plate (black) • **Dimensions (W x H x D):** 420 x 97 x 300mm • **Weight:** Approx. 6.2kg • **Optional Accessory:** Model MB-25B rack-mounting kit

(120V AC model)

- **Power Requirements:** 120V AC, 50/60Hz • **Power Consumption:** 8W

*Others are same as 230~240V AC model.

BA-803 (30W) BA-806 (60W)

Monaural Double Cassette Play Amplifier (230~240V AC model)



BA-803

- **Power Requirements:** 230~240V AC, 50/60Hz • **Power Consumption:** 75VA • **Output Power:** 30W • **Distortion:** Less than 1% (100Hz at rated output on AUX2 input) • **Frequency Response:** Tape; 50~15,000Hz/AUX2; 50~20,000Hz (± 3 dB) • **Tone Control:** Bass; 100Hz ± 10 dB/Treble; 10,000Hz ± 10 dB • **Input:** Mic; 600 ohms 1mV, balanced/AUX1; 50k ohms 100mV, unbalanced/AUX2; 600 ohms 1V, unbalanced/Line in (signal); 10k ohms 150mV, unbalanced • **Output:** Speaker Output; 4 ohms, 83 ohms; 50V/330 ohms; 100V/Line Output; 600 ohms 1V, unbalanced • **S/N Ratio:** Tape; 50dB (Dolby NR: OFF), AGC OFF, 60dB (Dolby NR: ON), AGC OFF/Mic; 60dB • **Usable Tape:** Compact cassette tapes • **Tape Speed:** 4.76cm/sec. • **Wow and Flutter:** Less than 0.2% (WRMS) • **Playing System:** Auto reverse • **Finish:** Front Panel; Aluminum, alumite process (black)/ABS resin/Case; Steel color plate (black) • **Dimensions (W x H x D):** 420 x 97 x 300mm • **Weight:** Approx. 9.0kg • **Optional Accessory:** Model MB-25B rack-mounting kit

*120V AC model is not available.

BA-806

- **Power Requirements:** 230~240V AC, 50/60Hz • **Power Consumption:** 120VA • **Output Power:** 50W • **Distortion:** Less than 1% (100Hz at rated output on AUX2 input) • **Frequency Response:** Tape; 50~15,000Hz/AUX2; 50~20,000Hz (± 3 dB) • **Tone Control:** Bass; 100Hz ± 10 dB/Treble; 10,000Hz ± 10 dB • **Input:** Mic; 200 ohms 1mV, balanced/AUX1; 50k ohms 100mV, unbalanced/AUX2; 600 ohms 1V, unbalanced/Line in (signal); 10k ohms 150mV, unbalanced • **Output:** Speaker Output; 4 ohms, 10 ohms/25V, 83 ohms; 70V Line Output; 600 ohms 1V, unbalanced • **S/N Ratio:** Tape; 50dB (Dolby NR: OFF), AGC OFF/Mic; 60dB • **Usable Tape:** Compact cassette tapes • **Tape Speed:** 4.76cm/sec. • **Wow and Flutter:** Less than 0.2% (WRMS) • **Playing System:** Auto reverse • **Finish:** Front Panel; Aluminum, alumite process (black)/ABS resin/Case; Steel color plate (black) • **Dimensions (W x H x D):** 420 x 97 x 300mm • **Weight:** Approx. 10.3kg • **Optional Accessory:** Model MB-25B rack-mounting kit

(120V AC model)

- **Power Requirements:** 120V AC, 50/60Hz
- **Power Consumption:** 100W

* Others are same as 230~240V AC model (the above).

CU-800

Replacement Cassette Player Unit



(For BA-800, BA-803, and BA-806)

Notes: 1. The recording head's approx. 2,000-hour effective playing life is expandable to 4,000 hours (8 hours per day for 500 days) by using two units alternatively.
2. The C-120 tapes (120 minutes) recording time for both sides and endless tapes are not recommended because their tapes are extremely thin and can often be slack or twist, leading to unstable operation. The C-90 (90 minutes) and C-60 (60 minutes) are most commonly used.

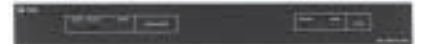
Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

Dolby and the double-D symbol **DD** are trademarks of Dolby Laboratories Licensing Corporation.

Chime Tone Generator

ML-301B

Music Melody Chime Panel



- **Power Requirements:** AC mains, 50/60Hz • **Power Consumption:** 4W • **Output:** 0dBV 600 ohms, unbalanced • **Control System:** Microprocessor control • **Tone Generator:** Frequency modulation • **Programs:** Westminster 22sec. ~ 46sec. (adjustable 10 steps)/4-tone chime (440Hz/554Hz/659Hz/880Hz, $\pm 5\%$) • **Activation:** Front switch/Remote control • **Remote:** 1 x Make contact/Capacity of Contact; 24V DC, 0.5A • **Operating Temperature:** 0°C ~ +50°C • **Color:** Panel; Black • **Dimensions (W x H x D):** 420 x 47.5 x 246.5mm • **Weight:** 2.4kg • **Accessories:** 1 x AC power supply cord (2m), 1 x connection cord (2m) with phone plug • **Optional Accessory:** Rack mounting bracket (MB-15B)

Program Selectors

PSP-100

Program Selector



- On/off and 4 program selector knob.
- Volume control knob.
- 76mm high-compliance speaker.
- 1W (10k ohms) input.
- Dimensions (W x H x D): 200 x 100 x 45mm.

PSP-101

Program Selector



- On/off and 4 program selector knob.
- Volume control knob.
- 76mm high-compliance speaker.
- 1W (10k ohms) input.
- Dimensions (W x H x D): 220 x 100 x 60mm.

Multi-Channel Monitors

MP-1216

Multi-Channel Monitor



- **Nominal Input Levels:** Line level; +4dB, transformer isolated/Low impedance speaker; 49V, transformer isolated/High impedance speaker; 70V, transformer isolated (100V, 220/240V AC version) • **Maximum Meter Levels:** Line level; +10dB/Low impedance speaker; 98V (1,200W at 8 ohms)/High impedance speaker; 140V • **Maximum Output Level:** 3W into internal speaker or 10mW into phones jack • **Operating Controls (common to both):** Select switch; Chans 1 to 16/Output; Speaker/Phone level/Power; On/Off • **Operating Control (link switch on rear panel):** Link switch; Inde/Master/Slave • **LED Indicators (per channel):** Meter; 12 segment LED/Channel indicator; On when selected • **LED Indicators (common to both):** Ch Select; On for Master/Inde modes, Off for Slave mode/Power; On • **Power Requirements:** AC Mains, 50/60Hz • **Power Consumption:** 21W (120V AC version), 25W (220/240V AC version), Fuse: 1.0A, 120V/0.25A, 220/240V • **Finish:** Black • **Dimensions (W x H x D):** 482.6 x 88.4 x 312.7mm • **Weight:** 5.3kg/0dB = 0.775Vrms

YA-8
Connection Cable for MP-1216

- 1m long
- 8P DIN plug



MP-032B
Monitor Panel



- **Functions:** Aural/Visual monitoring (up to 10 power amplifiers)
- **Controls:** Channel selector switch/Monitor volume control/Watt meter/Line voltage selector switch
- **Speaker:** Full-range 5" speaker
- **Input Line Voltage (Impedance):** 25V (625 ohms), 50V (2.5k ohms), 70V (5k ohms), 100V (10k ohms) switchable
- **Terminals:** Screw

MP-011
Monitor Panel



- **Power Source:** 24V DC
- **Current Consumption:** 400mA (rated output)
- **Input:** 10 inputs, Amplifier output level; 50V, 70V, 100V (changeable)/Line output level; 0dBV (1V)
- **Monitor Speaker:** 33 x 140mm dynamic speaker, 3W/8 ohms
- **Meter:** 7-segment LED meter
- **Control Signal Input:** Emergency control signal (bypasses volume control)/Talk switch signal (feedback prevention)
- **Dimensions (W x H x D):** 482 x 44 x 219.1mm
- **Weight:** 2.5kg
- **Color:** Black

Matching Transformers

LT-101

(Impedance: 10k ohms : 10k ohms)
For E-1231, E-232, D-1103 and L-1102.



- **Impedance:** 10k ohms : 10k ohms
- **Frequency Response:** 30Hz to 20kHz at ±0.15dB
- **Distortion:** Less than 0.2% (50Hz, 5dB*)
- **Constant Loss:** Within 1.5dB (at 1kHz, 1V)
- **Weight:** 44g

LT-102

(Impedance: 600 ohms : 600Ω ohms)
For E-1231, E-232, D-1103 and L-1102.



- **Impedance:** 600 ohms : 600 ohms
- **Frequency Response:** 30Hz to 20kHz at ±0.15dB
- **Distortion:** Less than 0.2% (50Hz, 5dB*)
- **Constant Loss:** Within 1.5dB (at 1kHz, 1V)
- **Weight:** 44g

Rack Mounted Equipment

DS-1000B
Emergency Power Supply Unit
("dryfit" Type)



- **Power Requirements:** 220V/240V AC changeable, 50/60Hz
- **Current Consumption:** 150VA
- **Applicable Batteries:** A212/24G5 (12V DC/24Ah) x 2 or A212/36G6 (12V DC/36Ah) x 2 (Made by Accumulatorenfabrik Sonnenschein GmbH)
- **Charging Method:** Trickle charging
- **Charge Current:** Max. 2.5A
- **Ambient Temperature:** 0~50°C
- **Color:** Black
- **Dimensions (W x H x D):** 483 x 88 x 281mm
- **Weight:** 7.0kg

Note:

The DS-1000B must be used in conjunction with two separately available A212/24G5 or A212/36G5 "dryfit" (lead) batteries of Accumulatorenfabrik Sonnenschein, GmbH.
"dryfit" is a trademark of Accumulatorenfabrik Sonnenschein, GmbH.

DS-029B
Emergency Power Supply unit
(Ni-Cd Type)



- **Power Requirements:** 110V, 120V, 220V, 240V switchable, 50/60Hz
- **Current Consumption:** 30VA
- **Applicable Batteries:** Sealed-type Ni-Cd batteries: NDC-2435 (3500mAh/5HR) for 120W/NDC-2460 (6000mAh/5HR) for 240W
- **Charging Method:** Trickle charge
- **Charge Current:** NDC-2435 (approx. 88mA)/NDC-2460 (approx. 150mA), switchable
- **Color:** Black
- **Dimensions (W x H x D):** 483 x 88.3 x 346mm including rack-mounting brackets and battery holder
- **Weight:** 5.4kg excluding batteries

NDC-2435/NDC-2460
Ni-Cd Battery



- **Weight:** NDC-2435; 3kg/NDC-2460; 4.7kg

AD-011
DC Power Supply Panels



- **Power Source:** 110/220V AC, 50/60Hz
- **Power Consumption:** 140VA (rated output)
- **Input:** 24V DC
- **Output:** AC operation; 24V DC±0.5V, 2.5A/DC operation; 1V below input DC voltage
- **Dimensions (W x H x D):** 482 x 44 x 235.3mm
- **Weight:** 5.4kg
- **Color:** Gray

AD-031B
DC Power Supply Panel



- **Power Source:** 110/220V AC, 50/60Hz
- **Power Consumption:** 530VA (rated output)
- **Input:** 24V DC
- **Output:** AC operation; 24V DC±0.5V, 10A/DC operation; 1V below input DC voltage
- **Main Power Output:** 24V DC ±0.5V, 200mA (when operated on AC)
- **Dimensions (W x H x D):** 482 x 132.6 x 316mm
- **Weight:** 14.95kg
- **Color:** Black

PS-011B
Power Switch Panel



- **Type:** Power remote switch
- **Switch Capacity:** 5A at 250V AC/10A at 125V AC
- **Dimensions (W x D x H):** 483 x 44.5 x 90mm
- **Weight:** 0.65kg
- **Color:** Black

JB-031B
Junction box



- **Number of Terminals:** 3 terminal blocks x 4 (18 terminals per block)
- **Current Capacity:** 250V/20A per terminal
- **Finish:** Black
- **Dimensions (W x D x H):** 483 x 132.6 x 285mm
- **Weight:** 3.5kg

JP-028B
Junction Panel



- **Power Requirements:** 220/240V AC, 50/60Hz
- **Power Consumption:** 16W
- **AC Power Output:** Switched; Max. 20A x 13/Unswitched; Max. 10A x 5
- **DC Power Output:** 24DC, 0.2A
- **Dimensions (W x D x H):** 483 x 89 x 350mm
- **Weight:** 5.7kg
- **Color:** Black

JP-1216
Junction Panel



- Junction panel for connecting rack-mounted equipment to external equipment.
- Terminals for eight signal lines.
- 16 lines for speaker terminals.
- Black front panel finish.
- **Line Terminals:** 8 line (for signal lines only)
- **Speaker Terminals:** 16 lines, 100V 15A
- **Finish:** Front panel: Black
- **Dimensions (W x H x D):** 482.6 x 88.4 x 301mm
- **Weight:** 3.7kg

BP-031B Blower Panel



- **Power Requirements:** AC mains 50/60Hz • **Power Consumption:** 8.5W • **Control:** 3-function switch (MANUAL/OFF/AUTO) • **Protection:** 1 AC fuse
- **Automatic Operation:** Thermal switch ON (when rack temperature exceeds 48°C)/Thermal switch OFF (when rack temperature drops below 38°C) • **Ventilation:** 1500ml/min. • **Dimensions (W × D × H):** 483 × 133 × 152.7mm • **Weight:** 3.7kg • **Color:** Black

BU-412 Blower Unit



- **Power Source:** AC mains, 50/60Hz • **Power Consumption:** 17W • **Amount of Air Blower:** Max. 1.98m³/min. (50Hz), 2.15m³/min. (60Hz) • **Auto-Sensor:** Temperatures in the racks 35°C; Starts operating/35°C; Stops
- **Dimensions (W × H × D):** 300 × 57.2 × 240mm • **Weight:** 1.4kg

YF-120B Blank Box



- **Dimensions (W × H × D):** 216 × 133 × 323.5mm
- **Weight:** 2.5kg • **Color:** Black

DP-053B Shelf Assembly



- **Dimensions (W × H × D):** 483 × 222 × 340mm • **Weight:** 6.6kg • **Color:** Black • **Inner Dimensions (W × H × D):** 432 × 208 × 317mm

BK-013B/023B/033B Blank Panel



- BK-013B: 1-size
BK-023B: 2-size
BK-033B: 3-size
- **Color:** Black
- **Dimensions (W × H):** BK-013B; 482.6 × 43.6mm/BK-023B; 482.6 × 88.1mm/BK-033B; 482.6 × 132.5mm
- **Weight:** BK-013B; 0.4kg/BK-023B; 0.75kg/BK-033B; 1.1kg

BK-1100/1200/1300 Blank Panels



- BK-1100: 1-unit size.
BK-1200: 2-unit size.
BK-1300: 3-unit size.
- **Color:** Black.

PF-013B/023B Perforated Panel



- PF-013B: 1-size,
PF-023B: 2-size
- **Color:** Black
- **Dimensions (W × H):** PF-013B; 482.6 × 43.6mm/PF-023B; 482.6 × 88.1mm • **Weight:** PF-013B; 0.15kg/PF-023B; 0.30kg

PF-1100 Perforated Panel



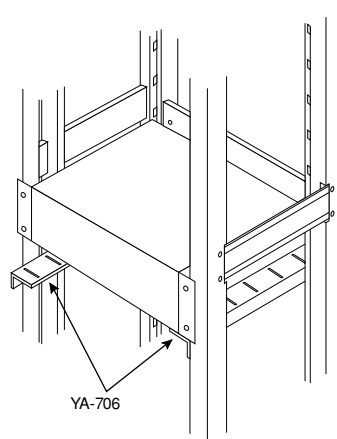
- 1-unit size
- **Color:** Black

YA-706 Rack Supporting Runner

- To support heavy rack equipment.
- Applicable racks: CR-272, CR-412 & CR-412-6.



(1 Pair)



SS-021B Speaker Selector



- Type: 10 lines speaker selector.
- 10-individual speaker selector switches.
- 1 all-call switch with remote control facility.
- Up to 1kW.
- 1 all-call switch and 2 (make and break) or auxiliary switches available by using relay.

Cabinet Racks

CR-131N/273/413/413-6 Cabinet Racks

CR-131N

- With 13-unit space
- **Dimensions (W × H × D):** 546 × 674.5 × 420mm
- **Color:** Pale ivory

CR-273

- With 27-unit space
- **Dimensions (W × H × D):** 566 × 1,364 × 435mm
- **Color:** Ivory

CR-413

- With 41-unit space
- **Dimensions (W × H × D):** 566 × 2,000 × 435mm
- **Color:** Ivory

CR-413-6

- Extra-deep type
- With 41-unit space
- **Dimensions (W × H × D):** 566 × 2,000 × 615mm
- **Color:** Ivory



CR-131N

CR-273

CR-413/
CR-413-6



Professional Sound Amplifiers

TOA's amplifiers for professional use are engineered to operate in demanding conditions with full reliability, providing superb audio reinforcement over an extended frequency bandwidth that allows all the nuances and dynamics of a live performance to reach audiences in concert and multipurpose halls as well as sports stadiums. IP Series Dual Channel Power Amplifiers are available in ratings of 600/450/300W into 4-ohm loads. Featuring compact dimensions and light in weight, they also offer selectable modes of operation : stereo, BTL and parallel output to suit applications. Built-in protection guards against current surges, overloads, short circuits and thermal overload. For large-scale applications, these amplifiers can be computer-controlled by using the DI-1616 Interface Unit.

More modest power requirements are satisfied by the P-120D/P-120DH Dual Power Amplifiers or the FA-302 Dual Output Stereo Amplifier for BGM or foreground music applications. If multi-channel amplification is required, the P-60F Multi-Channel Power Amplifier produces four channels of 80W into 4-ohm loads which can also be bridged for powerful 2-channel or versatile 3-channel operation. To extend the performance capabilities of each amplifier, TOA offers accessories such as output and matching transformers, cables and hardware such as junction and blank panels, racks and blower units.

Pro-Sound Amplifiers

Dual Ch Power Amplifiers

DI-1616 Interface Unit



- **Power Requirements:** 100 to 240V AC, 50/60Hz
- **Power Consumption:** 15W • **Frequency Response:** 20Hz to 20kHz (+0dB, -2dB) • **Total Harmonic Distortion:** Less than 0.07% at 1kHz, +4dB • **Level Control:** (Input) Signal Input; 16 channels, +4dB (max. 20dB), 10k ohms, unbalanced, mini-DIN connector/(Output) Signal Output: 16 channels, +4dB (max. 20dB), 2k ohms, unbalanced, mini-DIN connector/Level Setting: 0 to -0dB • **Monitoring:** Power supply status, Protection, Fan, Input/Output signal levels • **Memory:** 16 memory patterns • **Control:** Control Software; PC software (for Windows® 95 or Windows NT®) Communication System; RS-232C (when controlling only one DI-1616 unit), 9-pin D-sub connector/RS-485 (when controlling max. 30 units), XLR-3-31 and XLR-3-32 (or equivalent) • **Panel Function:** Memory/Unit ID No. Selection Switch (16 memories), Memory/Unit ID No. Display (2-digit LED) • **Finish:** Front Panel: SPCC t1.6, Black painting/Case; Colored steel plate, Black
- **Dimensions (W x H x D):** 482 x 44 x 294mm • **Weight:** 4kg • **Accessories:** Cable cord (2m) x 1, Rack-mounting screw x 4

*0dB = 0.075Vrms

*Windows® 95 and Windows NT® are registered trademarks of Microsoft Corporation.

*Software (Ver. 2.0) is pre-installed in the unit.

Example of PC-Control Software



• For 3 amplifiers

IP-300D/IP-450D/IP-600D Dual Channel Power Amplifiers



- **Power Requirements:** AC Mains, 50/60Hz • **Power Consumption:** IP-300D: 430VA (Based on UL/CSA standards), 1,200VA (1,040W) (rated output 4 ohms + 4 ohms) IP-450D: 660VA (Based on UL/CSA standards), 1,800VA (1,650W) (rated output 4 ohms + 4 ohms) IP-6300D: 940VA (Based on UL/CSA standards), 2,400VA (2,080W) (rated output 4 ohms + 4 ohms) • **Input:** IP-300D: 2 circuits 10k ohms (electrically balanced), +2.2dB (1V), ±0.5dB (input level control in maximum position)/Balanced phone jack, XLR-3-31, XLR-3-32 IP-450D: 2 circuits 10k ohms (electrically balanced), +4.0dB (1.23V), ±0.5dB (input level control in maximum position)/Balanced phone jack, XLR-3-31, XLR-3-32 IP-600D: 2 circuits 10k ohms (electrically balanced), +5.3dB (1.42V), ±0.5dB (input level control in maximum position)/Balanced phone jack, XLR-3-31, XLR-3-32
- **Output:** IP-300D: STEREO: 300W + 300W (4 ohms), 200W + 200W (8 ohms)/BTL: 600W (8 ohms)/Screw terminal (M4) (Solderless terminal of 5.5-4 or 5.5-5 usable) IP-450D: STEREO: 450W + 450W (4 ohms), 300W + 300W (8 ohms)/BTL: 900W (8 ohms)/Screw terminal (M4) (Solderless terminal of 5.5-4 or 5.5-5 usable) IP-600D: STEREO: 600W + 600W (4 ohms), 400W + 400W (8 ohms)/BTL: 1,200W (8 ohms)/Screw terminal (M4) (Solderless terminal of 5.5-4 or 5.5-5 usable)
- **Frequency Response:** 20 - 20,000Hz (+0dB, -0.5dB)
- **Total Harmonic Distortion:** 0.01% (8 ohms, 1kHz)/0.1% (8 ohms, 20-20,000Hz) • **Intermodulation Distortion:** 0.03% (60Hz : 7kHz = 4 : 1, 8 ohms) • **Voltage Gain:** 32dB
- **Protection Circuit:** Protection against excessive current flow due to overload, short circuit (under 0.5 ohms), unusual DC voltage output, and heat sink temperature rise (over 95°C) • **S/N Ratio:** 110dB (20-20,000Hz), 115dB (IHF-A weighted) • **Forced Air Cooling:** Under 40°C; Stop/40-75°C; Low to high speed (variable)/Over 75°C; High speed • **Finish:** Panel; Zinc diecasting, Black/Case; Colored steel plate, Black • **Dimensions (W x H x D):** 482 x 102.4 x 473.5mm • **Weight:** IP-300D/IP-450D: 13kg IP-600D: 18kg • **Accessories:** Power cord...1, Fiber washer...4, Screw 5 x 20...4, Screw M4 x 20...4* 0dB = 0.075Vrms

Accessories

MT-300M/450M/600M Output Transformers



MT-300M

• For IP-300D.

- **Capacity:** 200W • **Primary Impedance:** 8 ohms
- **Secondary Impedance:** 50 ohms (100V line), 25 ohms (70V line), 13 ohms (50V line), 3.1 ohms (25V line)
- **Frequency Response:** 100 - 18,000Hz, +0dB/-3dB
- **Connection Terminal:** Screw terminal (M4) • **Weight:** 2.2kg

MT-450M

• For IP-450D.

- **Capacity:** 3200W • **Primary Impedance:** 8 ohms
- **Secondary Impedance:** 33 ohms (100V line), 16 ohms (70V line), 8.3 ohms (50V line), 2.1 ohms (25V line)
- **Frequency Response:** 100 - 18,000Hz, +0dB/-3dB
- **Connection Terminal:** Screw terminal (M4) • **Weight:** 2.3kg

MT-600M

• For IP-6300D.

- **Capacity:** 400W • **Primary Impedance:** 8 ohms
- **Secondary Impedance:** 25 ohms (100V line), 12 ohms (70V line), 6.3 ohms (50V line), 1.6 ohms (25V line)
- **Frequency Response:** 100 - 18,000Hz, +0dB/-3dB
- **Connection Terminal:** Screw terminal (M4) • **Weight:** 3.1kg

FB-023B

Free Box (2-unit size)

• Rack-mounting box for up to four MT-series transformers.

• **Finish:** panel; Steel, Black/Case; SECC • **Dimensions (W x H x D):** 483 x 89 x 250mm • **Weight:** 2.7kg

P-120D/P-120DH Dual Power Amplifiers



- **Power Source:** AC Mains, 50/60Hz (120V AC, 60Hz)
- **Power Consumption:** P-120D: 380VA (Based on UL/CSA standards), 860VA (720W) (rated output, 412 + 412) [Max. 800W (rated output, 412 + 412)] P-120DH: 260VA (Based on UL/CSA standards), 620VA (500W) (rated output, 831/2 + 831/2) [Max. 540W (rated output, 831/2 + 831/2)] • **Input Sensitivity:** +4dB (1.23V) ± 0.5dB (input level control in maximum position) • **Input Impedance:** 10k1/2 (electrically-balanced), M3 screw terminal, distance between barriers: 6.4mm, balanced phone jack • **Rated Output:** P-120D: 2channels, 200W + 200W (41/2), 120W + 120W (81/2)/BTL: 400W (81/2), M4 screw terminal (solderless terminal of 5.5-4 or 5.5-5 usable.), distance between barriers: 10mm P-120DH: 2channels; 120W + 120W (831/2: 100V line)/M4 screw terminal (solderless terminal of 5.5-4 or 5.5-5 usable.), distance between barriers: 10mm • **Frequency Response:** P-120D: 20 - 20,000Hz (+0dB, -0.5dB) P-120DH: 70 - 20,000Hz (+0dB, -3dB) • **Total Harmonic Distortion:** P-120D: 0.01% (81/2, 1kHz), 0.1% (81/2, 20 - 20,000Hz) P-120DH: 0.05% (831/2, 1kHz)/0.15% (831/2, 70 - 16,000Hz) • **Protection Circuit:** Protection against excessive current flow due to overload, short circuit (under 0.51/2), unusual DC voltage output, and heat sink temperature rise (over 110°C) • **S/N Ratio:** 115dB (20 - 20,000Hz) • **Air Cooling:** Natural air cooling
- **Finish:** Panel; Aluminum, black, alumite/Case; Pre-coated steel plate, black • **Dimensions:** 482(W) x 102.4(H) x 456(D)mm • **Weight:** P-120D: 11kg P-120DH: 17kg • **Accessory:** Power cord (2.5m) x 1, Fiber washer x 4, Rack mounting screw x 4, Decorative screw x 4 • **Option:** Matching transformer; LT-101

Accessories

LT-101

Matching Transformer

(Impedance: 10kΩ : 10kΩ)

Multi-Ch Power Amplifier

P-60F

Multi-Channel Power Amplifier



- **Power Output:** 4 channel mode, 60W x 4 (8 ohms 1kHz), 80W x 4 (4 ohms 1kHz)/3 channel mode; 60W x 2, 160W x 1 (8ohms 1kHz)/2 channel mode; 160W x 2 (8 ohms 1kHz) • **Total Harmonic Distortion (4/8 ohms for 4 channel mode, 8 ohms for 2 channel mode):** 1kHz, less than 0.01%/20Hz to 20kHz; Less than 0.3%
- **Intermodulation Distortion (60Hz: 7kHz @ 4 : 1, 8 ohms):** 4 channel mode; Less than 0.03%/2 channel mode; Less than 0.05% • **Noise Level Below Maximum Output:** 20Hz to 20kHz; Better than -110dB/IHF A weighted; Better than -115dB • **Normal Input Sensitivity, Impedance:** +4dB (1.23V) ±0.5dB, 10k ohms (electronically balanced) • **Damping Factor (8 ohms 1kHz):** More than 50 • **DC Offset:** Less than ±10mV DC

Front Panel

- **Operating Controls (per channel):** Input; Level control
- **Operating Controls (common to all):** Power; On/Off
- **LED Indicators (per channel):** Output meter; 6 segment (0.1, 0.3, 1, 10, 30, 60W at 8 ohms plus clip) • **LED Indicators (common to all):** Power; On/Protect; On when protect circuits are activated

Rear Panel

- **Input Mode Switches (Chan. 1/2, Chan. 3/4):** Stereo mode; Independent 2 channel operation/BTL mode; Mono-bridge connection for 2 channels • **Output Mode Switch:** Each Ch; All inputs independent/Ch 1 to All; All inputs fed by Channel 1 input signal • **Protect Terminals:** Dry contact closure when protection circuits are activated
- **Power Requirements:** AC Mains, 50/60Hz • **Power Consumption:** 800VA; 4 channels, 4 ohms rated output/2.8A; Per UL/CSA measurement standard • **Finish:** Front panel; Black alumilite/Case; Black painted steel plate
- **Dimensions (W x H x D):** 482.6 x 88.4 x 403.8mm, 101.4H mm with feet attached • **Weight:** 10.0kg

Accessories

MT-683

Matching Transformer

• Connecting at the high-impedance speaker to the P-60F.



Stereo Power Amplifier

FA-302 (30W + 30W) Stereo Amplifier



- **Output:** 30W + 30W at 4 ohms load/25W + 25W, at 8 ohms load • **T.H.D.:** Less than 0.05% at 1kHz, 30W + 30W, 4 ohms • **Booster Output:** 1.23V (+4dB), 600 ohms
- **Input Sensitivity:** 100mV (-20dBv), 50k ohms
- **Frequency Response:** 20Hz to 20kHz, ±0.5dB (full-range output) • **Mid-High Range:** Cut-off frequency; 200Hz • **Signal to Noise Ratio:** Better than 80dB • **Power Consumption:** 66W • **Dimensions (W x H x D):** 330 x 47 x 275mm • **Weight:** Approx. 4.7kg



Professional Sound Speakers

Professional use speakers are in a class by themselves because of the attention and care required in their production which requires innovative design techniques, proven technology and advanced construction techniques. TOA professional speakers are offered in a comprehensive product line that includes complex and complete speaker systems to speaker components such as woofers, drivers, horns and assorted hardware. Professional speakers are designed to suit specific applications and installation requirements and accordingly come in a multitude of configurations such as 2- and 3-way loudspeaker units, sealed or vented bass reflex enclosures, free-standing units as well as ceiling-mount models. They are also available in a variety of finishes that range from the utilitarian or design-oriented to artfully blend with a location's décor. To answer the growing demand for wide-dispersion flush-mount ceiling speakers, TOA has devised a whole new F-Series range that make it easier to effectively cover wider areas. Whatever the speaker selected, the excellent sound and long-term reliability associated with TOA is delivered. There are also application-specific speaker models.

These include speakers for announcements, reference monitor speakers and compact personal monitors that easily install anywhere.

Sound reinforcement represents a much more demanding environment for speakers. TOA's expansive range of sound reinforcement models ranging from 2-way speakers, to speakers that use dedicated electronic controllers to increase wider coverage. There are also complex concert sound reinforcement systems which utilize electronic control for parameter adjustment and feedback control, various speaker modules and dynamic subwoofers as well as heavy-duty floor monitors. A wide assortment of installation hardware such as mounting brackets is also available.

TOA speaker components are aimed at professional applications and custom installations. These include low frequency speaker units ranging from 12" to 18", various compression and high frequency drivers as well as constant directivity horns and dividing networks. Abuse-resistant low frequency enclosures using high grade materials are also available.

SR (Z-drive) Series

SR-F1B/SR-L1B Speaker System/Super Woofer System



SR-F1B

- **Enclosure:** Bass-reflex type • **Speaker:** Low Frequency: One 30cm dia cone speaker High Frequency: CD horn (60° horizontal by 40° vertical) plus compression driver
- **Rated Impedance:** Low Frequency: 8 ohms High Frequency: 16 ohms • **Sensitivity:** Low Frequency: 98dB (1W/1m) High Frequency: 110dB (1W/1m)
- **Frequency Response:** 70 to 2,000Hz at AC-F1's use
- **Crossover Frequency:** 1kHz at AC-F1's use
- **Power Handling Capacity:** Low Frequency: Continuous pink noise: 120W RMS^{*1}, Continuous program: 360W High Frequency: Continuous pink noise: 80W RMS^{*2}, Continuous program: 240W • **Input Connector:** Neutrik NL4MPR • **Weight:** Approx.37kg • **Dimensions:** 390(W) × 619(H) × 364(D) mm • **Finish:** Enclosure: FRP coating, gray/Front grille: Black-painted

^{*1} Bard limited (50 to 1,000Hz) pink noise signal (24 hrs.)

^{*2} Bard limited (1,000 to 20,000Hz) pink noise signal (24 hrs.)

SR-L1B

- **Enclosure:** Bass-reflex type • **Speaker:** Two 38cm dia cone speakers • **Rated Impedance:** 8 ohms × 2
- **Sensitivity:** 96dB (1W/1m) • **Frequency Response:** 35 to 1,000Hz at AC-L1's use • **Crossover Frequency:** 125kHz at AC-L1's use • **Power Handling Capacity:** Continuous pink noise: 150W RMS^{*1} × 2, Continuous program: 450W × 2 • **Input Connector:** Neutrik NL4MPR • **Weight:** Approx.79kg • **Dimensions:** 829(W) × 629(H) × 606(D) mm • **Finish:** Enclosure: FRP coating, gray/Front grille: Black-painted

^{*1} Bard limited (40 to 1,000Hz) pink noise signal (24 hrs.)

AC-F1/AC-L1 Electronic Control Unit for SR-F1B/ SR-L1B



AC-F1

- **Input:** Electronically balanced (Cannon XLR-3-31 or equivalent) • **Input Impedance:** 20k ohms (Balanced), 10k ohms (Unbalanced) • **Rated Input Level:** +4dB (Pin No. 3; HOT, No. 2; COLD and No. 1; GND) • **Max. Input Level:** +26dB • **Sense Input:** Electronically balanced (4P screw terminal) • **Sense Input Impedance:** 10k ohms
- **Output:** Electronically balanced (Cannon XLR-3-31 or equivalent) • **Output Impedance:** 600 ohms (Balanced)
- **Rated Output Level:** +4dB • **Max. Output Level:** +26dB (Balanced), +20dB (Unbalanced) • **Crossover Frequency:** 1kHz • **Distortion:** Less than 0.05% (+4dB 1kHz) • **Hum & Noise:** Less than -90dB (20Hz - 20kHz)
- **Indicators:** Power; green LED Sense input; green LED (LOW SENSE, HIGH SENSE) Limit; red LED (LOW LIMIT, HIGH LIMIT) Dynamic Equalizer; green LED (DEQ)
- **Front Panel Operation:** Input level control, Power switch
- **Power Requirement:** AC Mains, 50Hz/60Hz • **Power Consumption:** 12W 120V version, 16W 220 - 240V version • **Dimensions:** 483(W) × 44(H) × 315(D) mm • **Weight:** 3.7kg

AC-L1

- **Input:** Electronically balanced (Cannon XLR-3-31 or equivalent) • **Input Impedance:** 20k ohms (Balanced), 10k ohms (Unbalanced) • **Rated Input Level:** +4dB (Pin No. 3; HOT, No. 2; COLD and No. 1; GND) • **Max. Input Level:** +26dB • **Sense Input:** Electronically balanced (4P screw terminal) • **Sense Input Impedance:** 10k ohms
- **Output:** Electronically balanced (Cannon XLR-3-31 or equivalent) • **Output Impedance:** 600 ohms (Balanced)
- **Rated Output Level:** +4dB • **Max. Output Level:** +26dB(Balanced), +20dB (Unbalanced) • **Crossover Frequency:** 125Hz • **Distortion:** Less than 0.05% (+4dB 1kHz) • **Hum & Noise:** Less than -90dB (20Hz - 20kHz)
- **Indicators:** Power; green LED Sense input; green LED (LOW SENSE) Limit; red LED (LOW LIMIT)
- **Front Panel Operation:** Low level control, Power switch
- **Rear Panel Operation:** Crossover select switch
- **Power Requirement:** AC Mains, 50Hz/60Hz • **Power Consumption:** 10W 120V version, 16W 220 - 240V version • **Dimensions:** 483(W) × 44(H) × 315(D) mm • **Weight:** 3.7kg

Note: 0dB= 0.775V rms

SR-F09/SR-F09-V1 Mobile Speaker System



SR-F09

- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous pink noise: 200W*, Continuous program: 600W • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 100dB (1W/1m) • **Frequency Response:** 70 to 20,000Hz (when AC-S09 is used) • **Crossover Frequency:** 1,000Hz (passive network) • **Speaker Component:** Low frequency: 30cm cone speaker, High frequency: CD horn (60° horizontal × 40° vertical) fitted with compression driver • **Input Connector:** Neutrik NL4MP × 2 and M5 screw terminal (distance between barriers: 12.2mm) • **Finish:** Enclosure: Plywood, black paint, Front grille: Steel plate, black acrylic paint • **Dimensions:** 390(W) × 619(H) × 364(D) mm • **Weight:** 35kg

* 24hrs pink noise input (50Hz to 20kHz).

