TOA

PRODUCT
LINEUP CATALOG
2026-2027

TOA

OUR THREE CONFIDENCES

TOTAL CONFIDENCE
OF OUR CUSTOMERS IN THE
USE OF ALL PRODUCTS.

TOTAL CONFIDENCE
OF OUR ASSOCIATES IN ALL
BUSINESS TRANSACTIONS.

TOTAL CONFIDENCE OF
OUR EMPLOYEES IN
ALL THEIR EFFORT.

TOA has acquired both ISO9001 quality assurance and ISO14001 environmental management certifications.

JMI-0020
ISO9001
- Head office
- Takarazuka Headquarters
- tokyo branch
- osaka branch

JMI-0020
ISO9001
- Takarazuka Headquarters

WE SUPPLY SOUND,
NOT EQUIPMENT.

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

TOA group has its headquarter in Kobe and consists of 27 sales and production bases, which are divided into 5 divisions. TOA (Hong Kong) Limited is located in Hong Kong since 1994 and is dedicated to serving premier public address systems, professional audio equipment, and IP intercom systems in the Hong Kong, Macau, South Korea, and Mongolia markets on behalf of TOA Corporation.

Dear reader,

My name is Dr. Sound. I am the new acoustic expert at TOA and am always seeking the perfect sound. At TOA we have made it our mission to supply you not just with high-quality equipment but above all with first-class sound.

Whether in schools, concert halls, airports or stadiums – our sound systems make millions of peoples' lives safer and more enjoyable.

Have fun browsing through our product catalogue and planning your next installation with TOA products.

Yours,

Dr. Sound

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Voice Evacuation Systems

IP-1000 Series

System Management Software

IP-1000S1-EA

Model	IP-1000S1-EA
CPU	Intel Core i5 series or above
Motherboard	Intel 97 series chipset or above, sound card, 100/1000 network adaptor
RAM	DDR3 4G or above
Display Card	Dedicated display card with 16G or above. With 2 or above video output. Provide VGA, DVI, etc., general output terminal

Hard Disk	SATA 7200 rpm 500GB or above
OS	Windows 7 or above. Recommend Windows 10. Does not support Windows XP

* Optional SIP Device License IP-IKSISL001

Network Control Input Unit

IP-1000CI

Model	IP-1000CI
Power Source	220 V AC, 50Hz
Functional Unit Terminal	Alarm output terminal, alarm input terminal, power input terminal, data upgrade terminal, network input terminal
Network Protocol	TCP/IP, UDP, ARP, ICMP, IGMP
Network Chip Rate	10/100Mbps self-adaption

Color	Black
Dimension	483(W) x 32(H) x 259(D) mm
Weight	2.9kg
Accessories	4P connecting terminals (4pcs), 5P connecting terminals (8pcs), power line (3*1.0mm2/1.5m) (1pc)

Compact Audio Interface Unit

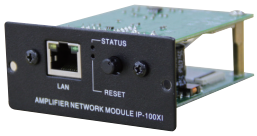
IP-1000AF

Model	IP-1000AF
Power Source	DC 24V
Current Consumption	Below 85mA
Audio Input	1V rms (Max: 2V rms), unbalanced 10KΩ
Audio Output	1V rms, unbalanced 600Ω
Frequency Response	LINE IN (Sampling Rate: 22k): 20 -10k Hz
	LINE OUT (MP3/Sampling Rate: 44k): 40 -15k Hz
Control Contact Input	Open circuit voltage: 24V DC; short circuit current: ≤5mA
Relay	
Normally Closed Contact (NC)	Withstand voltage ≤30V DC, control current ≤500mA

Common Contact (COM)	Withstand voltage ≤30V DC, control current ≤500mA
Normally Open Contact (NO)	Withstand voltage ≤30V DC, control current ≤500mA
Network I/F	10 BASE-T/100 BASE-TX, auto negotiation
Network Protocol	UDP, ARP, ICMP, IGMP
Operating Temperature	0°C to +40°C
Operating Humidity	Less than 90% RH (no condensation)
Dimension	91(W) x42(H) x109(D) mm
Accessory	5P terminal blocks x1, 4P terminal blocks x1, Plastic foot (10mm*3mm) x4

Network Module

IP-100XI



Model	IP-100XI
Power Source	DC 24V
Current Consumption	Below 85mA
Frequency Response	LINE OUT (MP3/ sampling freqency: 44k): 40Hz -15kHz
Amplifier Audio Signal Output	Range: 1V rms, unbalanced 600Ω
Amplifier Muting Control Output	High impedance, max. sink current: 10mA, withstand voltage : 24V DC
Amplifier Protection Detection Input	low level, activated, open-circuit voltage: 3.3V
Amplifier Fault Detection Input	low level, activated, open-circuit voltage: 3.3V
Network I/F	10 BASE-T/ 100 BASE-TX, auto negotiation
Network Protocol	UDP, ARP, ICMP, IGMP
Operating Temperature	0°C to +40°C
Operating Humidity	Less than 90% RH (no condensation)
Dimension	78(W) x 35(H) x 81(D) mm
Weight	0.1kg

Compact Amplifier

AX-0240

240W

* 0dB = 1V

Model	AX-0240
Power Source	220 V AC, 50Hz
Amplification System	Class D
Power Consumption	61W (according to EN62368-1 Standard) 296W (rated output)
Audio Input	MIC IN: -60dB* 2.2kΩ, electronically-balanced, removable terminal block (3pins) LINE IN: -10dB* 2.2kΩ, electronically-balanced, removable terminal block (3pins)
Audio Output	SPEAKER OUT: 240W (100V/ 42Ω), removable terminal block (4P) LINE OUT: 0dB*, 10kΩ, electronically-balanced, removable terminal block(3P)
Fault Output	Octocopter output, puncture: DC 35V, control current: below 50mA, removable terminal block (3 pins)
Frequency Response	50Hz - 20kHz ±3dB (Line)
Total Harmonic Distortion	1% (LINE:1kHz,1/3 rated output, with audio filter: audio precision AUX-0025 and LPF 20kHz filter)

S/N Ratio	MIC: above 60dB (by audio filter: audio precision AUX-0025 and A-weighted) LINE: above 80dB (by audio filter: audio precision AUX-0025 and A-weighted)
Control	MIC gain control, LINE gain control
Indicator	Power LED(green) x1, signal LED(green) x1, peak LED(red) x1, protect output LED(red) x1
Cooling	Forced air cooling
Operating Temperature	-10°C to +40°C
Operating Humidity	Below 90% RH (no condensation)
Finish	Surface-treated steel plate, black, paint
Dimensions	210(W) x 54.3(H) x 290(D) mm
Weight	2.41kg
Accessories	Removable terminal block(3 pins) x4, removable terminal block(4 pins) x1, M3x4 screws for mounting brackets x8
Option	IP-100XI, YA-706, rack mount bracket MB-15B-BK, MB-15B-J, MB-15B

IP Remote Microphone

IP-100RM

Model	IP-100RM
Power Source	DC24V
Current Consumption	Below 200mA (single IP-100RM), below 500mA (connected with 9 RM-110s)
Audio Input	1V rms (Max: 2V rms), 10kΩ electronically balanced gooseneck microphone
Audio Output	1V rms, unbalance 600Ω or unbalanced, 11.25mW, 32Ω
Frequency Response LINE IN LINE OUT (Network broadcast) SPEAKER OUT (Network broadcast)	 (Sampling rate: 22k), 20Hz -10kHz (MP3 / sampling rate: 44k), 40Hz - 20kHz (MP3/ sampling rate: 44k), 20Hz - 20kHz
Control Input	Optocoupler short circuit input, open voltage DC 5V, max. short circuit current ≤5mA
Built-in Monitor Speaker	Maximum output 1.125W

Volume control	Microphone volume control, monitor speaker volume control
No. of Function Keys	15, extendable up to 105 (with 9 RM-110s connected)
Key Extension	10 keys extension per RM-110, EXTENSION connector
No. of Connectable Units	9 (RM-110)
Maximum Zoning Support	1000
Network I/F	10BASE-T/100BASE-TX Auto Negotiation
Network Protocol	UDP, ARP, ICMP, HTTP, IGMP
Operating Temperature	0°C to +40°C
Operating Humidity	Less than 90% RH (no condensation)
Finish	ABS resin, bluish gray
Dimensions	190(W) x 76.5(H) x 215(D) mm (Without the gooseneck microphone)
Weight	0.8kg

IP Remote Microphone Extension

RM-110

Model	RM-110
Current Consumption	Less than 20mA (IP-100RM DC power input)
Connection	Connection by way of dedicated cable
No. of Function Keys	10
Finish	ABS resin, blueish gray (PANTONE 538 or its equivalent)

Operating Temperature	0 °C to +40°C
Operating Humidity	Less than 90% RH (no condensation)
Dimensions	110(W) x 76.5(H) x 215(D) mm
Weight	0.34kg
Accessory	Connection cable x1, Joint bracket A x2, Joint bracket B x1, Screw for Joint bracket x12

IP Remote Microphone

IP-107RM

Model	IP-107RM
Power Supply	DC 12V / 1.5A
Power Consumption	≤10W (AC Power Adapter)
Frequency Response	40-18,000Hz
Finish	Aluminum black, ABS Black
Network I/F	100 Base-TX, MDI/ MID-X, RJ45
Network Protocol	TCP/IP, UDP, ARP, ICMP, IGMP, HTTP, SIP RTP

Operating Temperature	0°C to +45°C
Operating Humidity	Less than 90% RH (no condensation)
Dimensions	183.9(W) x 169(H) x 58.4(D) mm (excluding gooseneck microphone)
Weight	0.72kg
Accessories	Gooseneck microphone stem x1, Terminal block

IP PoE Wall Mount Box Speaker

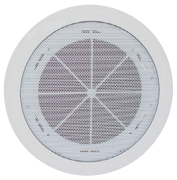
BS-PE678IP1

Model	BS-PE678IP1
Speaker Unit	6"(16cm) double cone type
Power Source	DC 24V / 1A or PoE (IEEE 802.3at)
Standby Power Consumption	Less tham 5W
Rated Output Consumption (DC Supply)	2*7W (Maximum Consumption Current 24V/0.65A under DC Condition)
Rated Output Consumption (PoE Supply)	2*7W (Maximum Consumption Current 16V/1.35A under PoE Condition)
Sensitivity (1m/ 1W)	94dB
Frequency Response	100 - 18,000 Hz

Network I/F	BASE-T/100BASE-TX, Auto negotiation
Network Protocol	UDP, ARP, ICMP, HTTP, IGMP
Operation Temperature	-20°C to +50°C
Operation Humidity	Less than 90% RH (no condensation)
Finish	Baffle: HIPS resin, off-white Cabinet: Particle board, off-white Grille: Surface-treated steel plate, off-white
Dimensions	250(W) x 190(H) x 110(D) mm
Weight	1.56kg
Accessory	Speaker mounting screw M4*35 x2, 4P terminal block x1

IP PoE Surface Mount Ceiling Speaker

PC-PE1868IP1



Model	PC-PE1868IP1
Speaker Unit	5"(12cm) cone type
Power Source	DC 24V / 1A or PoE (IEEE 802.3at)
Standby Power Consumption	Less tham 5W
Rated Output Consumption (DC Supply)	2*7W (Maximum Consumption Current 24V/0.65A under PoE Condition
Rated Output Consumption (PoE Supply)	2*7W (Maximum Consumption Current 16V/1.35A under PoE Condition)
Sensitivity (1m/ 1W)	90dB
Frequency Response	100 - 18,000 Hz

Network I/F	BASE-T/100BASE-TX, Auto negotiation
Network Protocol	UDP, ARP, ICMP, HTTP, IGMP
Operation Temperature	-20°C to +50°C
Operation Humidity	Less than 90% RH (no condensation)
Finish	Baffle: ABS resin, off-white Grille: Steel net, off-white (RAL 9010 or equivalent color), paint
Dimensions	Φ180 x 119.7(D) mm
Weight	0.73kg
Accessory	Mounting brackets x1, 4P terminal block x1

IP PoE Reflex Horn Speaker

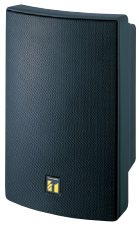
SC-PE630IP1

Model	SC-PE630IP1
Power Source	DC 24V / 1A or PoE (IEEE 802.3at)
Standby Power Consumption	Less tham 5W
Rated Output Consumption (DC Supply)	2*7W (Maximum Consumption Current 24V/0.65A under PoE Condition)
Rated Output Consumption (PoE Supply)	2*7W (Maximum Consumption Current 16V/1.35A under PoE Condition)
Sensitivity (1m/ 1W)	113dB
Frequency Response	300 - 18,000 Hz
Dust/ Water Protection	IP65

Network I/F	BASE-T/100BASE-TX, Auto negotiation
Network Protocol	UDP, ARP, ICMP, HTTP, IGMP
Operation Temperature	-20°C to +50°C
Finish	Horn: Aluminum, off-white Back cover: ABS/ PC Composite Bracket, screws and nuts: Stainless steel, dark grey
Dimensions	285(W) x 227(H) x 277(D) mm
Weight	1.95kg
Accessory	4P terminal block x1

IP Universal Speaker

BS-P1030BIP1 / BS-P1030WIP1



Model	BS-P1030BIP1	BS-P1030WIP1
Speaker Unit	4.8"(12cm) dynamic cone-type, dome tweeter	
Power Source	DC 24V / 2.7A	
Static Power Consumption	1.85W	
Impedance	8Ω, 30W	
Sensitivity	90dB (1W, 1m)	
Frequency Response	80Hz - 20kHz	
Input Terminal	European standard 2 pins	
Network Input	1Vrms (Max: 2Vrrms), Unbalanced, 10kΩ	
Network I/F	10BASE-T/100BASE,Auto Negotiation	
Network Protocol	UDP, ARP, HTTP, ICMP, IGMP	
Operating Temperature	-20°C to +40°C	
Operating Humidity	Below 90% RH (no condensation)	
Finish	Enclosure: ABS resin	
Color	Black	White
Dimensions	196(W) x 290(H) x 150(D) mm	
Accessory	Bracket x1, Bracket mounting screw x2, 2P connection terminal x2, Network port cover (1 set)	

IP Wall-mounted Box Speaker

BS-P678IP1

Model	BS-P678IP1
Speaker Unit	6”(16cm) double cone type
Power Source	DC 24V / 1A
Static Power Consumption	1.85 W
Impedance	8Ω, 10W
Sensitivity	94 dB
Frequency Response	150Hz - 20kHz
Input Terminal	European standard 2 pins
Line Input	1V rms (Max: 2V rms), unbalanced 10kΩ
Network I/F	10 BASE-T/100BASE-TX, Auto negotiation

Network Protocol	UDP, ARP, HTTP, ICMP, IGMP
Operating Temperature	20°C~+40°C
Operating Humidity	Below 90% RH (no condensation)
Finish	Cainet: Wood, off-white Grid: Surface-treated steel plate net, off-white
Dimensions	250(W) × 190(H) × 110(D) mm
Accessory	Retaining screw M4*35 x2, 2P connection terminal x2, Network port cover x1

Wall-mounted Box Speaker

BS-P678E

Model	BS-P678E
Speaker Unit	6”(16cm) double cone type
Impedance	8Ω, 10W
Sensitivity	94 dB
Frequency Response	150Hz - 20kHz
Operating Temperature	20°C~+40°C

Operating Humidity	Below 90% RH (no condensation)
Finish	Cainet: Wood, off-white Grid: Surface-treated steel plate net, off-white
Dimensions	250(W) × 190(H) × 110(D) mm
Accessory	Screw M4*35 x2

IP Column Speaker

TZ-P406BIP1 / TZ-P406WIP1

Model	TZ-P406BIP1	TZ-P406WIP1
Speaker Unit	4”(10cm) doubt cone type ×4, waterproof IP-65	
Power Source	DC24 / 2.7A	
StaticPower Consumption	1.85 W	
Impedance	4Ω, 40W	
Sensitivity	92 dB (1W, 1m)	
Frequency Response	150Hz -16kHz	
Input Terminal	European standard 2 Pins	
Line Input	1Vrms (Max:2Vrms), Unbalanced, 10kΩ	
Network I/F	10BASE-T/100BASE-TX, Auto Negotiation	
Network Protocol	UDP, ARP, HTTP, ICMP, IGMP	
Operating Temperature	-20°C to +40°C	
Operating Humidity	Below 90% RH (no condensation)	
Finish		
Enclosure	HIPS, black paint	HIPS, white paint
Punched Net	Surface-treated steel plate, black anti-rust paint	Surface-treated steel plate, white anti-rust paint
Speaker Bracket	Aluminum alloy, press casting, black paint	Aluminum alloy, press casting, white paint
Dust/Water Protection	IP-65	
Color	Black	White
Dimensions	135(W) x 498(H) x 128(D) mm	
Accessory	Speaker bracket x1, Joint bracket x1, Wall mounting bracket x1, Fixing bolt M5*60 x1, Hexagon bolt M6*12 (with plain washer and spring washer) x2, Hexagon M8*15 x1, 2P terminal block x2, Network port cover x1	

VX-1000 Series

Matrix Controller

VX-1000MC-EA

Model	VX-1000MC-EA
Power Source	Main Power Input: AC220V, 50Hz, European standard terminal ; Standby Power Input: AC220V, 50Hz, European standard terminal
Power Consumption	16.65W
Audio Input	4 channels, European standard terminal, balanced, input impedance 10KΩ, rated input 0dB
Auxiliary Audio Input	4 channels, RCA jack, unbalance, input impedance 10KΩ, rated input 0dB: mixing with the audio input interface
Amplifier interface	4 channels, RJ45 connector
Auxiliary Audio Output	4 channels, RCA jack, unbalanced, max. 0dB
Recording output	1channel, RCA jack, unbalanced, max. 0dB
Noise Detection Input	4 channels, European standard terminal, balanced, rated input 0dB
Control Input	8 channels, RJ45 connector
Control Output	8 channels, RJ45 connector
Volume controller Output	4 channels, European standard terminal
Speaker Loop Output	4 channels, European standard terminal

Internal Audio Storage	1GB
Network I/F	RJ45 connector, 10BASE-T/100BASE-TX, auto negotiation
Network Protocol	SIP, NTP, HTTP, RTP, FTP
Frequency Response	Analog Audio: 20~20,000Hz ±3dB Network Audio: 40~18,000Hz ±3dB Internal files: 40~18,000Hz ±3dB
Distortion	1% or less
S/N Ratio	70dB or more
Loop Detection Function	Open circuit, short circuit, ground
Fault Detection Function	Main power fault, auxiliary power fault, amplifier fault, power supply frame fault
Operating Temperature	-10℃ - +55℃
Operating Humidity	≤90% RH (no condensation)
Finish	Panel: Aluminum panel surface oxidation treatment, black
Dimensions	493(W)×88(H)×396(D)mm
Wight	6.96kg
Option	PM-100VX-EA Paging Microphone

IP Remote Microphone

VX-100RM-EA

Model	VX-100RM-EA
Power Source	DC 24V/1A or PoE (IEEE 802.3at)
Power Consumption	Lower than 200mA (Single unit of VX-100RM-EA) Lower than 500mA (when connecting 9 units of RM-110VX-EA)
Audio Input	Balanced, 1V rms (Max: 2 V rms), input impedance 10kΩ
Audio Output	Unbalanced, 1V rms, input impedance 10kΩ or unbalanced, 11.25mW, input impedance 32kΩ
Monitor Speaker	1W
Frequency Response	20Hz-20kHz
Audio Control	microphone volume control, monitor speaker volume control

Control Input	Optocoupler isolation circuit input, open circuit voltage DC5V, maximum short-circuit current ≤5mA
No. of Function Keys	10, Max.:100 (when connecting 9 units of RM-110VX-EA)
Network I/F	RJ45, 10BASE-T/100BASE-TX auto-negotiation
Network Protocol	TCP/IP, UDP, HTTP, ARP, RTP, ICMP, IGMP,SIP
Operating Temperature	0℃~+40℃
Operating Humidity	≤90%, no condensation
Finish	ABS resin, black
Dimensions	190(W)×76.5(H)×215(D)mm(excluding microphone)
Option	RM-110VX-EA Remote Microphone Extension

Remote Microphone Extension

RM-110VX-EA

Model	RM-110VX-EA
Power Consumption	Lower than 20mA (VX-100RM-EA DC power input)
No. of Function Keys	10
Operating Temperature	0℃~+40℃

Operating Humidity	≤90%, no condensation
Finish	ABS resin, black
Dimensions	110(W)×76.5(H)×215(D)mm

Peering Frame

VX-1000PF-EA

Model	VX-1000PF-EA
Power Source	AC220V/50Hz
Power Output	Amplifier output 4 channels, auxiliary amplifier output 1 channel
Amplifier interface	Amplifier interface 4 channels, auxiliary amplifier interface 1 channel

Amplifier Module

VX-1125DA-EA 125W
VX-1250DA-EA 250W
VX-1500DA-EA 500W

* 0dB = 1V

Model	VX-1125DA-EA	VX-1250DA-EA	VX-1500DA-EA
Power Source	AC 220 V / 50 Hz		
Power Consumption	30.3W (standby mode) 120W (rated output mode)	27.7W (standby mode) 255W (rated output mode)	28.2W (standby mode) 505W (rated output mode)
Amplification System	Class D		
Output Power	125W	250W	500W
Frequency Response	20 Hz - 20 kHz ±3dB		

Digital Power Amplifier

DA-102S 1000W
DA-X0130F-EA 130W x 4

* 0dB = 1V

Model	DA-102S	DA-X0130F-EA
Power Supply	AC220V-240V, 50Hz/60Hz	
Amplification System	Class D	
Power Consumption	30W (Standby mode), 1200W(Rated output 100V line, 10Ω)	85W(standby mode), 740W(Rated output 100V line, 67Ω x 4)
Input	1 channel: PA LINK (Dedicated Interface with VX-1000MC) 1 channel: AUX INPUT=0dB(1V) (Input level control in maximum position), 20kΩ, electronically-balanced	4 channels: PA LINK (Dedicated Interface with VX-1000MC) 4 channels: AUX INPUT=0dB(1V) (Input level control in maximum position), 20kΩ, electronically-balanced
Rated Output	1 channel: 1,000W (100V line, 10Ω)	4 channels: 130W (100V line, 67Ω)
Frequency Response	100~20,000Hz ±3dB	
Total Harmonics Distortion	≤0.5% (1W), 1% (Rated output)	0.4% (1W), 1% (1kHz, Rated output)
Protection Circuit	Overcurrent protection, undervoltage protection, overvoltage protection, overheat protection, short circuit protection	
S/N Ratio	>90dB (A-weighted)	>85dB (A-weighted)
Crosstalk	-	70dB (A-weighted)
Control Input	ACTIVE: Short=AUX INPUT signal source goes Amplifier output/ Open= PA LINK signal source goes Amplifier output	
LED Indicator	POWER (Green) x 1, SIGNAL (Green) x 1, PEAK (Red) x 1, AUX ACTIVE (Orange) x 1, FAULT (Red) x 1	POWER (Green) x 1, SIGNAL (Green) x 4, PEAK (Red) x 4, AUX ACTIVE (Orange) x 4, FAULT (Red) x 4
Cooling Method	Forced air cooling by FAN	
Operating Temperature	-10℃ to +50℃	0℃~+40℃
Operating Humidity	≤90%, not condensing	
Finish	Front panel AL Black, Cover SECC Black	
Control	Front: Power switch Rear : Input volume	Front: Power switch Rear: 4 channels input volume
Dimensions	440(W) x 44(H) x 300(D) mm	483(W) x 88(H) x 392(D) mm
Weight	4.00kg	6.9kg
Accessory	(CN)AC power cord x1, (EN)AC power cord x1, pluggable terminal block 2P x1, pluggable terminal block 5P x1	

Zone Expansion Panel

VX-1010ZE-EA

Model	VX-1010ZE-EA
Power Source	Power Source A：24V/1A power adapter，plug Power Source B：24V/1A power adapter, European standard terminal
Standby Power Consumption	≤5W
Control Input	11 channels, European standard terminal (8P×2)
CPU OFF Cascade	2 channels, RJ45 interface
Communication Interface	2 channels, RJ45 interface
Loop Detection Input	1 channel, European standard terminal (2P*2)
Loop Detection Output	2 channels, European standard terminal (4P)

Power Input & Output	3 channels, European standard terminal (6P)
Speaker Loop Output	10 channels, European standard terminal (20P)
Switch	8-digit DIP switch, the first four digits are ZE's ID number, the last four are reserved
Indicator	CONTROL INPUT STATUS(Green) x10, SP OUT STATUS (Green, Red, Orange) x10, EMERGENCY(Red) x1, POWER (Green) x2, CPU OFF(Orange) x1, COM(Green) x1
Operating Temperature	0℃ - +40℃
Operating Humidity	≤90%，no condensation
Dimensions	493(W)×44(H)×267.2(D)mm(Without gooseneck microphone

VX-3000 Series

Voice Evacuation Frame

VX-3004F

VX-3008F

VX-3016F

EN 54 16

*1 By default
*2 0dB = 1V

Model	VX-3004F	VX-3008F	VX-3016F
Power Source	31 V DC (operating range: 20 - 33 V DC), removable terminal block (4 pins)		
Power Consumption	85 W at 31 V DC	85 W at 31 V DC	90 W at 31 V DC
Indicators	POWER (green) x1, RUN (green) x1, EMERGENCY (red) x1, CPU OFF (red) x1, LAN A (green) x1, LAN B (green) x1, RS LINK A (green) x1, RS LINK B (green) x1 FAULT STATUS (yellow) GENERAL x1, CPU x1, UNIT*1 x1, NETWORK*1 x1, EMG MIC*1 x1, FUSE*1 x1, POWER*1 x1, ZONE x8 AMPLIFIER PEAK (red) x4, SIGNAL (green) x 4, OPERATE (green) x4, POWER (green) x4	POWER (green) x1, RUN (green) x1, EMERGENCY (red) x1, CPU OFF (red) x1, LAN A (green) x1, LAN B (green) x1, RS LINK A (green) x1, RS LINK B (green) x1 FAULT STATUS (yellow) GENERAL x1, CPU x1, UNIT*1 x1, NETWORK*1 x1, EMG MIC*1 x1, FUSE*1 x1, POWER*1 x1, ZONE x8 AMPLIFIER PEAK (red) x3, SIGNAL (green) x3, OPERATE (green) x3, POWER (green) x3	POWER (green) x1, RUN (green) x1, EMERGENCY (red) x1, CPU OFF (red) x1, LAN A (green) x1, LAN B (green) x1, RS LINK A (green) x1, RS LINK B (green) x1 FAULT STATUS (yellow) GENERAL x1, CPU x1, UNIT*1 x1, NETWORK*1 x1, EMG MIC*1 x1, FUSE*1 x1, POWER*1 x1, ZONE x16 AMPLIFIER PEAK (red) x2, SIGNAL (green) x2, OPERATE (green) x2, POWER (green) x2
Operation	Fault Control Switch x 2 (ACK/RESET), Test Switch x 1 (LAMP TEST) Setting Switch: ID NUMBER, RESET, IMPEDANCE, Setting (internal front panel)		
Lan A, B	Number of Connectors: 2 (LAN A, LAN B) Network I /F: 1 OOBASE-TX Network Protocol: TCP, UDP, ARP, ICMP, RTP, IGMP, FTP, HTTP Spanning tree Protocol: RSTP Audio Transmission System: TOA Packet Audio Audio Encoding Method: PCM Audio Sampling: 48 kHz, 16 bits Connection Device: Other VX-3004F, VX-3008F, VX-3016F, Switching HUB Connector: RJ45 connector, Connection Cable: Category 5 twisted pair cable (CAT5) Number of Stages of Cascade connection: UP to 7, Maximum Cable Distance: 100 m (328.08 ft)		
RS Link A, B	Number of Connectors: 2 (RS LINK A, RS LINK B) Audio input level: 0 dB (*2) Power feed: Max. 1 A per connector Connector: RJ45 connector, Connection Cable: Shielded Category 5 twisted pair cable (CAT5-STP) Maximum Cable Distance: 1200 m (3937.01 ft)		
DS Link	Connection Device: DS LINK of Power supply units Connector: RJ45 connector, Connection Cable: Shielded Category 5 twisted pair cable (CAT5-STP) Maximum Cable Distance: 5 m (16.4 ft)		
Analog Link	Number of Connectors: 1 input, 1 output Connection Device: Other VX-3004F, VX-3008F, VX-3016F Connector: RJ45 connector, Connection Cable: Shielded Category 5 twisted pair cable (CAT5-STP) Maximum Cable Distance: 800 m (2624.67 ft)		
Control Input 1, 2	16 inputs, no-voltage make contact input, open voltage: 24 V DC, short-circuit current: 2 mA Fault Detection System: Short circuit, Open circuit, Method: Voltage detect Connector: RJ45 connector, Connection Cable: Shielded Category 5 twisted pair cable (CAT5-STP)		
Emergency Control IN	Input 2: Isolated voltage input, -24 to + 24 V Connector: RJ45 connector, Connection Cable: Category 5 twisted pair cable (CAT5)		
Control Output 1, 2	General outputs : 8 with CONTROL OUTPUT 1 Exclusive outputs : 3 with CONTROL OUTPUT 2, GENERAL FAULT, CPU FAULT, CPU OFF No-voltage make contact, electrical contact output, control current: 10 mA, withstand voltage: 28V DC Connector: RJ45 connector, Connection Cable: Shielded Category 5 twisted pair cable (CAT5-STP)		
ATT/Control Output	8 outputs, no-voltage make contact, relay contact (NC, NO, C), control current: 2 mA to 5 A Connector: Removable terminal block (12 pins) x 2		16 outputs, no-voltage make contact, relay contact (NC, NO, C), control current: 2 mA to 5 A Connector: Removable terminal block (12 pins) x 4
Audio Input 1, 2, 3, 4	4 inputs Sensitivity: LINE: -20 dB*2, MIC: -60 dB*2 LINE/MIC (changeable with setting software) Gain Control: volume adjustable with volume control (internal front panel) -∞ to 0 dB Input Resistance: 47 kΩ, electronically-balanced Frequency Response: 40 Hz - 20 kHz ±1 dB (at DA CONTROL LINK, 0 dB output) Distortion: 1 % or less (at DA CONTROL LINK, 0 dB output, 1 kHz) Signal to Noise Ratio: 60 dB or more (at DA CONTROL LINK, A-weighted) Phantom Power Supply: 24 V DC, can be set with setting software Connector: Removable terminal block (6 pins) x 2		
Speaker Line	4 channels (with A/B LINE speaker output), 1 Earth terminal Maximum Voltage/Current: 100 Vrms, 5 Arms Connector: Removable terminal block (17 pins) x 1 Fault Detection System: Short circuit, Open circuit, Ground fault, Method: Impedance or End of line	8 channels, 1 Earth terminal Maximum Voltage/Current: 100 Vrms, 5 Arms Connector: Removable terminal block (17 pins) x 1 Fault Detection System: Short circuit, Open circuit, Ground fault, Method: Impedance or End of line	16 channels, 2 Earth terminals Maximum Voltage/Current: 100 Vrms, 5 Arms Connector: Removable terminal block (17 pins) x 2 Fault Detection System: Short circuit, Open circuit, Ground fault, Method: Impedance or End of line
Standby Amplifier Input/Output	Input: 1, Output: 1 Maximum Voltage/Current: 100 Vrms, 5 Arms, Connector: Removable terminal block (2 pins) x 2		
Extension Amplifier Input/Output	-	Input: 2, Output: 2 Maximum Voltage/Current: 100 Vrms, 5 Arms Connector: Removable terminal block (2 pins) x 4	Input: 1, Output: 1 Maximum Voltage/Current: 100 Vrms, 5 Arms Connector: Removable terminal block (2 pins) x 2
Power Amplifier	Number of Amplifiers: 4 Connector: DA CONTROL LINK x 4, DA OUTPUT LINK x 4	Number of Amplifiers: 3 Connector: DA CONTROL LINK x 3, DA OUTPUT LINK x 3	Number of Amplifiers: 2 Connector: DA CONTROL LINK x 2, DA OUTPUT LINK x 2
Operating Temperature	-5°C to +45°C		
Operating Humidity	90 %RH or less (no condensation)		
Finish	Panel: Surface-treated steel plate, black, 30% gloss, paint		
Dimensions	483 (W) x 132.6 (H) x 345 (D) mm		
Weight	7.6kg	7.9kg	8.1kg
Accessory	Rack mounting bracket (preinstalled on the unit) x2, CD (PC setting software) x 1, Removable terminal plug (2 pins) x 2, Removable terminal plug (4 pins) x 1, Removable terminal plug (6 pins) x 2, Removable terminal plug (12 pins) x 2, Removable terminal plug (17 pins) x 1, Ferrite clamp x2	Rack mounting bracket (preinstalled on the unit) x2, CD (PC setting software) x 1, Removable terminal plug (2 pins) x 6, Removable terminal plug (4 pins) x 1, Removable terminal plug (6 pins) x 2, Removable terminal plug (12 pins) x 2, Removable terminal plug (17 pins) x 1, Ferrite clamp x2	Rack mounting bracket (preinstalled on the unit) x2, CD (PC setting software) x 1, Removable terminal plug (2 pins) x 4, Removable terminal plug (4 pins) x 1, Removable terminal plug (6 pins) x 2, Removable terminal plug (12 pins) x 4, Removable terminal plug (17 pins) x 2, Ferrite clamp x2