SR-F09-V1

- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous pink noise: 200W*, Continuous program: 600W • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 100dB (1W/1m) • **Frequency Response:** 70 to 20,000Hz (when AC-S09 is used) • **Crossover Frequency:** 1,000Hz (passive network) • **Speaker Component:** Low frequency: 30cm cone speaker, High frequency: CD horn (90° horizontal × 60° vertical) fitted with compression driver • **Input Connector:** Neutrik NL4MP × 2 and M5 screw terminal (distance between barriers: 12.2mm) • **Finish:** Enclosure: Plywood, black paint, Front grille: Steel plate, black acrylic paint • **Dimensions:** 390(W) × 619(H) × 364(D) mm • **Weight:** 35kg

* 24hrs pink noise input (50Hz to 20kHz).

SR-F09-V2/SR-F09-V3 Permanent Application Speaker System



SR-F09-V2

- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous pink noise: 200W*, Continuous program: 600W • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 100dB (1W/1m) • **Frequency Response:** 70 to 20,000Hz (when AC-S09 is used) • **Crossover Frequency:** 1,000Hz (passive network) • **Speaker Component:** Low frequency: 30cm cone speaker, High frequency: CD horn (60° horizontal × 40° vertical) fitted with compression driver • **Input Connector:** Neutrik NL4MP × 2 and M5 screw terminal (distance between barriers: 12.2mm) • **Finish:** Enclosure: Plywood, black paint, Front grille: Steel plate, black acrylic paint • **Dimensions:** 390(W) × 619(H) × 364(D) mm • **Weight:** 35kg

* 24hrs pink noise input (50Hz to 20kHz).

SR-F09-V3

- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous pink noise: 200W*, Continuous program: 600W • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 100dB (1W/1m) • **Frequency Response:** 70 to 20,000Hz (when AC-S09 is used) • **Crossover Frequency:** 1,000Hz (passive network) • **Speaker Component:** Low frequency: 30cm cone speaker, High frequency: CD horn (90° horizontal × 60° vertical) fitted with compression driver • **Input Connector:** Neutrik NL4MP × 2 and M5 screw terminal (distance between barriers: 12.2mm) • **Finish:** Enclosure: Plywood, black paint, Front grille: Steel plate, black acrylic paint • **Dimensions:** 390(W) × 619(H) × 364(D) mm • **Weight:** 35kg

* 24hrs pink noise input (50Hz to 20kHz).

SR-L09 Sub-Woofer System



- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous pink noise: 300W*, Continuous program: 900W • **Rated Impedance:** 4Ω • **Sound Pressure Level:** 96dB (1W, 1m) • **Frequency Response:** 35 to 1,000Hz • **Crossover Frequency:** 125Hz (when AC-S09 is used) • **Speaker Component:** Low frequency: 38cm cone speaker × 2 • **Input Connector:** Neutrik NL4MP and M5 screw terminal (distance between barriers: 12.2mm) • **Finish:** Enclosure: Plywood, black paint, Front grille: Steel plate, black acrylic paint • **Dimensions:** 829(W) × 629(H) × 606(D) mm • **Weight:** 67kg

* 24hrs pink noise input (50Hz to 20kHz).

SR-L05 Sub-Woofers System



• **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous pink noise: 150W*, Continuous program: 450W • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 93dB (1W, 1m) • **Frequency Response:** 35 to 1,000Hz • **Crossover Frequency:** 125Hz (when AC-S09 is used) • **Speaker Component:** Low frequency: 38cm cone speaker • **Input Connector:** Neutrik NL4MP and M5 screw terminal (distance between barriers: 12.2mm) • **Finish:** Enclosure: Plywood, black paint Front grille: Steel plate, black acrylic paint • **Dimensions:** 452(W) × 629(H) × 502(D) mm • **Weight:** 36kg

* 24hrs pink noise input (50Hz to 20kHz).

SR-F05 Speaker System



• **Enclosure:** Bass-reflex type • **Speaker:** Low Frequency; One 25cm dia. cone speaker/High Frequency; CD horn (90° horizontal by 40° vertical) plus titanium diaphragm compression driver • **Nominal Impedance:** 8 ohms • **Sensitivity:** 99dB (1W/1m) • **Frequency Response:** 60 – 18,000Hz • **Crossover Frequency:** 2kHz (passive) • **Power Handling Capacity:** Continuous pink noise: 150W**, Continuous program: 450W • **Input Connector:** Two Neutrik NL4MPs (Applicable cable connector: Neutrik NL4FC) and one Screw terminal (Applicable terminal size M5) • **Weight:** Approx. 17.0kg • **Dimensions (W × H × D):** 316 × 445 × 242mm • **Finish:** Enclosure: MDF 18mm, Epoxy paint. Dark gray/Front grille: Acrylic paint, Black

AC-S09 Electronic Control Unit for SR-F09/ SR-F09-V1/ SR-F09-V2/ SR-F09-V3/ SR-L09/ SR-L05



• **Power Source:** AC Mains 50Hz/60Hz • **Power Consumption:** 17W • **Distortion:** 0.05% (+4dB, 1kHz) • **Hum & Noise:** Less than -90dB (20 to 20,000Hz) • **Number of Channels:** 2 • **Rated Input:** +4dB 20kΩ, balanced (electrically balanced), XLR-3-31 or equivalent • **Max. Input Level:** +26dB • **Sense Input:** 10kΩ, balanced (electrically balanced), screw terminal (binding post) • **Rated Output:** +4dB 600Ω, balanced (electrically balanced), XLR-3-32 or equivalent • **Max. Output Level:** +26dB • **Front Panel:** Input level control, Power switch, Mode switch • **Finish:** Panel: Aluminum, black alumite coating • **Dimensions:** 483(W) × 44(H) × 353(D) mm • **Weight:** 5kg

Note: 0dB= 0.775V rms

SR-M05L/SR-M05R Monitor Speaker System



• **Enclosure:** Bass-reflex type • **Speaker:** Low Frequency: One 25cm dia. cone speaker/High Frequency: CD horn (40° horizontal by 40° vertical) plus titanium diaphragm compression driver • **Nominal Impedance:** 8 ohms • **Sensitivity:** 99dB (1W/1m) • **Frequency Response (On-floor placement):** 60 – 18,000Hz/80 – 15,000Hz (±3dB) • **Crossover Frequency:** 2kHz (passive) • **Power Handling Capacity:** Continuous pink noise: 150W*, Continuous program: 450W • **Input Connector:** Neutrik NL4MP × 2 (Applicable cable connector: Neutrik NL4FC) • **Enclosure Material:** Medium density fiberboard (18mm) • **Weight:** Approx. 18.5kg • **Dimensions (W × H × D):** 445 × 275 × 405mm • **Finish:** Enclosure: Epoxy paint, black/ Front grille: Acrylic paint, black

* Band Limited (50 to 20,000Hz) pink noise signal (24hrs.).

AC-S05 Electronic Control Unit for SR-F05/SR-L05/SR-M05L/SR-M05R



• **Power Requirements:** AC mains, 50/60Hz • **Power Consumption:** 17W • **Distortion:** Less than 0.05% (+4dB* 1kHz) • **Hum & Noise:** Less than -90dB* (20Hz – 20kHz) • **Number of Channels:** 2 • **Input:** Electronically balanced (Cannon XLR+3-31 or equivalent) • **Input Impedance:** 20k ohms (balanced) • **Rated Input Level:** +4dB* (Pin No.3: HOT, No.2: COLD and No.1: GND) • **Max. Input Level:** +26dB* • **Sense Input:** Electronically balanced (Binding post) • **Sense Input Impedance:** 10k ohms • **Output:** Electronically balanced (Cannon XLR+3-31 or equivalent) • **Rated Output Impedance:** 600 ohms (balanced) • **Rated Output Level:** +4dB* • **Max. Output Level:** +26dB* (balanced) • **Indicators:** Power: green LED/SUBWOOFER: green LED/Sense input: green LED (MAIN SENSE, BASS SENSE)/Limit: red LED (MAIN LIMIT, BASS LIMIT) • **Front Panel Operation:** Input level control/Power switch/Mode switch/Subwoofer switch • **Finish:** Black • **Dimensions (W × H × D):** 482.6 × 44 × 353.3mm • **Weight:** 3.7kg

* 0dB=0.775Vrms

SR-M3L/SR-M3R 2-Way Stage Monitor Speaker System



• **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous pink noise: 200W*, Continuous program: 600W • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 100dB (1W, 1m) • **Frequency Response:** 65 - 20,000Hz • **Crossover Frequency:** 1 kHz • **Speaker Component:** Low frequency: 38cm cone speaker/High frequency: CD horn (40° × 60°) fitted with compression driver • **Input Connector:** Neutrik NL4MP × 2 • **Finish:** Enclosure: Plywood, black, paint, Front grille: Steel plate, black, acrylic paint • **Dimensions:** 673 (W) × 394 (H) × 505 (D)mm • **Weight:** 34kg

*Pink noise input: 50—20,000Hz, 24 hours.

SR-M1/SR-M2 Floor Monitor Speaker System



**SR-M1
Single-Woofers Monitor Speaker**
• **Sensitivity (pink noise 1W/1m):** Low Frequency (200Hz - 1kHz): 99dB SPL/High Frequency (1 - 2kHz): 109dB SPL • **Frequency Response:** (Anechoic Environment) 45 to 2,000Hz (When used with AC-M1) • **AES Power Handling LF:** 300W RMS • **24 Hour Power Handling:** LF (50 – 1kHz) Pink Noise: 120W RMS/Program: 360W RMS HF (1 – 20kHz) Pink Noise: 80W RMS/Program: 240W RMS • **Nominal Crossover Point:** 1kHz • **Nominal Impedance LF:** 8 ohms • **Nominal Impedance HF:** 16 ohms • **Low Frequency Driver:** 30cm dia cone × 1 • **High Frequency Driver:** Titanium comp. driver • **Enclosure:** Ported • **Enclosure Material:** Apiton plywood 18mm thick • **Enclosure Finish:** Acrylic paint (black) • **Perforated Steel Grille Finish:** Epoxy paint (black) • **Input Connector:** Neutrik NL4MP × 2 • **Dimensions:** 390(W) × 439(H) × 662(D) mm • **Weight:** Approx.32kg

**SR-M2
Twin-Woofers Monitor Speaker**
• **Sensitivity (pink noise 1W/1m):** Low Frequency (200Hz - 1kHz): 102dB SPL/High Frequency (1 - 2kHz): 109dB SPL • **Frequency Response:** (Anechoic Environment) 70 to 2,000Hz (When used with AC-M1) • **AES Power Handling LF:** 300W RMS • **24 Hour Power Handling:** LF (50 – 1kHz) Pink Noise: 240W RMS/Program: 720W RMS HF (1 – 20kHz) Pink Noise: 80W RMS/Program: 240W RMS • **Nominal Crossover Point:** 1kHz • **Nominal Impedance LF:** 8 ohms (16 ohms × 2, parallel-connection) • **Nominal Impedance HF:** 16 ohms • **Low Frequency Driver:** 30cm dia cone × 2 • **High Frequency Driver:** Titanium comp. driver • **Enclosure:** Ported • **Enclosure Material:** Apiton plywood 18mm thick • **Enclosure Finish:** Acrylic paint (black) • **Perforated Steel Grille Finish:** Epoxy paint (black) • **Input Connector:** Neutrik NL4MP × 2 • **Dimensions:** 902(W) × 346(H) × 618(D) mm • **Weight:** Approx.56kg

AC-M1 Electronic Control Unit for SR-M1/SR-M2



• **Power Requirement:** AC Mains, 50/60Hz • **Power Consumption:** 18W (120V AC version), 16W (220/240V AC version) • **Total Harmonic Distortion:** Less than 0.05% (+4dB*, 1kHz) • **Hum & Noise:** Less than -85dB* (20 – 20,000Hz) • **Input:** +4dB* 20k ohms balanced (electronically balanced) XLR-3-31 or equivalent • **Maximum Input Level:** +26dB • **Sense Input:** 10k ohms balanced (electronically balanced) binding post • **Output:** +4dB* 600 ohms balanced (electronically balanced) XLR-3-31 or equivalent • **Maximum Output Level:** +26dB • **Maximum Sense Input:** 150V • **Attack Times:** Dependent on signal characteristics • **Release Times:** Dependent on signal characteristics • **Limiting Ratio:** Approximately 10: 1 "Soft knee" threshold • **Operating Controls (per channel):** Select Switch; M1 or M2 Spkr/ Floor Correction; FC In/Out/Input; Level control • **Operating Controls (common to both):** Power; On/Off • **LED Indicators (per channel):** FC; In/Low Sense; Signal at LF sense I/P/High Sense Signal at HD sense I/P/Low Limit LF limit active, High Limit HF limit active • **LED Indicators (common to both):** Power; On • **Power Requirements:** AC mains, 50/60Hz • **Finish:** Panel: Aluminum, black/Case: Steel, black • **Dimensions (W × H × D):** 482.6 × 44.0 × 353.3mm • **Weight:** 5.0kg

* 0dB=0.775V rms

Electronically Controlled Speaker Systems Set-up Guide

	Speaker	Electronic Control Unit
Full Range	SR-F05	AC-S05
Sub Woofer	SR-L05	
Stage Monitor	SR-M05L	
	SR-M05R	
Full Range	SR-F09	AC-F1
	SR-F09-V1	AC-S09
	SR-F09-V2	
	SR-F09-V3	
Sub Woofer	SR-L1B	AC-F1
	SR-L09	AC-S09
	SR-L05	
Stage Monitor	SR-M1	AC-M1
	SR-M2	

ES Series

ES-0871 2-Way Speaker System



• **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous Pink Noise: 200W Continuous Program; 600W • **Rated Impedance:** 8 ohms • **Sound Pressure Level:** 100dB (1W/1m) • **Frequency Response:** 70 – 20,000Hz • **Crossover Frequency:** 1.8kHz • **Speaker Component:** Low Frequency; 38cm cone speaker High Frequency; CD horn (90° horizontal x 60° vertical or 60° horizontal x 90° vertical) fitted with compression driver • **Input Terminal:** Neutrik NL4MP x 2 and M5 screw terminal, (distance between barriers; 12.2mm) • **Finish:** Enclosure; Plywood, black, urethane paint Grille; Steel plate, black, acryl paint • **Dimensions (W x H x D):** 740 x 450 x 337mm • **Weight:** 37kg

ES-0851 2-Way Speaker System



• **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous Pink Noise: 200W/Continuous Program; 600W • **Rated Impedance:** 8 ohms • **Sound Pressure Level:** 97dB (1W/1m) • **Frequency Response:** 80 – 20,000Hz • **Crossover Frequency:** 1.8kHz • **Speaker Component:** Low Frequency; 25cm cone speaker High Frequency; CD horn (90° horizontal x 60° vertical or 60° horizontal x 90° vertical) fitted with compression driver • **Input Terminal:** Neutrik NL4MP x 2 and M5 screw terminal, (distance between barriers; 12.2mm) • **Finish:** Enclosure; Plywood, black, urethane paint Grille; Steel plate, black, acryl paint • **Dimensions (W x H x D):** 580 x 330 x 255mm • **Weight:** 20kg

ES-C0651 High-Power 25cm Flush-Mount Ceiling Speaker System



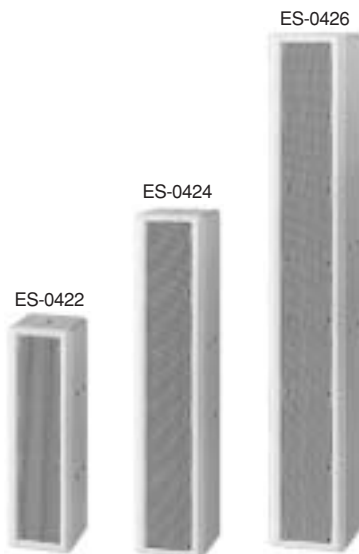
• **Enclosure:** Sealed enclosure • **Power Handling Capacity:** Continuous Pink Noise; 60W/Continuous Program; 180W • **Rated Impedance:** 8 ohms • **Sound Pressure Level:** 96dB (1W/1m) • **Frequency Response:** 80 – 20,000Hz • **Crossover Frequency:** 2.5kHz (passive network) • **Speaker Component:** Low Frequency; 25cm woofer/High Frequency; CD horn plus compression driver (60° horizontal x 60° vertical) • **Input Terminal:** Push-in terminal x 2 • **Finish:** Case; Wood, Black/Anchor Bracket; Steel plate • **Dimensions:** Mounting Hole; ø320mm Ceiling Thickness; 5 - 50mm • **Weight:** 6.8kg (including anchor bracket)

FG-C0651 Front Grille



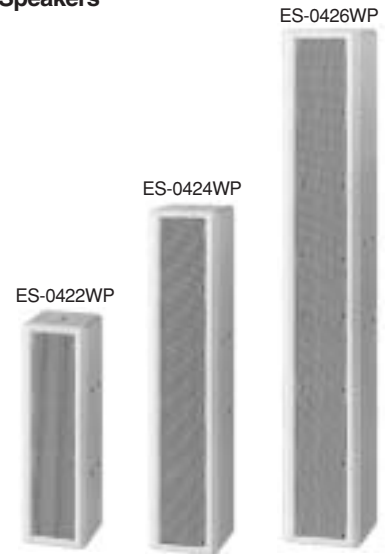
• **Fitting Method:** Spring-catch installation • **Finish:** Baffle: Wood, White/Grille: Rolled steel plate, White • **Dimensions:** ø360 x 12mm (exposed section) • **Weight:** 400g

ES-0422/ES-0424/ES-0426 Engineered-Sound Speaker System



• **Enclosure:** Sealed enclosure • **Power Handling Capacity:** ES-0422: Continuous Pink Noise; 80W Continuous Program; 240W/ES-0424: Continuous Pink Noise; 120W Continuous Program; 360W/ES-0426: Continuous Pink Noise; 120W Continuous Program; 360W • **Rated Impedance:** 8 ohms • **Sound Pressure Level:** ES-0422: 91dB (1W/1m)/ES-0424: 96dB (1W/1m)/ES-0426: 96dB (1W/1m) • **Frequency Response:** 120 – 20,000Hz • **Crossover Frequency:** 3kHz • **Speaker Component:** ES-0422: Low Frequency; 12cm dia. cone speaker x 2 High Frequency; CD horn fitted with compression driver (100° horizontal x 50° vertical)/ES-0424: Low Frequency; 12cm dia. cone speaker x 4 High Frequency; CD horn fitted with compression driver (100° horizontal x 50° vertical)/ES-0426: Low Frequency; 12cm dia. cone speaker x 6 High Frequency; CD horn fitted with compression driver (100° horizontal x 50° vertical) • **Input Terminal:** M5 screw terminal, pitch between barriers; 14mm • **Finish:** Enclosure; Wood urethane paint, white Front Grille; Steel plate acryl paint, white • **Dimensions (W x H x D):** ES-0422: 146 x 430 x 162mm/ES-0424: 146 x 710 x 162mm/ES-0426: 146 x 990 x 162mm • **Weight:** ES-0422: 8kg/ES-0424: 12kg/ES-0426: 15kg • **Option:** Ceiling/Wall Mounting Bracket: HY-0421CL Wall Mounting Bracket: HY-0421WL Matching Transformer: MT-S0601

ES-0422WP/ES-0424WP ES-0426WP Engineered-Sound Weatherproof Speakers



• **Enclosure:** Sealed enclosure • **Power Handling Capacity:** ES-0422WP: Continuous Pink Noise; 80W Continuous Program; 240W/ES-0424WP: Continuous Pink Noise; 120W Continuous Program; 360W/ES-0426WP: Continuous Pink Noise; 120W Continuous Program; 360W • **Rated Impedance:** 8 ohms • **Sound Pressure Level:** ES-0422WP: 91dB (1W/1m)/ES-0424WP: 95dB (1W/1m)/ES-0426: 96dB (1W/1m) • **Frequency Response:** 120 – 20,000Hz • **Crossover Frequency:** 3kHz • **Speaker Component:** ES-0422WP: Low Frequency; 12cm dia. cone speaker x 2 High Frequency; CD horn fitted with compression driver (100° horizontal x 50° vertical)/ES-0424WP: Low Frequency; 12cm dia. cone speaker x 4 High Frequency; CD horn fitted with compression driver (100° horizontal x 50° vertical)/ES-0426WP: Low Frequency; 12cm dia. cone speaker x 6 High Frequency; CD horn fitted with compression driver (100° horizontal x 50° vertical) • **Connected Cable:** Direct Cable Withdrawal from Internal Speaker; 7.4mm in diameter/Conductor Cross Section; 1.25mm², 2-core cable, 2m • **Finish:** Enclosure; Wood FRP-coating paint, White/Front Grille; Stainless steel, paint, White • **Dimensions (W x H x D):** ES-0422WP: 152 x 436 x 172mm /ES-0424WP: 152 x 710 x 172mm / ES-0426WP: 152 x 996 x 172mm • **Weight:** ES-0422WP: 8.5kg/ES-0424WP: 12.8kg/ES-0426WP: 16kg • **Option:** Wall Mounting Bracket: YS-0421WL/Matching Transformer: MT-S0601

T Series

T-650

Speaker with
Two CD Horns
(For Constant Coverage)



- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** Continuous Pink Noise: 120W/Continuous Program: 360W • **Rated Impedance:** 8 ohms • **Sound Pressure Level:** 100dB (1W, 1m) • **Frequency Response:** 80 – 20,000Hz • **Crossover Frequency:** 1.2kHz (passive network) • **Speaker Component:** Low Frequency; 25cm cone speaker × 2/High Frequency; (For Long-Distance Use) CD horn fitted with compression driver (60° horizontal × 30° vertical), (For Short-Distance Use) CD horn fitted with compression driver (90° horizontal × 40° vertical) • **Input Terminal:** 2-pole M5 screw terminal, distance between barriers; 12.2mm • **Finish:** Enclosure; Coniferous plywood, black, semi-mat, urethane paint/Grille; Steel plate, black, semi-mat, acryl paint • **Dimensions (W × H × D):** 288 × 827 × 354mm • **Weight:** Speaker System; 20kg/Mounting Bracket; 2kg • **Accessories:** Speaker mounting bracket A, B/Speaker mounting bolt × 8/Eyebolt × 1 • **Option:** Matching transformer: MT-S0601

T-550

2-Way Coaxial Speaker



- **Enclosure:** Sealed type • **Power Handling Capacity:** Continuous Pink Noise: 60W/Continuous Program: 180W • **Rated Impedance:** 8 ohms • **Sound Pressure Level:** 96dB (1W, 1m) • **Frequency Response:** 100 – 20,000Hz • **Crossover Frequency:** 2.5kHz (passive network) • **Speaker Component:** 2-way coaxial unit/Low Frequency; 25cm cone speaker/High Frequency; CD horn fitted with compression driver (60° horizontal × 60° vertical) • **Input Terminal:** 2-pole M5 screw terminal, distance between barriers; 12.2mm • **Finish:** Enclosure; Coniferous plywood, black, semi-mat, urethane paint/Grille; Steel plate, black, semi-mat, acryl paint/Mounting bracket: steel plate 13.2, black, semi-mat, acryl paint • **Dimensions (W × H × D):** 460 × 310 × 200mm • **Weight:** Speaker System; 9kg/Mounting Bracket; 2kg • **Accessories:** Speaker mounting bracket × 2/Speaker mounting bolt × 4 • **Option:** Matching transformer: MT-S0601

H Series

H-1

2-Way Flush-Mount
Speaker System



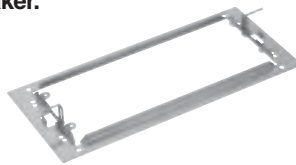
- **Enclosure:** Sealed type • **Power Handling:** 90W (continuous program/4Ω)/30W (continuous pink noise/4Ω) • **Rated Input:** 12W (16Ω, high impedance) • **Rated Impedance:** 4Ω or 16Ω/100V line; 830Ω (12W), 1.7kΩ (6W), 3.3kΩ (3W)/70V line; 420Ω (12W), 830Ω (6W), 1.7kΩ (3W), 3.3kΩ (1.5W) • **Sound Pressure Level:** 85dB (1W/1m), mounted in half-opened space • **Frequency Response:** 120 - 20,000Hz • **Speaker Element:** Low frequency; 8 × 5 cm cone woofer (neodymium magnet)/High frequency; Balanced dome tweeter • **Input Terminal:** Detachable screw terminal, (+)(-) 2 each (for bridge connection) • **Usable Cable:** Solid cable, stranded cable: 0.2 - 2.5mm² (AWG No. 24 - 14 equivalent) • **Finish:** Cover; fire-resistant ABS resin, white/Grille; rolled steel plate, white paint/Adapter Frame; stainless steel • **Dimensions (W × H × D):** 312 × 126 × 90mm • **Weight:** 1.5kg (including Adapter Frame) • **Accessory:** Adapter Frame (HY-H1) × 1, M4 mounting screw × 4, Hole pattern paper × 1.

* When installing, mount the Adapter Frame as switch box cover. (The Adapter Frame HY-H1 is also available as an optional accessory.)

* It is possible to mount the speaker directly to the switch box (without a cover.)

HY-H1

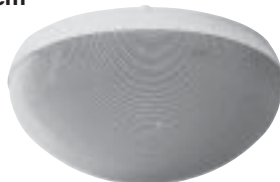
Optional Adapter Frame for H-1
speaker.



- **Finish:** Stainless steel • **Dimensions (W × H × D):** 287.2

H-2/H-2WP

2-Way Surface-Mount
Speaker System



- **Enclosure:** Sealed type • **Power Handling:** 120W (continuous program/4Ω)/40W (continuous pink noise/4Ω) • **Rated Input:** 12W (16Ω, high impedance) • **Rated Impedance:** 4Ω or 16Ω/100V line; 830Ω (12W), 1.7kΩ (6W), 3.3kΩ (3W)/70V line; 420Ω (12W), 830Ω (6W), 1.7kΩ (3W), 3.3kΩ (1.5W) • **Sound Pressure Level:** 88dB (1W/1m), mounted in half-opened space • **Frequency Response:** 100 - 20,000Hz • **Speaker Element:** Low frequency; 10cm cone woofer (neodymium magnet)/High frequency; Balanced dome tweeter • **Input Terminal:** Detachable screw terminal, (+)(-) 2 each (for bridge connection) • **Usable Cable:** Solid cable, stranded cable: 0.2 - 2.5mm² (AWG No. 24 - 14 equivalent) • **Finish:** H-2; Grille; steel plate, white paint/Frame; Fire-resistant ABS resin, white/Base Frame; steel plate/H-2WP: Grille; stainless plate, white paint/Frame; ABS resin, white/Base Frame; stainless plate • **Dimensions (W × H × D):** ø268 × 111mm • **Weight:** 2.1kg (including Base Frame) • **Accessory:** Base Frame × 1 • **Usable Electrical Box:** 1-gang size switch box (with cover)

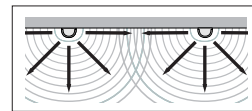
H-3/H-3WP

2-Way Wall Mount Speaker System

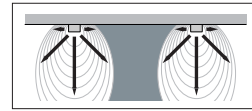


- **Enclosure:** Sealed type • **Power Handling:** 150W (continuous program/8Ω)/40W (continuous pink noise/8Ω) • **Rated Input:** 30W (16Ω, high impedance) • **Rated Impedance:** 8Ω or 16Ω/100V line; 330Ω (30W), 670Ω (15W), 1.3kΩ (7.5W)/70V line; 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1.3kΩ (3.75W) • **Sound Pressure Level:** 88dB (1W/1m), mounted in half-opened space • **Frequency Response:** 100 - 20,000Hz (-11dB) installation in 1/2 free sound field (Measured by installing the unit in the center of a wall.) • **Crossover Frequency:** 4,000Hz • **Water Resistance:** IP-X4 • **Speaker Component:** Low frequency; 10cm cone woofer (neodymium magnet) × 2/High frequency; 2.5cm dome tweeter (neodymium magnet) • **Input Terminal:** Detachable screw terminal, (+)(-) 2 each (for bridge connection) • **Usable Cable:** Solid cable, stranded cable: 0.2 - 2.5mm² (AWG No. 24 - 14 equivalent) • **Finish:** H-3; Enclosure; Fire-resistant ABS resin, black/Front Frame; Fire-resistant ABS resin, off-white, paint/Punched Net; Stainless plate, off-white, paint/Base Frame; Steel plate, plating /H-3WP: Enclosure; Fire-resistant ABS resin, black/Front Frame; Fire-resistant ABS resin, off-white, paint/Punched Net; Stainless steel • **Dimensions (W × H × D):** 295 × 318 × 129mm • **Weight:** 3.3kg • **Accessory:** Base Grille × 1/Base Frame × 1 • **Usable Electrical Box:** 2-gang electrical box

Sound Coverage Area Image



TOA H-3 Speakers ensure ideal audio dispersion both in front of and between speakers.



Conventional speaker dispersion pattern leaves dead sound spaces between speakers.

HB-1

Wall/Ceiling Mount Subwoofer
Speaker System



- **Enclosure:** Acoustic Super Woofer • **Power Handling Capacity:** 240W (continuous program, 40 - 200Hz)/80W (continuous pink noise, 40 - 200Hz) • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 91dB (1W/1m), mounted in half-opened space • **Frequency Response:** 100 - 20,000Hz (-11dB) installation in 1/2 free sound field (Measured by installing the unit in the center of a wall.) • **Crossover Frequency:** 4,000Hz • **Water Resistance:** IP-X4 • **Speaker Component:** Low frequency; 10cm cone woofer (neodymium magnet) × 2/High frequency; 2.5cm dome tweeter (neodymium magnet) • **Input Terminal:** Detachable screw terminal, (+)(-) 2 each (for bridge connection) • **Usable Cable:** Solid cable, stranded cable: 0.2 - 2.5mm² (AWG No. 24 - 14 equivalent) • **Finish:** H-3; Enclosure; Fire-resistant ABS resin, black/Front Frame; Fire-resistant ABS resin, off-white, paint/Punched Net; Stainless plate, off-white, paint/Base Frame; Steel plate, plating /H-3WP: Enclosure; Fire-resistant ABS resin, black/Front Frame; Fire-resistant ABS resin, off-white, paint/Punched Net; Stainless steel • **Dimensions (W × H × D):** 295 × 318 × 129mm • **Weight:** 3.3kg • **Accessory:** Base Grille × 1/Base Frame × 1 • **Usable Electrical Box:** 2-gang electrical box

F Series

Wide-Dispersion Ceiling Speakers

F-2852C (16cm cone) High Power (60W) 2-Way Wide Range



• **Enclosure:** Bass reflex type • **Rated Input:** 60W (high impedance) • **Power Handling Capacity:** Continuous pink noise; 90W (8Ω), 60W (16Ω)/Continuous program; 180W (8Ω), 120W (16Ω) • **Impedance:** 100V line; 170Ω (60W), 330Ω (30W), 670Ω (15W), 3.3kΩ (3W)/70V line; 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 3.3kΩ (1.5W)/25V line; 83Ω (7.5W), 170Ω (3.7W), 330Ω (1.9W), 670Ω (0.9W), 3.3kΩ (0.2W)/Low (adjustable); 16Ω, 8Ω • **Sound Pressure Level:** 91dB (1W, 1m) • **Frequency Response:** 60 – 20,000Hz (–10dB), 45 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.) • **Speaker Component:** High frequency; Dome-type/Low frequency; 16cm cone-type • **Mounting Hole:** ø250mm (maximum ceiling thickness; 37mm) • **Input Terminal:** Removable locking connector with screw-down terminals (2 input terminals and 2 bridge terminals) • **Usable Cable:** Solid copper wire; ø0.5 – ø1.6mm (equivalent to AWG No. 24 – 14)/Stranded copper wire; 0.2 – 2.5mm² (equivalent to AWG No. 24 – 14) • **Finish:** Enclosure; Steel plate, plating/Baffle; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), black/Rim; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), white, paint/Punched net; Steel plate, white, paint • **Dimensions:** ø280 × 227 (D)mm • **Weight:** 5.1kg (including mounting accessories) • **Accessories:** Panel × 1, Ceiling reinforcement ring × 1, Safety wire × 1, Paper pattern × 1 • **Option:** Anchor hanging bracket: HY-AH1, Tile bar bridge: HY-TB1

F-2322C (12cm cone) 30W Series Full Range



• **Enclosure:** Bass reflex type • **Rated Input:** 30W (high impedance) • **Power Handling Capacity:** Continuous pink noise; 60W (8Ω), 30W (16Ω)/Continuous program; 120W (8Ω), 60W (16Ω) • **Impedance:** 100V line; 330Ω (30W), 1kΩ (10W), 3.3kΩ (3W), 10kΩ (1W)/70V line; 170Ω (30W), 330Ω (15W), 1kΩ (5W), 3.3kΩ (1.5W), 10kΩ (0.5W)/25V line; 170Ω (3.7W), 330Ω (1.9W), 1kΩ (0.6W), 3.3kΩ (0.2W), 10kΩ (0.06W)/Low (adjustable); 16Ω, 8Ω • **Sound Pressure Level:** 90dB (1W, 1m) • **Frequency Response:** 70 – 20,000Hz (–10dB), 50 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.) • **Speaker Component:** 12cm cone-type • **Mounting Hole:** ø200 (maximum ceiling thickness; 37mm) • **Input Terminal:** Removable locking connector with screw-down terminals (2 input terminals and 2 bridge terminals) • **Usable Cable:** Solid copper wire; ø0.5 – ø1.6mm (equivalent to AWG No. 24 – 14)/Stranded copper wire; 0.2 – 2.5mm² (equivalent to AWG No. 24 – 14) • **Finish:** Enclosure; Steel plate, plating/Baffle; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), black/Rim; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), white, paint/Punched net; Steel plate, white, paint • **Dimensions:** ø230 × 200 (D)mm • **Weight:** 3.7kg (including mounting accessories) • **Accessories:** Panel × 1, Ceiling reinforcement ring × 1, Safety wire × 1, Paper pattern × 1 • **Option:** Anchor hanging bracket: HY-AH1, Back can: HY-BC1, Tile bar bridge: HY-TB1, Trim ring: HY-TR1

F-2352C (12cm cone) 30W Series 2-Way Wide Range



• **Enclosure:** Bass reflex type • **Rated Input:** 30W (high impedance) • **Power Handling Capacity:** Continuous pink noise; 60W (8Ω), 30W (16Ω)/Continuous program; 120W (8Ω), 60W (16Ω) • **Impedance:** 100V line; 330Ω (30W), 1kΩ (10W), 3.3kΩ (3W), 10kΩ (1W)/70V line; 170Ω (30W), 330Ω (15W), 1kΩ (5W), 3.3kΩ (1.5W), 10kΩ (0.5W)/25V line; 170Ω (3.7W), 330Ω (1.9W), 1kΩ (0.6W), 3.3kΩ (0.2W), 10kΩ (0.06W)/Low (adjustable); 16Ω, 8Ω • **Sound Pressure Level:** 90dB (1W, 1m) • **Frequency Response:** 70 – 20,000Hz (–10dB), 50 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.) • **Speaker Component:** High frequency; Balanced dome-type/Low frequency; 12cm cone-type • **Mounting Hole:** ø200 (maximum ceiling thickness; 37mm) • **Input Terminal:** Removable locking connector with screw-down terminals (2 input terminals and 2 bridge terminals) • **Usable Cable:** Solid copper wire; ø0.5 – ø1.6mm (equivalent to AWG No. 24 – 14)/Stranded copper wire; 0.2 – 2.5mm² (equivalent to AWG No. 24 – 14) • **Finish:** Enclosure; Steel plate, plating/Baffle; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), black/Rim; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), white, paint/Punched net; Steel plate, white, paint • **Dimensions:** ø230 × 229 (D)mm • **Weight:** 3.7kg (including mounting accessories) • **Accessories:** Panel × 1, Ceiling reinforcement ring × 1, Safety wire × 1, Paper pattern × 1 • **Option:** Anchor hanging bracket: HY-AH1, Back can: HY-BC1, Tile bar bridge: HY-TB1, Trim ring: HY-TR1, Reinforcement ring: HY-RR2