Digital Power Amplifier Module

VX-015DA 150W
VX-030DA 300W
VX-050DA 500W

EN 54 16

* 0dB = 1V

Model	VX-015DA	VX-030DA	VX-050DA
Power Source	31V DC (operating 20-33V DC) DC power in: M4 screw terminal, distance between barriers: 11mm (0.43")		
Amplification System	Class D		
Power Consumption	40W at 31V DC (1/8 rated output)	65W at 31V DC (1/8 rated output)	100W at 31V DC (1/8 rated output)
Rated Output Power	150W (at 100V line and min. resistive and max. capacitive load) 105W (at 70V line and min. resistive and max. capacitive load) 75W (at 50V line and min. resistive and max. capacitive load) (at AC Mains of VX-3000DS: 187V - 253V)	300W (at 100V line and min. resistive and max. capacitive load) 210W (at 70V line and min. resistive and max. capacitive load) 150W (at 50V line and min. resistive and max. capacitive load) (at AC Mains of VX-3000DS: 187V - 253V)	500W (at 100V line and min. resistive and max. capacitive load) 350W (at 70V line and min. resistive and max. capacitive load) 250W (at 50V line and min. resistive and max. capacitive load) (at AC Mains of VX-3000DS: 187V - 253V)
Output Voltage	100V (70V, 50V: selectable by internal change)		
Min. Resistive Load	67Ω (at 100V line), 47Ω (at 70V line), 33Ω (at 50V line)	33Ω (at 100V line), 23Ω (at 70V line), 17Ω (at 50V line)	20Ω (at 100V line), 14Ω (at 70V line), 10Ω (at 50V line)
Max. Capacitive Load	0.5μF		
No. of Channels	1		
Input	DA CONTROL LINK: Nylon connector (15pins)		
Output	DA OUTPUT LINK: Nylon Connector (2pins)		
Frequency Response	40Hz - 20kHz, -5dB to +1dB (at 100V line, 30dB* output)		
Distortion	1% or less (at 100V line, rated output, 1kHz)		
Signal to Noise Ratio	100 dB or more (at 100V line, A-weighted)		
Operating Temperature	-5°C to +45°C		
Operating Humidity	90% RH or less (no condensation)		
Finish	Surface-treated steel plate		
Dimensions	82.8(W) x 91(H) x 358.2(D) mm		
Weight	1.3 kg		1.4kg
Accessory	DA CONTROL LINK Cable x 1, DA OUTPUT LINK Cable x 1, DC Fuse (10A) x 1	DA CONTROL LINK Cable x 1, DA OUTPUT LINK Cable x 1, DC Fuse (20A) x 1	DA CONTROL LINK Cable x 1, DA OUTPUT LINK Cable x 1, DC Fuse (30A) x 1

Power Supply Manager

VX-3000DS
VX-3150DS

EN 54 16

* 0dB = 1V

Model	VX-3000DS	VX-3150DS
Applicable Model	System VX-3000 / VX-2000/SX-2000; all amplifiers	
Power Source	220 - 230 V AC, 50 / 60 Hz	
Power Consumption	2800 W max in total (at rated output with charging), 350 W max each (EN60065)	Approx. 1450 W max in total (at rated output with charging), 200 W max each (EN 60065)
DC Power Output (AC mode)	Rated output: 2300W (31V, 72.5A, total DC power output), Peak output: 2780W (29V, 96A, total DC power output)	Rated output: 1150W (31V, 25A, total DC power output), Peak output: 1390W (29V, 48A, total DC power output)
DC Power Output	8 x 31V (19 - 33 V) 25A max. each, M4 screw terminal, distance between barriers: 11mm 3 x 31 V (19 - 33 V) 5A max. each, removable terminal block (3 x 2 pins) 1 x 24 V (16 - 25V) 0.3A max., removable terminal block (1 x 2 pins)	
Charging Method	Temperature compensated trickle charging	
Charging Output Voltage	27.3V ±0.3V (at 25°C), Temperature correction coefficient: -40mV/°C	
Battery Connection	One each positive and negative terminal, applicable cable diameter: AWG 6 - AWG 0 (AWG 1/0) (16mm² - 50mm²), Line resistance within 4 mΩ / total	
Control Connector DS LINK IN/OUT	RJ45 female connector for connecting the system and cascade connection, Shielded Twisted-pair straight cable (TIA/EIA-568A standard), Type of control signal: Battery check, AC power status, DC power status, charging circuit failure, battery failure and communication	
Panel Indicator	AC power IN 1, IN 2 (Green), Charging (Green), Battery power (Green), Battery connect (Green), Battery condition (Green)	AC power IN 1, Charging (Green), Battery Power (Green), Battery connect (Green), Battery condition (Green)
Operating Temperature	-5°C to +45°C	
Operating Humidity	90 %RH or less (no condensation)	
Finish	Panel: Surface-treated steel plate, black, 30% gloss, paint	
Dimensions (W x H x D)	482 x 132.6 x 400.5 mm (19", 3U)	
Weight	11.8 kg	approx. 8kg
Accessory	Fuse (T8A H) x2, Fuse (T6.3A L) x2, Blade fuse (35 A) x2, Rack mounting screw (with washer) x4, Power cord (2 m) x2, Fastener hook x4, Fastener loop x4, Thermal insulating sheet x1, CAT5-STP cable (3 m) x1, Ferrite clamp x1	-

Preamp Matrix Panel

VX-3000PM

Model	VX-3000PM
Power Source	20 - 33 V DC, removable terminal block (2 pins)
Current Consumption	0.33 A at 33 V DC input 0.35 A at 24 V DC input
LAN A, B	Number of Connectors: 2 (LAN A, LAN B) Network I/F: 100BASE-TX Network Protocol: TCP, UDP, ARP, ICMP, RTP, IGMP, HTTP Spanning tree Protocol: RSTP Audio Transmission System: TOA Packet Audio *1 Audio Encoding Method: PCM Audio Sampling Frequency: 48 kHz Audio Quantifying Bit Number: 16 bits Connection Device: VX-3004F, VX-3008F, VX-3016F, NX-300, VX-3000CT, VX-3000PM, Switching HUB Connector: RJ45 connector Connection Cable: Category 5 twisted pair cable (CAT5) or greater Maximum Cable Distance: 100 m (328.08 ft)
Audio Input	8 inputs Input Level: INPUT 1 - 4: -60 dB *2/-40 dB *2/-20 dB (*2)/0 dB *2 selectable, input impedance 600 Ω, transformer-balanced INPUT 5, 6: -20 dB *2, input impedance 10 kΩ, unbalanced INPUT 7, 8: 0 dB *2, input impedance 10 kΩ, unbalanced Frequency Response: -60 dB *2: 200 Hz - 10 kHz, -2 dB ±3 dB -40 dB *2/-20 dB *2/0 dB *2: 100 Hz - 15 kHz, -2 dB ±3 dB Distortion: 1 % or less Signal to Noise Ratio: 60 dB or more Removable terminal block (6 pins × 2, 4 pins × 2) Only Input 1 is used in common with the front-mounted φ6.3 mm phone jack.

Control Input	20 channels, no-voltage make contact input, open voltage: 30 V DC, short-circuit current: 2 - 10 mA Connector: Removable terminal block (10 pins × 2, 12 pins × 2)
Control Output	Channels 1 - 5, relay (a contact), withstand voltage: 30 V DC, control current: 1 A Channels 6 - 10, open collector output (polarized), withstand voltage: 30 V DC, control current 100 mA Connector: Removable terminal block (10 pins) × 2
Indicators	Signal indicator (green) x8, RUN (green) x1, LINK/ACT (green) x2
Volume Control	8 channels
Operation	Input level setting switch x1, IP address setting switch x1
Operating Temperature	0 °C to +40 °C (32 °F to 104 °F)
Operating Humidity	90 %RH or less (no condensation)
Finish	Panel: Pre-coated steel plate, black, 30 % gloss Volume control section cover: Acrylic resin, gray smoke
Dimensions	482 (W) × 44 (H) × 292.4 (D) mm (18.98" x 1.73" x 11.51")
Weight	3.2 kg (7.05 lb)
Accessory	Rack mounting screw x4, Removable terminal plug (6 pins) x2, Removable terminal plug (4 pins) x2, Removable terminal plug (10 pins) x4, Removable terminal plug (12 pins) x2, Removable terminal plug (2 pins) x1

*1 TOA's unique technology which makes it possible to transmit high-quality audio signals in real time over an IP network.
*2 0 dB = 1 V

Control Panel

VX-3000CT

Model	VX-3000CT
Power Source	20 - 33 V DC, removable terminal block (4P)
Current Consumption	0.09 A at 33 V DC input 0.11 A at 24 V DC input
LAN A, B	Number of Connectors: 2 (LAN A, LAN B) Network I/F: 100BASE-TX Network Protocol: TCP, ARP, ICMP, HTTP Connection Device: VX-3004F, VX-3008F, VX-3016F, NX-300, VX-3000CT, VX-3000PM, Switching HUB Connector: RJ45 connector Connection Cable: Category 5 twisted pair cable (CAT5) or greater Maximum Cable Distance: 100 m (328.08 ft)

Indicators	POWER (green) x1, RUN (green) x1, LINK/ACT (green) x2, SIGNAL (green) x8, FAULT (yellow) x1, STATUS (green/yellow) x9, SELECT (green) x9
Volume Control	8 channels
Operation	Function key x9, Reset key x1, IP address setting switch x1
Operating Temperature	0°C to +40°C (32°F to 104°F)
Operating Humidity	90 %RH or less (no condensation)
Finish	Panel: Surface-treated steel plate, black, 30% gloss, paint
	Volume control section cover: ABS resin, gray smoke
Dimensions	482 (W) × 44 (H) × 315.2 (D) mm (18.98" x 1.73" x 12.41")
Weight	3 kg (6.61 lb)
Accessory	Rack mounting screw x4, Removable terminal plug (4P) x1

Line Output Module

VX-300LO

Model	VX-300LO
Power Source	Supplied from the VX-3000 Frame (DA CONTROL LINK)
Current Consumption*1	Max. 2 mA (Current through DC POWER IN)
Input	DA CONTROL LINK: Connector (15 pins)
Audio Output*1	1 channel Output signal level: 0 dB (*2) Adjustable range of the volume control: - ∞ to 0 dB Output method: 10 kΩ, transformer-balanced Applicable load impedance: 2 kΩ or more Frequency response: 40 Hz - 20 kHz ±1 dB Distortion: 1% or less (0 dB*2 output, 1 kHz) Signal to Noise Ratio: 60 dB or more Removable terminal block (3 pins)

Operating Temperature	0 °C to +40 °C (32 °F to 104 °F)
Operating Humidity	90 %RH or less (no condensation)
Finish	Surface-treated steel plate
Dimensions	76 (W) × 39 (H) × 33.2 (D) mm (2.99" x 1.54" x 1.31")
Weight	56 g (0.12 lb)
Accessory	DA CONTROL LINK Cable x1, Removable terminal plug (3 pins) x1, Mount base for cable binding x2, Fixing screw x1

*1 When installed in the VX-3000 Frame.
*2 0 dB = 1 V

VX-3000 Series Microphones and Optional Accessories

Remote Microphone

RM-300X

EN 54 16

	RM-300X
Power Source	24 V DC (operating range: 15 - 40 V DC, supplied from the voice evacuation frame) or DC input power supply connector (when the optional AD-246 power supply unit used). Usable DC power supply plug: 5.5 mm (0.22") outer diameter, 2.1 mm (0.08") inner diameter, 9.5 mm (0.37") long, and non-polarity type.
Current Consumption	240 mA or less
Audio Output	0 dB*, 600Ω, balanced
External Microphone Input	-40 dB*, 2.2 kΩ, unbalanced, ø3.5 mm phone jack (2P) for electret condenser microphone -20 dB*, 4.7 kΩ, unbalanced, ø3.5 mm phone jack (2P) (AUX Input) (phantom power supply: 3V DC)
Distortion	1 % or less
Frequency Response	100 Hz- 20kHz
S/N Ratio	60 dB or more
Microphone	Unidirectional electret condenser microphone with AGC (ON/OFF selectable)
Chime	Built inside (PCM sound source), monitoring possible using built-in speaker
Level Control	Microphone sensitivity control, monitor speaker volume control, chime (adjustable using software)
Monitor Speaker	Built inside

*0dB = 1V

Connection Cables	Main line: Shielded CPEV cable (1 pair of audio wire + 1 pair of data wire + 1 pair of monitor/control wire + 1 pair of power supply wire) or Shielded Category 5 twisted pair cable (CAT5-STP) Branch line: Shielded Category 5 twisted pair cable (CAT5-STP), RJ45 connector
Max. Cable Length	1200 m
No. of Connectable Expansion	max. 7 units
Operation	Function switch, Covered switch, Broadcast switch
Indicators	Power indicator, Failure indicator, Function switch indicator, Covered switch indicator, Broadcast switch indicator
Operating Temperature	0°C to +40°C
Operating Humidity	35 % to 80 %RH (no condensation)
Finish	ABS resin, black, semi-gloss
Dimensions	190 (W) X 76.5 (H) X 215 (D) mm (excluding microphone)
Weight	880 g
Option	Remote microphone extension: RM-210F Wall mounting bracket: WB-RM200 Electret condenser microphone: WH-4000A, YP-M101, YP-M301 etc.

Remote Microphone Extension

RM-210F

EN 54 16

Model	RM-210F
Power Source	Supplied from the RM-300X (option)
AC Power Consumption	2.4 W (Including power supply loss of the Emergency Power Panel) 0.4 W (Standby, including power supply loss of the Emergency Power Panel)
Current Consumption	80mA or less (Increase in power input at the RM-300X (option))
Operation	Zone selection key x 10
Indicators	Function switch indicator x 10, Zone Selection indicator x 10

Operating Temperature	0°C to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Finish	ABS resin, black, semi-gloss
Dimensions	110(W) x 76.5(H) x 215(D) mm
Weight	350g
Accessory	Connection cable (8 pins, 8 cm) x1, Joint bracket A x2, Joint bracket B x1, Screw for joint bracket x12
Applicable Unit	Remote microphone: RM-300X
Option	Wall mounting bracket: WB-RM200

Fireman's Microphone

RM-200SF

EN 54 16

Model	RM-200SF
Power Source	24V DC (operating range: 15 – 40V DC, supplied from the audio input unit)
Current Consumption	240mA or less
Audio Output	0dB*, transformer-balanced
Distortion	1% or less
Frequency Response	200Hz – 15kHz
S/N Ratio	55dB or more
Microphone	Unidirectional dynamic microphone with talk key, AGC (ON/OFF switchable), microphone element failure detectable by using built-in small oscillator
Volume Control	Microphone volume control, Monitor speaker volume control
Connection Cable	Shielded CPEV cable (each one pair of audio wire, data wire, monitor/control wire, and power supply wire) or Shielded Category 5 twisted pair cable (CAT5-STP), M3 screw terminal
Max. Cable Length	800m
Monitor Speaker	Built inside

*0dB = 1V

No. of Connectable Expansion	Max. 5 units
Operation	Emergency key, Function keys, CPU switch, Reset switch
Indication	Status indicators, Power indicator, Failure indicator, CPU indicator, Selection indicators, Microphone indicator, Broadcast status indicator
Operating Temperature	0°C to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Finish	ABS resin, blueish gray (PANTONE 538 or its equivalent)
Dimensions	200 (W) × 215 (H) × 95 (D) mm
Weight	1.48kg (with wall mounting bracket unit)
Accessory	EMC clamp x1, wall mounting bracket unit x 1, Wall mounting screw x 2, Box mounting screw x 2
Option	Remote microphone extension: RM-210
Applicable Box	YS-11A

Remote Microphone Extension

RM-210

EN 54 16

Model	RM-210
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) ; 80mA max. (in terms of DC power input of RM-200SA and RM-200SF)
Connection	Connection by way of dedicated cable
No. of Function Keys	10

Finish	ABS resin, blueish gray (PANTONE 538 or its equivalent)
Dimensions	110 (W) × 76.5 (H) × 215 (D) mm
Weight	350g
Accessory	Extension cable ×1, linkage bracket A ×2, linkage bracket B ×1, screw for linkage bracket ×12
Applicable Unit	RM-200SA, RM-200SF, RM-200M, RM-200X, RM-200XF, N-8610RM

Remote Microphone

RM-500

	RM-500
Power Source	24V DC (operating range: 15 - 33V DC, Supplied from the applicable system (RJ45 connector) or the optional AD-246 AC adaptor (DC input power supply connector) Usable DC power supply plug: 55mm outer diameter, 2.1mm inner diameter, 9.5mm long, polarized, center positive.
Current Consumption	130mA or less
Audio Output	0dB, balanced, RJ45 connector
AUX Input	1channel, unbalanced, LINE/MIC (selectable with the setting switch) LINE: -20dB, 10kΩ, push-in terminal block MIC: -60dB, 2.2kΩ, push-in terminal block
Control Input	1channel, no-voltage make contact inputs, open voltage: 33V DC, short-circuit current: 10mA, push-in terminal block.
Control Input	1 channel, open collector output, withstand voltage: 30 VDC, control current: 35mA, push-in terminal block
Distortion	1% or less
Frequency Response	100 Hz- 20kHz
S/N Ratio	60 dB or more
Microphone	Unidirectional electret condenser microphone
Chime	Uses the built-in sound sources of the main system unit (one of them selectable by the main system settings)