F-122C (12cm cone) 30W Series Full Range (Equalizing Controlled Type)



• **Enclosure:** Bass reflex type • **Rated Input:** 30W (high impedance) • **Power Handling Capacity:** Continuous pink noise; 60W (8Ω), 30W (16Ω)/Continuous program; 120W (8Ω), 60W (16Ω) • **Impedance:** 100V line; 330Ω (30W), 1kΩ (10W), 3.3kΩ (3W), 10kΩ (1W)/70V line; 170Ω (30W), 330Ω (15W), 1kΩ (5W), 3.3kΩ (1.5W), 10kΩ (0.5W)/25V line; 170Ω (3.7W), 330Ω (1.9W), 1kΩ (0.6W), 3.3kΩ (0.2W), 10kΩ (0.06W)/Low (adjustable); 16Ω, 8Ω • **Sound Pressure Level:** 90dB (1W, 1m) • **Frequency Response:** 70 – 20,000Hz (–10dB), 50 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.) • **Speaker Component:** 12cm cone-type • **Mounting Hole:** ø200 (maximum ceiling thickness; 37mm) • **Input Terminal:** Removable locking connector with screw-down terminals (2 input terminals and 2 bridge terminals) • **Usable Cable:** Solid copper wire; ø0.5 – ø1.6mm (equivalent to AWG No. 24 – 14)/Stranded copper wire; 0.2 – 2.5mm² (equivalent to AWG No. 24 – 14) • **Finish:** Enclosure; Steel plate, plating/Baffle; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), black/Rim; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), white, paint/Punched net; Steel plate, white, paint • **Dimensions:** ø230 × 229 (D)mm • **Weight:** 3.7kg (including mounting accessories) • **Accessories:** Panel × 1, Ceiling reinforcement ring × 1, Safety wire × 1, Paper pattern × 1 • **Option:** Anchor hanging bracket: HY-AH1, Back can: HY-BC1, Tile bar bridge: HY-TB1/Trim ring: HY-TR1, Electronic controller: AC-120, Reinforcement ring: HY-RR1

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

F-2352SC (12cm cone) 6W Series 2-Way Wide Range



• **Rated Input:** 6W (high impedance) • **Power Handling Capacity:** Continuous pink noise; 9W (8Ω), 6W (16Ω) /Continuous program; 18W (8Ω), 12W (16Ω) • **Impedance:** 100V line; 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W), 20kΩ (0.5W)/70V line; 830Ω (6W), 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W), 20kΩ (0.25W)/25V line; 830Ω (0.75W), 1.7kΩ (0.4W), 3.3kΩ (0.2W), 10kΩ (0.06W), 20kΩ (0.03W)/Low (adjustable); 16Ω, 8Ω • **Sound Pressure Level:** 89dB (1W, 1m) • **Frequency Response:** 80 – 20,000Hz (–10dB), 50 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.) • **Speaker Component:** High frequency; Balanced dome-type/Low frequency; 12cm cone-type • **Mounting Hole:** ø200 (maximum ceiling thickness; 37mm) • **Input Terminal:** Push-in connector (Bridging terminal-2 branch type) • **Usable Cable:** 600V Vinyl-insulated cable (IV wire or HIV wire)/Solid copper wire; ø0.8 – ø1.6mm (equivalent to AWG No.20 – 15)/7-core twisted copper wire; 0.75 – 1.25mm² (equivalent to AWG No.18 – 17) • **Finish:** Baffle; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), black/Rim; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), white, paint/Punched net; Steel plate, white, paint /Dust-proof bag; Artificial fiber, black • **Dimensions:** ø230 × 154 (D)mm • **Weight:** 1.5kg (including panel) • **Accessories:** Panel; 1/Paper pattern; 1 • **Option:** Back can: HY-BC1

F-1522SC (10cm cone) 6W Series Full Range



• **Rated Input:** 6W (high impedance) • **Power Handling Capacity:** Continuous pink noise; 9W (8Ω), 6W (16Ω) /Continuous program; 18W (8Ω), 12W (16Ω) • **Impedance:** 100V line; 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W)/70V line; 830Ω (6W), 1.7kΩ (3W), 3.3kΩ (1.5W)/25V line; 830Ω (0.75W), 1.7kΩ (0.4W), 3.3kΩ (0.2W)/Low (adjustable); 16Ω, 8Ω • **Sound Pressure Level:** 88dB (1W, 1m) • **Frequency Response:** 65 – 18,000Hz (–10dB), 45 – 20,000Hz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.) • **Speaker Component:** 10cm cone-type • **Mounting Hole:** ø135mm (maximum ceiling thickness; 37mm) • **Input Terminal:** Push-in connector (Bridging terminal-2 branch type) • **Usable Cable:** 600V Vinyl-insulated cable (IV wire or HIV wire) /Solid copper wire; ø0.8 – ø1.6mm (equivalent to AWG No.20 – 15)/7-core twisted copper wire; 0.75 – 1.25mm² (equivalent to AWG No.18 – 17) • **Finish:** Baffle; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), black/Rim; Fire-resistant ABS resin (resin material grade; UL-94 V-0 or its equivalent), white, paint /Punched net; Steel plate, white, paint/Dust-proof bag; Artificial fiber, black • **Dimensions:** ø155 × 117 (D)mm • **Weight:** 1kg (including panel) • **Accessories:** Panel; 1 /Paper pattern; 1

Accessories

HY-BC1 Back Can



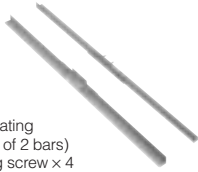
- **Finish:** Surface-treated steel plate, t0.8, black, paint
- **Weight:** 1.5kg • **Accessory:** Rubber grommet x 2

HY-TR1 Trim Ring



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

HY-TB1 Tile Bar Bridge



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

HY-AH1 Anchor Hanging Bracket



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

HY-RR1 Reinforcement Ring



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

HY-RR2 Reinforcement Ring



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

AC-120 Electronic Controller for F-122C



- **Power Requirements:** AC mains, 50/60Hz • **Power Consumption:** 9W • **Distortion:** Less than 0.05% (+4dB* 1kHz) • **Hum & Noise:** Less than -94dB (20Hz - 20kHz)
- **Channel Input:** Rated Input Level; +4dB* 10k ohms, electrically balanced, horn jack/Max. Input Level; +20dB*
- **Low Output:** Rated Output Level; +4dB* 600 ohms, electrically balanced, horn jack/Max. Output Level; +20dB*/Filter; Cut-off Frequency; 100Hz 12dB/oct • **Low Cut:** 100Hz 6dB cut (only with F-120C) • **Finish:** Panel; Aluminum in black • **Dimensions (W x H x D):** 482.6 x 44 x 297.5mm
- **Weight:** 3.7kg

* 0dB = 0.775V RMS

F-10B/10BM/10W/10WM Tetrahedron Designer Speakers



F-10B/10W

- **Enclosure:** Sealed type • **Speaker:** 10cm full-range cone • **Power Handling Capacity:** Continuous Pink Noise; 15W RMS of band-limited pink noise/Continuous Program; 45W • **Impedance:** 8 ohms • **Sensitivity:** 88dB/W/m
- **Frequency Response:** 100Hz - 18kHz • **Dimensions (W x H x D):** 299 x 211 x 150mm • **Weight:** Approx. 1.5kg
- **Color:** F-10B; Black/F-10W; White

F-10BM/10WM

- **Enclosure:** Sealed type • **Speaker:** 10cm full-range cone • **Rated Input (Impedance):** 100V line; 3.3k ohms (3W), 2k ohms (5W)/70V line; 1.7k ohms (3W), 1k ohm (5W) • **Sensitivity:** 88dB/W/m • **Frequency Response:** 100Hz~18kHz • **Dimensions (W x H x D):** 299 x 211 x 150mm • **Weight:** Approx. 1.5kg • **Color:** F-10BM; Black/F-10WM; White

F-160G/160GM/ F-160W/160WM 2-Way Foreground Speaker



F-160G/160W

- **Enclosure Type:** Bass-reflex type • **Speaker:** Low Frequency; 13cm cone speaker/High Frequency; 3cm dome speaker (film diaphragm) • **Rated Impedance:** 8 ohms • **Power Handling Capacity:** Continuous Pink Noise; 50W*/Continuous Program; 150W • **Output Sound Pressure Level:** 91dB (1W/1m)** • **Crossover Frequency:** 4kHz (passive network) • **Frequency Response:** 100~20,000Hz (-10dB), 150 - 13,000Hz (-3dB) • **Input Connector:** Push terminal • **Enclosure Material:** Polypropylene resin • **Color:** F-160G; Dark gray/F-160W; White • **Dimensions (W x H x D):** 250 x 157 x 169mm
- **Weight:** approx. 3.3kg

F-160GM/160WM

- **Enclosure Type:** Bass-reflex type • **Speaker:** Low Frequency; 13cm cone speaker/High Frequency; 3cm dome speaker (film diaphragm) • **Rated Impedance:** 100V Line; 330 ohms (30W), 500 ohms (20W), 1k ohm (10W), 2k ohms (5W)/70V Line; 170 ohms (30W), 330 ohms (15W), 500 ohms (10W), 1k ohm (5W), 2k ohms (2.5W) • **Rated Input Power:** 30W • **Output Sound Pressure Level:** 91dB (1W/1m)** • **Crossover Frequency:** 4kHz (passive network) • **Frequency Response:** 100 - 20,000Hz (-10dB), 150~13,000Hz (-3dB) • **Input Connector:** Push terminal
- **Enclosure Material:** Polypropylene resin • **Color:** F-160GM; Dark gray/F-160WM; White • **Dimensions (W x H x D):** 250 x 157 x 169mm • **Weight:** approx. 3.9kg

* Continuous 24-hour pink noise of 50 - 20,000Hz
** Pink noise of 330 - 3,300Hz

F-240G/240GM/ F-240W/240WM 2-Way Foreground Speaker



F-240G/240W

- **Enclosure Type:** Bass-reflex type • **Speaker:** Low Frequency; 16cm cone speaker/High Frequency; 3cm dome speaker (titanium diaphragm) • **Rated Impedance:** 8 ohms • **Power Handling Capacity:** Continuous Pink Noise; 50W* Continuous Program; 150W • **Output Sound Pressure Level:** 92dB (1W/1m)** • **Crossover Frequency:** 4kHz (passive network) • **Frequency Response:** 65~20,000Hz (-10dB), 130~15,000Hz (-3dB) • **Input Connector:** Push terminal • **Enclosure Material:** Polypropylene resin • **Color:** F-240G; Dark gray/F-240W; White • **Dimensions (W x H x D):** 355 x 210 x 226mm
- **Weight:** approx. 4.9kg

F-240GM/240WM

- **Enclosure Type:** Bass-reflex type • **Speaker:** Low Frequency; 16cm cone speaker/High Frequency; 3cm dome speaker (titanium diaphragm) • **Rated Impedance:** 100V Line; 330 ohms (30W), 500 ohms (20W), 1k ohm (10W), 2k ohms (5W)/70V Line; 170 ohms (30W), 330 ohms (15W), 500 ohms (10W), 1k ohm (5W), 2k ohms (2.5W) • **Rated Input Power:** 30W • **Output Sound Pressure Level:** 92dB (1W/1m)** • **Crossover Frequency:** 4kHz (passive network) • **Frequency Response:** 65~20,000Hz (10dB), 130~15,000Hz (-3dB) • **Input Connector:** Push terminal
- **Enclosure Material:** Polypropylene resin • **Color:** F-240GM; Dark gray/F-240WM; White • **Dimensions (W x H x D):** 355 x 210 x 226mm • **Weight:** approx. 5.5kg

* Continuous 24-hour pink noise of 50~20,000Hz
** Pink noise of 330~3,300Hz

F-500SR Loudspeaker



- **Enclosure Type:** Vented (bass reflex) type • **Speakers:** Low Frequency; 20cm woofer High Frequency; CD horn plus compression driver • **Power Handling Capacity:** continuous Pink Noise; 80W RMS of band-limited pink noise (40Hz to 20kHz, 24 Hours) Continuous Program; 240W/Instantaneous Peak; 800W • **Nominal Impedance:** 8 ohms • **Sensitivity:** 93dB (1W/1m, Band-limited pink noise, 230Hz to 2.5kHz) • **Frequency Response:** 70Hz to 20kHz • **Box Tuning Frequency:** 70Hz • **Crossover Frequency:** 3kHz • **Crossover Slope:** 12dB/Oct. (Woofer), 18dB/Oct (Tweeter) • **Input Terminals:** Two 1/4" phone jacks and screw type, both for full-range • **Enclosure Materials:** Low-foam polypropylene • **Color:** Gray • **Dimensions (W x H x D):** 452 x 282 x 210mm • **Weight:** 7.5kg

F-505W/505G Loudspeaker



- **Enclosure Type:** Vented (bass reflex) type • **Speakers:** Low Frequency; 20cm woofer/High Frequency; CD horn plus compression driver • **Power Handling Capacity:** continuous Pink Noise; 80W RMS of band-limited pink noise (40Hz to 20kHz, 24 Hours)/Continuous Program; 240W/Instantaneous Peak; 800W • **Nominal Impedance:** 8 ohms • **Sensitivity:** 93dB (1W/1m, Band-limited pink noise, 230Hz to 2.5kHz) • **Frequency Response:** 70Hz to 20kHz • **Box Tuning Frequency:** 70Hz • **Crossover Frequency:** 3kHz • **Crossover Slope:** 12dB/Oct. (Woofer), 18dB/Oct (Tweeter) • **Input Terminals:** Two 1/4" phone jacks and screw type, both for full-range • **Enclosure Materials:** Low-foam polypropylene • **Color:** F-505W; Ivory/F-505G; Gray • **Dimensions (W x H x D):** 458 x 282 x 231mm • **Weight:** 7.5kg

F-601SR Loudspeaker



- **Enclosure Type:** Vented (bass reflex) type • **Speakers:** Low Frequency; 30cm woofer High Frequency; CD horn plus compression driver • **Power Handling Capacity:** continuous Pink Noise; 120W RMS of band-limited pink noise (40Hz to 20kHz, 24 Hours) Continuous Program; 240W/Instantaneous Peak; 1200W • **Nominal Impedance:** 8 ohms • **Sensitivity:** 98dB (1W/1m, Band-limited pink noise, 230Hz to 2.5kHz) • **Frequency Response:** 65Hz to 20kHz • **Box Tuning Frequency:** 65Hz • **Crossover Frequency:** 2kHz • **Crossover Slope:** 18dB/Oct. (Woofer), 12dB/Oct (Tweeter) • **High Frequency Level Control:** +1.5 to -15dB (with an "OFF" position) • **Input Terminals:** Two 1/4" phone jacks and screw type, both for full-range • **Enclosure Materials:** Low-foam polypropylene • **Color:** Gray • **Dimensions (W x H x D):** 552 x 392 x 270mm • **Weight:** 17kg

F-605W/605G Loudspeaker



- **Enclosure Type:** Vented (bass reflex) type • **Speakers:** Low Frequency; 30cm woofer/High Frequency; CD horn plus compression driver • **Power Handling Capacity:** continuous Pink Noise; 120W RMS of band-limited pink noise (40Hz to 20kHz, 24 Hours)/Continuous Program; 360W/Instantaneous Peak; 1,200W • **Nominal Impedance:** 8 ohms • **Sensitivity:** 98dB (1W/1m, Band-limited pink noise, 230Hz to 2.5kHz) • **Frequency Response:** 65Hz to 20kHz • **Box Tuning Frequency:** 65Hz • **Crossover Frequency:** 2kHz • **Crossover Slope:** 18dB/Oct. (Woofer), 12dB/Oct (Tweeter) • **High Frequency Level Control:** +1.5 - -15dB (with an "OFF" position) • **Input Terminals:** Two 1/4" phone jacks and screw type, both for full-range • **Enclosure Materials:** Low-foam polypropylene • **Color:** F-605W; Ivory/F-605G; Gray • **Dimensions (W x H x D):** 552 x 392 x 270mm • **Weight:** 17kg

F-333/333G/333M/333GM 2-Way FGM Speaker



- **Enclosure Type:** Bass-reflex type • **Speaker:** Low Frequency; One 13cm dia. high-power cone speaker/High Frequency; CD horn (60°H x 40°V, coupled to a piezo driver) • **Power Handling Capacity:** Continuous Pink Noise; 60W RMS of band-limited pink noise/Continuous Program; 180W • **Nominal Impedance:** 8 ohms • **Sensitivity:** 90dB/W/m • **Frequency Response:** 70Hz - 20,000Hz ±6dB • **Crossover Frequency:** 5,000Hz • **Input Connector:** One pair of push-in terminals • **Dimensions (W x H x D):** 345 x 211 x 256mm • **Weight:** 3.6kg • **Finish:** Enclosure; Low-foam polypropylene resin, light gray for F-333, dark gray for F-333G/Front Grille; Punched metal, Grayish Gold

F-333M/333GM

- **Enclosure Type:** Bass-reflex type • **Speaker:** Low Frequency; One 13cm dia. high-power cone speaker/High Frequency; CD horn (60°H x 40°V, coupled to a piezo driver) • **Rated Input Power:** 30W RMS • **Rated Input (Impedance):** 100V taps at line; 330 ohms (30W), 500 ohms (20W), 1k ohm (10W), 2k ohms (5W)/70V; 170 ohms (30W), 330 ohms (15W), 500 ohms (10W), 1k ohm (5W), 2k ohm (2.5W) • **Sensitivity:** 90dB/W/m • **Frequency Response:** 70Hz - 20,000Hz, ±6dB • **Crossover Frequency:** 5,000Hz • **Input Connector:** One pair of push-in terminals • **Dimensions (W x H x D):** 345 x 211 x 256mm • **Weight:** 4.2kg • **Finish:** Enclosure; Low-foam polypropylene resin, light gray for F-333M, dark gray for F-333GM/Front Grille; Punched metal, Grayish Gold

F-777 2-Way FGM Speaker



- **Enclosure:** Bass-reflex type • **Low Frequency Speaker:** 20cm high-power cone speaker • **High Frequency Speaker:** Constant directivity horn coupled to a compression driver • **Power Handling Capacity:** Continuous Pink Noise Input; 80W/Continuous Program Input; 240W • **Nominal Impedance:** 8 ohms • **Sensitivity:** 93dB/W/m • **Frequency Response:** 60-20,000Hz • **Crossover Frequency:** 3,000Hz • **Input Terminal:** 1 x Push-in terminals • **Dimensions (W x H x D):** 470 x 292 x 312mm • **Weight:** Approx. 7kg • **Finish:** Enclosure; Low-foam polypropylene resin, Light gray

FB-10 Subwoofer Speaker System



- **Enclosure:** Port radiation type • **Speaker:** 16cm (6.3") dynamic cone • **Power Handling Capacity:** Continuous Pink Noise; 60W (40 - 20,000Hz), 20W (40 - 100Hz)/Continuous Program; 180W (40 - 20,000Hz), 60W (40 - 100Hz) • **Impedance:** 8 ohms • **Sensitivity:** 83dB/W/m • **Frequency Response:** 40 - 100Hz • **Dimensions (W x H x D):** 700 x 212 x 212mm • **Weight:** 9kg • **Color:** Black

BY-10 Mounting Bracket for FB-10

For ceiling and wall mounting



FB-100 Super-woofer Speaker System



- **Enclosure:** Acoustic Super Woofer • **Power Handling Capacity:** 450W (Continuous program, 40 - 200Hz), 150W (Continuous pink noise, 40 - 200Hz) • **Rated Impedance:** 81/2 • **Sound Pressure Level:** 88dB (1W, 1m) installation in free sound field (Measured in anechoic chamber.) 94dB (1W, 1m) installation in 1/2 free sound field (Measured by installing the unit in the center of a ceiling or wall.) • **Frequency Response:** 35 - 160Hz (-10dB) installation in 1/2 free sound field (Measured by installing the unit in the center or a ceiling or wall.) • **Speaker Component:** 25cm cone speaker • **Input Terminal:** Detachable screw terminal, (+)/(-) 2 each (for bridging connection) • **Usable cable:** Solid cable, stranded cable; 0.2 - 2.5mm² (AWG No.24 - 14) • **Finish:** MDF, black, paint • **Dimensions:** 354 (W) x 582 (H) x 340 (D)mm • **Weight:** 16kg • **Option:** Matching transformer; MT-S0601 (rated 60W)

F-160WP Weatherproof Speaker



- **Enclosure Type:** Bass-reflex type • **Speaker:** Low Frequency; 13cm cone speaker (drip-proof)/High Frequency; 3cm dome speaker (film diaphragm) • **Rated Impedance:** 100V Line; 330 ohms (30W), 500 ohms (20W), 1k ohm (10W), 2k ohms (5W)/70V Line; 170 ohms (30W), 330 ohms (15W), 500 ohms (10W), 1k ohm (5W), 2k ohms (2.5W) • **Rated Input Power:** 30W • **Output Sound Pressure Level:** 91dB (1W/1m)** • **Crossover Frequency:** 4kHz (passive network) • **Frequency Response:** 100 - 20,000Hz (-10dB), 150 - 13,000Hz (-3dB) • **Input Connector:** Push terminal • **Enclosure Material:** Polypropylene resin • **Color:** Dark gray • **Dimensions (W x H x D):** 250 x 157 x 169mm • **Weight:** approx. 3.9kg

** Pink noise of 330 - 3,300Hz

F-505WP/F-505WP-L(60W) F-605WP/F-605WP-L(120W) 2-Way Weatherproof Speakers (For Amusement Park BGM/FGM/ Announcements)



F-505WP/505WP-L

- **Enclosure Type:** Sealed type • **Speakers:** Low Frequency; 20cm woofer/High Frequency; CD horn plus compression driver • **Rated Power or Power Handling Capacity:** F-505WP; 60W*/F-505WP-L; 80W**, 240W***
- **Impedance:** F-505WP; 83 ohms, 170 ohms, 330 ohms, 670 ohms/F-505WP-L; 8 ohms • **Sensitivity:** 93dB/W/m
- **Frequency Response:** 80Hz - 20kHz • **Crossover Frequency:** 3,500Hz • **Crossover Slope:** 12dB/Oct. (Woofer, Tweeter) • **Finish:** Enclosure; Polypropylene resin, Ivory/Front grill; Stainless steel, Ivory • **Dimensions (W x H x D):** 452 x 282 x 210mm • **Weight:** F-505WP; 10.5kg/F-505WP-L; 9kg

F-605WP/605WP-L

- **Enclosure Type:** Sealed type • **Speakers:** Low Frequency; 30cm woofer/High Frequency; CD horn plus compression driver • **Rated Power or Power Handling Capacity:** F-605WP; 120W*/F-605WP-L; 120W**, 360W***
- **Impedance:** F-605WP; 42 ohms, 83 ohms, 170 ohms, 330 ohms/F-605WP-L; 8 ohms • **Sensitivity:** 98dB/W/m
- **Frequency Response:** 80Hz - 20kHz • **Crossover Frequency:** 2,500Hz • **Crossover Slope:** 12dB/Oct. (Woofer, Tweeter) • **Finish:** Enclosure; Polypropylene resin, Ivory/Front grill; Stainless steel, Ivory • **Dimensions (W x H x D):** 552 x 392 x 250mm • **Weight:** F-605WP; 19kg/F-605WP-L; 16.5kg

*Rated power input

**Continuous pink noise input

***Continuous program input

SL Series

SL-122 Compact Integrated 2-Way Floor Monitor System



- **Enclosure:** Sealed type • **Speakers:** Low Frequency; 30cm (12") woofer/High Frequency; CD horn (90° horizontal x 40° vertical) and piezo driver • **Handling Power Capacity:** Continuous Pink Noise**; 80W RMS/Continuous Program; 240W • **Rated Impedance:** 8 ohms
- **Sensitivity*:** 95dB (1W/1m) • **Frequency Response:** 70Hz to 20kHz • **Crossover Frequency:** 5,000Hz • **Input Connectors:** 1/4" phone jack x 2 (in/bridge out) • **Finish:** Enclosure; Gray leatherette/Punched Net; Black
- **Dimensions (W x H x D):** 380 x 520 x 310mm • **Weight:** 12.8kg

*Pink Noise (330 to 3,300Hz)

**Pink Noise (50 to 20,000Hz) 24 hours

SL-152 Compact Integrated 2-Way Speaker System



- **Enclosure:** Sealed type • **Speakers:** Low Frequency; 38cm (15") woofer High Frequency; CD horn (90° horizontal x 40° vertical) and piezo driver • **Handling Power Capacity:** Continuous Pink Noise**; 80W RMS Continuous Program; 240W • **Rated Impedance:** 8 ohms
- **Sensitivity*:** 98dB (1W/1m) • **Frequency Response:** 70Hz to 20kHz • **Crossover Frequency:** 5,000Hz
- **Input Connectors:** 1/4" phone jack x 2 (in/bridge out)
- **Finish:** Enclosure; Gray leatherette/Punched Net; Black
- **Dimensions (W x H x D):** 600 x 460 x 310mm
- **Weight:** 15.7kg

*Pink Noise (330 to 3,300Hz)

**Pink Noise (50 to 20,000Hz) 24 hours

SL-222 2-Way Twin Woofer Speaker System



- **Enclosure:** Sealed type • **Speakers:** Low Frequency; 30cm (12") woofer x 2 High Frequency; CD horn (90° horizontal x 40° vertical) and piezo driver • **Handling Power Capacity:** Continuous Pink Noise**; 80W RMS Continuous Program; 240W • **Rated Impedance:** 8 ohms
- **Sensitivity*:** 96dB (1W/1m) • **Frequency Response:** 50Hz to 20kHz • **Crossover Frequency:** 5,000Hz
- **Input Connectors:** 1/4" phone jack x 2 (in/bridge out)
- **Finish:** Enclosure; Gray leatherette Punched Net; Black
- **Dimensions (W x H x D):** 846 x 380 x 310mm
- **Weight:** 19.9kg

*Pink Noise (330 to 3,300Hz)

**Pink Noise (50 to 20,000Hz) 24 hours

SL-122M Compact Integrated 2-Way Floor Monitor System



- **Enclosure:** Sealed type • **Speakers:** Low Frequency; 30cm (12") woofer/High Frequency; CD horn (90° horizontal x 40° vertical) and piezo driver • **Handling Power Capacity:** Continuous Pink Noise**; 80W RMS/Continuous Program; 240W • **Rated Impedance:** 8 ohms
- **Sensitivity*:** 95dB (1W/1m) • **Frequency Response:** 70Hz to 20kHz • **Crossover Frequency:** 5,000Hz • **Input Connectors:** 1/4" phone jack x 2 (input and bridge)
- **Finish:** Enclosure; Gray leatherette/Punched Net; Black
- **Dimensions (W x H x D):** 380 x 383 x 581mm
- **Weight:** 11.2kg

*Pink Noise (330 to 3,300Hz)

**Pink Noise (50 to 20,000Hz) 24 hours

SL-152M Compact Integrated 2-Way Floor Monitor System



- **Enclosure:** Sealed type • **Speakers:** Low Frequency; 38cm (15") woofer High Frequency; CD horn (90° horizontal x 40° vertical) and piezo driver • **Handling Power Capacity:** Continuous Pink Noise**; 80W RMS Continuous Program; 240W • **Rated Impedance:** 8 ohms
- **Sensitivity*:** 98dB (1W/1m) • **Frequency Response:** 70Hz to 20kHz • **Crossover Frequency:** 5,000Hz
- **Input Connectors:** 1/4" phone jack x 2 (in/bridge out)
- **Finish:** Enclosure; Gray leatherette/Punched Net; Black
- **Dimensions (W x H x D):** 460 x 434 x 661mm
- **Weight:** 14.5kg

*Pink Noise (330 to 3,300Hz)

**Pink Noise (50 to 20,000Hz) 24 hours

SL-60W/60WH (80W) 2-Way Weatherproof Speakers



- **Enclosure Type:** Sealed type • **Speakers:** Weatherproofed 30cm (12") cone woofer and piezo driver CD horn (90° horizontal x 40° vertical) tweeter • **Power Handling Capacity:** Continuous Pink Noise; 80W RMS of band-limited pink noise/Continuous Program; 240W/Instantaneous Peak; 800W • **Impedance:** SL-60W; 8 ohms/SL-60WH; 100V; 125 ohms (80W), 250 ohms (40W), 330 ohms (30W), 500 ohms (20W), 1k ohm (10W)
- **Sensitivity:** 92dB/W/m • **Frequency Response:** 50Hz - 20kHz • **Finish:** Enclosure; Polypropylene/Punched metal net; Painted on zinc-plated steel/Name plate screws; Stainless steel • **Dimensions (W x H x D):** 367 x 510 x 310mm • **Weight:** SL-60W; 10.3kg/SL-60WH; 12kg

SM Series

SM-60 Full-Range Speaker with Cast Aluminum Enclosure



• **Enclosure:** Sealed type • **Speakers:** Two 12cm (5") full-range cone speakers • **Power Handling Capacity:** Continuous Pink Noise; 70W RMS of band-limited pink noise (50Hz to 20kHz)/Continuous Program; 210W • **Impedance:** 16 ohms • **Sensitivity:** 90dB (1W/1m) • **Frequency Response:** 110Hz to 16kHz • **Color:** Black • **Dimensions (W x H x D):** 325 x 170 x 140mm • **Weight:** Approx. 4.1kg

SM-68 Full-Range Speaker with Variable Attenuator



• **Enclosure:** Sealed type • **Speakers:** Two 12cm (5") full-range cone speakers • **Power Handling Capacity:** Continuous Pink Noise; 70W RMS of band-limited pink noise (50Hz to 20kHz)/Continuous Program; 210W • **Impedance:** 8 ohms • **Sensitivity:** 90dB (1W/1m) • **Frequency Response:** 110Hz to 16kHz • **Level Control:** 0 to 40dB or more • **Color:** Black • **Dimensions (W x H x D):** 325 x 170 x 140mm • **Weight:** Approx. 4.1kg

SM-75 2-Way Monitor Speaker System



• **Enclosure:** Sealed type • **Speakers:** LOW: Two 12cm (5") full-range cone speakers/HIGH: 4.7cm (1.9") cone tweeter • **Power Handling Capacity:** Continuous Pink Noise; 70W RMS of band-limited pink noise (50Hz to 20kHz)/Continuous Program; 210W • **Impedance:** 8 ohms • **Sensitivity:** 90dB (1W/1m) • **Frequency Response:** 110Hz to 20kHz • **Crossover Frequency:** 13kHz • **Level Control:** 0 to 40dB or more • **Color:** Black • **Dimensions (W x H x D):** 325 x 170 x 140mm • **Weight:** Approx. 4.1kg, Approx. 4.8kg

SM-25M Powered Monitor Speaker System



• **Enclosure:** Sealed type • **Speakers:** One 12cm (5") full-range cone; 5cm (2") horn tweeter • **Sound Pressure Level:** 88dB (1W/1m) • **Frequency Response:** 90Hz to 20kHz • **Attenuation:** 0 to 40dB or more • **Amplifier:** Power; AC mains/Power Consumption; 30W/Rated Output Power; 25W/Input Impedance, Open, for use with nominal 50 to 250 ohms, electronically balanced mic • **Input Sensitivity:** -55dB (1.38mV) • **Mic Input Type:** 3-pin female XLR • **Line Input Sensitivity:** -20dB (77.5mV) or +4dB (1.23V) switchable • **Tone Adjust, high cut:** -15dB @10kHz • **Line Input Terminal:** Phone jack • **Bridging Terminal:** Phone jack • **Finish:** Front Grille; Perforated metal (black)/Body; Cast aluminum (black) • **Dimensions (W x H x D):** 325 x 170 x 140mm • **Weight:** 5.6kg

Personal Monitors

RS-21M Full-Range Reference Monitor Speaker System



• **Enclosure:** Sealed type • **Speakers:** 12cm (5") full-range cone speaker • **Power Handling Capacity:** Continuous Pink Noise; 35W RMS of band-limited pink noise (50Hz to 20kHz)/Continuous Program; 100W Instantaneous Peak; 300W • **Impedance:** 8 ohms • **Sensitivity:** 88dB (1W/1m) (average level at 800Hz, 1kHz, 1.2kHz and 15kHz) • **Frequency Response:** 100Hz to 17kHz • **Color:** Black • **Dimensions (W x H x D):** 170 x 170 x 150mm • **Weight:** Approx. 2.4kg

Components

Woofer Units

HLS30J-8 HLS30J-16



- **Nominal Diameter:** 300mm (12") • **Nominal Impedance:** HLS30J-8; 8 ohms/HLS30J-16; 16 ohms
- **Minimum Impedance above Fs:** HLS30J-8; 8.0 ohms \pm 10% (25°C)/HLS30J-16; 16.0 ohms \pm 10% (25°C) • **Power Handling Capacity:** 300W continuous pink noise (AES Standard) • **Sensitivity:** 97dB SPL (1W/1m) • **Frequency Range:** 50Hz ~ 4kHz • **Highest Recommended Crossover Frequency:** 2kHz • **Flux Density:** 14,000 gauss • **fs:** 50Hz • **Overall Diameter:** 342mm • **Depth:** 138mm • **Weight:** 8.5kg

HLS30S2-8 HLS30S2-16



- **Nominal Diameter:** 300mm (12") • **nominal Impedance:** HLS30S2-8; 8ohms/HLS30S2-16; 16 ohms
- **Minimum Impedance above Fs:** HLS30S2-8; 8.0 ohms \pm 10% (25°C)/HLS30S2-16; 16.0 ohms \pm 10% (25°C)
- **Power Handling Capacity:** 300W continuous pink noise (AES Standard) • **Sensitivity:** 98dB SPL (1W/1m)
- **Frequency Range:** 50Hz ~ 4kHz • **Highest Recommended Crossover Frequency:** 2kHz • **Flux Density:** 16,200 gauss • **fs:** 52Hz • **Overall Diameter:** 342mm • **Depth:** 143mm • **Weight:** 11kg

HLS38S-8 HLS38S-16



- **Nominal Diameter:** 380mm (15") • **Nominal Impedance:** HLS38S-8; 8 ohms/HLS38S-16; 16 ohms
- **Minimum Impedance above Fs:** HLS38S-8; 8.0 ohms \pm 10% (25°C)/HLS38S-16; 16.0 ohms \pm 10% (25°C) • **Power Handling Capacity:** 300W continuous pink noise (AES Standard) • **Sensitivity:** 100dB SPL (1W/1m) • **Frequency Range:** 40Hz ~ 3kHz • **Highest Recommended Crossover Frequency:** 1kHz • **Flux Density:** 16,200 gauss • **fs:** 40Hz • **Overall Diameter:** 407mm • **Depth:** 165mm • **Weight:** 12kg

HLS38UL2-8 HLS38UL216



- **Nominal Diameter:** 8cm • **Nominal Impedance:** HLS38UL2-8; 8 ohms/HLS38UL216; 16 ohms
- **Minimum Impedance above Fs:** HLS38UL2-8; 8.0 ohms \pm 10% (25°C)/HLS38UL216; 16 ohms \pm 10% (25°C) • **Power Handling Capacity:** 500W continuous pink noise (AES Standard) • **Sensitivity:** 98dB SPL (1W/1m) • **Frequency Range:** 30 Hz ~ 3kHz • **Highest Recommended Crossover Frequency:** Less than 1kHz • **Flux Density:** 16,000 gauss • **fs:** 40Hz • **Overall Diameter:** 407mm • **Depth:** 186mm • **Weight:** 12kg

HLS46S-8



- **Nominal Diameter:** 460mm (18") • **Nominal Impedance:** 8 ohms • **Minimum Impedance above Fs:** 7.0 ohms \pm 10% (25°C) • **Power Handling Capacity:** 600W continuous pink noise (AES Standard) • **Sensitivity:** 98dB SPL (1W/1m) • **Frequency Range:** 30Hz - 3kHz
- **Highest Recommended Crossover Frequency:** 1kHz
- **Flux Density:** 13,600 gauss • **fs:** 30Hz • **Overall Diameter:** 464mm • **Depth:** 202mm • **Weight:** 16.5kg