*0dB = 1V

Level Control	Microphone volume control, AUX volume control
RM Link	Shielded Category 5 twisted pair LAN cable (CAT5-SIP), RJ45 connector Maximum cable distance: 1200m (when powered by optional AD-246 AC adapter)
Connection Cable and Connector	Solid copper wire: Ø0.4 - Ø1.1mm (AWG 28-17)
Operation	Numeric key x10, Left/ right selection key x2, F1/F2 key x2, All key x1, Clear key x1, Talk key x1, AUX key x1
Indicators	LCD display: 3" (255 x 160 dots), with backlight Indicator: talk indicator (green), microphone indicator (green)
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	ABS resin, black, paint
Dimensions	224(W) x 47.2(H) x 136(D) mm (excluding microphone)
Weight	620g
Included Accessories	Zip tie x2
Optional Accessories	Wall mounting bracket: WB-RM500 AC adapter: AD-246
Compatible Model	VX-3000 Series

Wall Mounting Bracket

WB-RM200

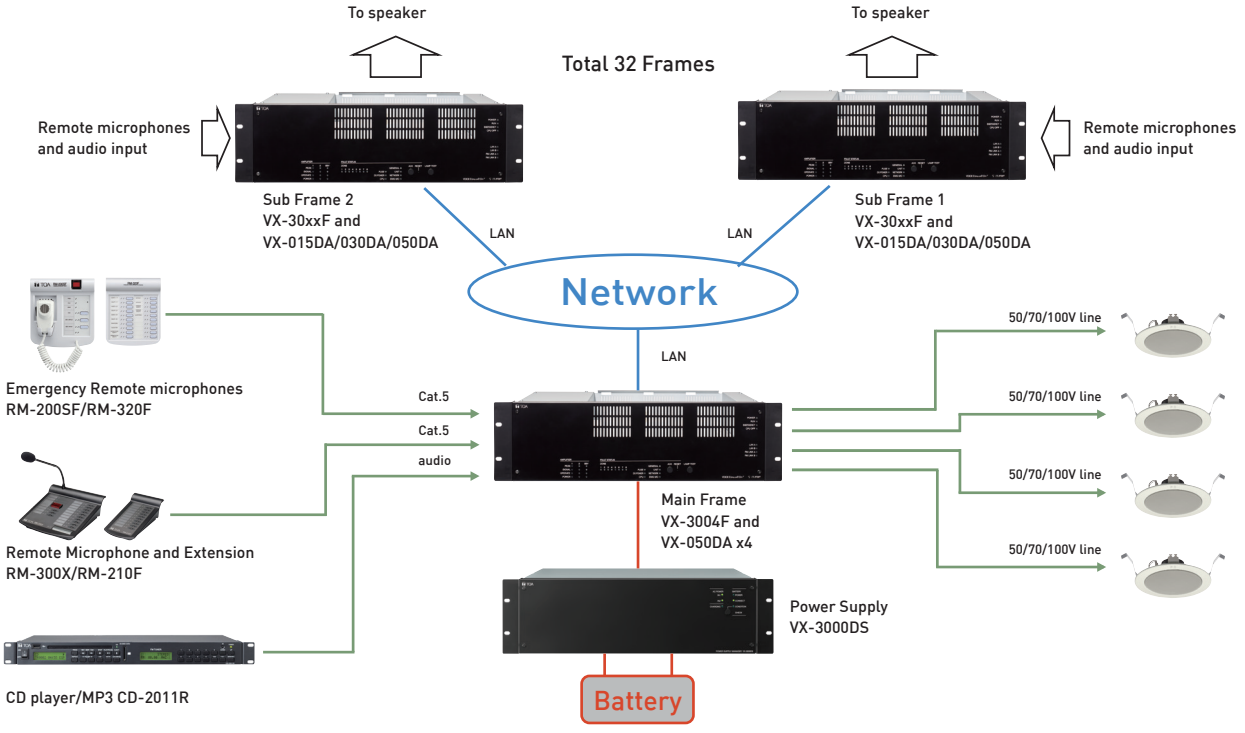
Finish: Surface-treated steel plate, black, paint
Dimensions: 64(W) x 160(H) x 37.4(D) mm
Weight: 100 g
Set Composition: Mount bracket x1
Accessories: Rack mounting screw x1 set
Use with: RM-300X, RM-200SF, RM-200M, RM-210

Wall Mounting Bracket

WB-RM500

Finish: Stainless steel
Dimensions: 146(W) x 113(H) x 23.9(D) mm
Weight:170 g
Included Accessories: Tapping screw (for direct wall mounting) x2
Machine screw (for mounting to the switch box) x2
Use with:RM-500

VX-3000 Series System Configuration



VM-3000 Series

Voice Alarm System Amplifier

VM-3240VA 240W
VM-3360VA 360W

EN 54 16

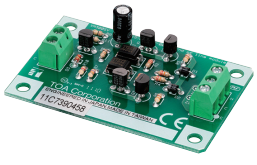
* 0dB = 1V

Model	VM-3240VA	VM-3360VA
Power Source	230V AC, 50/ 60Hz	
Power Consumption	600W (at rated output) 260W (according to EN60065)	850W (at rated output) 380W (according to EN60065)
Rated Output	240W	360W
Frequency Response	50Hz – 20kHz, ±3dB (at 1/3 rated output)	
Distortion	0.7% or less (at rated output, 1kHz)	
Signal-to-Noise Ratio	85dB or more	
Audio Input/ Output Characteristic	Sampling frequency: 48kHz A/D D/A CONVERTER: 24 bit	
Input	Inputs 1 – 3: -50dB* (MIC)/ -10dB* (LINE) (changeable), 600Ω, electronically balanced, combined XLR connector (female)/ phone jack Input 4: -50dB* (MIC)/ -10dB* (LINE) (changeable) 600Ω, electronically balanced removable terminal block (14 x 2pins) BGM 1 – 2: -10dB*, 10kΩ, unbalanced, RCA pin jack External AMP input: 100V line, removable terminal block (14 pins)	
Output	Speaker output 1 – 2: max. (240W) per output Speaker output 3 – 6: max. (120W) per output Speaker output 1 – 6: total within 240W, removable terminal block (14pins) Allowable minimum load: 500Ω (20W) at 100V line for speaker line failure detection Direct output: direct output from internal or external amplifier, removable terminal block (16pins) Recording output BGM/ Paging: 0dB*, 10kΩ, unbalanced, RCA pin jack	Speaker output 1 – 2: max. (360W) per output Speaker output 3 – 6: max. (120W) per output Speaker output 1 – 6: total within 360W, removable terminal block (14pins) Allowable minimum load: 500Ω (20W) at 100V line for speaker line failure detection Direct output: direct output from internal or external amplifier, removable terminal block (16pins) Recording output BGM/ Paging: 0dB*, 10kΩ, unbalanced, RCA pin jack
RM Link	Input 1 – 2: connecting the RM-300MF/ RM-200M remote microphone, RJ45 female connector Max. distance: 800m between this unit and remote microphones Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
Network I/F	10 BASE-T/ 100 BASE-TX (selectable by automatic negotiation), RJ45 female connector Max. distance: 100m between this unit and a switching hub Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
VM Link	Output: connecting the VM-3240E or VM-3360E, RJ45 female connector Max. distance: 800m Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
EXT PA Link	Connecting the VP-2241 (only for VM-3240VA) or VP-2421, RJ45 female connector Max. distance: 5m Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
General Control	Input 1 – 8: no-voltage make contact input, open voltage: 24V DC, short-circuit current: 2mA or less, removable terminal block (14 x 2 pins) Output 1 – 8: isolated open collector output, withstand voltage : 30V DC, operating current: 10mA or less, removable terminal block (14 × 2 pins)	
Emergency Control	Input 1 – 5: no-voltage make contact input, open voltage : 24V DC, short-circuit current: 2mA or less, RJ45 female connector Input 6: isolated voltage input: Inactive: -24V ±20%, active; +24V ±20%, RJ45 female connector Status out: relay contact output, withstand voltage: 40V DC, operating current: 2 - 300mA, RJ45 female connector	
ATT Control	Relay contact 1 – 6, 125V AC or 30V DC, total 5A or less, removable terminal block (16 pins)	
Power In/Out	Power in: connecting the VX-2000DS only (operating range: 20 - 40V DC) PS out: 28V DC/ 18A M4 screw terminal distance between barriers 11mm	Power in: connecting the VX-2000DS only (operating range: 20 - 40V DC) PS out: 28V DC/ 24A M4 screw terminal distance between barriers 11mm
DC24V Output	24V DC, max. feeding current 0.3A	
DS Link	Connecting the VX-2000DS, RJ45 female connector Max. distance: 5m Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
Operating Temperature	-5°C to +45°C	
Operating Humidity	5% to 95% RH (no condensation)	
Finish	Panel aluminum, hairline, black, Case: surface-treated steel plate, black	
Dimensions	482(W) × 132.6(H) × 431.2(D) mm	
Weight	16.5kg	19kg
Accessory	Power cord (2m) ×1, link cable (3m) ×2, plastic foot ×4, plastic foot mounting screw ×4, removable terminal plug (14pins) ×3, removable terminal plug (16pins) ×1, emergency microphone (hand-held) x1, setting software (CD) x1	
Option	Input transformer: IT-450	

Pilot Tone Detection Module

VM-300SV

Speaker line failure can be detected with high accuracy when a VM-300SV unit specifically designed for 100V speaker line is connected between the speaker line end and the emergency input terminal of the VM-3240VA, VM-3360VA, VM-3240E, and VM-3360E.



VM Extension Amplifier

VM-3240E 240W
VM-3360E 360W

EN 54 16

* 0dB = 1V

Model	VM-3240E	VM-3360E
Power Source	230V AC, 50/ 60Hz	
Power Consumption	600W (at rated output), 260W (according to EN60065)	850W (at rated output), 380W (according to EN60065)
Rated Output	240W	360W
Frequency Response	50Hz – 20kHz, ±3dB (at 1/3 rated output)	
Distortion	0.7% or less (at rated output, 1kHz)	
S/N Ration	85dB or more	
Input	Local input: -50dB* (MIC)/ -10dB* (LINE) (changeable), 600Ω, electronically balanced, removable terminal block (14 pins) External AMP input: 100V line, removable terminal block (14 x 2 pins)	
Output	Speaker output 1 – 2: max. (240W) per output Speaker output 3 – 6: max. (120W) per output Speaker output 1 – 6: total within 240W, removable terminal block (14 pins) Allowable min. load: 500Ω (20W) at 100V line for speaker line failure detection Direct output: direct output from internal or external amplifier, removable terminal block (16 pins)	Speaker output 1 – 2: max. (360W) per output Speaker output 3 – 6: max. (120W) per output Speaker output 1 – 6: total within 360W, removable terminal block (14 pins) Allowable minimum load: 500Ω (20W) at 100V line for speaker line failure detection Direct output: direct output from internal or external amplifier, removable terminal block (16 pins)
VM Link	Input: connecting the VM-3240VA or VM-3260VA, RJ45 female connector Output: connecting the VM-3240E or VM-3360E, RJ45 female connector Max. distance: 800m Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
EXT PA Link	Connecting the VP-2241 (for VM-3240E)/ VP-2421 (for VM-3360E), RJ45 female connector Maximum distance: 5m Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
General Control	Input 1 – 8: no-voltage make contact input, open voltage: 24V DC, short-circuit current: 2mA or less, removable terminal block (14 x 2 pins) Output 1 – 8: isolated open collector output, withstand voltage: 30V DC, operating current: 10mA or less, removable terminal block (14 x 2 pins)	
Emergency Control	Input 1 – 5: no-voltage make contact input, open voltage : 24V DC, short-circuit current: 2mA or less, RJ45 female connector Input 6: isolated voltage input: Inactive: -24V ±20%, active: +24V ±20%, RJ45 female connector Status out: relay contact output, withstand voltage: 40V DC, operating current: 2 – 300mA, RJ45 female connector	
ATT Control	Relay contact 1 – 6, 125V AC or 30V DC, total under 5A, removable terminal block (16 pins)	
Power In/ Out	Power in: connecting the VX-2000DS only (operating range: 20 - 40V DC) PS out: 28V DC/18A M4 screw terminal distance between barriers 11mm	Power in: connecting the VX-2000DS only (operating range: 20 - 40V DC) PS out: 28V DC/ 24A M4 screw terminal distance between barriers 11mm
24V DC Output	24V DC, Max. feeding current 0.3A	
DS Link	Connecting the VX-2000DS, RJ45 female connector Max. distance: 5m Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	
Operating Temperature	-5°C to +45°C	
Operating Humidity	5% to 95% RH (no condensation)	
Finish	Panel aluminum, hairline, black, Case: surface-treated steel plate, black	
Dimensions	482(W) × 132.6(H) × 407(D) mm	
Weight	16.5kg	19kg
Accessory	Power cord (2m) ×1, link cable (3m) ×2, plastic foot ×4, plastic foot mounting screw ×4, removable terminal plug (14 pins) ×3, removable terminal plug (16 pins) ×1	

VM-3000 Series Microphones and Optional Accessories

Fireman's Microphone

RM-300MF

EN 54 16

Model	RM-300MF
Power Source	24V DC (operating range; 15 – 40V DC, supplied from the VM-3000 system)
Current Consumption	120mA (RM-300MF), 660mA (with 3 RM-320F connected)
Frequency Response	200Hz – 15kHz
Distortion	1% or less
S/N Ratio	55dB or more
Microphone	Unidirectional dynamic microphone with talk key, compressor (on/off switchable)
Volume Control	Microphone volume control, buzzer volume control
Connection Cable	Main line: shielded CPEV cable (each one pair of audio line, data line, power supply line) or category 5 shielded twisted-pair straight cable for LAN (CAT5-STP), M3 screw terminal
No. of Connectable RM-320F	Max. 3 units

Max. Cable Distance	Total 800m
Operation	Emergency key, evacuate key, alert key, emergency reset key CPU switch, reset switch
Indicator	Power indicator, emergency indicator, CPU OFF indicator, communication failure indicator, evacuation announcement indicator, emergency reset indicator, alert announcement indicator, microphone in-use indicator, emergency broadcast equipment in-use indicator
Operating Temperature	-5°C to 45°C
Operating Humidity	5% to 95% RH (no condensation)
Finish	ABS resin, blueish gray (PANTONE 538 or its equivalent)
Dimensions	200(W) × 215(H) × 82.5(D) mm
Weight	1.1kg (with wall mounting bracket unit)
Accessory	Wall mounting bracket ×1, wall mounting screw ×2, electrical box mounting screw ×2

Remote Microphone

RM-200M

EN 54 16

*1 0dB = 1V
*2 Connecting VM-2000 only

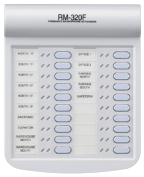
Model	RM-200M
Power Requirement	24V DC (operating range: 14 – 28V DC) Power input jack: non-polarity type Usable power input plug (use AC adapter AD-246 or equivalent): outer diameter ø5.5mm, inner diameter ø2.1mm, length 9.5mm
Current Consumption	100mA or less
Distortion	1% or less
Frequency Response	100Hz – 20kHz
S/N Ratio	60dB or more
Audio Output	0dB*1, 600Ω, balanced
Microphone	Unidirectional electret condenser microphone
No. of Function Keys	13, emergency key (covered), talk key

Emergency Broadcast*2	Activation of emergency broadcast (pre-recorded announcement or live microphone announcement) by emergency broadcast switch
Volume Control	Microphone volume control
Connection Cable and Connector	Category 5 STP cable, RJ45 connector
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)
Dimensions	190(W) × 76.5(H) × 215(D) mm (gooseneck microphone excluded)
Weight	750g
Accessory	Link cable (3m) x1
Option	Wall-mounting bracket: WB-RM200

Fireman's Microphone Extension

RM-320F

EN 54 16



Model	RM-320F
Current Consumption	180mA max. (in terms of RM-300MF)
Connection	Connection to RM-300MF by dedicated cable
No. of Function Keys	20
Finish	ABS resin, blueish gray (PANTONE 538 or its equivalent)

Dimensions	175 (W) × 215 (H) × 70 (D) mm
Weight	700g
Accessory	Wall mounting bracket ×1, wall mounting screw ×2

Remote Microphone Extension

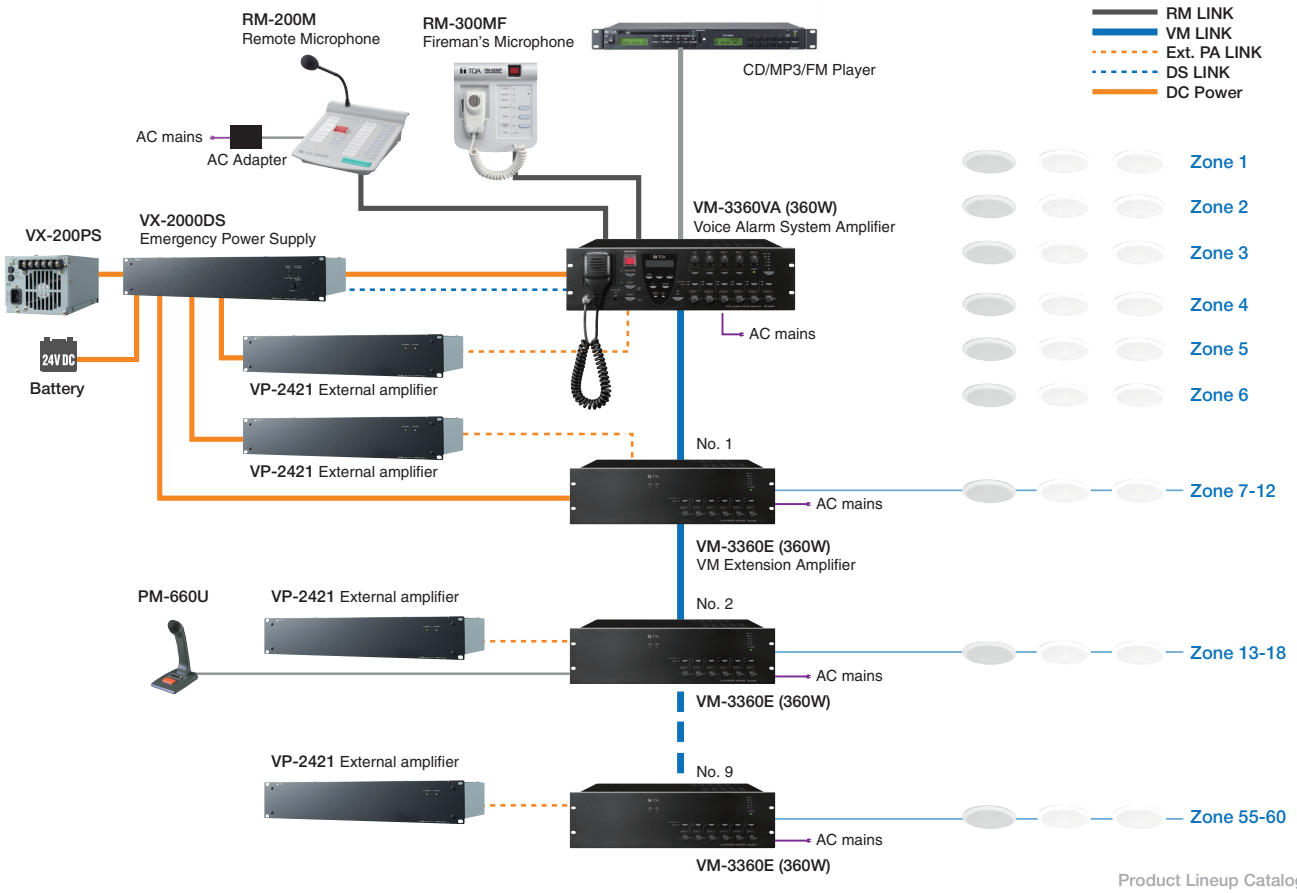
RM-210

EN 54 16

Model	RM-210
Current Consumption	20mA max. (in terms of RM-200M's DC power input); 80mA max. (in terms of DC power input of RM-200SF)
Connection	Connection by way of dedicated cable
No. of Function Keys	10
Finish	ABS resin, blueish gray (PANTONE 538 or its equivalent)

Dimensions	110 (W) × 76.5 (H) × 215 (D) mm
Weight	350g
Accessory	Extension cable ×1, linkage bracket A ×2, linkage bracket B ×1, screw for linkage bracket ×12
Option	Wall mounting bracket: WB-RM200
Applicable Unit	RM-200SF, RM-200M, N-8610RM

VM-3000 Series Application Example



VM-2000 Series

System Management Amplifier

VM-2120 120W
VM-2240 240W

Model	VM-2120	VM-2240
Power Source	230V AC, 50/ 60Hz 24V DC / 7.5A, M3.5 screw terminal, barrier distance: 8mm, Applicable cable diameter: AWG22 – AWG14	230V AC (CE-AU / ER / H version) or 120V AC (L version), 50/ 60Hz 24V DC / 15A, M3.5 screw terminal, barrier distance: 8 mm, Applicable cable diameter: AWG22 – AWG14
Power Consumption on AC Mains	With no signal present: 37W Under normal operating conditions according to EN60065: 1998 sec. 4.2: 107W With rated output signal: 201W	With no signal present: 54W Under normal operating conditions according to EN60065: 1998 sec. 4.2: 255W With rated output signal: 549W
Current Consumption on 24V DC Power Input	With no signal present: 0.7A Under normal operating conditions according to EN60065: 1998 sec. 4.2: 2.1A With rated output signal: 5.2A	With no signal present: 1A Under normal operating conditions according to EN60065: 1998 sec. 4.2: 5A With rated output signal: 14A
Rated Output	120W	240W
Output Voltage/ Impedance	100V/ 83Ω, 70 V/ 42Ω, 50 V/ 21Ω (selectable by the internal wiring change)	100V/ 42Ω, 70V/ 21Ω, 50V/ 10Ω (selectable by the internal wiring change)
Frequency Response	50Hz – 16kHz	
Distortion	1% or less	
Signal-to-Noise Ratio	60dB or more	
Tone Control	Bass: 100Hz ±10dB, treble: 10kHz ±10dB (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 Max. distance: 800m Link cable: Category 5 shielded No. of connectable RM-200M's: Up to 4 Twisted-Pair straight cable (TIA/ EIA-568A standard)	
Input	Inputs 1 – 3: -60dB*1 (MIC)/ -10dB*1 (LINE) (changeable), 600Ω, 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: -10dB*1, 10kΩ, electronically-balanced input with shield terminal*2 control: no-voltage make contact input, open voltage: 3.3V DC, short-circuit current: under 1mA BGM 1 – 2: -20dB*1, 10 kΩ, RCA pin jack, monaural (internally mixed) Power amplifier input: 0dB*1, 10kΩ, RCA pin jack External speaker line input: 100V 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: 0dB*1, 10 kΩ RCA pin jack Recording output: 0dB*1, 10 kΩ, RCA pin jack Preamplifier output: 0dB*1, 10 kΩ, RCA pin jack	
Control Input	For controlling inputs 1 – 3, push-in terminal block No-voltage make contact input, open voltage: 3.3V DC, short-circuit current: 1mA or less	
Control Input and Output	D-sub connector (25-pin, female) Input: no-voltage make contact input, open voltage: 3.3V DC, short-circuit current: 1mA or less Output: open collector output, withstand voltage: 30V DC, cont rol current: 10mA or less (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: 30V DC, 125V A contact current: 7A(DC) or less, 7A(AC) or less	
Surveillance Input and Output* 7	D-sub connector (25-pin, female) Input: no-voltage make contact input, open voltage: 3.3V DC, sh ort-circuit current: under 1mA Output: open collector output, withstand voltage: 30V DC, control current: 10mA or less	
Power Supply	24V DC/0.1A, for supplying power to an optional amplifier control unit RU-2001/ RU-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)/ 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: 40Ω or less (one way)	
Operating Temperature	0°C to +40°C	
Finish	Panel: ABS resin, dark gray (PANTONE 447C or its equivalent) Case: steel plate, dark gray (PANTONE 446C or its equivalent)	
Dimensions	419(W) × 143.3(H) × 355.7(D) mm	
Weight	12.5kg	14.5kg
Accessory	Power cable(2m) ×1, miniature type time-lag fuse T2.5A ×1, name label ×1, volume cover ×4	
Option	Rack mounting bracket: MB-36, input transformer: IT-450, voice announcement board: EV-200M, surveillance board: SV-200MA	

*1 0dB = 1V
*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, 0.5mm^2.
*5 Usable cable diameter: AWG24 – AWG12, 2.5mm^2.
*6 An optional EV-200M voice announcement board is required.
The chime sound source must be pre-recorded into CF(CompactFlash) card to be inserted into the EV-200M board.
*7 An optional SV-200MA surveillance board is required.

VM-2000 Series Microphones and Optional Accessories

Remote Microphone

RM-200M

*1 0dB = 1V
*2 Connecting VM-2000 only

Model	RM-200M
Power Requirement	24V DC (operating range: 14 – 28V DC) Power input jack: Non-polarity type Usable power input plug (use AC adapter AD-246 or equivalent): outer diameter ø5.5mm, inner diameter ø2.1mm, length 9.5mm
Current Consumption	100mA or less
Distortion	1% or less
Frequency Response	100Hz – 20kHz
S/N Ratio	60dB or more
Audio Output	0dB*1, 600Ω, balanced
Microphone	Unidirectional electret condenser microphone
No. of Function Keys	13, emergency key (covered), talk key
Emergency Broadcast*2	Activation of emergency broadcast (pre-recorded announcement or live microphone announcement) by emergency broadcast switch
Volume Control	Microphone volume control
Connection Cable and Connector	Category 5 STP cable, RJ45 connector
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)
Dimensions	190(W) × 76.5(H) × 215(D) mm (gooseneck microphone excluded)
Weight	750g
Accessory	Link cable(3m) x1
Option	Wall-mounting bracket: WB-RM200

Remote Microphone Extension

RM-210

Model	RM-210
Current Consumption	20mA max. (in terms of RM-200M's DC power input); 80mA max. (in terms of DC power input of RM-200SF)
Connection	Connection by way of dedicated cable
No. of Function Keys	10
Finish	ABS resin, blueish gray (PANTONE 538 or its equivalent)
Dimensions	110 (W) × 76.5 (H) × 215 (D) mm
Weight	350g
Accessory	Extension cable ×1, linkage bracket A ×2, linkage bracket B ×1, screw for linkage bracket ×12
Option	Wall mounting bracket: WB-RM200
Applicable Unit	RM-200SF, RM-200M, N-8610RM

Voice Annoucement Board

EV-200M

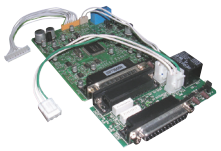
* 0dB = 1V

Model	EV-200M
Power Source	24V DC, 0.2A
Power Consumption	5W
Output	0dB*
Frequency Response	20Hz – 20kHz (44.1kHz sampling) 20Hz – 14kHz (32kHz sampling)
Distortion	0.3% or less (44.1kHz, recording method: extremely high)
Playback Mode	Single source playback
No. of Playback Program	8 programs
Operating Temperature	0°C to +50°C
Operating Humidity	90% or less RH (no condensation)
Dimensions	120(W) × 18.6(H) × 121(D) mm
Weight	120g
Accessory	Mounting screw ×2, CompactFlash card (128MB, preinstalled on the unit) ×1

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

Surveillance Board

SV-200MA



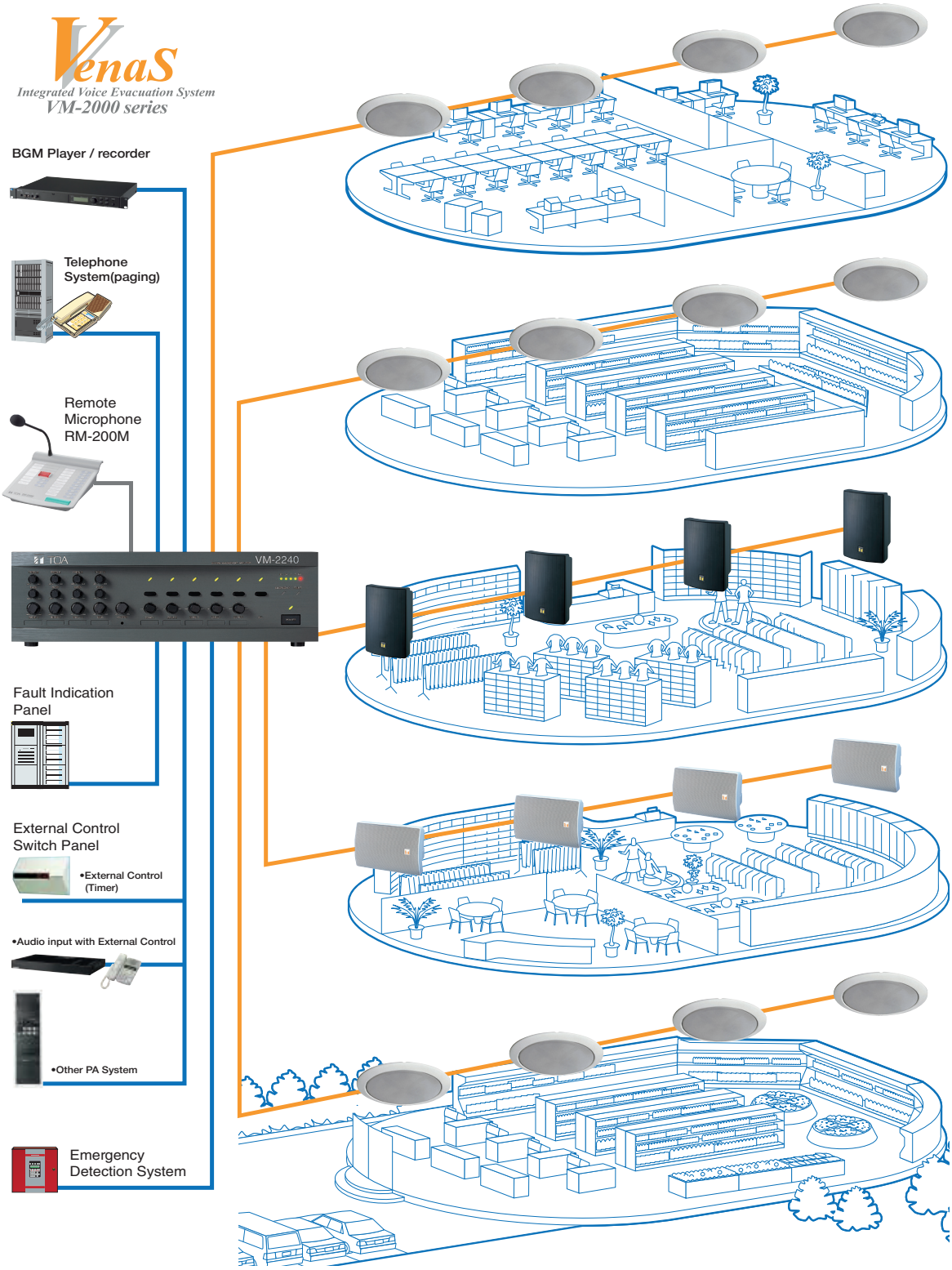
Model	SV-200MA
Power Source	24V DC
Current Consumption	120mA
Control Input / Output	
Input	No-voltage make contact input, open voltage: 3.3V DC, short circuit current: 1mA or less (1) Speaker line initial setting activation signal (2) Speaker line surveillance activation signal
Output	Open collector output, withstand voltage: 30V DC, control current: 10mA or less (1) Monitoring short or open of individual speaker line (zone 1 – 5) (2) Ground fault (insulation resistance: 50kΩ or less) (3) Power amplifier failures
Input/ Output	Input: no-voltage make contact input, open voltage: 24V DC, short circuit current: 60mA or less
Connector	Output: open collector output, withstand voltage: 24V DC (used with VM 24V DC output), control current: 20mA or less (1) Speaker zone information/selection (2) Power amplifier fault link D-sub connector (25 pins, female)
Failure Detection	Power amplifier failure: 20kHz pilot tone detection Speaker line failure: 40Hz impedance detection (detectable minimum load: 5W)
Speaker Line Surveillance	Speaker lines are automatically monitored at set time intervals
Set Time	(10 – 60min, at 10min intervals)
Operating Temperature	0°C to +50°C
Operating Humidity	90% RH or less (must be free from dew condition)
Dimensions	90(W) × 20.6(H) × 157(D) mm
Weight	140g
Accessory	Flat cable ×2

Wall Mounting Bracket

WB-RM200

Finish: Surface-treated steel plate, black, paint
Dimensions: 64(W) x 160(H) x 37.4(D) mm
Weight: 100 g
Set Composition: Mount bracket x1
Accessories: Rack mounting screw x1 set
Use with: RM-300X, RM-200SF, RM-200M, RM-210

VM-2000 Series System Configuration



Rack Mount Equipment

Program Timer

Program Timer

TT-208-AS

Model	TT-208-AS
Power Source	220 - 230 V AC, 50/60 Hz
Power Consumption	10W
Audio Output	Westminster chime Level : 0 dB, 600 Ω
Frequency Response	20Hz – 20kHz
Synchronise Time	Send out pulse per 1 minute
Control Output	8 channels contact switch(NO), 1 output contact switch(NO)
Display	Power indicator: Green, LCD character: Back light green, USB indicator PC link: Orange

Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Color	Front panel: aluminum, black, alumite Case: SECC plate, black, paint
Dimensions	420(W) x 59(H) x 342(D) mm
Weight	3.2 kg
Option	Rack mounting bracket: MB-15B
Accessory	Power cable(YA-301) x1, removable terminal plug (2pins) x12 CD Rom (software & manual) x1