Horn Units

LE-940 Constant Directivity Horn



- **Coverage Angle:** Horizontal: 90° (+22°, -6°) (630Hz ~ 20kHz)/Vertical: 40° (+15°, -0°) (630Hz ~ 20kHz)
- **Crossover Frequency:** 500Hz or more • **Throat Diameter:** 49mm (2") • **Applicable Drivers:** HFD-260-8/16, HFD-220-8/16 • **Material:** Horn Bell; Fiberglass reinforced plastic/Horn Throat; Aluminum, sand cast
- **Dimensions (W x H x D):** 780 x 725 x 730mm • **Weight:** 13kg

LE-640 Constant Directivity Horn



- **Coverage Angle:** Horizontal: 60° (+15°, -4°) (630Hz ~ 16kHz)/Vertical: 40° (+16°, -2°) (630Hz ~ 20kHz)
- **Crossover Frequency:** 500Hz or more • **Throat Diameter:** 49mm (2") • **Applicable Drivers:** HFD-260-8/16, HFD-220-8/16 • **Material:** Horn Bell; Fiberglass reinforced plastic/Horn Throat; Aluminum, sand cast
- **Dimensions (W x H x D):** 780 x 725 x 730mm • **Weight:** 12kg

LE-420 Constant Directivity Horn



- **Coverage Angle:** Horizontal: 40° (+13°, -1°) (630Hz ~ 16kHz)/Vertical: 20° (+8°, -3°) (1Hz ~ 6kHz) • **Crossover Frequency:** 500Hz or more • **Throat Diameter:** 49mm (2")
- **Applicable Drivers:** HFD-260-8/16, HFD-220-8/16
- **Material:** Horn Bell; Fiberglass reinforced plastic/Horn Throat; Aluminum, sand cast • **Dimensions (W x H x D):** 780 x 725 x 1,378mm • **Weight:** 17kg

LE-M124 Constant Directivity Horn



- **Coverage Angle:** Horizontal (-6dB): 120° (+23°, -13°) (400Hz ~ 20kHz)/Vertical (-6dB): 40° (+17°, -10°) (2kHz ~ 20kHz) • **Crossover Frequency:** 500Hz or more (HFD-260-8/16is used.), 800Hz or more (HFD-220-8/16 is used.)
- **Throat Diameter:** 49mm (2") • **Applicable Drivers:** HFD-260-8/16, HFD-220-8/16 • **Material:** Solid polyurethane • **Dimensions (W × H × D):** 510 × 340 × 273mm • **Weight:** 6kg

LE-M94 Constant Directivity Horn



- **Coverage Angle:** Horizontal (-6dB): 90° (+13°, -6°) (500Hz ~ 16kHz)/Vertical (-6dB): 40° (+16°, -7°) (2kHz ~ 20kHz) • **Crossover Frequency:** 500Hz or more (HFD-260-8/16is used.), 800Hz or more (HFD-220-8/16 is used.)
- **Throat Diameter:** 49mm (2") • **Applicable Drivers:** HFD-260-8/16, HFD-220-8/16 • **Material:** Solid polyurethane • **Dimensions (W × H × D):** 510 × 340 × 273mm • **Weight:** 5kg

HY-M94 Horn Mounting Bracket

For LE-M94



LE-M64 Constant Directivity Horn



- **Coverage Angle:** Horizontal (-6dB): 60° (+17°, -8°) (800Hz ~ 20kHz)/Vertical (-6dB): 40° (+16°, -7°) (1.6kHz ~ 20kHz) • **Crossover Frequency:** 500Hz or more (HFD-260-8/16is used.), 800Hz or more (HFD-220-8/16 is used.)
- **Throat Diameter:** 49mm (2") • **Applicable Drivers:** HFD-260-8/16, HFD-220-8/16 • **Material:** Solid polyurethane • **Dimensions (W × H × D):** 510 × 420 × 355mm • **Weight:** 6kg

LE-M42 Constant Directivity Horn



- **Coverage Angle:** Horizontal (-6dB): 40° (+12°, -2°) (800Hz ~ 20kHz)/Vertical (-6dB): 20° (+15°, -7°) (1.6kHz ~ 20kHz) • **Crossover Frequency:** 500Hz or more (HFD-260-8/16is used.), 800Hz or more (HFD-220-8/16 is used.)
- **Throat Diameter:** 49mm (2") • **Applicable Drivers:** HFD-260-8/16, HFD-220-8/16 • **Material:** Solid polyurethane • **Dimensions (W × H × D):** 630 × 420 × 712mm • **Weight:** 9kg

HCD-904 CD Horn



- **Cutoff Frequency:** 600Hz • **Distribution Pattern:** 90°H × 40°V • **Throat Diameter:** 22mm • **Applicable Compression Driver:** HFD-351BN-8/16 • **Weight:** 270g
- **Dimensions (W × H × D):** 400 × 160 × 200mm • **Finish:** Black matte (Front only)

PCD-90 CD Horn with Piezo Driver



- **Cutoff Frequency:** 3,000Hz • **Distribution Pattern:** 90°H × 40°V • **Maximum Input Voltage:** 15V • **Frequency Response:** 3,000 - 20,000Hz Sensitivity: 92dB (2.83V/1m)
- **Recommended Crossover Frequency:** More than 4kHz
- **Weight:** 270g • **Dimensions (W × H × D):** 310 × 120 × 162.5mm

Driver Units

HFD-220-8/16 Compression Drivers



• **Power Handling Capacity:** Continuous Pink Noise; 30W RMS, band-limited pink noise (800Hz ~ 20kHz)/Continuous Program; 90W • **Nominal Impedance:** 8 ohms (HFD-220-8), 16 ohms (HFD-220-16) • **Frequency Response:** 800Hz ~ 15kHz • **Pressure Sensitivity (800Hz ~ 5kHz pink noise 4-meter measurement distance referred to 1 meter):** 110dB/W/m; LE-940 horn, 112dB/W/m; LE-640 horn, 114dB/W/m; LE-420 horn, 108dB/W/m; LE-M124 horn, 109dB/W/m; LE-M94 horn, 112dB/W/m; LE-M64 horn, 114dB/W/m; LE-M42 horn • **Recommended Crossover Frequency:** More than 800Hz • **Throat Diameter:** 49mm • **Applicable Horn:** LE-940, LE-640, LE-420, LE-M124, LE-M94, LE-M64, LE-M42 • **Dimensions:** 152mm, 178mm deep less mounting studs • **Weight:** 4.8kg • **Finish:** Black NEW-ALKONE paint

HFD-260-8/16 Compression Drivers



• **Power Handling Capacity:** Continuous Pink Noise; 50W RMS, band-limited pink noise (500Hz ~ 20kHz)/Continuous Program; 150W • **Nominal Impedance:** 8 ohms (HFD-260-8), 16 ohms (HFD-260-16) • **Frequency Response:** 500Hz ~ 18kHz • **Pressure Sensitivity (500Hz ~ 5kHz pink noise 4-meter measurement distance referred to 1 meter):** 111dB/W/m; LE-940 horn, 113dB/W/m; LE-640 horn, 115dB/W/m; LE-420 horn, 109dB/W/m; LE-M124 horn, 110dB/W/m; LE-M94 horn, 113dB/W/m; LE-M64 horn, 115dB/W/m; LE-M42 horn • **Recommended Crossover Frequency:** More than 500Hz • **Throat Diameter:** 49mm • **Applicable Horn:** LE-940, LE-640, LE-420, LE-M124, LE-M94, LE-M64, LE-M42 • **Dimensions:** 225mm, 156mm deep less mounting studs • **Weight:** 11.5kg • **Finish:** Black NEW-ALKONE paint

HW-14C High Frequency Driver



• **Power Handling Capacity:** Continuous Pink Noise; 8W RMS/Continuous program; 24W/Instantaneous Peak; 80W • **Nominal Impedance:** 8 ohms • **Frequency Response:** 3,000 ~ 20,000Hz • **Sensitivity:** 101dB 91W/1m) • **Recommended Crossover Frequency:** More than 5,000Hz • **Weight:** 350g • **Dimensions (W x H x D):** 88 x 88 x 63.5mm

Matching Driver

Horn	Driver Unit
LE-940 H	FD-220-8/16 HFD-260-8/16
LE-640	
LE-420	
LE-M124	
LE-M94	
LE-M64	
LE-M42	

Service Kit

Woofers	Re-cone kit
HLS30J-8	DG-30J-8
HLS-30J-16	DG-30J-16
HLS30S2-8	DG-30S2-8
HLS30S2-16	DG-30S2-16
HLS38S-8	DG-38J-8
HLS38S-16	DG-38J-16
HLS38UL2-8	DG-38UL-8
HLS38UL2-16	DG-38UL-16
HLS46S-8	DG-46J-8
HLS46S-16	DG-46S-16

Dividing Networks

HNW-500 Dividing Network



• **Power Handling Capacity:** Continuous Pink Noise; 300W (4 ohms) • **Load Impedance:** Low Frequency; 4 ohms, High Frequency; 8 ohms • **Crossover Frequency:** 500Hz • **Slope Rate:** Low Frequency; 12dB/oct, High Frequency; 18dB/oct • **High Frequency Level Control:** Three steps (+2dB, normal, -2dB) • **Dimensions (W x H x D):** 178 x 218 x 75mm • **Weight:** 1.7kg • **Color:** Black

HNW-800 Dividing Network



• **Power Handling Capacity:** Continuous Pink Noise; 150W (8 ohms) • **Load Impedance:** Low Frequency; 8 ohms, High Frequency; 8 ohms • **Crossover Frequency:** 800Hz • **Slope Rate:** Low Frequency; 12dB/oct, High Frequency; 12dB/oct • **High Frequency Level Control:** Three steps (+2dB, normal, -2dB) • **Dimensions (W x H x D):** 178 x 218 x 80mm • **Weight:** 1.6kg • **Color:** Black

Low Frequency Enclosures

SB-46S



- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** 600W Continuous pink noise (AES standard)
- **Impedance:** 8Ω • **Sensitivity:** 98dB (1W, 1m)
- **Frequency Response:** 35 – 3,000Hz • **Recommended Crossover Frequency:** Less than 500Hz • **Input Connector:** 2P screw-terminal (M5) • **Finish:** Enclosure: Particle board 150, dark gray/Punched-metal grille: Steel plate, black, semi-matte paint • **Dimensions (W × H × D):** 580 × 1,000 × 580mm • **Weight:** 44kg/61kg (including internal speaker) • **Accessories:** Rubber spacer × 4
- **Applicable Speaker Unit:** HLS46S2-8

* When HLS46S-8 speaker is installed

SB-38W



- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** 1,000W Continuous pink noise (AES standard)
- **Impedance:** 4Ω • **Sensitivity:** 101dB (1W, 1m)
- **Frequency Response:** 40 – 3,000Hz • **Recommended Crossover Frequency:** Less than 800Hz • **Input Connector:** 2P screw-terminal (M5) • **Finish:** Enclosure: Particle board 150, dark gray/Punched-metal grille: Steel plate, black, semi-matte paint • **Dimensions (W × H × D):** 580 × 1,000 × 480mm • **Weight:** 34kg/60kg (including internal speaker) • **Accessories:** Rubber spacer × 4, Rear board fixing screw × 18 • **Applicable Speaker Unit:** HLS38UL-8 × 2/HLS38UL-16 × 2

* When HLS38UL-8 speaker is installed

SB-38S



- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** 500W Continuous pink noise (AES standard)
- **Impedance:** 8Ω • **Sensitivity:** 99dB (1W, 1m)
- **Frequency Response:** 40 – 3,000Hz • **Recommended Crossover Frequency:** Less than 800Hz • **Input Connector:** 2P screw-terminal (M5) • **Finish:** Enclosure: Particle board 150, dark gray/Punched-metal grille: Steel plate, black, semi-matte paint • **Dimensions (W × H × D):** 580 × 700 × 420mm • **Weight:** 21kg/34kg (including internal speaker) • **Accessories:** Rubber spacer × 4, Rear board fixing screw × 10 • **Applicable Speaker Unit:** HLS38UL-8

* When HLS38UL-8 speaker is installed

SB-30W



- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** 600W Continuous pink noise (AES standard)
- **Impedance:** 4Ω • **Sensitivity:** 101dB (1W, 1m)
- **Frequency Response:** 65 – 4,000Hz • **Recommended Crossover Frequency:** Less than 1,000Hz • **Input Connector:** 2P screw-terminal (M5) • **Finish:** Enclosure: Particle board 150, dark gray/Punched-metal grille: Steel plate, black, semi-matte paint • **Dimensions (W × H × D):** 440 × 880 × 300mm • **Weight:** 19kg/41kg (including internal speaker) • **Accessories:** Rubber spacer × 4, Rear board fixing screw × 14 • **Applicable Speaker Unit:** HLS30S2-8 × 2/HLS30S2-16 × 2

* When HLS30S2-8 speaker is installed

SB-30S



- **Enclosure:** Bass-reflex type • **Power Handling Capacity:** 300W Continuous pink noise (AES standard)
- **Impedance:** 8Ω • **Sensitivity:** 99dB (1W, 1m)
- **Frequency Response:** 65 – 4,000Hz • **Recommended Crossover Frequency:** Less than 1,000Hz • **Input Connector:** 2P screw-terminal (M5) • **Finish:** Enclosure: Particle board 150, dark gray/Punched-metal grille: Steel plate, black, semi-matte paint • **Dimensions (W × H × D):** 426 × 586 × 286mm • **Weight:** 18kg/29kg (including internal speaker) • **Accessories:** Rubber spacer × 4, Rear board fixing screw × 8 • **Applicable Speaker Unit:** HLS30S2-8

* When HLS30S2-8 speaker is installed

Accessories

Mounting Brackets

YS-150WP
Wall/Under-Eave
For F-150WP



YS-500
Wall/Pole
Mounting Bracket
For F-500WP/500WP-L
with YS-60B



YS-60
Wall/Pole
Mounting Kit
For SL-60W/60WH



YS-60B
Wraparound Band
Used with YS-60, YS-500 and YS-600



YS-600
Wall/Pole
Mounting Bracket
For F-600WP/600WP-L with YS-60B.



Matching Transformer

MT-S0601



- **Rated Input Power:** 60W • **Input Impedance:** 100V Line; 170 ohms (60W), 330 ohms (30W), 670 ohms (15W)/70V Line; 83 ohms (60W), 170 ohms (30W), 330 ohms (15W), 670 ohms (7.5W) • **Output Impedance:** 8 ohms • **Weight:** 1.2kg



Security Equipment

Filling a growing demand for quality intercom products, TOA has developed the VS-900 Voice Security Intercom System that integrates its audio and communication strengths seamlessly with existing security and video surveillance systems to achieve a significantly higher level overall security. Ideal for use in locations such as office complexes with adjoining plants, hospitals, airports, shopping malls, educational facilities and many more similar sites, the VS-900 Voice Security Intercom System boasts a scalable architecture to ensure it is precisely tailored to a location. The system can be managed from on- and off-site locations through computer control. Among its many features are useful data logging and efficient voice recording. A range of substations designed for specific installations is available as are expansion interfaces and various options.

Voice Security Intercom System

VS-900



SYSTEM FEATURES

- **System Capacity**
 - Single Exchange
 - 4 Master stations (enlargement unit: 2)
 - 64 Substations (enlargement unit: 16)
 - Up to 16 Exchanges
 - 64 Master stations
 - 1,024 Substations
- **Remote system management via RS-232C port**
 - PC programming and monitoring software
 - Program and maintain multiple exchanges offsite from one PC (via modem)
- **Audio and Data Logging**
 - PC archive of all system activity (RS-232C port)
 - Record individual Master station and telephone audio
- **Master Station Flexibility**
 - TOA master with alphanumeric display and clock
 - Supports single-line telephone equipment with Caller-ID*
- **Outside Line Communication**
 - Supports two C/O trunks
 - Substation to outside telephone line communication
- **Paging Interface**
 - 16 control outputs
 - 1 voice output
- **External Audio Input**
 - 4 activation inputs and 1 audio input for external source distribution

* in compliance with FCC regulation Part 68.

SYSTEM FUNCTIONS

- **Substation to Master Station Call**
 - Call designated Master station
 - Group Call [Master station grouping (16)]
 - Emergency Call up to the priority level
- **Call Forwarding-Related Functions**
 - Call forwarding
 - Time-Based Call forwarding
 - No-Answer Call forwarding
 - Busy Call forwarding
 - Outside Line Call forwarding
- **Paging**
 - Zone paging (19)
 - All-Zone paging
 - Emergency paging
 - External source distribution
- **Scan Monitor**
- **Emergency Conference (up to four parties)**
- **Auto-Dial and Redial**
- **Call Transfer/Hold**
- **Substation Priority (Emergency/Normal)**
- **Automatic Time-Out (Call/Conversation)**
- **Selective Response/Call Queuing (16)**

SYSTEM SPECIFICATIONS

- **Exchange Method:** PCM and space division
- **Control Method:** Common stored program control
- **Maximum Cable Length:**
 - Exchange to Master station: 1,500m (22AWG)
 - Exchange to Substation: 800m (22AWG)
 - Exchange to telephone: less than 500 ohms (loop impedance) Exchange to Exchange: 1.0km (22AWG)
- **Wiring:**
 - Master station: 2 twisted pairs
 - Substation: 2-core shielded
 - Telephone: 1 twisted pair
 - Exchange to Exchange: 1 twisted pair, shielded for Data, 2 twisted pairs for Audio
- **Frequency Response:** 300 - 3,400Hz
- **Conversation Method:**
 - Substation to Master station: Voice Switch or PTT-activated talk-back
 - Master station to Master station: Full-duplex handset communication
- **Power Requirements:**
 - Exchange: AX mains (PU-200) or 24V DC
 - VS-900DI/VS-910DI: 24V DC
- **Operating Temperature:**
 - Exchange and Master station: 0 to 40°C
 - Substation: -10 to 60°C

Note: All telephonic and related communications functions use described above dependent on individual country regulatory codes.

System Configuration and Equipment Functions

VS-900MF Main Frame:

Card modules installed here. Includes 2 RS-232C parts. Dimensions: 420(W) x 443.7 (H) x 288.3 (D) mm

VS-900MS Master Station Interface Card:

For connecting up to two master stations per card. An external recording device can be connected to each line

VS-900AL Telephone Interface Card:

For connecting up to two telephones per card. An external recording device can be connected to each line. Use the telephone which complies with the FCC regulation Part 68.

VS-900RS Substation Interface Card:

Connects up to 16 substations per card. Equipped with two speech links, one link able to be used as a paging link with the paging input/output connected to an external amplifier.

VS-910RS Substation Interface Card:

The VS-910RS Substation Interface Card is used to connect the Full-Duplex Substation by way of 2 sets of twisted pair cables. Up to 16 Full-Duplex Substations can be connected per card. The VS-910RS has 2 speech paths, either of which can be used for substation paging. * for RS-190 (Full-Duplex Substation)

VS-900CO Outside Line Interface Card:

Connects up to two outside lines per card. An external recording device can be connected to each line.

VS-900AF Audio Function Card:

Enables conference, external amplifier paging and external source distribution functions.

VS-900TI Tie-Line Interface Card:

Interconnects multiple exchanges. Connects up to 4 links using one pair of data lines and two pairs of voice lines.

VS-900SC Site Connector:

VS-900SC Site Connector is used to connect the VS-900 system exchanges to the fiber optical interface..

MS-900 Master station:

MS-900 can make calls to or receive calls from the substation or the master station (telephone). Dimensions: 216 (W) x 74.5 (H) x 213 (D) mm



RS-150



RS-160/170



RS-180



RS-190



RS-191

RS-150 Substation:

Cost-effective. Indoor use. Dimensions: 120 (W) x 120 (H) x 48.5 (D) mm

RS-160 Substation:

Vandal-proof*. Indoor use. Dimensions: 120 (W) x 120 (H) x 57.5 (D) mm

RS-170 Substation:

Vandal-proof* and weather-resistant. Outdoor/Indoor use. Dimensions: 120 (W) x 120 (H) x 57.5 (D) mm

RS-180 Substation:

Vandal-proof* and weather-resistant. Outdoor/Indoor use. Allows connecting to a remote alarm light or siren. Call lamp. Dimensions: 120 (W) x 120 (H) x 58.5 (D) mm

RS-190 Full-Duplex Substation:

Indoor use. Allows connecting to a handset RS-191 and a remote alarm light or siren. Call lamp. Dimensions: 120 (W) x 120 (H) x 58.5 (D) mm

RS-191 Option Handset:

Indoor use. Dimensions: 116 (W) x 220 (H) x 70 (D) mm

* Vandal-proof versions feature a stainless front panel that is 1.5 times thicker than the RS-150's panel. The internal speaker is protected by a metal plate.



Signal Processing Equipment

To complement its extensive range of sound reinforcement products, TOA also manufactures sound processing equipment that has gained a high rating from industry professionals. Representing a major advance in digital signal processors is the comprehensive DP-0206 Digital Signal Processor. Its modular design allows expanding from a basic 2-input/6-output configuration to 12 inputs/outputs by adding modules. It is also fully accessible via computer through Windows-based software for realtime processing as well as matrix configuring and parameter settings for EQ/filtering, compression, gating and channel dividing. TOA also offers dedicated processors such as the D-1103 Digital Delay and the L-1102 Dual Leveler/Limiter.

For routing and distributing signals as well as level control and signal mixing, there is the DX-0808 Analog Matrix Unit. Up to 30 DP and DX units can be connected to the same network and controlled by a single PC. For precision equalization, the single channel E-1231 offers 1/3 octave EQ while the E-232 is a dual channel 2/3 octave graphic equalizer. Various accessories such as connection cables and transformers are also available for these units.

Integrated DSP & Control Systems

DP-0206

Digital Processing Units

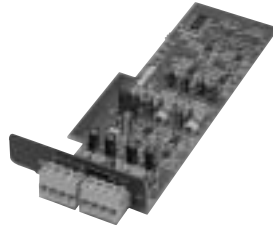


- **Power Source:** 100—240V AC, 50/60Hz • **Power Consumption:** 30W • **Frequency Response:** 20—20,000Hz, ± 1 dB • **Sampling Frequency:** 48 kHz • **Dynamic Range:** 110dB (IHF-A weighted) • **Total Harmonic Distortion:** Less than 0.05% at 1kHz, +4dB* (20—20,000Hz, BPF) • **Input:** 2 channels (expandable to up to 6 channels), +4dB* (Max. +24dB*), 10k Ω , electronically-balanced, terminal block type connector (4 poles) • **Output:** 6 channels (expandable to up to 10 channels), +4dB* (Max. +24dB*), connectable load: over 600 Ω , electronically-balanced, terminal block type connector (3 poles) • **A/D Converter:** 24 bits
- **D/A Converter:** 24 bits
- **Signal Processing**
- **Level Control:** +12 to ∞ dB, with polarity selector
- **Equalizer/Filter:** Graphic equalizer: 1/3 octave band, 31 center frequencies (10 adjustable points) ± 12 dB / Q: 0.267—69.249, individually variable band
Parametric equalizer: Continuously-variable frequency type (20—20,000Hz), 10 points, ± 12 dB / Q: 0.267—69.249
Filtering: High-pass filter 20—20,000Hz, 12dB/oct, 6dB/oct
Low-pass filter; 20—20,000Hz, 12dB/oct, 6dB/oct
Notch filter; 20—20,000Hz, Q/8.561—69.249
Parametric filter; 20—20,000Hz, ± 12 dB, Q/0.267—69.249
All-pass filter; 20—20,000Hz, Q/0.267—69.249
High frequency boost or cut; 6—20kHz, ± 12 dB
Low frequency boost or cut; 20—500Hz, ± 12 dB
Horn equalizer; 20kHz, 0 to +18dB
- **Compressor Threshold:** -16 to +24dB*, Ratio: 1 : 1— ∞ : 1/Attack time: 0.02—100ms, Release time: 10ms to 5s
- **Noise gate:** Threshold: ∞ to -26dB*, Attack time: 0.1—100ms/ Release time: 20ms to 5s • **Delay:** Delay time: 0—682ms • **Matrix:** 2 \times 6 (Expanded I/O configuration: 2 \times 8, 2 \times 10, 4 \times 6, 4 \times 8 or 6 \times 6)/ Level control: 0 to ∞ dB, with polarity inverter • **Channel Divider:** 2-way, 3-way, 4-way/ Crossover frequency: Overlap mode, 20—20,000Hz/ Slope: 6 dB/oct, 12 dB/oct, 18 dB/oct, 24 dB/oct/ Level: +12 to ∞ dB, with polarity selector/ Delay: 0—682ms • **Muting:** Output muting • **Memory:** Pattern memory: 16 memories • **Auxiliary:** Function System Locking function • **Control:** Control software: PC software (Windows95/98/NT compatible)* / Communications method: RS-232C, D-sub connector (9-pin)/ RS-485, terminal block type connector (3 poles), up to 30 units controllable / **Remote control module (option):** Memory selection, output volume adjustment, and output muting can be remotely controlled from external equipment. • **Panel Controls:** Memory call-up key: 16 memories/ Unit ID indication key: 30 units/ Input level indicator: 6 channels, dual color LED/ Output level indicator: 10 channels, dual color LED/ Memory No./Unit ID indicator: Double-digit 7-segment LED/ Master indicator: Green LED • **Finish:** Panel: Aluminum, hair-line finish, black Others: Pre-coated steel plate, black, 30% glossy • **Dimensions:** 482 (W) \times 88.4 (H) \times 325.2 (D)mm • **Weight:** 4.65 kg • **Accessory:** Rack mounting screw \times 4, Fuse \times 1

*0 dB = 0.775 Vrms

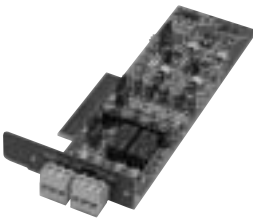
**Windows95/98/NT is a registered trademark of Microsoft Corporation in the U.S.A.

DQ-A01 Analog Input Module



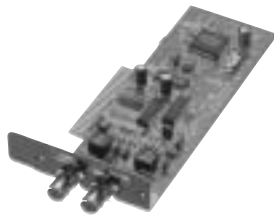
- **Input:** 2 channels, +4dB* (Max. +24dB*), 10k Ω , electronically-balanced, terminal block type connector (4 poles) • **A/D Converter:** 24 bits • **Sampling Frequency:** 48 kHz • **Frequency Response:** 20—20,000Hz (± 1 dB) • **Dynamic Range:** 110dB (IHF-A weighted) • **Total Harmonic Distortion:** Less than 0.05% at 1kHz, +4dB* (20—20,000 Hz, BPF) • **Finish:** Pre-coated steel plate, black, 30% glossy • **Dimensions:** 25.6 (W) \times 76.5 (H) \times 168 (D)mm • **Weight:** 80 g • **Accessory:** Mounting screw \times 2, Seal \times 2, Terminal block type connector \times 2

DQ-A02 Analog Output Module



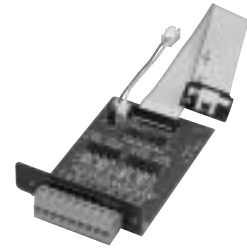
- **Output:** 2 channels, +4dB* (Max. +24dB*), connectable load, over 600 Ω , electronically-balanced, terminal block type connector (3 poles) • **D/A Converter:** 24 bits • **Sampling Frequency:** 48 kHz • **Frequency Response:** 20—20,000Hz (± 1 dB) • **Dynamic Range:** 110dB (IHF-A weighted) • **Total Harmonic Distortion:** Less than 0.05% at 1kHz, +4dB* (20—20,000Hz, BPF) • **Finish:** Pre-coated steel plate, black, 30% glossy • **Dimensions:** 25.6 (W) \times 76.5 (H) \times 168 (D) mm • **Weight:** 100 g • **Accessory:** Mounting screw \times 2, Seal \times 2, Terminal block type connector \times 2

DQ-D01 Digital I/O Module



- **Mode:** Input mode: Signal format: AES/EBU (2 channels multiplexed) / Connector: BNC jack / Input impedance: 75 Ω / Input voltage: 0.5—5.0 V (p-p) / Sampling frequency: 32—48kHz / Through output: Delivers the input signal electrically buffered. / Output mode: Signal format: AES/EBU (2 channels multiplexed) / Connector: BNC jack / Output impedance: 75 Ω / Output voltage: 1 V (p-p) / Sampling frequency: 48kHz • **Mode selection:** Input mode or output mode (selectable by a slide switch) • **Data Length:** 24 bit • **Finish:** Pre-coated steel plate, black, 30% gloss • **Dimensions:** 25.6 (W) \times 76.5 (H) \times 167.1 (D) mm • **Weight:** 90g • **Accessory:** Mounting screw \times 2, Label \times 4

DQ-C01 Remote Control Module



- **Control Input:** COM and terminals 1—8: Open voltage: 5V DC, short circuit current: 25mA, terminal block type connector (9 poles) • **Control:** Memory selection: Direct: Max., 8 memories, Binary: 16 memories (Any one of 16 memories can be assigned to each terminal when set for "Direct" mode.) / Control method: No-voltage make of over 500ms/ No-voltage make pulse of over 500ms (No-voltage make of over 500ms only when set for "Binary" mode.) / **Volume control (Up/Down):** Direct: Max. 4 groups, Binary: Max. 10 groups (Any output channel or channel group can be assigned to each terminal.) / Control method: 1-step variation with no-voltage make pulse of over 500ms./ Continuous variation in 500ms units with pulse of over 700ms./ Continuous up/down variation in 500 msec units with the addition of no-voltage make pulse of over 700msec./ Continuous up/down variation in 500msec units with the addition of no-voltage make pulse of over 700msec./ Continuous volume variation stops when a break pulse is fed./ Variable range: +12 to ∞ dB/ **Muting (On/Off):** Max. 8 groups (Any output channel or channel group can be assigned to each terminal.) / Control method: No-voltage make of over 500ms/ No-voltage make pulse of over 500ms The above controls can be performed singly or in combination with other controls. • **Setting:** PC software (Windows95/98/NT compatible)* • **Finish:** Pre-coated steel plate, black, 30% glossy • **Dimensions:** 25.6 (W) \times 76.5 (H) \times 101 (D)mm • **Weight:** 60 g • **Accessory:** Mounting screw \times 2, Terminal block type connector \times 1

DX-0808

Analog Matrix Unit



PERFORMANCE

- **Frequency Response:** 20Hz to 20kHz (+0.5dB, -2.0dB)
- **Total Harmonic Distortion:** Less than 0.05% at 1kHz, +4dB*
- **Hum and Noise:** Less than -86dB*, 20Hz to 20kHz, fully assigned
- **Crosstalk:** Less than -70dB at 1kHz

INPUT AND OUTPUT

- **Input:** +4dB* (Maximum +24dB*), 10k ohms, Electronically balanced, XLR-3-31 type connector
- **Output:** +4dB* (Maximum +24dB*), 600 ohms, Electronically balanced, XLR-3-32 type connector
- **Signal Matrix Configuration:** 8 input, 8 input bus, 8 output bus, 8 output
- **Mixing Configuration:** Programmable: Inputs to Input Bus; 8 x 8 switch matrix, expandable to 32 x 8 with maximum of 4 DX-0808 linked/ Output Bus to Output; 8 x level controlled matrix, expandable to 8 x 32 with maximum of 4 DX-0808 linked/ Total Signal Cross Points; 128
- **Level Control:** 0dB to -60dB/, 1dB steps
- **Mute:** Individual input and output mute, all mute
- **Others:** Input/Output routing display, Fade-In/Fade-Out selection

OTHER FUNCTIONS

- **Preset Memories:** 16 presets
- **Security:** Hardware; 3 status switch settings (Off: All functions available/1: Lock all but memory selection/2: Lock all function)/Software; Password protected, System lock, Edit lock

CONTROL

- **Communication Ports Connectors:** RS-232C, RS-485 (Switchable), XLR-3-31 type RS-485 input, XLR-3-32 type, RS-485 output, Two DB9 female, RS-232C (Front and rear panel)
- **Programming Software System Requirement:** Hardware: PC compatible, 80386 processor or higher, Math Co-processor recommend for the frequency and phase response graphic display, 4MB of memory or higher, 1MB HDD space, VGA color monitor recommended, Mouse recommended/Software: Windows® 95 or Windows NT®
- **Memory Input/Output:** Connector; 8 pin, Mini DIN/Function; Memory control input and memory status output

PANEL FUNCTIONS (Front panel)

- **Memory Selection:** Up/down keys
- **ID Number Setting:** Momentary slide switch and up/down keys
- **Displays:** 2-digit, 7-segment LED display, red, memory number and unit number, switchable, up/down key selection
- **Operating Status LEDs:** MASTER (green)
- **Matrix Assignment Display:** Input Mixing Bus; 64-dot LED (green)/Output Dividing Bus; 64-dot LED (red)
- **Mute Switches:** Each output w/LED (green)
- **Power Switch:** Power ON/OFF w/LED (green)

PANEL FUNCTIONS (Rear panel)

- **Input Mixing Bus Connector:** 2-8 pin DIN connector
- **Output Dividing Bus Connector:** 2-8 pin DIN connector
- **Ground Lift Switch:** Normal/lift
- **Power Inlet:** 3 pin, IEC-320, standard

POWER

- **Power Requirement:** AC 100V to AC 240V, 50/60Hz
- **Power Consumption:** 40W maximum

PHYSICAL

- **Dimensions (W x H x D):** 483 x 88.4 x 328mm, EIA 2-rack unit size
- **Color:** Black, anodized aluminum (Front panel), black, painted steel (Chassis)
- **Weight:** 6kg*0.3D = 0.775Vrms

Equalizers

E-1231

1-Channel 1/3 Octave Graphic Equalizer



PERFORMANCE

- **Frequency Response:** 20Hz to 20kHz (± 1 dB)
- **Total Harmonic Distortion:** Less than 0.01% at 1kHz, all sliders at 0 position, rated output
- **Hum and Noise:** -94dB (EQ in, 20Hz to 20kHz BPF, all sliders at 0 position)

INPUT AND OUTPUT

- **Input:** Input Impedance; 10k ohms, Rated Input Level; +4dB* (INPUT LEVEL CONTROL set at 0 position), Maximum Input Level; +20dB* at 1kHz
- **Output:** Recommended Load; 600 ohms or higher, Rated Output Level; +4dB* with 600 ohms load, Maximum Output Level; +20dB* with 600 ohms load

CONTROLS AND PANEL FUNCTIONS (Front Panel)

- **Equalizer Sliders:** Bands; 28, Center Frequencies; Standard ISO center frequencies from 31.5Hz to 16kHz, Boost/Cut; ± 12 dB
- **Input Level Control:** ± 12 dB
- **Highpass Filter:** Adjustable Cutoff Frequency 15Hz to 300Hz, 12dB per oct
- **Lowpass Filter:** Adjustable Cutoff Frequency; 2.5kHz to 30kHz, 12dB per oct/6dB per oct switchable slope
- **Filter In/Out:** Push Switch defeats Highpass and Lowpass Filters, Green LED indicator
- **Pre-Peak Indicator:** Red LED (Lights when input or output reaches 3dB below clipping)
- **Power:** On/Off Push Switch with Green LED indicator

(Rear Panel)

- **Input:** Screw Terminals (H = Hot, C = Cold, E = Ground)
- **Output:** Screw Terminals (H = Hot, C = Cold, E = Ground)
- **Ground:** Signal Ground to Chassis Ground (removable link)
- **Fuse:** 250V, 0.2A (120V version), 250V, 80mA Slow-blow Type (220/240V version)
- **Power Requirements:** AC mains, 50/60Hz
- **Power Consumption:** 11W
- **Dimensions (W x H x D):** 483 x 88 x 317mm, EIA rack mount
- **Net Weight:** 4.5kg

E-232

2-Channel 2/3 Octave Graphic Equalizer



PERFORMANCE

- **Frequency Response:** 20Hz to 20kHz (+1dB, -2dB)
- **Total Harmonic Distortion:** Less than 0.01% at 1kHz, all sliders at 0 position, rated output
- **Hum and Noise:** -98dB (EQ in IHF-A, all sliders at 0 position)

INPUT AND OUTPUT

- **Input:** Input Impedance; 30k ohms (Input level control set at 0 position)/Rated Input Level; +4dB* (Input level control set at 0 position)/Maximum Input Level; +32dB (Input level control set at -12dB)
- **Output:** Output Impedance; 1k ohm/Rated Output Level; +4dB*/Maximum Output Level; +20dB*

CONTROLS AND PANEL FUNCTIONS (Front Panel)

- **Equalizer Sliders:** Bands 14/Center Frequencies; Standard ISO center frequencies from 40Hz to 16kHz/ Boost; +6dB or +12dB (Selectable each channel)/ Cut; -6dB or -12dB (Selectable each channel)
 - **Input Level Control:** ± 12 dB
 - **Highpass Filter:** Adjustable -3dB frequency: 15Hz to 300Hz, 12dB per octave
 - **Pre-Peak Indicator:** Red LED (Lights when input or output reaches 3dB below clipping.)
 - **Power:** On/Off push switch with green LED indicator
- #### (Rear Panel)
- **Input:** Screw terminals (H = Hot, C = Cold, E = Ground), unbalanced 1/4" phone jacks
 - **Output:** Screw terminals (H = Hot, C = Cold, E = Ground), unbalanced 1/4" phone jacks
 - **Ground:** Signal Ground to Chassis Ground

POWER

- **Power Requirements:** AC mains, 50/60Hz
- **Power Consumption:** 11W (120V version); 13W (220 to 240V version)

PHYSICAL

- **Finish:** Front Panel; Aluminum, black/Case; Steel, black
- **Dimensions (W x H x D):** 483 x 44 x 311mm, EIA rack mount
- **Net Weight:** 3.8kg

Digital Delay

D-1103

One-by-Three Digital Sound Delay



PERFORMANCE

- **Frequency Response:** 20Hz to 20kHz, ± 1 dB
- **Total Harmonic Distortion:** Less than 0.03%
- **Hum and Noise:** At least 90dB below maximum output
- **Delay:** Time; 0 to 655msec, Steps; 10msec and 1msec scales (summed), Propagation Delay; 100msec, A/D Conversion; 16-bit at 100kHz Sampling Rate
- **Memories:** Four - selectable via front panel buttons or rear panel dry contact to screw terminals. One master controls up to 15 slave units.

INPUT AND OUTPUT

- **Input:** Type; Electronically balanced (Transformer optional), Input Impedance; 10k ohms, Rated Input Level; +4dB*, Maximum Input Level; +18dB*
- **Outputs (x 3):** Type; Electronically balanced (Transformer optional), Recommended Load; 600 ohms or higher, Rated Output; +4dB* at 600 ohms, Maximum Output Level; +18dB*

CONTROLS AND PANEL FUNCTIONS (Front Panel)

- **Input Level Control:** Attenuation type
- **Output Level Controls:** x 3; Attenuation type
- **Level Meter:** Type; Headroom Indicator; "0" indicates 3dB below maximum level, LED Points; Seven segments (Red at 0 and -3dB; Green at -6, -9, -12, -16 and -26dB)
- **Memory Selection:** 4 pushbuttons with ED status indicators
- **Fine:** Fine/Coarse Display Pushbutton with LED status indicator
- **Lock:** Disables function pushbuttons except memory selection and "Fine", LED status indicator
- **Memory:** Memory Store
- **Clear:** Displayed Delay Time Clear
- **Setting:** Up/Down Buttons (x 3)
- **Display:** 3-digit numeric display (x 3)
- **Power:** On/Off pushbutton with LED status indicator

(Rear Panel)

- **Protect:** On/Off slide switch; Disables all front panel pushbuttons
- **Input:** Screw terminals (H = Hot, C = Cold, E = Ground)
- **Outputs:** x 3; Screw terminals (H = Hot, C = Cold E = Ground)
- **Ground:** Signal Ground to Chassis Ground (removable link)
- **Remote Selection:** 4-presets; Screw terminals; Selection via dry contacts to "E". Master designation by removal of "D"/"E" link
- **Fuse:** 250V, 0.3A Slow-blow Type (120V version), 250V, 0.1A Slow-blow Type (220/240V version)
- **Power Socket:** EIA AC power cable socket
- **Power Requirements:** AC mains, 50/60Hz
- **Power Consumption:** 15W
- **Dimensions (W x H x D):** 483 x 44 x 357mm, EIA rack mount
- **Net Weight:** 4.4kg

Leveler/Limiter

L-1102

Dual Leveler/Limiter



- **Power Requirements:** AC Mains, 50/60Hz
- **Power Consumption:** 14W (120V AC version), 15W (220/240V AC version)
- **Frequency Response:** 20Hz to 20kHz (± 1 dB)
- **Total Harmonic Distortion:** Less than 0.1% (1kHz rated output), Less than 0.2% (1kHz, 30dB compression)
- **Input:** +4dB* for 10k ohms load (electronically balanced)
- **Output:** +4dB* for 600 ohms load (electronically balanced)
- **Maximum Input Level:** +20dB*
- **Maximum Output Level:** +20dB*
- **Sense Input:** 100k ohms (electronically balanced)
- **Noise Level:** Less than -92dB* (IHF-A)
- **Threshold Level Range:** Leveler; -40 to 0dB* (with respect to input)/Limiter; 1 to 100V rms (with respect to sense input)
- **Noise Gate Threshold Range:** -80 to -40dB*
- **Adjustable Output Range:** 0 to +20dB
- **Attack Times:** Dependent on input (or sense input) signal
- **Release Times:** Dependent on input (or sense input) signal
- **Color:** Black
- **Dimensions (W x H x D):** 482.6 x 44.0 x 316.8mm
- **Weight:** 4kg



Speakers

TOA produces many speaker categories as well as variations for each category. Horns are available in reflex or straight types that will fit any driver. The more compact horns are ideal for highly intelligible voice communication in outdoor installations, while the straight and high-power horns are designed for high performance in noisy and crowded environments. Special application speakers include emergency ceiling horns capable of withstanding extreme heat, up to 380° for 15 minutes as well as explosion-proof speakers and projection speakers that extend sound coverage. Box speakers are available in a range of sizes to suit location and feature easy wall mounting using various hardware accessories. Convenient

ceiling speakers are offered in a variety of designs and mounting options. The column speakers feature all-metal construction and are designed for vertical mounting to ensure excellent sound dispersion.

There are also fully weatherproof widerange speakers that maintain a high level of performance in terms of sound and directivity over many years in outdoor installations. To meet the requirements of interior design special speakers have been designed to effectively blend into the décor of sales/display spaces, restaurants, boutiques, coffee shops and many other commercial locations. A full range of hardware including mounting brackets, stands and back boxes are provided.

Horn Speakers

Reflex Horns

TH-100



- **Applicable Unit:** TU-630, TU-630M, TU-650, TU-650M
- **Driver Unit Coupling:** 1-3/8", 18-threads x 2
- **Cut-off Frequency:** 140Hz
- **Finish:** Horn flare, inner horn, cover: Aluminum, ivory white, paint/Bracket: Steel, ivory white, paint
- **Dimensions:** 482 (W) x 511 (H) x 538 (D) mm
- **Weight:** 14.1kg

TH-200



- **Applicable Unit:** TU-630, TU-630M, TU-650, TU-650M
- **Driver Unit Coupling:** 1-3/8", 8-threads x 4
- **Cut-off Frequency:** 140Hz
- **Finish:** Horn flare, inner horn, cover: Aluminum, ivory white, paint/Bracket: Steel, ivory white, paint
- **Dimensions:** 482 (W) x 511 (H) x 538 (D) mm
- **Weight:** 14.6kg

TH-650



- **Applicable Drivers:** TU-630, TU-630M, TU-650, TU-650M
- **Sound Pressure Level:** 110dB (1W, 1m) (When operated with a driver.)
- **Frequency Response:** 200—6,000Hz (When operated with a driver.)
- **IP Code:** IP 65 (When operated with a driver.)
- **Driver Coupling:** 1-3/8, 18 threads (inch screw)
- **Operating Temperature:** -20°C to +55°C (must be free from dew condensation)
- **Finish:** Horn flare and flange; Aluminum, off-white, powder coating/Reflector horn; ABS resin, off-white/Bracket holder and flange; Aluminum, gray, powder coating/Bracket; Steel, gray, powder coating/Screws and bolts; Stainless steel
- **Dimensions:** ø500 x 394 (D)mm
- **Weight:** 2.9kg

TH-660



- **Applicable Drivers:** TU-630, TU-630M, TU-650, TU-650M
- **Sound Pressure Level:** 112dB (1W, 1m) (When operated with a driver.)
- **Frequency Response:** 200—6,000Hz (When operated with a driver.)
- **IP Code:** IP 65 (When operated with a driver.)
- **Driver Coupling:** 1-3/8, 18 threads (inch screw)
- **Operating Temperature:** -20°C to +55°C (must be free from dew condensation)
- **Finish:** Horn flare and flange; Aluminum, off-white, powder coating/

Straight Horns

DH-110 (50W) DH-120 (100W)



DH-110
(DHA-11+DH-11B)



DH-120
(DHA-11+DH-12B)

- **Sound Pressure Level:** 110dB (1W, 1m)*
- **Frequency Response:** 180-6,000Hz*
- **Applicable Unit:** TU-630, TU-630M, TU-650, TU-650M
- **Driver Coupling:** 1-3/8, 18 threads (inch screw)
- **Variable Installation Angle:** Vertical: +10°, -20° (when locally procured mounting bracket is used)
- **Finish:** Horn A: Aluminum, Ivory, power coating/L-shaped adapter and Horn C: Aluminum, Ivory, powder coating/Bracket: Steel plate, Ivory, powder coating
- **Mouth Diameter:** ø158mm
- **Length:** DH-110: 968mm/DH-120: 884mm
- **Weight:** 5.3kg
- **Accessory:** Stainless steel bolt for assembly 1set, Gasket 1set, Anti-bird net 1set

*When TU-630 or TU-650 series is used.

Driver Units

TU-630 (30W)



- **Applicable Horns:** TH-650, TH-660, TH-100* and TH-200*
- **Rated Input:** 30 W
- **Rated Impedance:** 16Ω
- **Sound Pressure Level:** 110dB (1W, 1m) (When operated with JIS C 5504 standard horn.)
- **Frequency Response:** 150-6,000Hz (When operated with JIS C 5504 standard horn.)
- **IP Code:** IP 65 (When a driver is operated with a horn.)
- **Horn Coupling:** 1-3/8 18 threads (inch screw)
- **Polarity:** Hot; Black, Com; White
- **Operating Temperature:** -20°C to +55°C (must be free from dew condensation)
- **Finish:** Flange; Aluminum, gray, powder coating/Rear cover; ABS resin, gray/Screws; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length)
- **Dimensions:** ø139 x 106 (D)mm
- **Weight:** 1.4kg
- **Option:** Driver unit cover; UC-200A/Matching transformer; MT-30T, MT-60T

TU-630M (30W)



- **Applicable Horns:** TH-650, TH-660, TH-100* and TH-200*
- **Rated Input:** 30 W
- **Line Voltage:** 100V line or 70V line
- **Rated Impedance:** 100V line; 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W)/70V line; 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W)
- **Sound Pressure Level:** 110dB (1W, 1m) (When operated with JIS C 5504 standard horn.)
- **Frequency Response:** 150-6,000Hz (When operated with JIS C 5504 standard horn.)
- **IP Code:** IP 65 (When a driver is operated with a horn.)
- **Horn Coupling:** 1-3/8, 18 threads (inch screw)
- **Polarity:** Hot; Black, Com; White
- **Operating Temperature:** -20°C to +55°C (must be free from dew condensation)
- **Finish:** Flange; Aluminum, gray, powder coating/Rear cover; ABS resin, gray/Screws; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length)
- **Dimensions:** ø139 x 149 (D)mm
- **Weight:** 1.9kg
- **Option:** Driver unit cover; UC-200A

TU-650 (50W)



- **Applicable Horns:** TH-650, TH-660, TH-100* and TH-200*
- **Rated Input:** 50 W
- **Rated Impedance:** 16Ω
- **Sound Pressure Level:** 110dB (1W, 1m) (When operated with JIS C 5504 standard horn.)
- **Frequency Response:** 150-6,000Hz (When operated with JIS C 5504 standard horn.)
- **IP Code:** IP 65 (When a driver is operated with a horn.)
- **Horn Coupling:** 1-3/8, 18 threads (inch screw)
- **Polarity:** Hot; Black, Com; White
- **Operating Temperature:** -20°C to +55°C (must be free from dew condensation)
- **Finish:** Flange; Aluminum, gray, powder coating/Rear cover; ABS resin, gray/Screws; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length)
- **Dimensions:** ø139 x 106 (D)mm
- **Weight:** 2kg
- **Option:** Driver unit cover; UC-200A/Matching transformer; MT-30T, MT-60T

TU-650M (50W)



- **Applicable Horns:** TH-650, TH-660, TH-100* and TH-200*
- **Rated Input:** 50 W
- **Line Voltage:** 100V line or 70V line
- **Rated Impedance:** 100V line; 200Ω (50W), 330Ω (30W), 670Ω (15W)/70V line; 100Ω (50W), 200Ω (25W), 330Ω (15W), 670Ω (7.5W)
- **Sound Pressure Level:** 110dB (1W, 1m) (When operated with JIS C 5504 standard horn.)
- **Frequency Response:** 150-6,000Hz (When operated with JIS C 5504 standard horn.)
- **IP Code:** IP 65 (When a driver is operated with a horn.)
- **Horn Coupling:** 1-3/8, 18 threads (inch screw)
- **Polarity:** Hot; Black, Com; White
- **Operating Temperature:** -20°C to +55°C (must be free from dew condensation)
- **Finish:** Flange; Aluminum, gray, powder coating/Rear cover; ABS resin, gray/Screws; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length)
- **Dimensions:** ø139 x 149 (D)mm
- **Weight:** 2.7kg
- **Option:** Driver unit cover; UC-200A

NOTE (*)

- (1) When the driver unit cannot be mounted to the TH-100 or TH-200 speaker horn, first remove a horn coupler. Attach the driver to the removed coupler, then reinstall the coupler assembly in the horn.
- (2) Speaker cable connection. Remove connectors of cables from the TH-100s or TH-200s cover, and connect the drivers speaker cables to the horn cables of the same color.

UC-200A

Driver Unit Cover



Cover to protect and extend operating life of Driver units: TU-630, TU-630M, TU-650 and TU-650M.

Paging Horn Speakers

SC-610 (10W)



- **Rated Input:** 10W (Mobile mount use; 5W) • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 110dB (1W, 1m at 500 to 2,500Hz peak level) • **Frequency Response:** 315–12,500Hz • **Sensitivity (0dB = 1mW/10 dynes/cm²):** –24dB at 1kHz (when used as Microphone) • **IP Code:** IP 65 • **Polarity:** Hot: Black, Com: White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn and rear cover; ABS resin, off-white/Bracket, Screws and bolts; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** 172 (W) × 161 (H) × 188 (D)mm • **Weight:** 1kg • **Option:** Swivel bracket; YS-151S (Can be used instead of the supplied bracket.)

SC-610M (10W)



- **Rated Input:** 10W • **Line Voltage:** 100V line or 70V line • **Rated Impedance:** 100V line: 1kΩ (10W), 2kΩ (5W), 3.3kΩ (3W), 10kΩ (1W)/70V line: 500Ω (10W), 1kΩ (5W), 2kΩ (2.5W), 3.3kΩ (1.5W), 10kΩ (0.5W) • **Sound Pressure Level:** 110dB (1W, 1m at 500 to 2,500Hz peak level) • **Frequency Response:** 315–12,500Hz • **Sensitivity (0dB = 1mW/10 dynes/cm²):** –24dB at 1kHz (when used as Microphone) • **IP Code:** IP 65 • **Polarity:** Hot: Black, Com: White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn and rear cover; ABS resin, off-white/Bracket, Screws and bolts; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** 172 (W) × 161 (H) × 188 (D)mm • **Weight:** 1.2kg • **Option:** Swivel bracket; YS-151S (Can be used instead of the supplied bracket.)

SC-615 (15W)



- **Rated Input:** 15W (Mobile mount use; 10W) • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 112dB (1W, 1m at 500 to 2,500Hz peak level) • **Frequency Response:** 280–12,500Hz • **Sensitivity (0dB = 1mW/10 dynes/cm²):** –22dB at 1kHz (when used as Microphone) • **IP Code:** IP 65 • **Polarity:** Hot: Black, Com: White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn and rear cover; ABS resin, off-white/Bracket, Screws and bolts; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** 222 (W) × 179 (H) × 234 (D)mm • **Weight:** 1.1kg • **Option:** Swivel bracket; YS-151S (Can be used instead of the supplied bracket.)

SC-615M (15W)



- **Rated Input:** 15W • **Line Voltage:** 100V line or 70V line • **Rated Impedance:** 100V line: 670Ω (15W), 1kΩ (10W), 2kΩ (5W), 3.3kΩ (3W)/70V line: 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W), 3.3kΩ (1.5W) • **Sound Pressure Level:** 112dB (1W, 1m at 500 to 2,500Hz peak level) • **Frequency Response:** 280–12,500Hz • **Sensitivity (0dB = 1mW/10 dynes/cm²):** –22dB at 1kHz (when used as Microphone) • **IP Code:** IP 65 • **Polarity:** Hot: Black, Com: White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn and rear cover; ABS resin, off-white/Bracket, Screws and bolts; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** 222 (W) × 179 (H) × 234 (D)mm • **Weight:** 1.3kg • **Option:** Swivel bracket; YS-151S (Can be used instead of the supplied bracket.)

SC-630 (30W)



- **Rated Input:** 30W (Mobile mount use; 15W) • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 113dB (1W, 1m at 500 to 2,500Hz peak level) • **Frequency Response:** 250–10,000Hz • **Sensitivity (0dB = 1mW/10 dynes/cm²):** –20dB at 1kHz (when used as Microphone) • **IP Code:** IP 65 • **Polarity:** Hot: Black, Com: White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn and rear cover; ABS resin, off-white/Bracket, Screws and bolts; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** 285 (W) × 227 (H) × 277 (D)mm • **Weight:** 1.7kg • **Option:** Swivel bracket; YS-151S (Can be used instead of the supplied bracket.)

SC-630M (30W)



- **Rated Input:** 30W • **Line Voltage:** 100V line or 70V line • **Rated Impedance:** 100V line: 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W)/70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W) • **Sound Pressure Level:** 113dB (1W, 1m at 500 to 2,500Hz peak level) • **Frequency Response:** 250–10,000Hz • **Sensitivity (0dB = 1mW/10 dynes/cm²):** –20dB at 1kHz (when used as Microphone) • **IP Code:** IP 65 • **Polarity:** Hot: Black, Com: White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn and rear cover; ABS resin, off-white/Bracket, Screws and bolts; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** 285 (W) × 227 (H) × 277 (D)mm • **Weight:** 2kg • **Option:** Swivel bracket; YS-151S (Can be used instead of the supplied bracket.)

Reflex Horn Speakers

TC-615 (15W)



- **Rated Input:** 15W • **Rated Impedance:** 8Ω • **Sound Pressure Level:** 108dB (1W, 1m) • **Frequency Response:** 250–7,000Hz • **IP Code:** IP 65 • **Polarity:** Hot: Black/Com; White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn; ABS resin, off-white/Bracket holder; Aluminum, gray, powder coating/Bracket; Steel, gray, powder coating/Rear cover; ABS resin, gray/Screw and bolts; Stainless steel/Speaker Cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** ø400 × 376 (D) mm • **Weight:** 3kg

TC-615M (15W)



- **Rated Input:** 15W • **Line Voltage:** 100V line or 70V line • **Rated Impedance:** 100V line: 670Ω (15W), 1kΩ (10W), 2kΩ (5W), 3.3kΩ (3W)/70V line: 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W), 3.3kΩ (1.5W) • **Sound Pressure Level:** 108dB (1W, 1m) • **Frequency Response:** 250–7,000Hz • **IP Code:** IP 65 • **Polarity:** Hot: Black/Com; White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn; ABS resin, off-white/Bracket holder; Aluminum, gray, powder coating/Bracket; Steel, gray, powder coating/Rear cover; ABS resin, gray/Screw and bolts; Stainless steel/Speaker Cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** ø400 × 376 (D) mm • **Weight:** 3.2kg

TC-630 (30W)



- **Rated Input:** 30W • **Rated Impedance:** 16Ω • **Sound Pressure Level:** 110dB (1W, 1m) • **Frequency Response:** 200–6,000Hz • **IP Code:** IP 65 • **Polarity:** Hot: Black/Com; White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn; ABS resin, off-white/Bracket holder; Aluminum, gray, powder coating/Bracket; Steel, gray, powder coating/Rear cover; ABS resin, gray/Screw and bolts; Stainless steel/Speaker Cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** ø500 × 463 (D) mm • **Weight:** 4.1kg

TC-630M (30W)



• **Rated Input:** 30W • **Line Voltage:** 100V line or 70V line
 • **Rated Impedance:** 100V line: 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W)/70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W) • **Sound Pressure Level:** 110dB (1W, 1m) • **Frequency Response:** 200–6,000Hz • **IP Code:** IP 65 • **Polarity:** Hot; Black/Com; White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn; ABS resin, off-white/Bracket holder; Aluminum, gray, powder coating/Bracket; Steel, gray, powder coating/Rear cover; ABS resin, gray/Screw and bolts; Stainless steel/Speaker Cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** ø500 × 463 (D) mm • **Weight:** 4.5kg

Mobile Mounted Speakers

TC-10P (10W)



• **Input:** Rated 10W • **Impedance:** 8 ohms • **Frequency Response:** 400 – 5,500Hz • **Sound Pressure Level:** 101dB (1W, 1m) • **Dimensions (W × H):** ø130mm × 272mm • **Weight:** 1.1kg • **Finish:** Horn flare and stand; Aluminum, off-white/Inner horn assembly, driver unit case and driver unit case; Aluminum, dark blue, paint

TC-35P (35W)



• **Input:** Rated 35W • **Impedance:** 8 ohms • **Frequency Response:** 250 – 8,000Hz • **Output Sound Pressure Level:** 104dB (1m, 1W) SPL, 119.5dB (1m, 3W) SPL
 • **Dimensions (W × H):** ø166mm × 288mm • **Weight:** 2.0kg • **Finish:** Horn flare and stand; Aluminum, white/ Others; Aluminum, silver

SC-650 (50W)



• **Rated Input:** 50W (Mobile mount use; 30W) • **Rated Impedance:** 16Ω • **Sound Pressure Level:** 109dB (1W, 1m) • **Frequency Response:** 250 – 6,000Hz • **IP Code:** IP 65 • **Polarity:** Hot: Black, Com: White • **Operating Temperature:** –20°C to +55°C (must be free from dew condensation) • **Finish:** Horn flare; Aluminum, off-white, powder coating/Reflector horn; ABS resin, off-white/Bracket, Steel, gray, powder coating/Rear cover; ABS resin, gray/Screws and bolts; Stainless steel/Speaker cable; Polyvinyl chloride insulated cabtyre cable (6mm in diameter, 600mm in length) • **Dimensions:** 430(W) × 297.5 (H) × 327 (D)mm
 • **Weight:** 3.4kg

Ultra-High Power Speaker

SC-240 (240W)



• **Input:** 240W • **Impedance:** 8 ohms × 4 • **Frequency Response:** 250 – 5,000Hz • **Output Sound Pressure Level:** 107dB (1W, 1m) • **Adjustable Angle Range:** Vertical; 8.5° upward, 14° downward • **Required Terminals:** ø21mm/2-pin round connector • **Finish:** Horn; Aluminum die-casting, Ivory/Cover; Surface treated steel plate, Ivory/Driver Unit Case; Weatherproof ABS resin/Bracket; Equal angle steel, Ivory/Horn Mounting Bolts; Dichromate-plated iron • **Dimensions (W × H × D):** 598 × 251 × 654mm • **Weight:** 28kg

Matching Transformer TM-60T



• **Impedance:** Primary: 290 ohms (35W), 250 ohms (40W), 220 ohms (45W), 200 ohms (50W), 180 ohms (55W), 170 ohms (60W)/Secondary: 4 ohms, 8 ohms, 16 ohms
 • **Frequency Response:** 80 – 16,000Hz • **Dimensions (W × H × D):** 96 × 96 × 98mm • **Weight:** 1.3kg

Explosion-Proof Horn Speakers *

TP-M15E (15W)



• **Input:** Rated 15W, max. 20W • **Impedance:** 670 ohms (15W), 1k ohm (10W), 2k ohms (5W) • **Frequency Response:** 300 – 5,500Hz • **Sound Pressure Level:** 104dB (1W, 1m) • **Explosion-proof:** EG4 (Explosion-proof) • **Standard Environmental Condition:** Temperature: –20°C to +40°C/Elevation: Under 1,000m/Relative humidity: 45–85%/Others: Dust, corrosive gas or vibration which requires special considerations to be provided in the explosion-proof facility must not exist.
 • **Dimensions:** ø397 × 475mm • **Weight:** 4.9kg
 • **Finish:** Horn; Ivory/Others; Dark gray/Bracket materials: Surface sinc treated steel plate t3.0

TP-M15D (15W)



• **Input:** Rated 15W, max. 20W • **Impedance:** 670 ohms (15W), 1k ohm (10W), 2k ohms (5W) • **Frequency Response:** 350 – 4,500Hz • **Sound Pressure Level:** 104dB (1W, 1m) • **Explosion-proof:** EG4 (Explosion-proof) • **Standard Environmental Condition:** Temperature: –20°C to +40°C/Elevation: Under 1,000m/Relative humidity: 45–85%/Others: Dust, corrosive gas or vibration which requires special considerations to be provided in the explosion-proof facility must not exist.
 • **Dimensions:** ø242 × 368mm • **Weight:** 4.3kg
 • **Finish:** Horn; Ivory/Others; Dark gray/Bracket materials: Surface sinc treated steel plate t3.0

Installation Locations

*Locations where flammable gas and vapor of flammable liquid are mixed together under the abnormal condition, creating an atmosphere close to the threshold of explosion,

*The TP-M15E/TP-M15D cannot be used in locations that can periodically create an explosive atmosphere when used or operated normally

[Poor Installation Location Examples]

- 1) Locations where vessels are damaged due to corrosion or deterioration, causing explosive gas to escape.
- 2) Locations which emit explosive gas due to malfunctions, or high temperature or high pressure as a result of irregular reaction.
- 3) Locations which can create an explosive atmosphere when the ventilation device fails and explosive gas stays.
- 4) Peripheral areas of or rooms adjacent to locations which can create an explosive atmosphere in a normal state and the explosive gas rarely enters such areas or rooms.

Box Speakers

Bi-Directional Box Speakers

BS-61WA/61WT-A (6W)



- **Input:** Rated 6W, max. 9W • **Input Impedance:** BS-61WA; 1.7k ohms (6W), 5k ohms (2W)/BS-61WT-A; 1.7k ohms (6W) • **Frequency Response:** 130-13,000Hz
- **Sound Pressure Level:** 92dB (1m, 1W) • **Coverage Angle:** 100°C • **Attenuation:** 0 (OFF), 1 (12dB), 2 (6dB), 3 (0dB) • **Dimensions (W x H x D):** 200 x 292 x 220mm
- **Weight:** 2.8kg • **Speaker Component:** 16cm dynamic cone type speaker x 2 • **Finish:** Enclosure; Wood, Off-white/Grille; Cloth, Off-white

YS-31W

Pendent Metal Fitting for BS-61WA/61WT-A



- Length: 254mm.

Wall-Mounting Box Speakers

BS-330/330T (3W)



BS-330



BS-330T

- **Input:** Rated 3W, max. 4.5W • **Rated Impedance:** 3.3k ohms (3W)/10k ohms (1W) • **Sensitivity:** 91dB (1W, 1m)
- **Frequency Response:** 120 - 15,000Hz • **Speaker Component:** 12cm dynamic cone-type speaker • **Usable Cables:** 600V vinyl-insulated cable (IV wire or HIV wire) Solid copper wire: $\varnothing 0.8 - \varnothing 1.2$ mm 7-core twisted copper wire: 0.75 - 1.25mm² • **Dimensions (W x H x D):** 173 x 195 x 101mm (except volume control) • **Weight:** BS-330; 745g/BS-330T; 790g • **Finish:** Case; ABS resin, Off-white/Rear board; Hard board
- **Attenuation* (at 1W connection):** OFF, 12dB, 6dB, 0dB

* The model with "T" has an attenuator.

BS-677B/677BT BS-677W/677WT (6W)



- **Input:** Rated 6W • **Input Impedance:** BS-677B/677W; 1.7k ohms (6W)/3.3k ohms (3W)/6.7k ohms (1.5W)/13k ohms (0.8W), BS-677BT/677WT; 1.7k ohms • **Sound Pressure Level:** 330-3,300Hz, 91dB/W/m pink noise input
- **Frequency Response:** 100-10,000Hz (-20dB from peak of SPL) • **Attenuation:** BS-677BT/677WT; OFF (NC), 1 (-12dB), 2 (-6dB), 3 (0dB) • **Speaker Component:** 12cm dynamic cone-type speaker • **Dimensions (W x H x D):** BS-677B/677W; 190 x 250 x 100mm/BS-677BT/677WT; 200 x 250 x 100mm • **Weight:** 1.4kg • **Finish:** Enclosure; Vinyl chloride particleboard, BS-677B/677BT; Black, BS-677W/677WT; White

* The models with "T" each have an attenuator with its impedance marked on it.

BS-102SA/102ST-A (10W)



- **Input:** Rated 10W, max. 15W • **Impedance:** BS-102SA; 1k ohm (10W)/2k ohms (5W)/BS-102ST-A; 1k ohm (10W)
- **Sensitivity:** 94dB (1W, 1m) • **Frequency Response:** 100 - 13,000Hz • **Attenuation*:** 0 (OFF), 1 (12dB), 2 (6dB), 3 (0dB) • **Speaker Component:** 20cm dynamic cone-type speaker • **Dimensions (W x H x D):** 350 x 250 x 190mm • **Weight:** BS-102SA; 3.4kg/BS-102ST-A; 3.5kg
- **Finish:** Enclosure; Wood, Off-white/Grille; Cloth, Off-white

* The models with "T" each have an attenuator.

Universal Speakers

BS-1030B/1030W



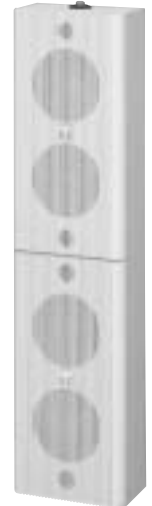
- **Enclosure:** 2-way bass reflex type • **Rated Input:** 30W
- **Impedance:** 8 Ω 100V line; 330 Ω (30W), 500 Ω (20W), 670 Ω (15W), 1k Ω (10W), 2k Ω (5W) 70V line; 170 Ω (30W), 25 Ω (20W), 330 Ω (15W), 500 Ω (10W), 1k Ω (5W)
- **Sensitivity:** 90dB (1W/1m, in anechoic chamber)
- **Frequency Response:** 80 - 20,000Hz • **Speaker Components:** 12 cm dynamic cone-type speaker 2.5 cm balanced dome tweeter • **Speaker Cable:** 2-core cabtyre cable (diameter 6mm) • **Operating Temperature:** -10°C to +50°C • **Water Resistance:** IP-X4 (installed vertically or horizontally) • **Material/Finish:** BS-1030B Enclosure: ABS resin, black, paint Grille: surface treated steel plate, black, powder coating Bracket: surface treated steel plate, black, powder coating BS-1030W Enclosure: ABS resin, white, paint Grille: surface treated steel plate, white, powder coating Bracket: surface treated steel plate, white, powder coating • **Dimensions:** 196 (W) x 290 (H) x 150 (D) mm (without bracket) • **Weight:** 2.5kg (without bracket)
- **Accessories:** Bracket x 1, Bracket mounting screw x 2, Bracket mounting washer x 2 • **Options:** Bracket: BS-1030B; WCB-12, TMB-1, SP-410 BS-1030W; WCB-12W, TMB-1W, SP-410, SP-420 Stand: ST-16

BS-1110W (10W) BS-1120W (20W)

BS-1110W



BS-1120W



BS-1110W

- **Rated Input:** 10W • **Rated Impedance:** 100V LINE: 1k Ω (10W), 2k Ω (5W) 70V LINE: 500 Ω (10W), 1k Ω (5W), 4 Ω (10W) • **Sensitivity:** 92dB (1W/1m) • **Frequency Response:** 150 - 14,000Hz • **Speaker Component:** 12cm dynamic cone-type speaker x 2 • **Applicable Cables:** 600V vinyl-insulated cable (IV wire or HIV wire) Solid copper wire: $\varnothing 0.8 - \varnothing 1.2$ mm 7-core twisted copper wire: 0.75 - 1.25mm² • **Connection:** Push-in connector (Bridging connections possible.) • **Operating Temperature:** -10°C to +50°C • **Finish:** Enclosure: Plywood vinyl coating, white (RAL 9010 PURE WHITE) Front: ABS resin, white (RAL9010 PURE WHITE), paint Rear: Steel plate, white (RAL9010 PURE WHITE), paint
- **Dimensions:** 180 (W) x 360 (H) x 100 (D) mm • **Weight:** 2.9kg (unit only) • **Accessory:** Mounting bracket x 2
- **Option:** Applicable bracket: YS-301, SP-410, WCB-12W, TMB-1W Applicable stand: ST-16

BS-1120W

- **Rated Input:** 20W • **Rated Impedance:** 100V LINE: 500 Ω (20W), 1k Ω (10W) 70V LINE: 250 Ω (20W), 500 Ω (10W), 8 Ω (20W) • **Sensitivity:** 95dB (1W/1m)
- **Frequency Response:** 150 - 20,000Hz • **Speaker Component:** 12cm dynamic cone-type speaker x 4 Balanced dome tweeter x 1 • **Applicable Cables:** 600V vinyl-insulated cable (IV wire or HIV wire) Solid copper wire: $\varnothing 0.8 - \varnothing 1.2$ mm 7-core twisted copper wire: 0.75 - 1.25mm² • **Connection:** Push-in connector (Bridging connections possible.) • **Operating Temperature:** -10°C to +50°C • **Finish:** Enclosure: Plywood vinyl coating, white (RAL 9010 PURE WHITE) Front: ABS resin, white (RAL9010 PURE WHITE), paint Rear: Steel plate, white (RAL9010 PURE WHITE), paint • **Dimensions:** 180 (W) x 720 (H) x 100 (D) mm • **Weight:** 5.1kg (unit only)
- **Accessory:** Mounting bracket x 2 • **Option:** Applicable bracket: YS-301

Ceiling Speakers

Box Type Splashproof Speakers

BS-5W (5W)
BS-10WL (10W)

(For Shower Room/
Pool Low Input BGM/
FGM)

- IP-X4 Equivalent
(Refer to page 54)



BS-5W (5W, 100V line input)

- **Type:** Sealed type • **Speaker Component:** 10cm dynamic cone-type speaker • **Input:** Rated 5W
- **Impedance:** 2k ohms (5W), 3.3k ohms (3W), 5k ohms (2W) • **Sound Pressure Level:** 90dB(1W, 1m)
- **Frequency Response:** 120 to 18,000Hz • **Operating Temperature:** -20 to +55°C • **Dimensions (W × H × D):** 198 × 177 × 159mm • **Weight:** 1.4kg • **Finish:** Enclosure; Polypropylene/Grille; Aluminum

BS-10WL (10W, 8 ohms input)

- **Type:** Sealed type • **Handling Capacity:** 10W (continuous pink noise)/30W (continuous program)/100W (instantaneous peak) • **Sound Pressure Level:** 90dB (1W, 1m) • **Impedance:** 8 ohms • **Speaker Component:** 10cm dynamic cone-type speaker • **Frequency Response:** 80 to 18,000Hz • **Operating Temperature:** -20 to +55°C
- **Dimensions (W × H × D):** 198 × 177 × 159mm • **Weight:** 1.5kg • **Finish:** Enclosure; Polypropylene/Grille; Aluminum

* Appearance is same as BS-5W.