Audio Player

Music Device with CD Player

MD-210CTU-EB

Model	MD-210CTU-EB
Power Source	100~240 V AC, 50/60Hz (use of the supplied AC adapter)
Power Consumption	8W
Frequency Response	20 - 20kHz, ± 3dB
Tuner Receiving Frequency	87.5 - 108MHz (50kHz step)
Audio Input	FM 75Ω antenna terminals, USB port for memory stick (up to 32GB, type file: MP3 file & WAV file), SD/ MMC card slot (up to 32GB, type file: MP3 file & WAV file), CD port for disk (type file: MP3 file)
Audio Output	RCA audio output L and R channels for FM, RCA audio output L and R channels for CD/USB/SD, RCA audio output L and R channels for PRIORITY

Channels of Memory Tuner	30 channels in total for FM broadcasts
Indicators	2 LC-Display light blue 2 LED indicator light green
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Finish	Front Panel: aluminum, black, paint Case: Steel plate, black, paint
Dimensions	482(W) × 44(H) × 250(D) mm
Weight	3.5kg
Accessory	AC adapter x1, power cord x2, antenna cable x1, remote controller x1

Sound Repeater

Desktop Sound Repeater

EV-20R

*1 0dB = 1V

Model	EV-20R
Power Source	Supplied from an external 24 V DC/ 400 mA 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	20Hz – 20kHz, ±3dB(1kHz) 50Hz – 14kHz, ±3dB (IT-450 mounted, 1kHz)
Distortion	1% or less (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, removable terminal block (22P)
Control Output	Busy: contact capacity 30V DC/0.5A, removable terminal block(22P)
Input	Input/ recording input: Mic/ Line changeable, -60dB*1 2.2kΩ(MIC), -20dB*1 10kΩ (LINE), unbalanced, phone jack Line input: 0dB*1, 10kΩ, unbalanced, removable terminal block(22P)
Output	Line output: 0dB*1, 600Ω, unbalanced, removable terminal block (22P) Headphone output: 0dB*1, 100Ω, unbalanced, phone jack Speaker output: 3W, 8Ω, removable terminal block(22P)
LED Indicator	POWER, USB, START/ STOP 1 – 4

Max. No. of Messages	4 Pre-recorded audio data: Message 1 Westminster chime Message 2 Ascending 4-tone chime Message 3 Descending 4-tone chime Message 4 None Note: The above audio sources can be overwritten by using the supplied software.These audio sources are also contained in the supplied CD-ROM as sample audio data.
Max. Recording Time	6 minutes
Messages Delay Time	0, 2s, or 4s(selectable)
Playback Interval Time	∞, 0, 5s, 10s, 30s, 1min, 5min, 10min, 30min or 1h(selectable)
Finish	ABS resin, black
Dimensions	210(W) x 44.2(H) x 181(D) mm (excluding projection)
Weight	730g
Accessory	CD-ROM (USB data transfer software and sample chimes recorded) ×1, Unbalanced-phone plug ×1, USB cable(1m) x1, removable Terminal block (22P) ×1, Rubber foot ×4
Option	Rack mounting bracket: MB-WT3 (for rack mounting one EV-20R unit), MB-WT4 (for rack mounting two EV-20R units) AC adapter: AD-246

Digital Announcers

Digital Announcer

EV-700

Model	EV-700
Power Source	Supplied from an external 24 V DC/ 400 mA power supply, removable terminal block (2 pins) or from an optional AD-246 AC adapter
Power Consumption	10W
Wave Format	44.1kHz/ 32kHz sampling frequency, 16-bit PCM, WAV file(monaural)
Sound Source Rewriting Method	LAN data transfer/analog recording/ direct write to memory card using the setting software
Audio Input	MIC:-55dB*1 (microphone input volume control in maximum position), 600 Ω, unbalanced, ø6.3 phone jack(2P) LINE(rear): -20dB*1 (line input volume control in maximum position),10kΩ, unbalanced, removable terminal block (12pins) LINE(front): -29dB*1 (line input volume control in maximum position), 10kΩ, unbalanced, RCA pin jack
Audio Output	LINE 1, 2: 0dB*1, 600Ω, unbalanced, removable terminal block (12pins) Headphone: 0dB*1, 100Ω, monaural, ø3.5 mini jack (3P)
Frequency Response	20Hz – 20kHz, ±3dB (1kHz) 50Hz – 14kHz, ±3dB (IT-450 mounted, 1kHz)
Distortion	3% or less (1kHz, rated output)
Storage Media	Compatible with Compact Flash™ specification memory card
Number of Mountable Memory cards	2 (1 Memory card containing preset sound sources is supplied.) Backup operation available when 2 cards are mounted.
Number of Recordable Phrases	32768
Maximum Recording Time	About 3 hours (at 44.1kHz sampling rate) or about 4 hours (at 32 kHz sampling rate)
Audio Output Method	Single channel monaural
Number of Playback Programs	Direct mode: 16 programs, binary mode: 256 programs 1 emergency message takes precedence over the above programs and is played back. R.E.M. (Recording Endless Message) playback*2 can be performed.

Control Input	Activations 1-16, playback pause, recording, erasure/clear, emergency playback, emergency recording, emergency pause No-voltage make contact input, pulse make length: 50 ms or more, open voltage: 30 V DC, short-circuit current: 10mA, removable terminal block (12 pins, 16 pins)
Control Output	Shorting outputs 1-8 (busy), error: contact capacity: 30 V DC, 0.5 A, removable terminal block (8 pins)
Network	
Network I/F	100BASE-TX
Network protocol	TCP/IP, UDP, HTTP, FTP
Connector	RJ45 connector
Operating Display	7-segment LED, 5 digits
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: Aluminum, black, 30% gloss, paint Case: Pre-coated steel plate, black, 30% gloss
Dimensions	420(W) x 44(H) x 222(D) mm
Weight	2.4 kg
Accessory	Memory card (1 GB, containing prerecorded audio files) x1, rubber foot x4, removable terminal plug (2 pins) x1, removable terminal plug (8 pins) x2, removable terminal plug (12 pins) x2, removable terminal plug (16 pins) x2, front cover fixing screw x2, CD (setting software) x1
Option	AC adapter: AD-246, rack mounting bracket: MB-15B

(*1) 0dB = 1V
(*2) An emergency broadcast function that repeatedly plays the sound source recorded on the spot with the highest priority in case of an emergency situation.
※ Line outout can be converted to balanced type using an optional IT-450 transformer.
※ CompactFlash is a trademark of SanDisk Corporation.

Speaker Selectors

Speaker Selector

SS-2010-AS

Model	SS-2010-AS
Voltage Source	24V DC
Current Consumption	1.0A DC
Inputs	10 inputs BGM, 10 inputs paging
Output	10 outputs, each output channel max. 480W at 100V line
Controls (Front)	10 BGM selectors, 10 paging selectors,1 all call selector
Controls (Rear)	1-10 paging controls in, all paging control in

Indicator Led	10 BGM selector LEDs, 10 paging selector LEDs, 1 All Call LED
Operating Temperature	0°C to +40°C
Finish	Front Panel : aluminum hair line, etching black Case : steel plate, black
Dimensions	482(W) x 44(H) x 320(D) mm
Weight	3.2kg
Accessories	6P connectors x12, 2P connector x1

Speaker Selector

SS-1010

Model	SS-1010
Voltage Source	24V DC
Current Consumption	0.4A DC
Inputs	10 inputs zone, 1 emergency override
Output	10 outputs zone, each output max. 480W
Controls (Front)	10 zone selectors, 1 all zone selector for all zone
Controls (Rear)	1-10 zone controls in, all zone control in for all zone

Indicator Led	10 zone selector LEDs, 1 all zone LED
Operating Temperature	0°C to +40°C
Finish	Front panel : aluminum hair line, etching black Case: steel plate, painting black
Dimensions	420(W) × 44(H) × 320(D) mm
Weight	3.2kg
Accessories	6P connectors x12, 2P connector x1

Line Converter

Line Converter

LC-100

Model	LC-100
Input	10kΩ, Unbalanced, pluggable terminal block with input selector: 100V. 70V, 50V, 25V
Output	Line Out: 0 dB with adjustable volume, 600Ω, unbalanced, pluggable terminal block Aux Out: -20 dB = 100mV, 600Ω, unbalanced, RCA pin jack
Frequency Response	20 Hz - 20 kHz
Operating Temperature	0 °C to +40 °C
Finish	Upper Case: Surface-treated steel plate, painting black Lower Case: Surface-treated steel plate
Dimensions	129 (W) x 41 (H) x 90 (D) mm
Weight	256g
Accessory	Removable Terminal Plug x1

Multi-Channel Monitors

Monitor Panel

MP-011

Model	MP-011
Power Source	24V DC
Power Consumption	400mA
Input	10 zones high impedance level: 50V, 70V, 100V (selectable) Line level: 0dBV (1V)
Monitor Speaker	33 × 140mm dynamic speaker, 3W/ 8Ω

Meter	7-point LED meter
Control Signal Input	Emergency control signal (bypasses volume control) Talk switch signal (feedback prevention)
Dimensions	482(W) × 44(H) × 219.1(D) mm
Weight	Approx. 2.45kg

Monitor Panel

MP-032B

Model	MP-032B
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 12cm speaker
Input Lines	25V(625Ω), 50V(2.5kΩ), 70V(5kΩ),100V(10kΩ) switchable

Terminals	M4 screw terminals, distance between barriers: 8.8mm
Finish	Surface-treated steel plate, black
Dimensions	482(W) × 133(H) × 87(D) mm
Weight	2.2kg
Accessory	Rack mounting screw (with washer) ×4

16 Channel Audio Monitor Panel

MP-16

*0dB = 1V

Model	MP-16
Power Source	Supplied from an external 24V DC (20-33 V) power supply, removable terminal block (2pins) or AC adapter AD-246 (option)
Power Consumption	520 mA(max.)
Input	High impedance speaker: Max 100V Low impedance speaker: 1200W (8Ω) Line: +6 dB*
Output	Speaker output: Max. 3W Headphone output: 8Ω
Level Display	Meter: 12-segment LED meter x16 Level indications: 1.6 – 100V (high impedance speaker) 0.3W – 1200W (low impedance speaker) -30dB to +6dB* (line)

Operating Temperature	0 °C to +40 °C
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: pre-coated steel plate, black, 30% gloss Case: surface-treated steel plate
Dimensions	482(W) × 88.4(H) × 240.8(D) mm
Weight	3.9kg
Accessory	Removable terminal plug (10pins, input terminal) x8, removable terminal plug (2pins, power supply) x1, rack mounting screw x4
Option	AC adapter: AD-246

Monitor Panel

MP-210-AS

Model	MP-210-AS
Power Requirements	24V DC
Current Consumption	30mA
Input	10zones high impedance level: 100V line Level line: 40dBV(100V)
Speaker Component	30 x 70mm cone speaker 6W/ 8Ω
Monitor Level	6-point LED display

Control Panel	Channel selector switch, volume control switch
Color	Front panel: black, chassis and case: natural SECC
Dimensions	482(W) x 44(H) x 116.4(D) mm
Weight	Approx. 1.1kg
Accessory	Removable terminal plug(2 pins) x10

Rack Mount Associated Equipment

Junction Box

JB-031B

Model	JB-031B
No. Of Terminals	3 terminal blocks ×4 (18 terminals per block) (72 terminals in total)
Current capacity	250V/ 20A per terminal
Color	Black
Dimensions	483(W) × 132.6(H) × 285(D) mm
Weight	3.5kg

IP Audio Equipment

CX-1000 Series

System Manager
CX-SM1000

*1 0dB = 1V

Model	CX-SM1000
Power Source	24 V DC (operating range: 21.6 - 26.4 V DC) Removable terminal block (2 pins) or use of the optional AC adapter
Current Consumption	200mA
Power Consumption	5W
Network Section	Network I /F: 100Base- TX Network protocol: TCP /IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, IGMP, NTP, SIP, FTP, RSTP, DNS Connector: RJ45 connector x 2 Network cable: UTP (Cat5 or greater)
Maximum No. of Configurations	CX-OP1700: 100 units, CX-OP1500: 3000 units CX-CL1750: 3000 units, CX-CL1550: 3000 units CX-RM1700: 100 units, CX-AF1026: 300 units CX-PA1120/ CX-PA1240: 300 units CX-CC1016: 100 units CX-SM1000: 1 unit (Only 1 unit per system, Indispensable)
Number of Audio Links	Maximum 200 links within the system (each 1 link for calls and multi/unicast broadcasts)
User Control	FAULT ACK x 1, FAULT RESET x 1, Reset key x 1, Setting switch x LED indicators: LAN (green)x 2, POWER (green)x 1, RUN (green) x 1 STATUS (yellow, red, green) x 11
Indicators	LED indicators: LAN (green) x 2, POWER (green) x 1, RUN (green) x 1, STATUS (yellow, red, green) x 1
Control Output	1 channel, relay contact output, maximum contact capacity : 30 V DC/1.0 A 1 channel, open collector output, maximum contact capacity : 30 V DC/100 mA, removable terminal block (5 pins)
SD Section	Setting file upload/download/for log storage Media: SD/SDHC/SDXC(*2) *No SD card provided.
Installation Method	Desktop, rack, or wall mounting (Rack or wall mounting needs optional brackets.
Operating Temperature	0 °C to +40 °C (32 °F to 104 °F)
Operating Humidity	90 %RH or less (no condensation)
Finish	Panel, Case: Pre-coated steel plate, black, 30 % gloss
Dimensions	210 (W) x 44.3 (H) x 268 (D) mm
Weight	1.5kg
Accessory	Removable terminal plug (2 pins) x 1, Removable terminal plug (5 pins) x 1, Plastic foot x 4, Screw for fitting plastic foot x 4
Option	AC adaptor: AD-246 Wall mounting bracket: YC-850 Half width blank panel: MB-15B-BK (for rack mounting one CX-SM1000 unit) Rack joint bracket: MB-15B-J (When mounting the unit on the rack in conjunction with the CX-CC1016)

Note:
(*1) The maximum number of configurations means that the entire system can be configured to have the maximum number of audio inputs, audio outputs. control inputs/outputs, and speaker line outputs, within the range not exceeding the maximum allowable number for each device.
(*2) For SD cards that have been verified to work, please refer to the document "Verified SD Cards".

Control I/O Unit
CX-CC1016

*1 0dB = 1V

Model	CX-CC1016
Power Source	24 V DC (operating range: 21.6 - 26.4 V DC) Removable terminal block (2 pins) or use of the optional AC adapter
Current Consumption	230mA
Power Consumption	5.5W
Network Section	Network I/F: 100Base-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, FTP Connector: RJ45 connector x 1 Network cable: UTP (Cat5 or greater)
User Control	Reset key x 1
Indicators	LED indicators: LAN (green) x1, POWER (green) x1, RUN (green) x1, STATUS (yellow, red, green) x1 Control output indicators: CONTROL OUTPUT (green) x16
Control Input	16 channels, no-voltage make contact input, open voltage: 24 V DC, short-circuit current: 10 mA or less, removable terminal block (10 pins x2)
Control Output	16 channels, relay contact output, maximum contact capacity: 30 V DC/1.0 A, removable terminal block (16 pins x2)
Installation Method	Desktop, rack, or wall mounting (Rack or wall mounting needs optional brackets.)
Operating Temperature	0 °C to +40 °C
Operating Humidity	90 %RH (no condensation)
Finish	Panel, Case: Pre-coated steel plate, black, 30 % gloss
Dimensions	210 (W) x44.3 (H) x266.7 (D) mm
Weight	1.5kg
Accessory	Removable terminal plug (2 pins) x 1, Removable terminal plug (10 pins) x 2, Removable terminal plug (16 pins) x 2, Plastic foot x4, Screw for fitting plastic foot x 4
Option	AC adaptor: AD-246 Wall mounting bracket: YC-850 Half width blank panel: MB-15B-BK (for rack mounting one CX-CC1016 unit) Rack joint bracket: MB-15B-J (for rack mounting two CX-CC1016 units)