BS-20W/20W-WHT (20W)

(For Rail Way Station Platform Announcement)
(in compliance with IP-X4)



- **Speaker for Mid/Low Frequency:** One 13cm dia. splashproof cone speaker • **Speaker for High Frequency:** DC horn (30° horizontal by 90° vertical) plus splashproof piezo driver unit • **Input:** Rated 20W
- **Impedance:** 500Ω (20W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) • **Sound Pressure Level:** 94dB (1W, 1m)
- **Frequency Response:** 100 to 20,000Hz • **Operating Temperature:** -20 to +55°C • **Finish:** Enclosure; ABS resin, black paint (BS-20W) (BS-20W-WHT: white paint)/ Punching net/fixing angle; Zinc-coated steel plate, black paint (BS-20W) (BS-20W-WHT: white paint)/Angle bolts; Stainless steel • **Dimensions (W × H × D):** 350 × 225 × 213mm • **Weight:** 3.6kg

Firedome Speaker

PC-1867F/PC-1867C
(6W)



- **Rated Input:** 6W (for 100V line), 3W (for 70V line)
- **Rated Impedance:** PC-1867F: 100V line: 1.7kΩ (6W), 3.3kΩ (3W), [6.7kΩ (1.5W), 13kΩ (0.8W)]; Internal wiring must be changed/70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), [6.7kΩ (0.8W), 13kΩ (0.4W)]; Internal wiring must be changed/ PC-1867C: 100V line: 1.7kΩ (6W), [3.3kΩ (3W), 6.7kΩ (1.5W), 13kΩ (0.8W)]; Internal wiring must be changed/70V line: 1.7kΩ (3W), [3.3kΩ (1.5W), 6.7kΩ (0.8W), 13kΩ (0.4W)]; Internal wiring must be changed]
- **Sound Pressure Level:** 90dB (1m, 1W) 330 - 3,300Hz pink noise • **Frequency Response:** 100 - 16,000Hz (without fire dome) • **Speaker Component:** 12cm cone
- **Standard:** PC-1867C: Incompliance with the British Standard BS 5839-8: 1998 (10.3 Protection of Loudspeakers) • **Dimensional for Fixing Hole:** ø156^{±3} (mounting hole) × 30 (maximum ceiling thickness)mm
- **Speaker Mounting Method:** Spring catch • **Applicable Cables:** PC-1867F: 600V vinyl-insulated cable (IV wire or HIV wire)/Solid copper wire: ø0.8 - ø1.2mm/7-core twisted copper wire: 0.75 - 1.25mm² / PC-1867C: 600V vinyl-insulated cable (IV wire or HIV wire)/Solid copper wire: 1 × max. ø3.0mm or 2 × max. 0.15mm • **Connection:** PC-1867F: Push-in connector (Bridging terminal-2 branch type) / PC-1867C: Screw connector (ceramic terminal)
- **Dimensions:** ø180 × 11 (exposed section + 110 (D))mm
- **Weight:** 1.3kg • **Finish:** Baffle: Aluminum, off-white*, paint/Grille: Aluminum net, off-white*, paint/Dome mounting bracket: Steel plate, bichromate plating/Fire dome: Steel plate, black, painting

*RAL 9010 or equivalent color

Heat-Resistant Ceiling Horn Speakers

PC-129
(1W)



- **Input:** 1W • **Input Impedance:** 10k ohms • **Frequency Response:** 500-8,000Hz • **Sound Pressure Level:** 100dB • **Heat-Resisting Temperature:** Withstands 380°C air current for 15 minutes • **Dielectric Strength:** 1,000V AC, 1 minute (Between input terminal and body)
- **Installation Resistance:** 500V DC, more than 10M ohms (Between input terminal and body) • **Dimensions:** 116ø × 130(D)mm • **Weight:** 1.6kg • **Finish (Color):** Panel; Ivory, Munsell 2.5Y 9/1

PC-139 (1W)



- **Input:** 1W • **Input Impedance:** 10k ohms • **Frequency Response:** 500-10,000Hz • **Sound Pressure Level:** 100dB • **Heat-Resisting Temperature:** Withstands 380°C air current for 15 minutes • **Dielectric Strength:** 1,000V AC, 1 minute (Between input terminal and body)
- **Installation Resistance:** 500V DC, more than 10M ohms (Between input terminal and body) • **Dimensions:** 122ø × 146(D)mm • **Weight:** 1.7kg • **Finish (Color):** Panel; Ivory, Munsell 2.5Y 9/1

FGM Ceiling Speaker

PC-212

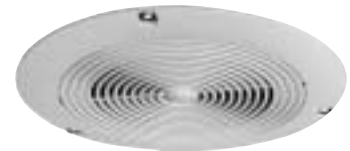


- **Input:** Rated 15W, max. 22.5W • **Input Impedance:** 100V; 670 ohms (15W), 1k ohm (10W), 2k ohms (5W)/70V; 670 ohms (7.5W), 1k ohm (5W), 2k ohms (2.5W)
- **Frequency Response:** 50 - 18,000Hz • **Sound Pressure Level:** 91dB/W/m • **Dimensions:** ø280 × 193mm • **Weight:** 2.6kg • **Speaker Component:** 20cm coaxial 2-way dynamic cone • **Finish:** Frame; Aluminum/Front Grille; Aluminum punching net, Silver.

Flush Mounting Type Ceiling Speakers

Screw-in Type

PC-645R (6W)



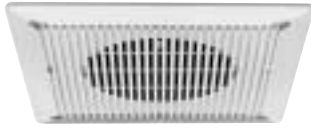
- **Rated Input:** 6W (100V line)/3W (70V line) • **Rated Impedance:** 100V line; 1.7kΩ(6W), 3.3kΩ(3W), 6.7kΩ(1.5W), 13kΩ(0.8W), 70V line; 1.7kΩ(3W), 3.3kΩ(1.5W), 6.7kΩ(0.8W), 13kΩ(0.4W) • **Pre-set Impedance:** 6.7kΩ (1.5W/100V line, 0.8W/70V line)
- **Sound Pressure Level:** 90dB/W/m, 330-3,300Hz pink noise • **Frequency Response:** 100-12,000Hz • **Line Voltage:** 100V or 70V line • **Speaker:** 12cm (rated impedance 8Ω) • **Connector Cable:** ø6.6mm, 0.75mm², 2-core cable, 2m • **Dimensions:** ø191 × 8.5 (exposed section)+ 74mm, ceiling mounting hole; ø150mm
- **Weight:** 610g • **Finish:** ABS resin, off-white

PC-646R (6W)



- **Rated Input:** 6W (100V line)/3W (70V line) • **Rated Impedance:** 100V line; 1.7kΩ(6W), 3.3kΩ(3W), 6.7kΩ(1.5W), 13kΩ(0.8W), 70V line; 1.7kΩ(3W), 3.3kΩ(1.5W), 6.7kΩ(0.8W), 13kΩ(0.4W) • **Pre-set Impedance:** 6.7kΩ (1.5W/100V line, 0.8W/70V line)
- **Sound Pressure Level:** 90dB/W/m, 330-3,300Hz pink noise • **Frequency Response:** 100-12,000Hz • **Line Voltage:** 100V or 70V line • **Speaker:** 12cm (rated impedance 8Ω) • **Connector Cable:** ø6.6mm, 0.75mm², 2-core cable, 2m • **Dimensions:** ø191 × 10 (exposed section)+ 74mm, ceiling mounting hole; ø150mm • **Weight:** 620g • **Finish:** Baffle; ABS resin, off-white/Grille; Aluminum net, Off-white

PC-643S (6W)



- **Rated Input:** 6W (100V line)/3W (70V line) • **Rated Impedance:** 100V line; 1.7k ohms (6W), 3.3k ohms (3W), 6.7k ohms (1.5W), 13k ohms (0.8W)/70V line; 1.7k ohms (3W), 3.3k ohms (1.5W), 6.7k ohms (0.8W), 13k ohms (0.4W) • **Pre-set Impedance:** 6.7k ohms (1.5W/100V line, 0.8W/70V line) • **Sound Pressure Level:** 90dB/W/m, 330~3,300Hz pink noise • **Frequency Range:** 40~15,000Hz • **Frequency Response:** 100~12,000Hz
- **Line Voltage:** 100V line or 70V line • **Speaker Component:** 12cm (rated impedance 8 ohms)
- **Dimensions (W × H × D):** 200 × 200 × 85mm
- **Weight:** 700g • **Finish:** Baffle; ABS resin, Off-white

PC-644S (6W)



- **Rated Input:** 6W (100V line)/3W (70V line) • **Rated Impedance:** 100V line; 1.7k ohms (6W), 3.3k ohms (3W), 6.7k ohms (1.5W), 13k ohms (0.8W)/70V line; 1.7k ohms (3W), 3.3k ohms (1.5W), 6.7k ohms (0.8W), 13k ohms (0.4W) • **Pre-set Impedance:** 6.7k ohms (1.5W/100V line, 0.8W/70V line) • **Sound Pressure Level:** 90dB/W/m, 330~3,300Hz pink noise • **Frequency Range:** 40~15,000Hz • **Frequency Response:** 100~12,000Hz
- **Line Voltage:** 100V line or 70V line • **Speaker Component:** 12cm (rated impedance 8 ohms)
- **Dimensions (W × H × D):** 200 × 200 × 85mm
- **Weight:** 720g • **Finish:** Baffle; ABS resin, Off-white/Grille; Aluminum net, Off-white

Spring Catch Type

PC-1863 (6W) -□-



- **Rated Input:** 6W (for 100V line)/3W (for 70V line) • **Rated Impedance:** 100V line; 1.7kΩ (6W), 3.3kΩ (3W), {6.7kΩ (1.5W), 13kΩ (0.8W)}: Internal wiring must be changed/70V line; 1.7kΩ (3W), 3.3kΩ (1.5W), {6.7kΩ (0.8W), 13kΩ (0.4W)}: Internal wiring must be changed) • **Sound Pressure Level:** 90dB (1W, 1m) 330~3,300Hz pink noise
- **Frequency Response:** 100 ~ 16,000Hz • **Speaker Component:** 12cm cone-type • **Dimensions for Fixing Hole:** ø150 (mounting hole) × 50 (maximum ceiling thickness) mm • **Speaker Mounting Method:** Spring catch • **Applicable Cables:** 600V vinyl-insulated cable (IV wire or HIV wire)/Solid copper wire; ø0.8~ø1.2mm/7-core twisted copper wire; 0.75~1.25mm² • **Connection:** Push-in connector (bridging terminal-2 branch type) • **Finish:** Baffle; ABS-resin, off-white*/Grille; Aluminum net, off-white*
- **Dimensions:** ø180 × 11 (exposed section)+110mm
- **Weight:** 710g (bracket excluded)

*RAL 9010 or equivalent color

Note: Do not cover the speaker with heat insulating material or sound absorbing material. Ensure that the speaker is kept away from the heat insulating material.

PC-1864 (6W) -□-



- **Rated Input:** 6W (for 100V line)/3W (for 70V line) • **Rated Impedance:** 100V line; 1.7kΩ (6W), 3.3kΩ (3W), 6.7kΩ (1.5W), 13kΩ (0.8W): Internal wiring must be changed/70V line; 1.7kΩ (3W), 3.3kΩ (1.5W), 6.7kΩ (0.8W), 13kΩ (0.4W): Internal wiring must be changed • **Sound Pressure Level:** 90dB (1W, 1m) 330 ~ 3,300Hz pink noise • **Frequency Response:** 100 ~ 16,000Hz • **Speaker Component:** Dynamic 12cm cone-type • **Dimensions for Fixing Hole:** ø150 (mounting hole) × 50 (maximum ceiling thickness) mm
- **Speaker Mounting Method:** Spring catch • **Applicable Cables:** 600V vinyl-insulated cable (IV wire or HIV wire)/Solid copper wire; ø0.8~ø1.2mm/7-core twisted copper wire; 0.75~1.25mm² • **Connection:** Push-in connector (bridging terminal-2 branch type) • **Finish:** Panel: ABS resin, off-white*
- **Dimensions:** ø180 × 11 (exposed section)+110mm
- **Weight:** 690g (bracket excluded)

*RAL 9010 or equivalent color

Note: Do not cover the speaker with heat insulating material or sound absorbing material. Ensure that the speaker is kept away from the heat insulating material.

PC-1867 (6W) -□-



- **Rated Input:** 6W (for 100V line)/3W (for 70V line) • **Rated Impedance:** 100V line; 1.7kΩ (6W), 3.3kΩ (3W), {6.7kΩ (1.5W), 13kΩ (0.8W)}: Internal wiring must be changed/70V line; 1.7kΩ (3W), 3.3kΩ (1.5W), {6.7kΩ (0.8W), 13kΩ (0.4W)}: Internal wiring must be changed) • **Sound Pressure Level:** 90dB (1W, 1m) 330~3,300Hz pink noise • **Frequency Response:** 100 ~ 16,000Hz • **Speaker Component:** 12cm cone-type • **Dimensions for Fixing Hole:** ø150 (mounting hole) × 50 (maximum ceiling thickness) mm • **Speaker Mounting Method:** Spring catch • **Applicable Cables:** 600V vinyl-insulated cable (IV wire or HIV wire)/Solid copper wire; ø0.8~ø1.2mm/7-core twisted copper wire; 0.75~1.25mm² • **Connection:** Push-in connector (bridging terminal-2 branch type) • **Finish:** Baffle; Aluminum, off-white*, paint/Grille; Aluminum net, off-white*, paint • **Dimensions:** ø180 × 11 (exposed section)+110mm • **Weight:** 740g (bracket excluded)

*RAL 9010 or equivalent color

Note: Do not cover the speaker with heat insulating material or sound absorbing material. Ensure that the speaker is kept away from the heat insulating material.

YS-270

Protection Cover

For PC-1800 Series Ceiling speakers



- **Dimension for Fixing Hole:** ø150mm • **Weight:** 140g
- **Finish:** Cover; Heat-resistant ABS-resin, Black

ATT-311

Attenuator

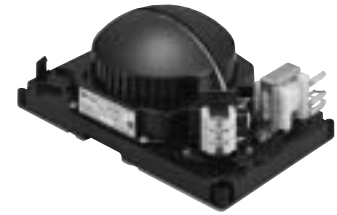
App;ocab;e s[ealers:
PC-1864/1863/
1867/2668



- **Rated Input:** 3W

Separate Type with Spring Catch Type Ceiling Speakers

CM-760 (6W)



- **Rated Input:** 6W • **Rated Impedance:** 1.7kΩ(6W), 3.3kΩ(3W), (6.7kΩ(1.5W), 13kΩ(0.8W)): Internal wiring must be changed) • **Sound Pressure Level:** 90dB (1W, 1m) • **Frequency Response:** 100-16,000Hz • **Speaker:** 12cm dynamic cone type speaker • **Dimensions for Fixing Hole:** ø150mm (mounting hole) × 50 (ceiling thickness) mm • **Speaker Mounting Method:** spring catch • **Applicable Cables:** 600V Vinyl-insulated cable (IV wire or HIV wire), Solid copper wire; ø0.8~ø1.2mm, 7-core twisted copper wire; 0.75-1.25mm² • **Connection:** Push-in connector (Bridging and branch connections possible) • **Finish:** Grill; Fire-resistant, high-impact styren resin (resin material grade: UI94 V-O or its equivalent), black • **Dimensions (W × H × D):** 215 × 134 × 89mm • **Weight:** 655g • **Applicable Panel:** CP-70 series panel (option): CP-73, CP-77

CM-960 (6W)



- **Rated Input:** 6W • **Rated Impedance:** 1.7kΩ(6W), 3.3kΩ(3W), (6.7kΩ(1.5W), 13kΩ(0.8W)): Internal wiring must be changed) • **Sound Pressure Level:** 92dB (1W, 1m) • **Frequency Response:** 100-12,000Hz • **Speaker:** 16cm dynamic cone type speaker • **Dimensions for Fixing Hole:** ø200mm (mounting hole) × 50 (ceiling thickness) mm • **Speaker Mounting Method:** spring catch • **Applicable Cables:** 600V Vinyl-insulated cable (IV wire or HIV wire), Solid copper wire; ø0.8~ø1.2mm, 7-core twisted copper wire; 0.75-1.25mm² • **Connection:** Push-in connector (Bridging and branch connections possible) • **Finish:** Grill; Fire-resistant, high-impact styren resin (resin material grade: UI94 V-O or its equivalent), black • **Dimensions (W × H × D):** 230 × 174 × 106mm • **Weight:** 850g • **Applicable Panel:** CP-90 series panel (option): CP-93, CP-97

CP-73/77

Front Grille for CM-76



- **Speaker Mounting Method:** spring catch
- **Dimensions:** ø180 × 11 (exposed section)+ 5.5mm
- **Weight:** 70g • **Finish:** frame; ABS resin, off-white, net; aluminum, off-white, paint (CP-73)/frame; metal, off-white, net; aluminum, off-white, paint (CP-77)

CP-93/97

Front Grille for CM-96



- **Speaker Mounting Method:** spring catch
- **Dimensions:** ø230 × 12 (exposed section)+ 6mm
- **Weight:** 100g • **Finish:** frame; ABS resin, off-white, net; aluminum, off-white, paint (CP-93)/frame; metal, off-white, net; aluminum, off-white, paint (CP-97)

Installation of the 18cm Baffle Series ceiling speakers marked -□- is simple and quick spring-catch installation. Just follow these 6 easy-to-understand steps.



Push up installation fitting and pierce ceiling with them.

Rotate fitting so scribes cut 20mm/dia. hole in ceiling.

Place fitting in hole and secure it with screws in the two ceiling clamps.

Secure one speaker spring to fitting and connect input cables to speaker terminals.

Secure second speaker to installation fitting.

Force of springs will keep speaker in place.

Column Speakers

Wide Range Speakers

Surface-mounting Type Ceiling Speaker

PC-2668 (6W) -T-



- **Rated Input:** 6W (100V line)/3W (70V line) • **Rated Impedance:** 100V line; 1.7k ohms (6W), 3.3k ohms (3W), 6.7k ohms (1.5W), 13k ohms (0.8W)/70V line; 1.7k ohms (3W), 3.3k ohms (1.5W), 6.7k ohms (0.8W), 13k ohms (0.4W) • **Frequency Response:** 100~16,000Hz • **Speaker Component:** 12cm dynamic cone-type speaker
- **Speaker Mounting Method:** Spring catch • **Applicable Cables:** 600V vinyl-insulated cable (1V wire or HIV wire)/Solid copper wire; $\phi 0.8$ ~ $\phi 1.2$ mm/7-core twisted copper wire; 0.75~1.25mm² • **Connection:** Push-in connector (bridging terminal-2 branch type) • **Sound Pressure Level:** 90dBW/m, 330~3,300Hz pink noise • **Dimensions:** $\phi 260 \times 92$ (exposed section)+110mm • **Weight:** 650g (bracket excluded) • **Finish:** ABS-resin, Off-white

*RAL 9010

Splashproof Ceiling Speakers

PC-3CL (3W)

(For Clean Rooms & Steam Sauna Rooms)



- **Rated Input:** 3W, 1W • **Rated Impedance:** 3.3k ohms (3W), 10k ohms (1W) • **Sound Pressure Level:** 87dB (1W, 1m) • **Frequency Response:** 150-20,000Hz
- **Chemical Resistance:** Resistant to formalin and iodine solution • **Ambient Temperature:** -20°C to +60°C
- **Fixing Hole Dimensions:** $\phi 100$ mm, ceiling thickness; 5mm • **Dimensions:** $\phi 139 \times 10$ (exposed section)+94.5mm • **Weight:** 550g • **Finish:** Panel; alloy-coated ABS resin/Enclosure; ABS resin/Punching net; stainless steel (SUS304)

PC-3WR (3W)

(For Shower Rooms & Indoor Pool)



- **Rated Input:** 3W, 1W • **Rated Impedance:** 3.3k ohms (3W), 10k ohms (1W) • **Sound Pressure Level:** 88dB (1W, 1m) • **Frequency Response:** 180-20,000Hz
- **Ambient Temperature:** -10°C to +50°C • **Fixing Hole Dimensions:** $\phi 150$ mm, ceiling thickness; up to 50mm
- **Dimensions:** $\phi 180 \times 10$ (exposed section)+110mm • **Weight:** 700g • **Finish:** Frame and case; ABS resin, Off-white/Punching net; stainless steel

Column Speakers

Metal Case Type

(Splashproof—For Use Under Roof Eaves)



TZ-105 (10W)

- **Input:** Rated 10W, max. 15W • **Rated Impedance:** 1k ohm (10W), 2k ohms (5W) • **Frequency Response:** 150~10,000Hz • **Sound Pressure Level:** 90dB (1W, 1m)
- **Water Resistant:** IP-X3 equivalent • **Dimensions (W x H x D):** 167 x 335 x 141mm • **Weight:** 3.4kg (unit only), 4kg (including mounting bracket) • **Speaker Component:** 12cm dynamic cone-type speaker 2 pcs. • **Finish:** Enclosure; Extruded aluminum, Silver gray, fully-glazed, baked paint/Grille; Punched net, black, matte, baked paint/ Mounting bracket; silver gray, fullu-glozed, baked paint

TZ-205 (20W)

- **Input:** Rated 20W, max. 30W • **Rated Impedance:** 500 ohms (20W), 1k ohm (10W) • **Frequency Response:** 150~10,000Hz • **Sound Pressure Level:** 93dB (1W, 1m)
- **Water Resistant:** IP-X3 equivalent • **Dimensions (W x H x D):** 167 x 580 x 141mm • **Weight:** 5.1kg (unit only), 5.7kg (including mounting bracket) • **Speaker Component:** 12cm dynamic cone-type speaker 4 pcs. • **Finish:** Enclosure; Extruded aluminum, Silver gray, fully-glazed, baked paint/Grille; Punched net, black, matte, baked paint/ Mounting bracket; silver gray, fullu-glozed, baked paint

TZ-301 (30W)

- **Input:** Rated 30W, max. 45W • **Rated Impedance:** 330 ohms (30W), 670 ohms (15W) • **Frequency Response:** 160~10,000Hz • **Sound Pressure Level:** 100dB (1W, 1m)
- **Dimensions (W x H x D):** 167 x 1,256 x 141mm
- **Weight:** 12.2kg (unit only), 12.8kg (including mounting bracket) • **Speaker Component:** 12.7 x 17.8cm oval shape dynamic cone-type speaker 6 pcs. • **Finish:** Enclosure; Extruded aluminum, Silver gray, fully-glazed, baked paint/Grille; Punched net, black, matte, baked paint/ Mounting bracket; silver gray, fullu-glozed, baked paint

Accessories

Speaker Mounting Brackets

Outdoor use

YS-301

For TZ-105/205/301



Wide Range Weatherproof Speakers

CS-64 (6W)



- **Rated Input:** 6W • **Rated Impedance:** 100 V line; 1.7k Ω (6W), 3.3k Ω (3W), 10k Ω (1W)/70 V line; 830 Ω (6W), 1.7k Ω (3W), 3.3k Ω (1.5W), 10k Ω (0.5W) • **Sound Pressure Level:** 96dB (1W, 1m) • **Frequency Response:** 130~13,000Hz • **Speaker Component:** 12cm cone-type dynamic speaker (treated for splash proof) • **Speaker Code:** 2-core cabtyre cable with diameter of 6mm • **Finish:** Horn, cover; ABS resin, off-white, paint/Bracket; Stainless steel/Punched net; Surface treated steel plate, dark-gray, powder coating/ Screw; Stainless steel • **Dimensions:** 233 (W) x 224 (H) x 208 (D)mm • **Weight:** 1.5kg

CS-154 (15W)



- **Rated Input:** 15W • **Rated Impedance:** 100 V line; 670 Ω (15W), 1k Ω (10W), 2k Ω (5W), 70 V line; 330 Ω (15W), 670 Ω (7.5W), 1k Ω (5W), 2k Ω (2.5W) • **Sound Pressure Level:** 97dB (1W, 1m) • **Frequency Response:** 150~15,000Hz • **Speaker Component:** 12cm cone-type dynamic speaker (treated for splash proof) • **Horizontal Directivity:** Constant directivity horn 90° ($\pm 45^\circ$ horizontal from front axis)/Over 93dB (1W, 1m), 3kHz at $\pm 45^\circ$ • **Speaker Code:** 2-core cabtyre cable with diameter of 6mm • **Finish:** Horn, cover; ABS resin, off-white, paint/Bracket; Stainless steel/Net; Aluminum, gray, paint/Screw; Stainless steel
- **Dimensions:** 366 (W) x 230 (H) x 272 (D)mm
- **Weight:** 2.8kg

CS-304 (30W)



- **Rated Input:** 30W • **Rated Impedance:** 100 V line; 330 Ω (30W), 500 Ω (20W), 1k Ω (10W)/70 V line; 170 Ω (30W), 330 Ω (15W), 500 Ω (10W), 1k Ω (5W) • **Sound Pressure Level:** 98dB (1W, 1m) • **Frequency Response:** 120~15,000Hz • **Speaker Component:** 12cm cone-type dynamic speaker (treated for splash proof) • **Horizontal Directivity:** Constant directivity horn 90° ($\pm 45^\circ$ horizontal from front axis)/Over 93dB (1W, 1m), 3kHz at $\pm 45^\circ$ • **Speaker Code:** 2-core cabtyre cable with diameter of 6mm • **Finish:** Horn, cover; ABS resin, off-white, paint/Bracket; Stainless steel/Net; Aluminum, gray, paint/Screw; Stainless steel
- **Dimensions:** 366 (W) x 230 (H) x 272 (D)mm
- **Weight:** 3.1kg

Column Speaker Directivity

Column speakers are mounted vertically, so they disperse the sound evenly and widely over the audience.

• Column speaker directivity



• Ordinary speaker directivity



Interior Design Speakers

Pendent Speakers

PE-84 (8W)
PE-164 (16W)



- **Input:** PE-84: Rated 8W, max. 12W/PE-164: Rated 16W, max. 24W • **Input Impedance:** PE-84: 310 ohms, 625 ohms, 1.25k ohms, 2.5k ohms, 5k ohms/ PE-164: 155 ohms, 310 ohms, 625 ohms, 1.25k ohms, 2.5k ohms • **Frequency Response:** 160 – 20,000Hz • **Sound Pressure Level:** 99dB (1W, 1m) • **Dimensions:** 458ømm x 245(D)mm • **Weight:** PE-84: 2.7kg/PE-164: 3.0kg • **Speaker Component:** 16cm mechanical 2-way speaker • **Color:** Horn, Cover; Gray, Munsell 5G 3/1 approx./Case; Ivory, Munsell 5Y 8/1 approx.

Pendent Ball Speakers

PE-63B/63W (6W)
PE-123B/123W (12W)



PE-62B/62W

- **Input:** Rated 6W, max. 9W (25V; 1.5W rated, 2.3W max.)
- **Input Impedance:** 100V; 1.7k ohms, 3.3k ohms, 6.7k ohms/70V; 830 ohms, 1.7k ohms, 3.3k ohms, 6.7 ohms/50V; 420 ohms, 830 ohms, 1.7k ohms, 3.3k ohms, 6.7k ohms/25V; 420 ohms, 830 ohms, 1.7k ohms, 3.3k ohms, 6.7k ohms • **Frequency Response:** 150–10,000Hz
- **Sound Pressure Level:** Input 1W, 1m; 87dB/Input 6W, 1m/95dB • **Coverage Angle:** 220° • **Dimensions (W x H x D):** 201ømm • **Weight:** 1.2kg • **Cord Length:** Max. 2.1m • **Speaker Component:** 12cm dynamic speaker • **Color:** PE-63B; Black/PE-63W; Off-white

PE-122B/122W (12W)

- **Input:** Rated 12W, max. 18W (25V; 3W rated, 4.5W max.)
- **Input Impedance:** 100V; 830 ohms, 1.7k ohms, 3.3k ohms/70V; 420 ohms, 830 ohms, 1.7k ohms, 3.3k ohms/50V; 210 ohms, 420 ohms, 830 ohms, 1.7k ohms, 3.3k ohms/25V; 210 ohms, 420 ohms, 830 ohms, 1.7k ohms, 3.3k ohms • **Frequency Response:** 150–10,000Hz
- **Sound Pressure Level:** Input 1W, 1m; 87dB/Input 12W, 1m/98dB • **Coverage Angle:** 220° • **Dimensions (W x H x D):** 201ømm • **Weight:** 1.5kg • **Cord Length:** Max. 2.1m • **Speaker Component:** 12cm dynamic speaker • **Color:** PE-123B; Black/PE-123W; White

Lamp Speakers

LS-300B/300W (3W)
LS-500B/500W (5W)



LS-300B/300W

- **Input:** Rated 3W, max. 4.5W • **Input Impedance:** 3.3k ohms (3W), 10k ohms (1W) • **Frequency Response:** 300–16,000Hz • **Sound Pressure Level:** At 1W; 86dB at 1m/At Rated Input; 90.8dB at 1m • **Dimensions:** 95ømm x 128mm (G95 lamp type) • **Weight:** 360g • **Speaker Component:** 77mm dia. dynamic type • **Color:** Case; Black, Munsell N 1.2 approx. (LS-300B), Ivory, Munsell 7.5Y 9/1 approx. (LS-300W)/Net; Black (LS-300B), Gray (LS-300W)

LS-500B/500W

- **Input:** Rated 5W, max. 7.5W • **Input Impedance:** 2k ohms (7W), 3.3k ohms (3W) • **Frequency Response:** 200–20,000Hz • **Sound Pressure Level:** At 1W; 85dB at 1m/At Rated Input; 92dB at 1m • **Dimensions:** 125ømm x 168mm (G125 lamp type) • **Weight:** 580g • **Speaker Component:** 77mm dia. dynamic type • **Color:** Case; Black, Munsell N 1.2 approx. (LS-500B), Ivory, Munsell 7.5Y 9/1 approx. (LS-500W)/Net; Black (LS-500B), Gray (LS-500W)

LS-10 (10W)
Spotlight-Shaped Speaker



- **Enclosure:** Sealed type • **Speaker Component:** 77mm dynamic type • **Impedance:** 16 ohms • **Sensitivity:** 83dB/W/m • **Frequency Response:** 150–15,000Hz • **Power Handling Capacity:** Continuous Pink noise; 10W/Continuous Program; 30W/Instantaneous Peak; 100W
- **Operating Temperature Range:** -20~+55°C
- **Dimensions:** 125 dia. x 135mm(D)mm • **Weight:** 500g
- **Finish:** ABS resin A coated

Corner Speakers

PS-16BM/16WM
Full-Range Speakers



- **Enclosure:** Full range unit, bass-reflex type • **Rated Input Power:** 10W (continuous program input: 45W for low-impedance connection) • **Impedance:** 1k ohm (10W), 2k ohms (5W), 3.3k ohms (3W), 8 ohms (low-impedance connection) • **Output Sound Pressure Level:** 89dB (1W/1m) • **Frequency Response:** 125 – 18,000Hz • **Woofer:** 10cm cone speaker • **Dimensions (W x H x D):** 220 x 160 x 130mm • **Weight:** 1.5kg
- **Materials:** Case; Wood/Punched Grille; Steel sheet
- **Finish:** Case; Polyurethane paint (PS-16BM; Black/PS-16WM; White)/Punched Grille; Acrylic paint (PS-16BM; Black/PS-16WM; White)

PS-32BM/32WM
2-Way Speakers



- **Enclosure:** 2-Way bass-reflex type • **Rated Input Power:** 10W (continuous program input: 45W for low-impedance connection) • **Impedance:** 1k ohm (10W), 2k ohms (5W), 3.3k ohms (3W), 8 ohms (low-impedance connection) • **Output Sound Pressure Level:** 90dB (1W/1m) • **Frequency Response:** 100 – 20,000Hz
- **Crossover Frequencies:** 6,000Hz • **Woofer:** 10cm cone speaker • **Tweeter:** 2cm film tweeter • **Dimensions (W x H x D):** 220 x 320 x 130mm • **Weight:** 2.6kg
- **Materials:** Case; Wood/Punched Grille; Steel sheet
- **Finish:** Case; Polyurethane paint (PS-32BM; Black/PS-32WM; White)/Punched Grille; Acrylic paint (PS-32BM; Black/PS-32WM; White)

Projection Speakers

PJ-100W (10W)



- **Input Power:** 10W • **Impedance:** 50V line; 250 ohms (10W), 500 ohms (5W), 1k ohm (2.5W), 2k ohms (1.25W), 4k ohms (0.63W)/70V line; 500 ohms (10W), 1k ohm (5W), 2k ohms (2.5W), 4k ohms (1.25W)/100V line; 1k ohm (10W), 2k ohms (5W), 4k ohms (2.5W) • **Pre-set Impedance:** 1k ohm • **S.P.L. (at 1kHz):** 92dB/W/m
- **Speaker Diameter:** 12cm • **Frequency Response:** 65 – 15,000Hz • **Dimensions (W × H × D):** 160 × 200 × 195mm
- **Weight:** 1.8kg • **Cabinet:** ABS resin • **Color:** Off-white

PJ-200W (20W)



- **Input Power:** 20W • **Impedance:** 50V line; 125 ohms (20W), 250 ohms (10W), 500 ohms (5W), 1k ohm (2.5W), 2k ohms (1.25W)/70V line; 250 ohms (20W), 500 ohms (10W), 1k ohm (2.5W), 2k ohms (1.25W)/100V line; 500 ohms (20W), 1k ohm (10W), 2k ohms (5W) • **Pre-set Impedance:** 500 ohms • **S.P.L. (at 1kHz):** 95dB/W/m
- **Speaker Diameter:** 16cm • **Frequency Response:** 50 – 20,000Hz • **Dimensions (W × H × D):** 200 × 255 × 250mm
- **Weight:** 2.5kg • **Cabinet:** ABS resin • **Color:** Off-white

Wall Flush-Mount Speakers

PC-391/391T (3W)



- **Input:** Rated 3W, max. 4.5W • **Input Impedance:** 3.3k ohms • **Frequency Response:** 150Hz – 15,000Hz
- **Sound Pressure Level:** Input 1W, 1m; 86dB/Input 3W, 1m; 90.7dB • **Coverage Angle:** 90° • **Dimensions (W × H):** 162 × 115mm • **Weight:** 600g • **Speaker Component:** 77mm dynamic cone type speaker • **Finish:** Baffle: Stainless steel, Aluminum silver • **Attenuation*:** OFF 1...12dB, 2...6dB, 3...0dB • **Applicable Back Box:** JIS 3-unit

* The model with "T" has an attenuator.

Back Boxes for PC-391/391T

YC-150 Flush-Mounted Type



- **Finish:** Zinc-plating • **Weight:** 0.7kg

YC-150E Flush-Mounted Type



- **Finish:** Heavy chrome plating • **Weight:** 0.41kg

YS-13A Surface-Mounted Type



- **Finish:** Beige melamine frosted coating • **Weight:** 0.55kg

Swivel Bracket YS-151S



- For SC-610, SC-610M, SC-615, SC-615M, SC-630 and SC-630M.
- Can be swiveled 360° horizontally and 180° vertically.
- **Dimensions:** 95.5(H) × 72mm • **Weight:** 0.43kg
- **Finish:** Zinc, Black, paint

Mobile Mounting Brackets

B-1

For Single Squa
Speaker with Inj
Below 15W



B-2

For 2 Trumpet
Speakers



B-8

For 1 or 2 Square
Speakers



B-9

For TC-10P



Attenuators

AT-063P/303P/603P



- **Input Range:** AT-063P; 0.5W–6W/AT303P; 0.5W–30W/AT-603P; 0.5W–60W • **Attenuation:** 5 steps (0dB, –6dB, –12dB, –18dB, OFF) • **Usable Cable:** 600V vinyl-insulated cable (Indoor vinyl or heat-resistant indoor vinyl cable)/Solid Cable; $\varnothing 0.8\sim\varnothing 1.2\text{mm}$ /Stranded Cable (7 cores); $0.75\sim 1.25\text{ mm}^2$ • **Terminal:** Push-in connector (bridging terminal) • **Finish:** Knob/Panel/Plate: ABS resin, Milk white/Case: ABS resin, Black

ATT-1 (1W), ATT-2 (2W), ATT-3 (3W)

Mount attenuator in
opening in 3 - 12mm
thick cabinet wall.



- ATT-1: 1W
- ATT-2: 2W
- ATT-3: 3W

Speaker Connectors

YS-4CF/4CM

- **YS-4CF:**
XLR-4-31-F77
Connector/
YS-4CM:
XLR-4-32-F-77
Connector



YS-4CF

- **Connector:** XLR-4-31-F77 • **Current Capacity:** 10A (AC) • **Usable Cable:** 600V vinyl-installed cable with diameter of 0.8~1.6mm or sectional area of 0.9~2.0mm²
- **Usable Plate:** YP-1AF • **Usable Plug:** XLR-4-12C
- **Finish:** Cover; ABS resin (Off-white)/Frame; Steel plate (t1.2) • **Dimensions (W × H × D):** 45 × 110 × 53mm
- **Weight:** 950g

YS-4CM

- **Connector:** XLR-4-32-F77 • **Current Capacity:** 10A (AC) • **Usable Cable:** 600V vinyl-installed cable with diameter of 0.8~1.6mm or sectional area of 0.9~2.0mm²
- **Usable Plate:** YP-1AF • **Usable Plug:** XLR-4-11C
- **Finish:** Cover; ABS resin (Off-white)/Frame; Steel plate (t1.2) • **Dimensions (W × H × D):** 45 × 110 × 53mm
- **Weight:** 800g

Plate

YP-1AF

- Cover plate for YS-4CF and YS-4CM.



- **Finish:** Aluminum hairline • **Dimensions (W × H × D):** 70 × 120 × 6mm • **Weight:** 25g

Blank Plate

YP-1BF

- Cover plate.



- **Finish:** Aluminum hairline • **Dimensions (W × H × D):** 70 × 120 × 6mm • **Weight:** 50g

Wall Mounting Boxes

YC-301

1-Gang Flush-Mounting Back Box



- **Finish:** SPHC, MFAn4 (glazed chromate)
- **Dimensions (W × H × D):** 54 × 102 × 35mm
- **Weight:** 125g

YS-11A

Surface-Mounting Back Box



- **Finish:** High-impact sterol resin, Milky white
- **Dimensions (W × H × D):** 70 × 120 × 40mm
- **Weight:** 60g

Impedance Meter

ZM-104

Impedance Meter



- Range × 1: 5Ω~1kΩ
- Range × 10: 50Ω~10kΩ
- Range × 100: 500Ω~100kΩ



Wireless Microphone Systems

Acclaimed for its industry-leading advances in wireless microphone technology, TOA is constantly refining and improving products and performance in this category and establishing a new standard of excellence. The new range of wireless microphone systems incorporate recent improvements in PLL synthesis technology achieved by TOA. A full range of components to fit different configuration requirements and budgets are offered for both UHF and VHF applications.

TOA's wireless microphones are available in handheld, headset and lavalier types. Tuners feature increased frequency ranges and several types including rackmount, portable and 2-channel. Ancillary equipment includes power/antenna distributors as well as antennas and mounting hardware. Thanks to the proprietary TOA Space Diversity technology and algorithms utilized in the tuners, constant coverage is maintained with simpler circuitry so that reliability is

improved. Related to the wireless category are lightweight, very portable meeting amplifiers available in UHF and VHF versions and with built-in cassette recorders. They are ideal for extending the scope of wireless microphones and interface easily with other TOA wireless products to enable versatile wireless systems to be easily configured.

Also to be found in this category is the innovative Wireless Guide System. It has been expressly designed to facilitate tour guidance in various environments with noise levels ranging from loud such as factories to quiet such as museums. This system is also ideal for simultaneous interpreting applications as it enables five different languages to be simultaneously processed. The Wireless Guide System is composed of portable transmitters and receivers, three different types of microphones, ear-suspension earphones as well as a desktop transmitter.

UHF Wireless Systems

WM-4200

UHF Hand-held (Vocal) Wireless Microphone



- **Microphone Element:** Dynamic microphone unit; Cardioid • **Emission:** F3E • **Frequency Range:** 690 – 865MHz, UHF*1 • **Channel Selectable:** 64 Selectable frequencies (international may vary)*3 • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 145dB SPL • **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9V × 1) • **Battery Life:** 10 hours (alkaline) • **Indication:** Power/Battery indicator (common use) • **Antenna:** 1/4 λ helical antenna • **Operating Temperature:** –10°C to +50°C • **Finish:** Resin, coating (change other's) • **Dimensions:** ø52.2 × 279.4 mm • **Weight:** 300g (with battery) • **Accessory:** Stand adapter × 1, Screwdriver × 1, Storage case × 1

WM-4210

UHF Hand-held (Vocal) Wireless Microphone



- **Microphone Element:** Dynamic microphone unit, Cardioid • **Emission:** F3E • **Frequency Range:** 690–865MHz, UHF*1 • **Channel Selectable:** 16CH*3 • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 130dB SPL • **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9V × 1) • **Battery Life:** 10hours (alkaline) • **Indication:** Power/Battery indicator • **Antenna:** Internal antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating (change other's) • **Dimensions:** ø50 × 235.2mm • **Weight:** 250g (with battery) • **Accessory:** Stand adapter × 1, Screwdriver × 1, Storage case × 1

WM-4220

UHF Hand-held (Speech) Wireless Microphone



- **Microphone Element:** Electret condenser unit, Cardioid • **Emission:** F3E • **Frequency Range:** 690–865MHz, UHF*1 • **Channel Selectable:** 16CH*3 • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 125dB SPL • **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9V × 1) • **Battery Life:** 10hours (alkaline) • **Indication:** Power/Battery indicator • **Antenna:** Internal antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating (change other's) • **Dimensions:** ø45 × 235.2mm • **Weight:** 250g (with battery) • **Accessory:** Stand adapter × 1, Screwdriver × 1, Storage case × 1

WM-4300

UHF Lavalier Wireless Microphone



- **Emission:** F3E • **Frequency Range:** 690–865MHz, UHF*1 • **Channel Selectable:** 64 Selectable frequencies (international may vary)*3 • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 120dB SPL • **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9 V × 1) • **Battery Life:** 10hours (alkaline) • **Indication:** Power/Battery indicator (common use) • **Antenna:** 1/4 λ helical antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating • **Dimensions(W × H × D):** 62 × 142 × 32mm • **Weight:** 135g (with battery) • **Accessory:** Screwdriver × 1, Storage case × 1
- Microphone unit**
 - **Microphone Element:** Electret condenser microphone, Cardioid • **Power Requirement:** DC (supplied from lavalier pack) • **Connector:** TA-4 (XLR-type)

WM-4310

UHF Lavalier Wireless Microphone



- **Emission:** F3E • **Frequency Range:** 690–865MHz, UHF*1 • **Channel Selectable:** 16CH*3 • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 120dB SPL • **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9 V × 1) • **Battery Life:** 10hours (alkaline) • **Indication:** Power/Battery indicator (common use) • **Antenna:** 1/4 λ helical antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating • **Dimensions(W × H × D):** 62 × 142 × 32mm • **Weight:** 135g (with battery) • **Accessory:** Screwdriver × 1, Storage case × 1
- Microphone unit**
 - **Microphone Element:** Electret condenser microphone, Cardioid • **Power Requirement:** DC (supplied from lavalier pack) • **Connector:** ø3.5 plug (EIAJ RC701)

WM-4310H

UHF Headset Wireless Microphone



- **Emission:** F3E • **Frequency Range:** 690–865MHz, UHF*1 • **Channel Selectable:** 16CH*3 • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 120dB SPL • **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9 V × 1) • **Battery Life:** 10hours (alkaline) • **Indication:** Power/Battery indicator (common use) • **Antenna:** 1/4 λ helical antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating • **Dimensions(W × H × D):** 62 × 142 × 32mm • **Weight:** 135g (with battery) • **Accessory:** Screwdriver × 1
- Microphone unit**
 - **Microphone Element:** Electret condenser microphone, Cardioid • **Power Requirement:** DC (supplied from lavalier pack) • **Connector:** ø3.5 plug (EIAJ RC701)

WM-4310A

UHF Headset (Aerobics) Wireless Microphone



- **Emission:** F3E • **Frequency Range:** 690–865MHz, UHF*1 • **Channel Selectable:** 16CH*3 • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 120dB SPL • **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9 V × 1) • **Battery Life:** 10hours (alkaline) • **Indication:** Power/Battery indicator (common use) • **Antenna:** 1/4 λ helical antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating • **Dimensions(W × H × D):** 62 × 142 × 32mm • **Weight:** 135g (with battery) • **Accessory:** Waist pouch × 1, Screwdriver × 1
- Microphone unit**
 - **Microphone Element:** Electret condenser microphone, Cardioid • **Power Requirement:** DC (supplied from lavalier pack) • **Connector:** ø3.5 plug (EIAJ RC701)

WH-4000P

Waist Pouch



WT-4800

UHF Wireless Tuner



- **Power Requirement:** AC mains • **Power Consumption:** 250mA (12V DC) • **Receiving Frequency:** 690–830MHz, UHF*1 • **Channel Selectable:** 64 Selectable frequencies*3 • **Receiving System:** Double super-heterodyne • **Diversity System:** Space diversity*4 • **Mixing Input:** –20 dB², 10kΩ • **Antenna Input:** 75Ω, BNC (phantom powering for antenna) 9V DC, 30mA (max) • **Antenna Output:** 75Ω, BNC (Gain 0dB) • **Receiving Sensitivity:** Over 80dB, S/N ratio (20dBμV input, 40kHz deviation) • **Squelch Sensitivity:** 18 – 40dBμV variable • **Squelch System:** Using together of noise SQ, carrier SQ and tone SQ • **Tone Frequency:** 32.768kHz • **Indication:** Audio (11 step), RF (11step), ANT A/B, Audio (peak) • **Channel Check:** Usable frequencies scanning • **Digital Control I/O:** Usable frequencies reading, frequencies input • **Audio Output:** Phone jack (unbalanced), XLR-3-31 type connector (balanced) • **Cascade input:** Phone jack (unbalanced) • **S/N Ratio:** Over 110dB (A-weight, balanced output) • **Harmonic Distortion:** Under 1% • **Frequency Response:** 100–12,000Hz, ±3dB • **Other Function:** Frequency select by PC, channel • **Operating Temperature:** –10°C to +50°C • **Finish:** Resin, black • **Dimensions (W × H × D):** 210 × 44.2 × 181mm • **Weight:** 700 g • **Accessory:** AC-DC adapter × 1 • **Option:** Mounting bracket kit:MB-WT3 (for rack mounting one WT-4800 unit)/MB-WT4 (for rack mounting two WT-4800 units)

WT-4810 UHF Wireless Tuner



- **Power Requirement:** AC mains • **Power Consumption:** 130mA (12V DC) • **Receiving Frequency:** 690–830MHz, UHF*1 • **Channel Selectable:** 16CH*3 • **Receiving System:** Double super-heterodyne • **Diversity System:** Space diversity*4 • **Mixing Output:** MIC: –60 dB*/LINE: –20 dB*2, 600Ω • **Mixing Input:** –20dB*2, 10 kΩ
- **Antenna:** Rod antenna • **Receiving Sensitivity:** Over 80dB, S/N ratio(20dBμV input, 40kHz deviation)
- **Squelch Sensitivity:** 18–40 dBμV variable • **Squelch System:** Using together of noise SQ and carrier SQ
- **Audio Output:** Phone jack (unbalanced), XLR-3-32 type connector (balanced) • **Cascade Input:** Phone jack (unbalanced) • **S/N Ratio:** Over 104dB (A-weight, balanced output) • **Harmonic Distortion:** Under 1%
- **Frequency Response:** 100 – 12,000Hz, ±3dB
- **Operating Temperature:** –10°C to +50°C • **Finish:** Resin, black • **Dimensions (W × H × D):** 240 × 35 × 110mm • **Weight:** 390g • **Accessory:** AC-DC adapter x 1, Driver for channel changing x 1

WT-4820 UHF Wireless Tuner



- **Power Requirement:** AC mains • **Power Consumption:** 250mA (12V DC when operating with two tuner modules)
- **Receiving Frequency:** 690–870MHz, UHF • **Channel Selectable:** 16CH*3 • **Mixing Input:** –20dB*2, 10kΩ, 1/4" Phone jack • **Antenna Input:** 75Ω, BNC (phantom powering for antenna) 9V DC, 30mA (max) • **Antenna Output:** 75Ω, BNC (Gain 0dB) • **Indication:** ANT A/B, Audio (peak), Power • **Audio Output:** Mixing/Channel 1 (selectable): –20 dB*2 (+6dB*2 Max.), 600Ω unbalanced, phone jack / –14dB*2 (+12dB*2 Max.), 600Ω, balanced XLR-3-31 type connector / Channel 2: –20dB*2 (+6dB*2 Max.), unbalanced 600Ω, 1/4" phone jack • **S/N Ratio:** Over 102dB (A-weight, balanced output) • **Harmonic Distortion:** Under 1% • **Frequency Response:** 50 – 18,000Hz, ±3dB • **Other Function:** Frequency select by PC, channel • **Operating Temperature:** –10°C to +50°C • **Finish:** Resin, black • **Dimensions (W × H × D):** 210 × 44 × 181mm • **Weight:** 770g (without tuner module)
- **Accessory:** Rod antenna x 2, Rubber foot x 4 • **Option:** Mounting bracket kit: MB-WT3 (for rack mounting one WT-4820 unit)/MB-WT4 (for rack mounting two WT-4820 units)

YW-4500 UHF Wireless Antenna



- Dipole ratio relative gain: more than 8dB.
- Wall-mountable.
- **Power Requirement:** 7–12V DC (supplied from amplifier or tuner) • **Current Consumption:** Under 24mA
- **Receiving Frequency:** 680–880MHz, UHF • **Dipole Ratio Relative Gain:** More than 8dB (780MHz)
- **V.S.W.R.:** Less than 3.0 • **Output Impedance:** 75Ω
- **Mounting Hole Pitch:** 83.5mm (dimensions for wiring box) • **Operating Temperature:** –10°C to +50°C
- **Finish:** ABS resin, off-white • **Dimensions (W × H × D):** 105 × 140 × 126mm • **Weight:** 270g

*1 Frequency range dependent on individual country regulatory codes.

*2 0dB = 1 V

*3 A number of channels may vary by area.

*4 Patents pending for TOA Space Diversity Technology.

UHF/VHF Wireless System

WD-4800 Antenna Distributor



- **Power Requirement:** AC mains • **Power Consumption:** 25W • **Frequency Range:** VHF/UHF • **Antenna Input:** 2 input (front x 1, rear x 1), 75Ω, BNC (phantom powering for antenna) • **Antenna Output:** 4 output, 75Ω, BNC • **DC Power Supply:** 4 output, (each output: 13V DC/250mA)
- **Indication:** Power • **Operating Temperature:** –10°C to +50°C • **Finish:** Steel, coating • **Dimensions (W × H × D):** 420 × 44 × 305.5mm • **Weight:** 3.5kg • **Accessory:** DC cable x 4 • **Option:** Rack mounting bracket: MB-15B

VHF Wireless Systems

WM-3210 VHF Hand-held (Vocal) Wireless Microphone



- **Microphone Element:** Dynamic microphone unit, Cardioid • **Emission:** F3E • **Frequency Range:** 169 – 216MHz, VHF*1 • **Channel Selectable:** 6CH • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz
- **Modulation System:** PLL synthesizer • **Maximum Input Level:** 125dB SPL • **Maximum Deviation:** ±40kHz
- **Battery:** 6LR61 (9V x 1) • **Battery Life:** More than 10hours (alkaline) • **Indication:** Power/Battery indicator
- **Antenna:** Internal antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating • **Dimensions:** ø50 × 235.2mm • **Weight:** 250g (with battery)
- **Accessory:** Stand adapter, Screwdriver

WM-3220 VHF Hand-held (Speech) Wireless Microphone



- **Microphone Element:** Electret condenser unit, Cardioid • **Emission:** F3E • **Frequency Range:** 169 – 216MHz, VHF*1 • **Channel Selectable:** 6CH
- **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz • **Modulation System:** PLL synthesizer • **Maximum Input Level:** 120dB SPL
- **Maximum Deviation:** ±40kHz • **Battery:** 6LR61 (9V x 1) • **Battery Life:** More than 10hours (alkaline)
- **Indication:** Power/Battery indicator • **Antenna:** Internal antenna • **Ambient Temperature:** –10°C to +50°C
- **Finish:** Resin, coating • **Dimensions:** ø45 × 235.2mm • **Weight:** 250g (with battery) • **Accessory:** Stand adapter, Screwdriver

WM-3310 VHF Lavalier Wireless Microphone



- **Emission:** F3E • **Frequency Range:** 169 – 216MHz, VHF*1 • **Channel Selectable:** 6CH • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz
- **Modulation System:** PLL synthesizer • **Maximum Input Level:** 120dB SPL • **Maximum Deviation:** ±40kHz
- **Battery:** 6LR61 (9V x 1) • **Battery Life:** More than 10hours (alkaline) • **Indication:** Power/Battery indicator
- **Antenna:** 1/4 λ wire antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating • **Dimensions (W × H × D):** 62 × 142 × 32mm • **Weight:** 135g (with battery) • **Accessory:** Screwdriver
- Microphone unit**
- **Microphone Element:** Electret condenser microphone, Cardioid • **Cable Length:** 0.85m • **Power Requirement:** DC (supplied from Transmitter unit) • **Connector:** ø3.5 plug

WM-3310H VHF Headset Wireless Microphone



- **Emission:** F3E • **Frequency Range:** 169 – 216MHz, VHF*1 • **Channel Selectable:** 6CH • **RF Carrier Power:** Less than 50mW • **Tone Frequency:** 32.768kHz
- **Modulation System:** PLL synthesizer • **Maximum Input Level:** 120dB SPL • **Maximum Deviation:** ±40kHz
- **Battery:** 6LR61 (9V x 1) • **Battery Life:** More than 10hours (alkaline) • **Indication:** Power/Battery indicator
- **Antenna:** 1/4 λ wire antenna • **Ambient Temperature:** –10°C to +50°C • **Finish:** Resin, coating • **Dimensions (W × H × D):** 62 × 142 × 32mm • **Weight:** 135g (with battery) • **Accessory:** Screwdriver
- Microphone unit**
- **Microphone Element:** Electret condenser microphone, Cardioid • **Cable Length:** 1.3m • **Power Requirement:** DC (supplied from Transmitter unit) • **Connector:** ø3.5 plug

*1 Frequency range dependent on individual country regulatory codes.

*2 0dB = 1 V

*3 Patents pending for TOA Space Diversity Technology.

WT-3800

VHF Wireless Tuner



- **Power Requirement:** AC mains (using AC-DC adapter)
- **Power Consumption:** 150mA (13.8V DC)
- **Receiving Frequency:** 169 - 216 MHz, UHF^{*1}
- **Channel Selectable:** 6CH
- **Receiving System:** Double super-heterodyne
- **Diversity System:** TOA space diversity^{*3}
- **Output:** MIC: -60 dB^{**2}/LINE: -20dB^{**2}, 600Ω
- **Audio Output:** 1/4" Phone jack (unbalanced), XLR-3-31 type connector (balanced)
- **Mixing Input:** -20 dB^{**2}, 4kΩ, 1/4" Phone jack (unbalanced)
- **Antenna Input:** 75Ω, BNC ((phantom powering for antenna) 9V DC, 30mA (max))
- **Receiving Sensitivity:** Better than 80dB, S/N ratio (20dBμV input, 40kHz deviation)
- **Squelch Sensitivity:** 18-40 dBμV variable
- **Squelch System:** Using together of noise SQ, carrier SQ and tone SQ
- **Tone Frequency:** 32.768kHz
- **Indication:** Audio (signal/peak), ANT A/B, Channel
- **Channel Check:** Usable frequencies scanning
- **S/N Ratio:** Better than 100dB (A-weight, balanced output)
- **Harmonic Distortion:** Less than 1%
- **Frequency Response:** 100 - 12,000Hz, ±3dB
- **Ambient Temperature:** -10°C to +50°C
- **Finish:** Resin, black
- **Dimensions(W × H × D):** 210 × 44.6 × 180mm
- **Weight:** 600g
- **Accessory:** AC-DC adapter
- **Option:** Mounting bracket kit: MB-WT1 (for rack mounting one WT-4800 unit)/MB-WT2 (for rack mounting two WT-4800 units)

WT-3810

VHF Wireless Tuner



- **Power Requirement:** AC mains (using AC-DC adapter)
- **Power Consumption:** 150mA (13.8V DC)
- **Receiving Frequency:** 160 - 216MHz, VHF^{*1}
- **Channel Selectable:** 6CH
- **Receiving System:** Double super-heterodyne
- **Diversity System:** TOA space diversity^{*3}
- **Output:** -20 dB^{**2}, 600Ω
- **Audio Output:** 1/4" Phone jack (unbalanced)
- **Mixing Input:** -20dB^{**2}, 4kΩ, 1/4" Phone jack (unbalanced)
- **Antenna Input:** Rod antenna
- **Receiving Sensitivity:** Better than 80dB, S/N ratio (20dBμV input, 40kHz deviation)
- **Squelch Sensitivity:** 18dBμV
- **Squelch System:** Using together of noise SQ and carrier SQ
- **Indication:** Power, ANT A/B, Audio (peak)
- **S/N Ratio:** Better than 100dB (A-weight, balanced output)
- **Harmonic Distortion:** Less than 1%
- **Frequency Response:** 100 - 12,000Hz, ±3dB
- **Ambient Temperature:** -10°C to +50°C
- **Finish:** Resin, black
- **Dimensions(W × H × D):** 240 × 35 × 110mm
- **Weight:** 380g
- **Accessory:** AC-DC adapter

YW-3500

VHF Wireless Antenna



- **Power Requirement:** 8 - 10V DC (supplied from Antenna Distributor or Tuner)
- **Current Consumption:** Under 24mA
- **Receiving Frequency:** 169 - 216MHz, VHF^{*1}
- **Dipole Ratio Relative:** More than 6dB (including booster amplifier)
- **V.S.W.R.:** Less than 2.6
- **Output Impedance:** 75 Ω
- **Mounting Hole Pitch:** 68.5mm (dimensions for wiring box)
- **Ambient Temperature:** -10°C to +50°C
- **Finish:** Antenna/bracket; ABS resin, off-white
- **Dimensions(W × H × D):** 197 × 850 × 32mm
- **Weight:** 200g

VHF Antenna

YW-3510

- For WT-3800 (2 pieces).



Wireless Meeting Amplifiers

WA-1822

Wireless Meeting Amplifier

WA-1822C

Cassette-Equipped Wireless Meeting Amplifier



- **Power Requirement:** AC mains, 50/60Hz Dry cells-8 pcs. (R20P or D size)
- **Power Consumption:** UK, H: AC: 44W (rated output) / LT, L: AC: 43W (rated output)
- **Rated Output:** AC: 20W (Max. 40W with EXT SP.) / DC: 8W
- **Battery Life:** Dry cell battery: Approx. 12 (WA-1822) hours (WA-1822C 6 hours)
- **Frequency Response:** 70 - 10,000Hz (deviation 3dB)
- **Distortion:** Under 10% (rated output)
- **Input:** Wired mic: -48dB*, 600Ω / AUX: -20dB*, 10kΩ
- **Output:** External Speaker: 8 - 16Ω/over 20W of rated input "Internal speaker and external speaker" or "external speaker only" (selectable) / Line/Rec.: -10dB*, 1kΩ
- **S/N Ratio:** Over 70dB (rated output)
- **Antenna:** Rod antenna
- **Internal Speaker:** 20cm full range speaker + tweeter
- **Operation Temperature:** AC: -10°C to +50°C / DC: 0°C to +40°C
- **Finish:** ABS resin, light gray
- **Dimensions:** 298 (W) × 460 (H) × 200 (D)mm
- **Weight:** WA-1822: 6kg / WA-1822C: 6.7kg
- **Accessory:** Power cord (2m) × 1, Dust cover × 1, Screwdriver × 1

Cassette Deck Section (WA-1822C only)

- **Reproduction System:** Auto-reverse
- **Track System:** 2-track/1 channel (monaural)
- **Usable Tape:** Normal tape
- **Recording Method:** AC bias
- **Erasing Method:** AC erasure
- **Tape Speed:** 4.8cm/sec
- **Wow and flutter:** 0.2% WRMS
- **Fast Forward/Rewind Time:** Approx. 100 sec. (C-60 tape)

* 0dB = 1V

WTU-4800

UHF Wireless Tuner Unit

WTU-3800

VHF Wireless Tuner Unit



- **Power Requirement:** 7 - 12V DC
- **Receiving Frequency:** WTU-4800: 692 - 865MHz, UHF^{*1} / WTU-3800: 160 - 216MHz, VHF^{*1}
- **Channel Selectable:** WTU-4800: 16CH / WTU-3800: 6CH
- **Diversity System:** TOA space diversity^{*3}

^{*1} Frequency range dependent on individual country regulatory codes.

^{**2} 0dB = 1 V

^{*3} Patents pending for TOA Space Diversity Technology.

Wireless Guide Systems

WM-2100

Portable Transmitter



- **Power Requirement:** 1.5 V DC (Battery)
- **Modulation:** Frequency modulation
- **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 - 5,000 Hz (Portable transmitter to Portable receiver)
- **Pre-emphasis:** 50 μs
- **Input Level:** -50 dB* (sensitivity Hi) / -44 dB* (sensitivity Low)
- **Battery Life:** 18 hours (alkaline)
- **Battery:** LR6 (1.5 V) × 1
- **Operation Temperature:** -10°C to +40°C
- **Finish:** Resin, dark gray
- **Dimensions:** 62 (W) × 163.6 (H) × 32.5 (D) mm
- **Weight:** 115 g (battery included)
- **Accessory:** Neck strap ... 1

*0 dB = 0.775 V

WM-2110

Desk-top Transmitter



- **Power Requirement:** 230 V AC, 50 Hz
- **Power Consumption:** 3 W
- **Modulation:** Frequency modulation
- **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 - 6,000 Hz (Desk-top transmitter to Portable receiver)
- **Pre-emphasis:** 50 μs
- **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
- **Operation Temperature:** -10°C to +40°C
- **Finish:** ABS resin, dark gray
- **Dimensions:** 140 (W) × 31 (H) × 119.5 (D) mm
- **Weight:** 270 g
- **Accessory:** AC-DC adapter (1.8 m) ... 1, Screw driver ... 1, 3-pole phone plug cord (2 m) ... 1

*0 dB = 1 V

YP-M101 Tie-clip Microphone



- **Type:** Electret condenser type • **Directivity:** Unidirectional • **Sensitivity:** -46 dB (0 dB = 1 V/Pa, 1 kHz, load: 2 k) • **Maximum Input Level:** 115 dB SPL
- **Terminal:** ø3.5 mm monaural plug • **Finish:** Dark gray
- **Weight:** 20 g (cable included) • **Accessory:** Clip 1

YP-M201 Close-Talking Microphone



- **Type:** Electret condenser type • **Directivity:** Unidirectional • **Sensitivity:** -57 dB (0 dB = 1 V/Pa, 1 kHz, load: 2 k) • **Maximum Input Level:** 115 dB SPL • **Switch:** Press to talk switch (can be locked) • **Terminal:** ø3.5 mm stereo plug • **Finish:** Black • **Weight:** 20 g (cable included)

YP-M301 Headset Microphone



- **Type:** Electret condenser type • **Directivity:** Unidirectional • **Sensitivity:** -41 dB (0 dB = 1 V/Pa, 1 kHz, load: 2 k) • **Maximum Input Level:** 117 dB SPL
- **Terminal:** ø3.5 mm monaural plug • **Finish:** Headband: ABS resin, black • **Weight:** 45 g • **Accessory:** Storage case ... 1, Windscreen ... 2

WT-2100 Portable Receiver



- **Power Source:** 1.5 V DC (Battery) • **Receiving Frequencies:** 470 MHz band (5 ch) (470.075, 470.150, 470.375, 470.625, 470.725 MHz) • **Receiving System:** Double super-heterodyne • **Receiving Sensitivity:** Better than 25 dB, S/N ratio (7 dBμVEMF input, ±1.7kHz deviation) • **Frequency Response:** 200 – 5,000 Hz (Portable transmitter to Portable receiver) 150 – 6,000 Hz (Desk-top transmitter to Portable receiver) • **De-emphasis:** 50 μs • **Output Level:** 4 mW (16 load, 10% distortion)
- **Battery Life:** 18 hours (alkaline) • **Battery:** LR6 (1.5 V) 1 • **Operation Temperature:** -10°C to +40°C
- **Finish:** Resin, dark silver • **Dimensions:** 62 (W) x 163.6 (H) x 32.5 (D) mm • **Weight:** 112 g (battery included)
- **Accessory:** Neck strap ... 1

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

YP-E401 Ear-Suspension Earphone



- **Type:** Dynamic type • **Impedance:** 16 Ω • **Frequency Response:** 300 15,000 Hz • **Rated Sensitivity:** 88 dB (0 dB = 2 X 10⁻⁵ Pa, 1 kHz, 10mW) • **Input:** Max. 50 mW
- **Terminal:** ø3.5 mm monaural plug • **Finish:** Black
- **Weight:** 17 g • **Accessory:** Ear-pad ... 1, Suspension ring* ... 2

*Three different sizes are available for the suspension ring.
L: 68 Å~ 47 mm M: 64 Å~ 45 mm S: 60 Å~ 43 mm

Accessories

Rack Mounting Bracket Kit



MB-WT3

- Two type brackets.
- For rack-mounting one WT-4800, WT-4820 or WT-3800 unit.



MB-WT4

- Bracket (x2) with connector.
- For rack-mounting two WT-4800, WT-4820 or WT-3800 units.

Rack Mounting Bracket



MB-15B

- For rack-mounting one WD-4800 unit.

Charts














This section is a useful reference section that contains Speaker Reference Charts as well as many accessories for versatile speaker mounting and rack-mounting options.





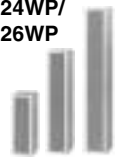








Speaker Mounting Accessories Set-Up Chart

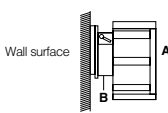
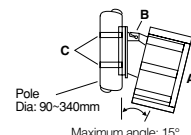
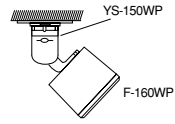
Speakers	FGM Speakers							
	H-1	BS-1030B/W	BS-1110W	BS-1120W	F-160G/W F-160GM/WM	F-240G/W F-240GM/WM	F-10B/W F-10BM/WM	F-777
Installation Configurations								
Ceiling Mounting Bracket		 SP-420 SP-410	 SP-410 WCB-12/12W		 WCB-12/12W HY-333/333B/333W	 CMB-31/31W HY-333/333B/333W	 WCB-12/12W	 HY-777
Wall Mounting Bracket		 WCB-12/12W	 YS-301		 WCB-12/12W HY-W333/W333W	 WCB-31/31W HY-W333/W333W		
Table Mounting Bracket		 TMB-1			 TMB-1		 TMB-1	
Speaker Stand		 ST-16			 ST-16			

















Speakers	General Use Speakers		
	ES-0851	ES-0871	ES-0422/ ES-0424/ ES-0426
Installation Configurations			
Ceiling Mounting Bracket	 HY-0851CL	 HY-C0801 *1	 HY-0871CL
Wall Mounting Bracket	 HY-0851CL	 HY-W0801 *1	 HY-0871WS
Ceiling Pipe Bracket	 HY-B0801 *1	*1: Use with Speaker Mounting Bracket HY-0851ST or HY-0852ST. *2: Use with HY-B0801, HY-C0801, HY-W0801 or Stand ST-32. *3: Use with HY-B0801, HY-C0801 or HY-W0801.	
Speaker Mounting Bracket	 HY-0851ST *2	 HY-0852ST *3	
Speaker Stand	*Use with HY-0851ST. ST-32		

	FB-10	F-333/333G F-333M/ F-333GM
		
		HY-333/333B/ HY-333W
	BY-10	
		HY-W333B/ HY-W333W


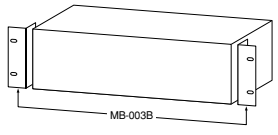


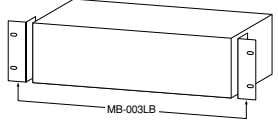

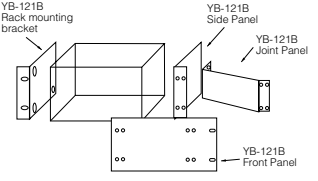
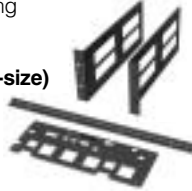
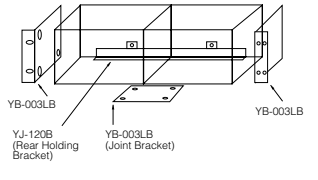
Speakers	SR Speakers						
	SL-122	SL-152	SL-222	F-500SR	F-601SR	F-505G/ F-505W	F-605G/ F-605W
Installation Configurations							
Ceiling Mounting Bracket	*Attaching HY-411 to SL122 and SL152 speakers requires prior drilling of mounting holes in speaker cabinet.						
Wall Mounting Bracket							
							
Speaker Stand							


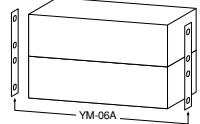
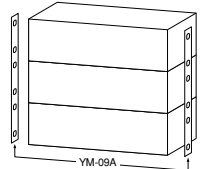
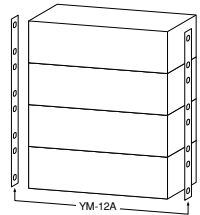
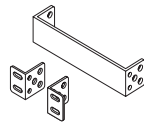
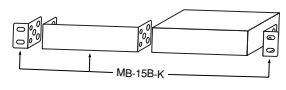
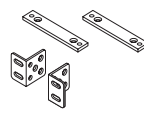
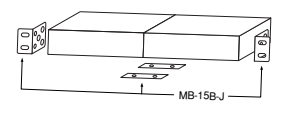
Speakers	Weatherproof Speakers				
	F-505WP/505WP-L	F-605WP/605WP-L	SL-60W/60WH	F-160WP	ES-0422WP/ ES-0424WP/ ES-0426WP
Installation Configurations					
Ceiling Mounting Bracket					
Wall Mounting Bracket					
	YS-500	YS-600	YS-60	HY-412 *Indoor Use	
Pole Mounting Bracket	*For pole-mounted YS-500/600, YS-60 or YS-0421WL installations, YS-60B Wrap-around Band should be used.				
					YS-60B



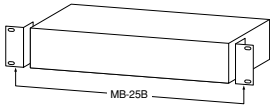











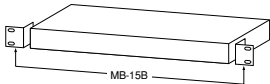

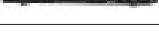




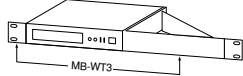






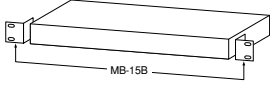
Mounting Brackets			Installation	Ceiling suspension
A	B	C	① Wall mounting Use the YS-60 (optional). 	② Mounting on the pole Use the optional mounting kits YS-60 and YS-60B. 
Main Unit	Wall Mounting	Pole Mounting		
F-505WP/505WP-L	YS-500	YS-500 & YS-60B		
F-605WP/605WP-L	YS-600	YS-600 & YS-60B		
SL-60W/60WH	YS-60	YS-60 & YS-60B	Use the YS-160WP (optional). 	

Speakers	Electronically Controlled Speakers				
	SR-F1B	SR-F09/F09-V1	SR-F09-V2/F09-V3	SR-F05	
Installation Configurations					
Wall Mounting Bracket				 HY-W05	
Ceiling Mounting Bracket				 HY-C05	
Ceiling Pipe (Baton) Bracket				 HY-B05	
Flying Bracket	 AMFS-SRF1-TH Truss Module	 AMFS-1X2-30 Connecting Bar	 AMFS-1X2-SME Shackle Mount	 AMFS-1X2-SB Stacking Bracket	 2.5QRP Quick Release Pin
Stand Mounting Bracket				 HY-S05	
Speaker Stand	 19852 Stand Bracket & 213 Speaker Stand			 ST-32	
Stand Bracket				 YS-B31 *Used with speaker stand having a 38.1mm (1.5") diameter stand pipe.	