Operation Station

CX-OP1500

*1 0dB = 1V

Model	CX-OP1500
Power Source	PoE (IEEE802.3af compliant) or 12 V DC (use of the optional AC adapter)
Current Consumption	PoE: 120 mA, 12 V DC (AC adapter): 340 mA
Power Consumption	4.5W
Speech Method	Handset: Full-duplex, Hands-free: Full-duplex (echo canceler + voice switch), Half-duplex (PTT)
Frequency Response	Conversation /Broadcast: 300 Hz - 7 kHz
Hands-free	Speaker: Dynamic type speaker, maximum output 2.0 W, Microphone: Omni-directional digital MEMS microphone x 2
Handset	Receive path: Dynamic type speaker, Send path: Electret condenser microphone
Headset	Speaker: Dynamic type speaker, 32 Ω, Ø3.5 mm mini jack Microphone: Electret condenser microphone, Ø3.5 mm mini iack
External Speaker	Maximum output 2.0 W, 8 Ω, push-in terminal (2 pins)
Signal Processing	Input channel: Gain, EQ x 2, Comp, AGC, noise canceler, echo canceler, voice switch, microphone array, speech enhancement Output channel: Gain, EQ x 7
Network Section	Network I/F: 100Base-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, I GMP, NTP, SIP, FTP, RSTP Audio packet transmission method: Unicast, Multicast Number of broadcasting destinations: Unicast (max. 16), Multicast (max. 2999) Connector: RJ45 connector x 2, LAN A (PoE compatible), LAN B (PoE incompatible) Network cable: UTP (Cat5 or greater)
Audio Transmission	Sampling frequency: 16 kHz, 8 kHz (controllable on the software) Audio codec: PCM, G.722, G.711 μ-Law/A-Law Quantization bit depth: 16-bit Voice packet loss recovery: Silence insertion
User Control	Dial key, Direct key x10, Function 1, Function 2, Broadcast, Hold, Transfer, PTT, Cancel
Indicators	LCD: 16 characters x 2 lines LED indicators: RUN (green) x 1, STATUS (yellow, red, green) x 1
Control Input	2 channels, no-voltage make contact input, open voltage: 12 V DC, short-circuit current: 5 mA or less, push-in terminal (3 pins)
Control Output	2 channels, open collector output, maximum contact capacity : 30 V DC/100 mA, push-in terminal (3 pins)
Audio Transmission	Desktop installation or wall mounting (Wall mounting needs an optional bracket.)
Operating Temperature	0 °C to +40 °C
Operating Humidity	90 %RH (no condensation)
Finish	ABS Resin, Dark Gray
Dimensions	148 (W) x 78.9 (H) x 200 (D) mm (excluding cord)
Weight	760g
Accessory	Stand x1, Stand Fixing Screw x2, Zip tie x2
Option	AC adaptor: AD-1210P, AD-1215P, Wall mounting bracket: YC-1001

Video Operation Station

CX-OP1700

*1 0dB = 1V

Model	CX-OP1700
Power Source	PoE (IEEE802.3af compliant) or 12 V DC (use of the optional AC adapter)
Current Consumption	PoE: 210 mA, 12 V DC (AC adapter): 680 mA
Power Consumption	8.5W
Speech Method	Handset: Full-duplex, Hands-free: Full-duplex (echo canceler + voice switch), Half-duplex (PTT)
Frequency Response	Conversation: 300 Hz - 7 kHz, Broadcast: 300 Hz - 16 kHz
Hands-free	Speaker: Dynamic type speaker, maximum output 2.0 W, Microphone: Omni-directional digital MEMS microphone x 2
Handset	Receive path: Dynamic type speaker, Send path: Electret condenser microphone
Headset	Speaker: Dynamic type speaker, 32 Ω, Ø3.5 mm mini jack Microphone: Electret condenser microphone, Ø3.5 mm mini iack
External Speaker	Maximum output 2.0 W, 8 Ω, push-in terminal (2 pins)
Signal Processing	Input channel: Gain, EQ x 2, Comp, AGC, noise canceler, echo canceler, voice switch, microphone array, speech enhancement Output channel: Gain, EQ x 7
Network Section	Network I/F: 100Base-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, I GMP, NTP, SIP, FTP, RSTP Audio packet transmission method: Unicast, Multicast Number of broadcasting destinations: Unicast (max. 16), Multicast (max. 2999) Connector: RJ45 connector x 2, LAN A (PoE compatible), LAN B (PoE incompatible) Network cable: UTP (Cat5 or greater)
ONVIF	Profile S Client
Audio Transmission	Sampling frequency: 48 kHz, 16 kHz, 8 kHz (controllable on the software) Audio codec: PCM, G.722, G.711 μ-Law/A-Law Quantization bit depth: 16-bit Voice packet loss recovery: Silence insertion
Video Transmission	Video codec: H.264, MJPEG Resolution: HD 1280 x 720 (max.) Frame rate: 20 fps (max.)
User Control	Touch screen LCD, Dial key, Function 1, Function 2, Broadcast, Hold, Transfer, PTT, Cancel
Indicators	Touch screen LCD: 5" TFT color LCD, 1280 x 780 LED indicators: STATUS (yellow, red, green) x 1
Camera	Image device: 1/2.9 type CMOS Number of effective pixels: 1280 x 720 (max.) Angle of view: horizontal 69°, vertical 37.4°
Control Input	2 channels, no-voltage make contact input, open voltage: 12 V DC, short-circuit current: 5 mA or less, push-in terminal (3 pins)
Control Output	2 channels, open collector output, maximum contact capacity : 30 V DC/100 mA, push-in terminal (3 pins)
Installation Method	Desktop installation or wall mounting (Wall mounting needs an optional bracket.)
Dust/ Water Protection	Conforming to IP3X
Operating Temperature	0 °C to +40 °C
Operating Humidity	90 %RH (no condensation)
Finish	ABS Resin, Dark Gray
Dimensions	200 (W) x 81.4 (H) x 200 (D) mm
Weight	940g
Accessory	Stand x1, Stand Fixing Screw x2, Zip tie x2
Option	AC adaptor: AD-1210P, AD-1215P, Wall mounting bracket: YC-1001

Call Station

CX-CL1550

Model	CX-CL1550
Power Source	PoE (IEEE802.3af compliant) or 12 V DC (use of the optional AC adapter)
Current Consumption	PoE: 140 mA, 12 V DC (AC adaptor) : 390 mA
Power Consumption	5.5W
Speech Method	Hands-free: Full-duplex (echo canceler + voice switch)
Frequency Response	Conversation/Broadcast: 300 Hz - 7 kHz
Hands-free	Speaker: Dynamic type speaker, maximum output 2.0 W, Microphone: Omni-directional digital MEMS microphone x 2
External Speaker	Maximum output 2.0 W, 8 Ω, push-in terminal (2 pins)
Signal Processing	Input channel: Gain, EQ x 2, Comp, AGC, noise canceler, echo canceler, voice switch, microphone array, speech enhancement Output channel: Gain, EQ x 7, ANC
Network Section	Network I/F: 100Base-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, IGMP, NTP, SIP, FTP, RSTP Audio packet transmission method: Unicast, Multicast Number of broadcasting destinations: Unicast (max. 16), Multicast (max. 2999) Connector: RJ45 connector x 2, LAN A (PoE compatible), LAN B (PoE incompatible) Network cable: UTP (Cat5 or greater)
Audio Transmission	Sampling frequency: 16 kHz, 8 kHz (controllable on the software) Audio codec: PCM, G.722, G.711 μ-Law/A-Law Quantization bit depth: 16-bit, Voice packet loss recovery: Silence insertion
User Control	Direct key x 1
Indicators	LED indicators: RUN (green) x 1, STATUS (yellow, red, green) x 1, Calling indicator (yellow) x 1, Conversation indicator (green) x 1, Unlock indicator (green) x 1
Control Input	4 channels, no-voltage make contact input, open voltage: 12 V DC, short-circuit current: 5 mA or less, push-in terminal (5 pins)
Control Output	1 channel, relay contact output, withstand voltage: 30 V DC, maximum control current: 1 A, push-in terminal (2 pins) 4 channels, open collector output, maximum contact capacity : 30 V DC/100 mA, push-in terminal (5 pins)
Installation Method	Flush-mounting or wall-mounting
Impact Resistance	IK08
Dust/Water Protection	IP65
Operating Temperature	-40°C to +60 °C
Operating Humidity	90 %RH (no condensation)
Finish	Case: Die-cast aluminum, silver, mat finish, paint Panel: PC resin
Dimensions	115 (W) x 162 (H) x 72.2 (D) mm
Weight	750g
Accessory	Waterproof washer x 4, Tamper-proof screw x 4
Option	AC adapter: AD-1210P, AD-1215P Flush mount: 3-gang electrical box or Back Box YC-150 Wall mount: Wall-mount Box YS-13A

Note:
(*1) An AC adapter, when used as power source, cannot be put in the YS-13A, YC-150 or a 3-gang electrical box together with the CX-CL1550 because such boxes do not have enough room to accommodate both.

Video Call Station

CX-CL1750

Model	CX-CL1750
Power Source	PoE (IEEE802.3af compliant) or 12 V DC (use of the optional AC adapter)
Current Consumption	PoE: 200 mA, 12 V DC (AC adaptor) : 610 mA
Power Consumption	8W
Speech Method	Hands-free: Full-duplex (echo canceler + voice switch)
Frequency Response	Conversation: 300 Hz - 7 kHz, Broadcast: 300 Hz - 16 kHz
Hands-free	Speaker: Dynamic type speaker, maximum output 2.0 W Microphone: Omni-directional digital MEMS microphone x 2
External Speaker	Maximum output 2.0 W, 8 Ω, push-in terminal (2 pins)
Signal Processing	Input channel: Gain, EQ x 2, Comp, AGC, noise canceler, echo canceler, voice switch, microphone array, speech enhancement Output channel: Gain, EQ x 7, ANC
Network Section	Network I/F: 100Base-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, IGMP, NTP, SIP, FTP, RSTP Audio packet transmission method: Unicast, Multicast Number of broadcasting destinations: Unicast (max. 16), Multicast (max. 2999) Connector: RJ45 connector x 2, LAN A (PoE compatible), LAN B (PoE incompatible) Network cable: UTP (Cat5 or greater)
Audio Transmission	Sampling frequency: 48 kHz, 16 kHz, 8 kHz (controllable on the software) Audio codec: PCM, G.722, G.711 μ-Law/A-Law Quantization bit depth: 16-bit Voice packet loss recovery: Silence insertion
Video Transmission	Video codec: H.264, MJPEG Resolution: HD 1280 x 720 (max.) Frame rate: 20 fps (max.)
User Control	Direct key x 1
Indicators	LED indicators: RUN (green) x 1, STATUS (yellow, red, green) x 1, Calling indicator (yellow) x 1, Conversation indicator (green) X 1, Unlock indicator (green) x 1
Camera	Image device: 1/2.9 type CMOS Number of effective pixels: 1280 x 720 (max.) Angle of view: horizontal 120°, vertical 69°
Control Input	4 channels, no-voltage make contact input, open voltage: 12 V DC, short-circuit current: 5 mA or less, push-in terminal (5 pins)
Control Output	1 channel, relay contact output, withstand voltage: 30 V DC, maximum control current: 1 A, push-in terminal (2 pins) 4 channels, open collector output, maximum contact capacity : 30 V DC/100 mA, push-in terminal (5 pins)
Installation Method	Flush-mounting or wall-mounting
Impact Resistance	IK08
Dust/ Water Protection	IP65
Operating Temperature	-40 °C to +60 °C
Operating Humidity	90 %RH (no condensation)
Finish	Case: Die-cast aluminum, silver, mat finish, paint, Panel: PC resin
Dimensions	115 (W) x 162 (H) x 75.5 (D) mm
Weight	770g
Accessory	Waterproof washer x 4, Tamper-proof screw x 4, Protection seal x 2
Option	AC adapter: AD-1210P, AD-1215P Flush mount: 3-gang electrical box or Back Box YC-150 Wall mount: Wall-mount Box YS-13A

Note:
(*1) An AC adapter, when used as power source, cannot be put in the YS-13A, YC-150 or a 3-gang electrical box together with the CX-CL1750 because such boxes do not have enough room to accommodate both.

Touch Screen Remote Microphone

CX-RM1700

*1 0dB = 1V

Model	CX-RM1700
Power Source	PoE (IEEE802.3af compliant) or 12 V DC (use of the optional AC adapter)
Current Consumption	PoE: 190 mA, 12 V DC (AC adapter): 560 mA
Power Consumption	7.5W
Microphone	Unidirectional electret condenser microphone (with indicator)
AUX Input	1 channel, -60 dB (*2)/20 dB (*2) selectable, 600 Ω, transformer-balanced, push-in terminal (3 pins)
Frequency Response	200 Hz - 16 kHz
Signal to Noise Ratio	60 dB or more
Distortion	1 % or less
Volume Control	Microphone volume control, AUX volume control
Internal Speaker	Dynamic type speaker, maximum output 1 W
Signal Processing	Input channel: Gain, EQ x 2, Comp, AGC, Trim, Gate (for VOX function), speech enhancement
Network Section	Network I/F: 100Base-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, IGMP, NTP, FTP, RSTP Audio packet transmission method: Unicast, Multicast Number of broadcasting destinations: Unicast (max. 16), Multicast (max. 2999) Connector: RJ45 connector x 2, LAN A (PoE compatible), LAN B (PoE compatible) Network cable: UTP (Cat5 or greater)
ONVIF	Profile S Client
Audio Transmission	Sampling frequency: 48 kHz, 16 kHz (controllable on the software) Audio codec: PCM, G.722 Quantization bit depth: 16-bit Voice packet loss recovery: Silence insertion
User Control Indicators	Touch screen LCD, Direct key x 5, Talk key Touch screen LCD: 5" TFT color LCD, 1280 x 780 LED indicator: SELECT (green) x 5, Microphone (green) x 1, STATUS (yellow, red, green) x 1, TALK (green) x 1
Control Input	1 channel, no-voltage make contact input, open voltage: 12 V DC, short-circuit current: 5 mA or less, push-in terminal (2 pins)
Control Output	1 channel, relay contact output, maximum contact capacity : 30 V DC/100 mA, push-in terminal (2 pins)
Installation Method	Desktop installation only
Operating Temperature	0°C to +40 °C
Operating Humidity	90 %RH (no condensation)
Finish	ABS resin, dark gray
Dimensions	1152 (W) x 57.1 (H) x 188.7 (D) mm
Weight	670g
Accessory	Zip tie x 1
Option	AC adaptor: AD-1210P, AD-1215P

Note:
(*1) ONVIF is a registered trademark of ONVIF Inc.

Audio Interface 6in2out

CX-AF1062

*1 0dB = 1V

Model	CX-AF1062
Power Source	24 V DC (operating range: 21.6 - 26.4 V DC) Removable terminal block (2 pins) or use of the optional AC adapter
Current Consumption	340mA
Power Consumption	8W
Audio Input	3 channels, -60 dB (*1)/0 dB (*1) selectable, 600 Ω, transformer-balanced 3 channels, 0 dB (*1), 10 kΩ, electronically-balanced Removable terminal block (9 pins x 2) Only Input 1 is used in common with the front-mounted Ø6.3 mm phone jack.
Audio Output	2 channels, 0 dB (*1), 10 kΩ, electronically-balanced, removable terminal block (3 pins x 2)
Frequency Response	200 Hz - 16 kHz
Signal to Noise Ratio	60 dB or more
Distortion	1% or less
Volume Control	Audio input volume control x 6, Audio output volume control x 2
Signal Processing	Input channel: Gain, EQ x 2, Comp, AGC, Trim, Gate (for VOX function) Output channel: Gain, EQ x 7
Network Section	Network I/F: 100BASE-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, IGMP, NTP, FTP, RSTP Audio packet transmission system: Unicast, Multicast Number of paging destinations: Unicast (max. 16), Multicast (max. 2999) Connector: RJ45 connector x 2 Network cable: UTP (Cat5 or greater)
Audio Transmission	Sampling frequency: 48 kHz, 16 kHz (controllable on the software) Audio codec: PCM, G.722 Quantization bit depth: 16-bit Voice packet loss recovery: Silence insertion
User Control	Direct key x 10, Reset key x 1, Setting switch (input level setting (MIC/LINE selectable) x 1
Indicators	LED indicators: LAN (green) x 2, POWER (green) x 1, RUN (green) x 1, STATUS (yellow, red, green) x 1, INPUT (red, green) x 6, OUTPUT (red, green) x 2 Direct keys: SELECT (green) x 10, STATUS (yellow, red, green) x 10
Control Input	10 channels, no-voltage make contact input, open voltage: 24 V DC, short-circuit current: 5 mA or less, removable terminal block (12 pins x 2)
Control Output	4 channels, relay output, maximum contact capacity : 30 V DC/1.0 A, removable terminal block (6 pins x 2) 6 channels, open collector output, maximum contact capacity : 30 V DC/100 mA, removable terminal block (6 pins x 2)
Installation Method	Desktop, rack, or wall mounting (Rack or wall mounting needs optional brackets.)
Operating Temperature	0°C to +40°C
Operating Humidity	90 %RH (no condensation)
Finish	Panel, Case: Pre-coated steel plate, black, 30% gloss Front cover: ABS resin, gray smoke
Dimensions	420 (W) x 44.3 (H) x 284.5 (D) mm
Weight	3.1 kg
Accessory	Removable terminal plug 2 pins) x 1, Removable terminal plug (3 pins) x 2, Removable terminal plug (6 pins) x 4, Removable terminal plug (9 pins) x 2, Removable terminal plug (12 pins) x 2, Plastic foot x 4, Screw for fitting plastic foot x 4, Removable terminal plug 2 pins) x1
Option	AC adaptor: AD-246 Wall mounting bracket: YC-850 Rack mounting bracket: MB-15B