Metal Rack-Mount Selection Chart

Mountable Equipment			Rack Mounting Brackets		
Name	Model	Appearance	Appearance, Size and Color	Setting	
V-1000 Series	Mixer Frame	V-1000B	YM-003B (3-size) Color: Black 		
	Spot Announcer	AM-821			
	Power Amplifier	VP-1240B		YM-003LB (3-size) Color: Black 	
		VP-1060B		YB-121B (3-size) Color: Black 	
VP-1120B		When mounting side-by-side YJ-120B and YM-003LB (3-size) Color: Black 			

Mountable Equipment			Stacking Brackets	
Name	Model	Appearance	Appearance, Size and Color	Setting
V-1000 Series	Mixer Frame	V-1000B	YM-06A (2 Components of 3-size) Color: Black YM-09A (3 Components of 3-size) Color: Black YM-12A (4 Components of 3-size) Color: Black 	  
	Spot Announcer	AM-821		
	Power Amplifier	VP-1240B		
Network-Related System	Network Audio Adapter	NX-100	MB-15B-BK (1-size) (Color: Black) 	
			MB-15B-J (1-size) (Color: Black) 	

Mountable Equipment			Rack Mounting Brackets		
	Name	Model	Appearance	Appearance, Size and Color	Setting
900 Series	Mixer Power Amplifier	A-903MK2		MB-25B (2-size) Color: Black 	
		A-906MK2			
		A-912MK2			
	Mixer Preamplifier	M-900MK2			
	Power Amplifier	P-912MK2			
P-924MK2			MB-35B (3-size) Color: Black 		
1700/1800 Series	Mixer Power Amplifier	A-1706		MB-25B (2-size) Color: Black 	
		A-1712			
		A-1724			
		A-1803			
		A-1806			
	A-1812				
Power Amplifier	P-1812				
Digital Announcers & Others	Double Cassette Player	BA-800		MB-15B (1-size) Color: Black 	
	Double Cassette Play Amplifier	BA-803			
		BA-806			
	Program Timer	TT-104B			
	Music Melody Chime Panel	ML-301B			
Wireless	UHF Wireless Tuner	WT-4800		MB-WT3 (1-size) Color: Black 	
		WT-4820			
	VHF Wireless Tuner	WT-3800		MB-WT4 (1-size) Color: Black 	
	Power Antenna Distributor	WD-4800		MB-15B (1-size) Color: Black 	

Speaker Reference Chart

Model	Type	Continuous Power Input	Input Impedance	Freq. Response	Speaker Component	Efficiency (SPL)	Attenuators (Max. cut)	Finish	Grille	Connectors (incl. In/Out)	Other Features
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• SR (Z-Drive) Series Speakers

SR-F1B	2-Way Bass Reflex	360W(Low) 240W(High)	8Ω (low) 16 Ω(high)	70Hz-20kHz (AC-F1's use)	30cm, Compression HF Driver w/60°H x 40°V CD Horn	98dB		FRP, Gray	Removable Punched Metal, Black	Neutrik NL4MPR	APITON Plywood Cabinet									
SR-L1B	Bass Reflex	450W×2	8Ω	35Hz-1kHz	Two 38cm, Bass Reflex Subwoofers w/ Double Magnets	96dB		Plywood, black, paint	Steel plate, black, acrylic paint	Neutrik NL4MP × 2, M5 screw										
SR-F09	2-Way Bass Reflex	600W		70Hz-20kHz (AC-S09's Use)	30cm, Cone Speaker (90°H x 40°V) CD Horn w/Compression Driver	100dB														
SR-F09-V1			900W	4Ω	35Hz-1kHz	38cm, Cone Speaker × 2	96dB													
SR-F09-V2						450W	8Ω	60Hz-18kHz	25cm, Compression Driver (90°H x 40°V) CD Horn	99dB										
SR-F09-V3			600W	8Ω	65Hz-20kHz				38cm, Cone Speaker	93dB										
SR-L09	Bass Reflex	900W				4Ω	35Hz-1kHz	38cm, Cone Speaker × 2	96dB	Epoxy Paint Black	Acrylic Paint Black	Neutrik NL4MP × 2 and Screw Terminal	Medium Density Fiberboard Cabinet							
SR-L05			38cm, Cone Speaker	93dB																
SR-F05	2-Way Bass Reflex	600W	8Ω	60Hz-18kHz	25cm, Compression Driver (90°H x 40°V) CD Horn	99dB		Plywood, black, paint	Steel plate, black, acrylic paint	Neutrik NL4MP × 2										
SR-M05L/R												360W(Low) 240W(High)	8Ω (low) 16 Ω(high)	70Hz-20kHz (AC-M1's use)	30cm, Compression Driver (90°H x 40°V) CD Horn	99dB	Epoxy Paint Black (APITON Plywood Cabinet)	Acrylic Paint Black	Neutrik NL4MP × 2	Bi-amp. Driver with Electronic Control Unit (AC-M1)
SR-M3L/R																				
SR-M1												720W(Low) 240W(High)	45Hz-20kHz (AC-M1's use)	Two 30cm, Compression Driver (90°H x 40°V) CD Horn	102dB					

• ES Series

ES-0851	2-Way Bass Reflex	600W		80Hz-20kHz	25cm Cone Speaker 90°H and 60°V (60°H x 90°V)CD Horn w/Compression Driver	97dB		Plywood, black, urethane paint	Steel plate, black, acrylic paint	Neutrik NL4MP × 2, M5 screw							
ES-0871				70Hz-20kHz	38cm Cone Speaker 90°H and 60°V (60°H x 90°V)CD Horn w/Compression Driver	100dB											
ES-C0651	Sealed	180W	8Ω	80Hz-20kHz	2-Way Coaxial Unit, 25cm Woofer, CD Horn w/Compression Driver(60°H x 60°V)	96dB		Wood, Black	Rolled steel plate, white (option, FG-C0651)	Push Terminals							
ES-0422		240W		120Hz-20kHz	Two 12cm Woofers, CD Horn w/Compression Driver(100°H x 50°V)	91dB											
ES-0424		360W			Four 12cm Woofers, CD Horn w/Compression Driver(100°H x 50°V)	95dB											
ES-0426					Six 12cm Woofers, CD Horn w/Compression Driver(100°H x 50°V)	96dB											
ES-0422WP		Sealed/Weather-Resistant		240W	120Hz-20kHz	Two 12cm Woofers, CD Horn w/Compression Driver(100°H x 50°V)						91dB		Wood FRP Coating Paint, White	Stainless Steel Paint, White	M5 Screw Terminal	Option, MT-S0601 Matching Transformer
ES-0424WP				360W		Four 12cm Woofers, CD Horn w/Compression Driver(100°H x 50°V)						95dB					
ES-0426WP						Six 12cm Woofers, CD Horn w/Compression Driver(100°H x 50°V)						96dB					

• T Series Speakers

T-650	Bass Reflex	360W	8Ω	80Hz-20kHz	Two 25cm Woofers, Two CD Horns w/Compression Driver	100dB		Coniferous Plywood, Urethane Paint, Black	Steel Plate Acrylic Paint, Black	M5 Screw Terminal	Option: MT-S0601 Matching Transformer
T-550	Sealed	180W		100Hz-20kHz	2-Way Coaxial Unit, 25cm Woofer, CD Horn w/Compression Driver	96dB					

• H Series Speakers

H-1	2-Way Bass-Reflex/ Foreground	12W*	4Ω, 16Ω, 100V: 830Ω, 1.7kΩ, 3.3kΩ 70V: 420Ω, 830Ω, 1.7kΩ, 3.3kΩ	120Hz-20kHz	8 x 5cm Woofer, Balanced Dome Tweeter	85dB		Fire-Resistant ABS Resin, White	Rolled Steel Plate, White	Detachable Screw Terminal, 2 each +/-	
H-2				100Hz-20kHz	10cm Woofer, Balanced Dome Tweeter	88dB			Steel Plate, Off-White		
H-2WP									ABS Resin, White		Stainless Steel Off-White
H-3		30W*	8Ω, 16Ω, 100V: 330Ω, 670kΩ, 1.3kΩ 70V: 170Ω, 330Ω, 670Ω, 1.3kΩ	100Hz-20kHz	10cm Woofer x 2, 2.5cm Dome Tweeter	89dB			Fire-Resistant ABS Resin, Off-White		Steel Plate, Off-White
H-3WP									ABS Resin, White		Stainless Steel Off-White
HB-1	Subwoofer	240W	8Ω	45Hz-200Hz	20cm Cone	91dB	Steel plate, Off-White	Punched Net, Off-White			

Notes: *: Rated Input

Model	Type	Continuous Power Input	Input Impedance	Freq. Response	Speaker Component	Efficiency (SPL)	Attenuators (Max. cut)	Finish	Grille	Connectors (incl. In/Out)	Other Features
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• F Series Speakers

F-122C	Bass reflex/ Distributed FGM	120W	100V: 330Ω, 1kΩ, 3.3kΩ, 10kΩ 70V: 170Ω, 330Ω, 1kΩ, 3.3kΩ, 10kΩ 25V: 170Ω, 330Ω, 1kΩ, 3.3kΩ, 10kΩ 16Ω, 8Ω	70 – 20kHz	12cm Cone Speaker	90dB		White	Punched Steel, White	Removable locking connector	Used with AC-120	
F-2352C					Balanced dome tweeter, 12cm Cone Speaker							
F-2322C					12cm Cone Speaker							
F-2852C	Distributed FGM	180W	100V: 170Ω, 330Ω, 670Ω, 3.3kΩ 70V: 83Ω, 170Ω, 330Ω, 670Ω, 3.3kΩ 25V: 83Ω, 170Ω, 330Ω, 670Ω, 3.3kΩ 16Ω, 8Ω	50 – 20kHz	Dome Tweeter, 16cm Cone Speaker	91dB						
F-1522SC		18W	100V: 1.7kΩ, 3.3kΩ 70V: 830Ω, 1.7kΩ, 3.3kΩ 25V: 830Ω, 1.7kΩ, 3.3kΩ, 8Ω, 16Ω	64 – 18kHz	10cm Cone Speaker	88dB				Push-in connector		
F-2352SC	Sealed/ Foreground	45W	8Ω	100Hz-18kHz	10cm Full-Range Speaker in Triangular Corner Enclosure	88dB		Black/White Triangle	Removable Matching Color Jersey	Hardwire	Optional X-former	
F-10B/W											5W*	100V: 3.3kΩ 2kΩ 70V: 1.7kΩ, 1kΩ
F-160G/W	2-Way Bass Reflex/Foreground	150W	8Ω	100Hz-20kHz	13cm Woofer, 3cm Dome Tweeter	91dB		Gray (F-160G/ F-160GM) White (F-160W/ F-160WM)	Punched Metal, Gray (F-160G/ F-160GM) White (F-160W/ F-160WM)	Push Terminals, 2-1/4" Jacks	Built-in Matching Transformer	
F-160GM/ F-160WM	2-Way Bass Reflex	30W*	100V: 330Ω 500Ω, 1kΩ, 2kΩ 70V: 170Ω, 330Ω 500Ω, 1kΩ 2kΩ								Built-in Matching Transformer	
F-240G/W	2-Way Bass Reflex/Foreground	150W	8Ω	65Hz-20kHz	16cm Woofer, 3cm Dome Tweeter	92dB		Gray (F-240G/ F-240GM) White (F-240W/ F-240WM)	Punched Metal, Gray (F-240G/ F-240GM) White (F-240W/ F-240WM)		Built-in Matching Transformer	
F-240GM/ F-240WM	2-Way Bass Reflex	30W*	100V: 330Ω 500Ω, 1kΩ, 2kΩ 70V: 170Ω, 330Ω 500Ω, 1kΩ 2kΩ								Built-in Matching Transformer	
F-500SR	2-Way Bass Reflex	240W	8Ω	70Hz-20kHz	20cm LF Driver, Comp. HF Driver 60°H x 40°V CD Horn	93dB	1HF (15dB)	Polyprop.- Gray	Punching Net	Push Terminals 2- 1/4" Jacks convertible to XLR	CD Horn mountable horiz. or vert., Overload Protected, Plastic Cabinet	
F-505W				60Hz-20kHz	30cm LF Driver, Comp. HF Driver 60°H x 40°V CD Horn	98dB			Punching Net			
F-601SR				360W	60Hz-20kHz	30cm LF Driver, Comp. HF Driver 60°H x 40°V CD Horn			98dB			Punching Net
F-333/ F-333G	2-Way Bass Reflex/Foreground	180W	8Ω	70Hz-20kHz	13cm Woofer, CD Horn with Piezo Driver	90dB		Light Gray (F333/333M) Dark Gray (F333G/ 333GM)	Punched Metal, Grayish Gold	Push Terminals	Built-in Matching Transformer	
F-333M/ F-333MG	2-Way Bass Reflex	30W*	100V: 330Ω 500Ω, 1kΩ, 2kΩ 70V: 170Ω, 330Ω 500Ω, 1kΩ 2kΩ								Built-in Matching Transformer	
F-777	Subwoofer for F-10 Series	240W	8Ω	60Hz-20kHz	20cm Woofer, CD Horn with Compression Driver	93dB		Polypropylene Resin Light Gray	Punched Metal, Black	Detachable Screw Terminals 2 each +/-		
FB-10		60W		40Hz-100kHz	16cm Subwoofer Speaker in Designer Enclosure	83dB						Black Poly
FB-100		Acoustic Super Woofer		450W	35Hz-160kHz	25cm Cone Speaker						94 (88dB)
F-160WP	2-Way Bass Reflex/Weather- Resistant	30W*	100V: 330Ω 500Ω, 1kΩ, 2kΩ 70V: 170Ω, 330Ω 500Ω, 1kΩ 2kΩ	100Hz-20kHz	13cm Woofer, 3cm Dome Tweeter	91dB		Polyprop.- Gray	Punched Metal, Gray			
F-505WP	2-Way Sealed/Weather- Resistant	60W*	83Ω 170Ω 330Ω 670Ω	80Hz-20kHz	20cm, Compression HF Driver w/ 60°H x 40°V CD Horn	93dB		Polyprop.- resin, Ivory	Stainless Steel, Ivory	Pigtail Cable	Overload Protected, Weather- Resistant Cabinet w/Handle	
F-505WP-L		240W	8Ω									
F-605WP		120W*	42Ω 83Ω 170Ω 330Ω									30cm, Compression HF Driver w/ 60°H x 40°V CD Horn
F-605WP-L		360W	8Ω									

Notes: *: Rated Input

Model	Type	Continuous Power Input	Input Impedance	Freq. Response	Speaker Component	Efficiency (SPL)	Attenuators (Max. cut)	Finish	Grille	Connectors (incl. In/Out)	Other Features
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• SL Series Speakers

SL-122	Sealed	240W	8Ω	70Hz-20kHz	30cm Woofer, Decoupled Piezo Tweeter, 90°H x 40°V CD Horn	95dB		Gray Leatherette	Punched Metal Grille, Black	Two Parallel 1/4" Jacks In/Out	Interlock Corners for stacking, Carrying Strap
SL-152						98dB					
SL-222	Sealed Twin Woofers			50Hz-20kHz	30cm Wooferx2, Decoupled Piezo Tweeter, 90°H x 40°V CD Horn	96dB					
SL-122M	Sealed Floor Monitor			70Hz-20kHz	30cm Woofer, Decoupled Piezo Tweeter, 90°H x 40°V CD Horn	95dB					
SL-152M		38cm Woofer, Decoupled Piezo Tweeter, 90°H x 40°V CD Horn	98dB								
SL-60W	2-Way Sealed/Weather-Resistant	240W	100V: 125Ω 250Ω 330Ω 500Ω 1kΩ	50Hz-20kHz	30cm Woofer, Piezo Driver, 90°Hx40°V CD Horn	92dB		Polyethylene, Black	Punched Metal, Black	Pigtail Cable	X-former included
SL-60WH		80W*									

• SM Series Speakers

SM-60	Sealed	210W	8Ω	110Hz-16kHz	Two 12cm Full-Range Drivers	90dB	1 atten. (40dB)	Cast Aluminum, Black	Punched Metal, Black	Two Locking Parallel 1/4" Jacks	160Ω Bridge Out Jack
SM-68				Two 12cm Full-Range Drivers, 4.7cm Cone Tweeter	Bridge Out Jack						
SM-75		25W		110Hz-20kHz	Two 12cm Full-Range Drivers, 5cm Cone Tweeter, 25W Power Amp. Line In, Bridge Out	N/A				XLR 1/4"	2CH Mixer, Tone, Headphone Amp.
SM-25M											

• Personal Monitor

RS-21M	Sealed	100W	8Ω	100Hz-17kHz	12cm Full-Range Cone Driver	88dB		Black Tolex	Jersey, Black	Push-Type Terminals	Lightweight
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• Paging Horn Speakers

SC-610	Reflex, Indoor/Outdoor Use	10W*	8Ω	315Hz-12.5kHz	172 x 126 Reflex Horn with Driver	110dB	Aluminum, Off-White		Terminal	Built-in Transformer
SC-610M			100V: 1kΩ, 2kΩ, 3.3kΩ, 10kΩ 70V: 500Ω, 1kΩ, 2kΩ, 3.3kΩ, 10kΩ							
SC-615		15W*	8Ω	280Hz-12.5kHz	222 x 162 Reflex Horn with Driver	112dB				
SC-615M			100V: 670Ω, 1kΩ, 2kΩ, 3.3kΩ 70V: 330Ω, 670Ω, 1kΩ, 2kΩ, 3.3kΩ							
SC-630	30W*	8Ω	250Hz-10kHz	285 x 205 Reflex Horn with Driver	113dB	Built-in Transformer				
SC-630M							100V: 330Ω, 670Ω, 1kΩ, 2kΩ 70V: 170Ω, 330Ω, 670Ω, 1kΩ, 2kΩ			

• Reflex Horn Speakers

TC-615	Reflex, Indoor/Outdoor Use	15W*	8Ω	250Hz-7kHz	ø400mm Reflex Horn with Driver	108dB	Aluminum, Off-White		Terminal	Built-in Transformer	
TC-615M			100V: 670Ω, 1kΩ, 2kΩ, 3.3kΩ 70V: 330Ω, 670Ω, 1kΩ, 2kΩ, 3.3kΩ								
TC-630		30W*	16Ω	200Hz-6kHz	ø500mm Reflex Horn with Driver	110dB					Built-in Transformer
TC-630M			100V: 330Ω, 670Ω, 1kΩ, 2kΩ 70V: 170Ω, 330Ω, 670Ω, 1kΩ, 2kΩ								

• Mobile Mounted Speakers

TC-10P	Reflex/Mobile Mount	10W	8Ω	400Hz-5.5kHz	ø130mm Reflex Horn with Driver	101dB		Cream	Terminal	B-2, B-9 (Brackets)
TC-35P		35W		250Hz-8kHz	ø166mm Reflex Horn with Driver	104dB				White
SC-650		50W*	16Ω	250Hz-6kHz	403 x 297.5mm Reflex Horn with Driver	109dB				Aluminum, Off-White

* Mobile mount use: 30W

• Ultra-High Power Speaker

SC-240	Ultra-High Power	240W	8Ωx4	250Hz-5kHz	60W x 4	107dB		Aluminum, Ivory		Terminal	
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• Explosion-Proof Horn Speakers

TP-M15E	Reflex/Explosion Proof	15W*	670Ω, 1kΩ, 2kΩ	350Hz-5.5kHz	Ø397mm Reflex Horn Explosion Proof with Driver	105dB		Aluminum, Ivory	Terminal	Built-in Transformer
TP-M15D				350Hz-4.5kHz	Ø242mm Reflex Horn Explosion Proof with Driver	104dB				

Notes: *: Rated Input

• Bi-Directional Box Speakers

BS-61WA	Bi-Directional Box Type	6W	1.7kΩ, 5kΩ	130Hz-13kHz	16cm Full-Range Dynamic Cone	92dB	○	Wood, Off-White	Cloth Off-White	Terminal	YS-31W (Mounting Bracket)
BS-61WT-A											

Model	Type	Continuous Power Input	Input Impedance	Freq. Response	Speaker Component	Efficiency (SPL)	Attenuators (Max. cut)	Finish	Grille	Connectors (incl. In/Out)	Other Features
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• **Wall-Mounting Box Speakers**

BS-330	Wall-Mounting Box Speaker	3W*	3.3kΩ, 10kΩ	220Hz-14kHz	12cm Full-Range Dynamic Cone	91dB	○	ABS Resin	Off-White	Terminal	
BS-330T		6W*	1.7kΩ	100Hz-10kHz	12cm Full-Range Dynamic Cone		○	Vinyl Chloride Particle Board	Black		
BS-677BT							○		White		
BS-677WT			○			Black					
BS-677B			○			White					
BS-677W		10W*	1kΩ, 2kΩ	100Hz-13kHz	20cm Full-Range Dynamic Cone	94dB	○	Wood, Off-White	Cloth Off-White		
BS-102SA											
BS-102ST-A											

• **Universal Speakers**

BS-1030B	2-Way Bass Reflex	30W*	8Ω 100V: 30Ω, 500Ω, 670Ω, 1kΩ, 2kΩ 70V: 170Ω, 250Ω, 330Ω, 500Ω, 1kΩ	80Hz-20kHz	12cm Dynamic Cone 2.5cm Balanced Dome Tweeter	90dB		ABS Resin, Black, Paint	Punching Net, Black	Terminal	
BS-1030W								ABS Resin, White, Paint			
BS-1110W	Full-Range Bass Reflex	10W*	100V: 1kΩ, 2kΩ 70V: 500Ω, 1kΩ, 4kΩ	150Hz-14kHz	12cm Dynamic Cone x 2	92dB		Plywood Vinyl Coating, White	Punching Net, White	Push-In Type	
BS-1120W	2-Way Bass Reflex	20W*	100V: 500Ω, 1kΩ 70V: 250Ω, 500Ω, 8Ω	150Hz-20kHz	12cm Dynamic Cone x 4 Balanced Dome Tweeter	95dB					

• **Box-Type Splashproof Speakers**

BS-5W	Box-Type Splashproof Speaker	5W*	2kΩ, 3.3kΩ, 5kΩ	120Hz-18kHz	10cm Full-Range Dynamic Cone	90dB		Polyprop. Gray	Aluminum Gray	Terminal	Any color available with min. 100pc. order
BS-10WL		10W*	8Ω	100Hz-20kHz		88dB					
BS-20W		20W*	500Ω, 670Ω, 1kΩ, 2kΩ		Mid/Low: 13cm Splashproof Cone, High: CD Horn plus Splashproof Piezo Driver	94dB					
BS-20W-WHT											

• **Firedome Speaker**

PC-1867F	Fire-Resistant Flush-Mount Ceiling	100V: 6W* 70V: 3W*	1.7kΩ, 3.3kΩ, (6.7kΩ, 13kΩ)	100Hz-16kHz	12cm Dynamic Cone	90dB		Aluminum, Off-White/ Steel Plate, Black	Aluminum Net, Off-White	Push-in type	
PC-1867FC										Connector	

• **Heat-Resistant Ceiling Horn Speakers**

PC-129	Heat-Resistant/ Ceiling Mount	1W*	10kΩ	500Hz-8kHz	Horn Speaker, ø116 x 130(D)mm	100dB		Aluminum, Off-White		Connector	Withstands 380°C Air Current for 15 mins.
PC-139				500Hz-10kHz	Horn Speaker, ø122 x 146(D)mm						

• **FGM Ceiling Speaker**

PC-212	Distributed FGM	15W*	100V: 670Ω, 1kΩ, 2kΩ 70V: 670Ω, 1kΩ, 2kΩ	50Hz-18kHz	20cm Coaxial 2-Way Ceiling Cone	91dB		Aluminum	Aluminum Punched Net, Silver	Terminal	
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• **Flush-Mounting Type Ceiling Speakers**

Screw-in Type

PC-645R	Panel Cone Speaker	100V: 6W* 70V: 3W*	1.7kΩ, 3.3kΩ, 6.7kΩ, 13kΩ	100Hz-12kHz	12cm Dynamic Cone	90dB		ABS Resin, Off-White	Aluminum Lath, Off-White	Terminal	
PC-643S											
PC-646R											
PC-644S											

Spring Catch Type

PC-1864	Panel Cone Speaker	100V: 6W* 70V: 3W*	1.7kΩ, 3.3kΩ, 6.7kΩ, 13kΩ	100Hz-16kHz	12cm Dynamic Cone	90dB		ABS Resin, Off-White	Steel Net, Off-White	Terminal	YS-270 (Protection Cover)
PC-1863								Aluminum Off-White			
PC-1867											

Separate Type

CM-760	Separate Type	6W*	1.7kΩ, 3.3kΩ, 6.7kΩ, 13kΩ	100Hz-16kHz	12cm Full-Range Dynamic Cone	90dB			Resom, Black	Terminal	Optional Speaker Grille: PC-73: Baffle: ABS Resin, Off-White/ Baffle: ABS Resin, Off-White/ Grille: Aluminum Net, Off-White PC-77: Baffle, Metal Off-White/ Grille: Aluminum Net, Off-White Terminal
CM-960					16cm Full-Range Dynamic Cone	92dB					Optional Speaker Grille: PC-93: Baffle: ABS Resin, Off-White/ Baffle: ABS Resin, Off-White/ Grille: Aluminum Net, Off-White PC-97: Baffle, Metal Off-White/ Grille: Aluminum Net, Off-White

Notes: *: Rated Input

Model	Type	Continuous Power Input	Input Impedance	Freq. Response	Speaker Component	Efficiency (SPL)	Attenuators (Max. cut)	Finish	Grille	Connectors (incl. In/Out)	Other Features
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• Surface-Mounting Type Ceiling Speaker

PC-2668	18cm Baffle Type	100V: 6W* 70V: 3W*	1.7k Ω 3.3k Ω 6.7k Ω 13k Ω	100Hz-16kHz	12cm Dynamic Cone	86dB		ABS Resin, Off-White		Terminal	
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• Splashproof Ceiling Speakers

PC-3CL	Ceiling Flush-Mount	3W*	3.3k Ω	150Hz-20kHz	8cm Splashproof Dynamic Cone	87dB		ABS Resin, Off-White	Stainless Steel Punched Net	Terminal	Shower Room & Indoor Pool, Bathroom, Steam Sauna
PC-3WR				180Hz-20kHz		88dB		ABS Resin, Chrome-Plated			

• Column Speakers

TZ-105	Metal Case Type	10W*	1k Ω , 2k Ω	150Hz-10kHz	12cm x 2 Dynamic Cone	90dB		Extruded Aluminum, Silver Gray	Punched Net, Black	Terminal	YS-301 (Outdoor-Use Mounting Bracket) ST-490 (Speaker Stand)
TZ-205		20W*	500 Ω , 1k Ω		12cm x 4 Dynamic Cone	93dB					
TZ-301		30W*	330 Ω , 670 Ω	160Hz-10kHz	12.7 x 17.8cm Oval Shape Dynamic Cone x6	100dB					

• Wide Range Weatherproof Speakers

CS-64	Wide Range/ Weatherproof	6W*	100V: 1.7k Ω , 3.3k Ω , 10k Ω 70V: 830 Ω , 1.7k Ω , 3.3k Ω , 10k Ω	130Hz-13kHz	12cm Dynamic Cone	96dB		ABS Resin, Off-White	Punched Steel Plate, Dark Gray	Terminal	
CS-154		15W*	100V: 670 Ω , 1k Ω , 2k Ω 70V: 330 Ω , 620k Ω , 1k Ω , 2k Ω	150Hz-15kHz		97dB			Aluminum Net, Gray		
CS-304		30W*	100V: 330 Ω , 500 Ω , 1k Ω 70V: 170 Ω , 330 Ω , 500 Ω , 1k Ω	120Hz-15kHz		98dB					

• Pendant Speakers

PE-84	Pendant Type	8W*	310 Ω , 625 Ω , 1.25k Ω , 2.5k Ω , 5k Ω	160Hz-20kHz	16cm Dynamic Cone	99dB		Cover gray, Case ivory		Terminal	
PE-164		16W*	155 Ω , 310 Ω , 625 Ω , 1.25k Ω , 2.5k Ω			101dB					

• Pendant Ball Speakers

PE-63B	Pendant Ball Type	6W*	100V: 1.7k Ω , 3.3k Ω 6.7k Ω	150Hz-10kHz	12cm Dynamic Cone	87dB			Black	Terminal	
PE-63W			70V: 830 Ω , 1.7k Ω 3.3k Ω 6.7k Ω						Off-White		
PE-123B		12W*	100V: 830 Ω , 1.7k Ω 3.3k Ω	Black							
PE-123W			70V: 420k Ω 830 Ω , 1.7k Ω 3.3k Ω	Off-White							

• Lamp Speakers

LS-300B	Lamp/Spotlight Type	3W*	3.3k Ω 10k Ω	300Hz-16kHz	7.7cm Dynamic Cone	86dB		Black	Black	Terminal	
LS-300W				Ivory		Gray					
LS-500B		5W*	2k Ω 3.3k Ω	200Hz-20kHz	85dB	Black	Black				
LS-500W				Ivory	Gray						
LS-10				10W*	16 Ω	150Hz-18kHz	83dB	ABS Resin			

• Corner Speakers

PS-16BM	Full-Range Bass Reflex Type	10W*	1k Ω (10W), 2k Ω (5W), 3.3k Ω (3W), 8 Ω (low impedance connection)	125Hz-18kHz	10cm Cone Woofer	89dB		Wood, Polyurethane Paint, Black	Punched Steel Sheet, Acrylic Paint, Black	Terminal	
PS-16WM				Wood, Polyurethane Paint, White				Punched Steel Sheet, Acrylic Paint, White			
PS-32BM	2-Way Bass Reflex Type			100Hz-20kHz	10cm Cone Woofer, 2cm Film Tweeter	90dB	Wood, Polyurethane Paint, Black	Punched Steel Sheet, Acrylic Paint, Black			
PS-32WM				Wood, Polyurethane Paint, White			Punched Steel Sheet, Acrylic Paint, White				

• Projection Speakers

PJ-100W	Reflex/ Wide Range	10W*	50V: 250 Ω , 500 Ω , 1k Ω , 2k Ω , 4k Ω 70V: 500 Ω , 1k Ω , 2k Ω , 4k Ω 100V: 1k Ω , 2k Ω , 4k Ω	65Hz-15kHz	12cm Dynamic Cone	92dB		ABS Resin, Off-White		Terminal	Built-in Transformer (50/70/100V Lines)
PJ-200W		20W*	50V: 125 Ω , 250 Ω , 1k Ω , 2k Ω , 70V: 250 Ω , 500 Ω , 1k Ω , 2k Ω 100V: 500 Ω , 1k Ω , 2k Ω	50Hz-20kHz	16cm Dynamic Cone	95dB					

• Wall Flush-Mount Speakers

PC-391	Wall Flush-Mount	3W*	3.3k Ω	150Hz-15kHz	7.7cm Dynamic Cone	86dB	○	Stainless Steel, Silver		Terminal	
PCC-391T											

Notes: *: Rated Input

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Note:
* A descriptive *LEAFLET* is available
for equipment marked with a **L**.

**Note: From April 1, please use the following URL:
http://www.toacad.jp/sales_promotion/index.html**

Meeting Safty Guide Lines

	CE	UL	Cul	CSA
A-903MK2		●		●
A-906MK2		●		●
A-912MK2		●		●
A-1031 (AS)	●			
A-1031 (LH)	●			
A-1061 (AS)	●			
A-1061 (LH)	●			
A-1121 (AS)	●			
A-1121 (LH)	●			
A-1503	●			
A-1506	●			
A-1512	●			
A-1706	●			
A-1712	●			
A-1724	●			
A-1803	●			
A-1806	●			
A-1812	●			
AC-120	●	●		
AC-F1	●	●		
AC-L1	●	●		
AC-S05	●			
AC-S09	●			
AM-821	●			
AR-71	●			
AX-1000A	●	●		●
BA-800	●	●		
BA-803	●			
BA-806	●	●		
BS-10WL	●			
BS-20W	●			
BS-20W-WHT	●			
BS-677B	●			
BS-677BT	●			
BS-677W	●			
BS-677WT	●			
BS-1030B	●			
BS-1030W	●			
CA-115	●			
CA-130	●			
CA-160	●			
CA-207	●			
CA-407	●			
CS-64	●			
CS-154	●			
CS-304	●			
CX-124/164	●	●		
D-901	●	●	●	
D-1103	●	●		●
DP-0206	●	●	●	
DS-1000B	●			
DX-0808	●	●		●
E-232	●	●		●
E-1231	●	●		●
ER-510	●			
ER-510S	●			
ER-510W	●			
ER-604W	●			
ER-1015	●			
ER-1015S	●			
ER-2015	●			
ER-2015W	●			
EV-20R	●			
EV-200	●			
EV-350P	●			
EV-350R	●			

	CE	UL	Cul	CSA
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F-10W	●			
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F-122C	●			
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H-3	●			
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HB-1	●			
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NX-100	●			
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P-924MK2		●		●
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PC-391	●			
PC-391T	●			
PC-643S	●			
PC-644S	●			
PC-645R	●			
PC-646R	●			
PC-1863	●			
PC-1864	●			
PC-1867	●			
PC-1867F	●			
PC-1867FC	●			
PC-2668	●			
PE-63B	●			
PE-84	●			
PE-123B	●			
PE-123W	●			
PJ-100W	●			
PJ-200W	●			
PM-20EV	●			
PP-025B	●			
RM-200M	●			
RM-210	●			
RM-820	●			
RS-150	●			
RS-160	●			
RS-170	●			
RS-180	●			
RS-190	●			
RS-191	●			
SC-610	●			
SC-610M	●			
SC-615	●			
SC-615M	●			
SC-630	●			
SC-630M	●			
SL-122	●			
SL-122M	●			
SL-152	●			
SL-152M	●			
SL-222	●			
SM-60	●			
SM-68	●			
SM-75	●			
SR-F05	●			
SR-F09	●			
SR-F09-V1	●			
SR-F09-V2	●			
SR-F09-V3	●			
SR-F1B	●			
SR-L05	●			
SR-L09	●			
SR-L1B	●			
SV-200M	●			
SX-1000	●			
SX-1000M	●			
SX-1001	●			
SX-1001M	●			
SX-1100	●			
SX-1110	●			
SX-1200	●			
TC-10P	●			
TC-615	●			
TC-615M	●			
TC-630	●			
TC-630M	●			

	CE	UL	Cul	CSA
TP-M15D	●			
TP-M15E	●			
TS-700	●	●	●	
TS-701	●	●	●	
TS-702	●	●	●	
TT-104B	●			
TU-630	●			
TU-630M	●			
TU-650	●			
TU-650M	●			
TZ-105	●			
TZ-205	●			
TZ-301	●			
V-1000B	●			
V-1005B	●			
V-1014B	●			
V-1015B	●			
V-1016B	●			
V-1034B	●			
V-1082B	●			
VM-2120	●			
VM-2240	●			
VP-1060B	●			
VP-1120B	●			
VP-1240B	●			
VR-1005	●			
VR-1010	●			
VR-1020	●			
VS-900	●	●	●	
VS-900AL	●			
VS-900AF	●			
VS-900CO	●			
VS-900MF	●			
VS-900MS	●			
VS-900RS	●			
VS-900SC	●			
VS-900TI	●			
VS-901RS	●			
VS-901TI	●			
WA-1822	●			
WA-1822C	●			
WD-4800	●	●	●	
WM-3210	●			
WM-3220	●			
WM-3310	●			
WM-3310H	●			
WM-4200	●			
WM-4210	●			
WM-4220	●			
WM-4300	●			
WM-4310	●			
WM-4310A	●			
WM-4310H	●			
WT-3800	●			
WT-3810	●			
WT-4800	●			
WT-4810	●			
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YW-4500	●			
ZM-104	●			

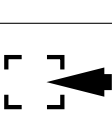
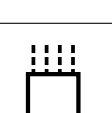
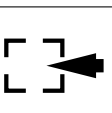

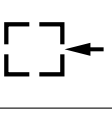
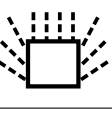
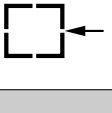
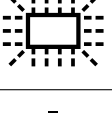
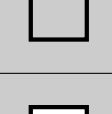
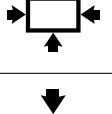

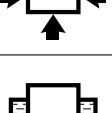

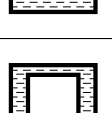
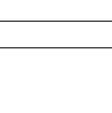

IP Grade Panel

What is IP standard?

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

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

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

1st Numeral: Protection of persons & solid objects		2nd Numeral: Protection of ingress of water			
0		Non-protected	0		No protection
1		Protected against solid objects greater than 50mm ex) Can not touch the live part in the enclosure with hand.	1		Protected against dripping water
2		Protected against solid objects greater than 12mm ex) Can not touch the live part in the enclosure with finger tip.	2		Protected against dripping water when tilted up to 15
3		Protected against solid objects greater than 2.5mm ex) Can not touch the live part in the enclosure with tools, wires.	3		Protected against splashing water at angle up to 60 from the vertical.
4		Protected against solid objects greater than 1.0mm ex) Can not touch the live part in the enclosure with tools, wires.	4		Protected against splashing water from any direction.
5		Dust protected Ingress of dust is not totally prevent but satisfactory operation of the equipment is available.	5		Protected against water jets by a nozzle against the enclosure from any direction.
6		Dust tight No ingress of dust	6		Protected against heavy seas or water projected in powerful jets shall not enter the enclosure.
X		Not tested	7		Protected against the effects on immersion
			8		Protected against submersion
			X		Not tested



TOA Corporation

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Specifications are subject to change without notice.
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