Power Amplifier

CX-PA1120
CX-PA1240

*1 0dB = 1V

Model	CX-PA1120	CX-PA1240
Power Source	240V AC 50/70HZ	
Rated Output	120W	240W
Power Consumption	180W (rated output), 55W (based on EN62368)	330W (rated output), 72W (based on EN62368)
Audio Input	1 channel, -60 dB (*1)/-40 dB (*1)/-20 dB (*1)/0 dB (*1) selectable, 10 kΩ, electronically-balanced, phantom power supply available, removable terminal block (3 pins) 1 channel, -60 dB (*1)/0 dB (*1) selectable, 10 kΩ, electronically-balanced, removable terminal block (3 pins)	
Recording Output	1 channel, 0 dB (*1), 10 kΩ, electronically-balanced, removable terminal block (3 pins)	
Frequency Response	200Hz to 16,000Hz	
Signal to Noise Ratio	60dB or more	
Distortion	1 % or less at 1 kHz, rated power (20 kHz LPF (AUX-0025)	
Speaker Line	10 channels, removable terminal block (10 pins x 2)	-
Output Voltage	100V/ 70V switchable	-
Volume Control	Audio input volume control x 2, Recording output volume control x 1, Speaker output volume control x 1	
Signal Processing	Input channel: Gain, EQ x 2, Comp, AGC, Trim, Gate (for VOX function) Output channel: Gain, EQ x 7, ANC	
Network Section	Network I/F: 100Base-TX Network protocol: TCP/IP, UDP, ARP, ICMP, HTTP, RTP, RTSP, I GMP, NTP, SIP, FTP, RSTP, SNMP Audio packet transmission method: Unicast, Multicast Number of broadcasting destinations: Unicast (max. 16), Multicast (max. 2999) Connector: RJ45 connector x 2, LAN A (PoE compatible), LAN B (PoE compatible) Network cable: UTP (Cat5 or greater)	
Audio Transmission	Sampling frequency: 48 kHz, 16 kHz (controllable on the software) Audio codec: PCM, G.722 Quantization bit depth: 16-bit Voice packet loss recovery: Silence insertion	
User Control	Direct key x 10, Reset key x 1, CPU OFF switch x 1, Output voltage selection switch x 1, Input setting switch (input level setting (MIC/LINE selectable), phantom power setting)x 1	
Indicators	LED indicators: LAN (green) x 2, POWER (green) x 1, RUN (green) x 1, STATUS (yellow, red, green) x 1, INPUT (green, red) x 2, REC OUT (green, red) x 1, OUTPUT (green, red) x 1, CPU OFF (red) x 1 Direct keys: SELECT (green) x 10, STATUS (yellow, red, green) x 10	
Control Input	10 channels, no-voltage make contact input, open voltage: 24V DC, short-circuit current: 5 mA or less, removable terminal block (12 pins x 2)	
Control Output	10 channels, relay contact output, maximum contact capacity : 125 V AC/24 V DC, 4.0 A, removable terminal block (15 pins x 2)	
Emergency Control Input	1 channel, photo coupler input, input current: 5 mA or less, removable terminal block (2 pins)	
Installation Method	Desktop, rack, or wall mounting (Rack or wall mounting needs optional brackets.)	
Operating Temperature	0 °C to +40 °C	
Operating Humidity	90 %RH or less	
Finish	Panel, Case: Pre-coated steel plate, black, 30 % gloss	
	Volume control section cover: ABS resin, gray smoke	
Dimensions	420 (W) x 88.7 (H) x 326 (D) mm	
Weight	5.6kg	
Accessory	Power cord (2m) x 1, Removable terminal plug (2 pins) x 1, Removable terminal plug (3 pins) x 3, Removable terminal plug (12 pins) x 2, Removable terminal plug (10 pins) x 2, Removable terminal plug (15 pins) x 2, Plastic foot x 4, Screw for fitting plastic foot x 4	Power cord (2 m (6.56 ft) x 1, Removable terminal plug (2 pins) x 1, Removable terminal plug (3 pins) x 3, Removable terminal plug (2 pins) x 2, Removable terminal plug (10 pins) x 2, Removable terminal plug (15 pins) x 2, Plastic foot x 4, Screw for fitting plastic foot x 4
Option	Wall mounting bracket: YC-850 Rack mounting bracket: MB-25B	Wall mounting bracket: YC-850 Rack mounting bracket: MB-25B

Network Audio Adapters

Network Audio Adapter

NX-300

*1 0dB = 1V

Model	NX-300
Power Source	24V DC (21.6 - 26.4 V), or AC adapter AD-246 (optional) or the equivalent
Power / Current Consumption	10 W (AC operation), 310 mA (DC operation)
Audio Input	2 channels, balanced (transformer isolated)/unbalanced changeable, 2 kΩ, LINE/MIC changeable, volume adjustable Rated input: -20 dB*1 (LINE)/-60 dB*1 (MIC) PAD function(-16 dB*1) , removable terminal block (6 pins)
Audio Output	2 channels, balanced (transformer isolated), 600 Ω or less Rated output: 0 dB*1 (unbalanced input/-2 dB*1 (balanced input), removable terminal block (6 pins)
Frequency Response	50Hz - 18kHz (48 kHz sampling frequency, PCM, 0 to -6 dB deviation referred to 1 kHz)
Distortion	0.2 % or less (1 kHz, LINE signal level, 48 kHz sampling frequency, PCM, BPF)
Signal to Noise Ratio	73 dB or more (LINE signal level, at rated output)
Separation	70 dB or more (1 kHz, LINE signal level, BPF)
Audio Format	WAV file
Number of Storable Audio Files	Max. 8
Storable Time of Audio Files	Max. 2 min. per audio file (16 kHz sampling frequency, sub-band-ADPCM, monaural operation)
Control Input	8 channels, no-voltage make contact input, open voltage: 24 V DC, short-circuit current: 2 mA or less, removable terminal block (9 pins) (only channel 8 equipped with failure detection.)
Control Input Failure Detection Section	Connection resistance to make the function inactive: 20 kΩ ±5 % Connection resistance to make the function active: 10 kΩ ±5 % Connector cable: Twisted pair cable (shielded type is recommended), Maximum cable distance: 10 m
Control Output	8 channels, open collector output (polarized), withstand voltage: 30V DC, control current: 50mA max., removable terminal block (9 pins) 2 channels, relay output (non-polar), withstand voltage: 30V DC, control current: 500mA max., removable terminal block (4 pins)
Network Selection	Network I/F: 10BASE-T /100BASE-TX, Full-duplex/Half-duplex auto-negotiation Network protocol: TCP, UDP, ARP, HTTP, RTP, IGMP, FTP, NTP Audio packet transmission system: Unicast (Up to 16 simultaneous transmissions), Multicast (Up to 64 simultaneous transmissions) Connector: RJ45 connector Voice sampling frequency: 8 kHz, 16 kHz, 32 kHz, 48 kHz (controllable on the software) Quantifying bit number: 16 bits Voice encoding method: PCM, Sub-band ADPCM (controllable on the software) Voice packet loss recovery: Silence insertion Audio delay time: Min. 20 ms
Operation	2 channels, audio input level control (convertible to audio output level control)
Indicator	2 channels, audio input, SIGNAL (green)/PEAK (red), 2 channels, audio output, SIGNAL (green) LNK/ACT (green), BUSY (green), STATUS (green), ERROR (yellow), RUN (green)
Setting Switch	Reset, grand lift changeable, audio input 2 channels PAD changeable, audio input 2 channels LINE/MIC changeable
SD Section	For log storage (Max. 10000) Media: SD/SDHC card (Max. 32 GB) File system: FAT16, FAT32 * Not compatible with SDXC memory cards * Use only SD memory cards rated at 100mA current consumption or less. * No SD card provided.
Installation Method	Rack, Desk, surface mount
Operating Temperature	-10°C to +50°C (0°C to +40°C when AC adapter is in use)
Operating Humidity	90 %RH or less (no condensation)
Finish	Pre-coated steel plate, black, 30 % gloss
Dimensions	210(W) x 44.3(H) x 258(D) mm
Weight	1.7kg
Accessory	Removable terminal plug (3 pins) x1, removable terminal plug (6 pins) x2, removable terminal plug (9 pins) x2, removable terminal plug (4 pins) x1, plastic foot x 4, screw for fitting plastic foot x4
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one NX-300 unit), MB-15B-J (for rack mounting two NX-300 units), wall mounting bracket: YC-850, AC adapter: AD-246

Note: The NX-300 cannot be connected to other equipment using the MB-15B-J bracket for rack mounting.
When you need the AC adapter, be sure to consult your TOA dealer.

AC Adapter

AD-246

Power Source: 220 - 240V AC, 50/ 60Hz (ER/UK), 110 - 120V AC, 50/ 60Hz (US)
Output: 24V DC, 1A
Current Consumption: 270mA (rated output) (ER/ UK), 420mA (rated output) (US)
Cord Length: 1.8m
Plug: RC6705 center "+"
Operating Temperature: 0°C to +40°C
Finish: Case: Heat-resistant resin, black
Weight: 130g
Accessory: Power cord (2m) x 1

Network Audio Adapter

NX-100
NX-100S

*0dB = 1V

Model	NX-100	NX-100S
Power Source	24V DC (removable terminal block (3 pins)), or AC adapter AD-246 (optional) or the equivalent	AC adapter AD-246 (optional) or the equivalent
Current Consumption	200mA (DC operation)	7W (when AD-246 (optional) is used)
Audio Input	1 channel (transformer-isolated), –58dB* to 0dB*, balanced (MIC/ LINE changeable, volume adjustable with volume control), 2kΩ, removable terminal block (3 pins)	1 channel (transformer-isolated), –58dB* to 0dB*, balanced (MIC/ LINE changeable, volume adjustable with volume control), 2kΩ, removable terminal block (3 pins), phantom power supply, (24V, can be set with the switch)
Audio Output	1 channel (transformer-isolated), balanced, 600Ω, removable terminal block (3 pins)	
Frequency Response	50Hz – 14kHz (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, removable terminal block (9 pins)	
Control Output	8 channels, open collector output (polarized), withstand voltage: 30V DC, control current: 50mA max., removable terminal block (9 pins)	
Network I/F	10BASE-T/ 100BASE-TX, auto-negotiation	
Serial I/F	RS-232C (DCE I/F), D-sub connector (9P, male), 9600bps - 115200bps	-
Network Protocol	TCP, UDP, ARP, ICMP, HTTP, RTP, IGMP	
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)	0°C to +40°C
Operating Humidity	90% RH or less (no dew condensation should be produced)	
Finish	Steel plate, black, 30% gloss	
Dimensions	210 (W) × 44.7 (H) × 188 (D) mm	
Weight	1.2kg	
Accessory	CD (PC installation & operation software programs, instruction manuals) ×1, power supply removable terminal plug (3 pins) ×1, audio I/O removable terminal plug (3 pins) ×2, control I/O removable terminal plug (9 pins) ×2, RS-232C connector cover ×1, bracket mounting screw ×8	CD (PC Installation & operation software programs, Instruction manuals) ×1, Audio I/O removable terminal plug (3 pins) ×2, Ferrite clamp ×1, Control I/O removable terminal plug (9 pins) ×2, Bracket mounting screw ×8
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one NX-100S unit), MB-15B-J (for rack mounting two NX-100S units), AC adapter: AD-246	

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

Sophisticated IP Audio Endpoints

IP Audio Interface

IP-A1AF

Model	IP-A1AF
Power Source	PoE+ (IEEE802.3at Class 4), PoE (IEEE802.3af Class 3)
Power Consumption	22W (at PoE+ powered, rated output) 12.95W (at PoE powered, rated output) 5W (IEC62368-1)
Amplifier Rated Output	15W (at PoE+, powered, 8Ω) 8W (at PoE, powered, 8Ω) Applicable impedance: 8-16 Ω
Frequency Response	50Hz - 20kHz
Audio Codec	PCMU (G.711u), PCMA (G.711a), G.722
Audio Delay Time	Min. 100 ms*1
Broadcasting Mode	SIP broadcasting/SIP calling mode: PCMU/PCMA/G.722, P2P/SIP server connection Multicast broadcasting mode: PCMU/PCMA/G.722 Auto codec recognition, 20 ports VMS broadcasting mode: ONVIF audio backchannel, PCMU Internal message broadcasting mode Local broadcasting mode: output from LINE/MIC IN to SPEAKER OUT Note: each broadcast mode can be assigned an order of priority using the priority setting function.
Internal Message	Max. 20 messages (max. recording capacity: 80 MB) Supported file formats WAV file: 8/16/44.1/48 kHz sampling frequency, 8/16 bit, monaural/stereo MP3 file: 32/44.1/48 kHz sampling frequency, 64 - 320 kbps, CBR/VBR, monaural/stereo Repeat playback: playcount (1 - 10 times), duration (5 - 3600 sec) or timer (from start time to end time) Interval time: 0 - 60 sec, delay time: 0 - 30 sec Trigger: control Input or remote API (HTTP)

Network I/F	100BASE-TX, auto MDI/MDI-X, RJ45 connector
Network Protocol	TCP/IP, UDP, HTTP, RTP, RTSP, RTCP, ARP, ICMP, IGMPv3, NTP, SIP (RFC3261)
Audio Input	1 channel, electronically-balanced, 10kΩ LINE/MIC selectable (rated input: LINE: 0dB*2, MIC: -60dB*2 PAD function (-20dB*2, phantom power ON/OFF (12V DC), volume adjustable removable terminal block (6 pins)
Audio Output	1 channel, electronically-balanced, 600Ω or less Rated input: 0dB*2, removable terminal block (6 pins)
Control Input	2 channels, no-voltage make contact inputs, open voltage: 5V DC, short-circuit current: 2 mA or less, removable terminal block (6 pins)
Control Output	1 channel, open collector output, withstand voltage: 30 V DC, control current: 10mA or less, removable terminal block (6pins)
Indicator	STATUS (green/blue/orange/red), LINE/MIC IN (green/red), OUTPUT (green), LINK/ACT (green)
Clock Accuracy	±13 seconds per month
Time Adjustment	Manual time setting, time adjustment by NTP server
Power Outage Protection Period	24 hours (RTC time retention, at 40 °C)
Operating Temperature	-30 °C to +55 °C
Operating Humidity	90% RH or less (no condensation)
Finish	Front case: surface-treated steel plate, black, paint Rear chassis: surface-treated steel plate
Dimensions	126(W) x 33(H) x 80(D) mm
Weight	390g
Accessory	Removable terminal plug (6pins, preinstalled on the unit) x2, removable terminal plug (2pins, preinstalled on the unit), rubber feet x4, mounting screw(M3x6) x4

*1 When using in local input broadcasting mode, assume audio delay time.
*2 0dB = 1V
*ONVIF is a registered trademark of ONVIF Inc.
*These specifications apply to the firmware verion 3.0.1 or later.

IP Power Amplifier 12W

IP-A1PA12

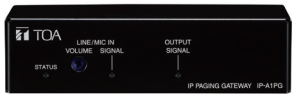
Model	IP-A1PA12
Power Source	PoE+ (IEEE802.3at Class 4)
Power Consumption	25 W (rated output) 6 W (IEC62368-1)
Amplifier Rated Output	12 W
Frequency Response	100 Hz - 20 kHz
Audio Codec	PCMU (G.711u), PCMA (G.711a), G.722
Audio Delay Time	Min. 100 ms*1
Broadcasting Mode	SIP Broadcasting/SIP calling Mode: PCMU/PCMA/G.722, P2P/SIP Server Connection Multicast Broadcasting Mode: PCMU/PCMA/G.722 Auto codec recognition, 20 ports VMS Broadcasting Mode: ONVIF Audio Backchannel, PCMU Internal Message Broadcasting Mode Local Broadcasting Mode: Output from LINE/MIC IN to SPEAKER OUT Note: Each broadcast mode can be assigned an order of priority using the Priority Setting function.
Internal Message	Max. 20 messages (Max. recording capacity: 80 MB) Supported file formats: WAV file: 8/16/44.1/48 kHz sampling frequency, 8/16 bit, monaural/stereo MP3 file: 32/44.1/48 kHz sampling frequency, 64 - 320 kbps, CBR/VBR, monaural/stereo Repeat playback: Playcount (1 - 10 times), Duration (5 - 3600 sec) or Timer (from Start time to End time) Interval time: 0 - 99 sec, Delay time: 0 - 99 sec Trigger: Control Input or Remote API (HTTP)
Network I/F	100BASE-TX, Auto MDI/MDI-X, RJ45
Network Protocol	TCP/IP, UDP, HTTP, RTP, RTSP, RTCP, ARP, ICMP, IGMPv3, NTP, SIP (RFC3261)

*1 When using in Local Input Broadcasting Mode, assume Audio Delay Time.
*2 0 dB = 1 V
*3 Not compatible with jointing 2 units using MB-15B-J
*ONVIF is a registered trademark of ONVIF Inc.
*These specifications apply to the firmware verion 3.0.1 or later.

Audio Input	1 channel, electronically-balanced, 10 kΩ LINE/MIC selectable (Rated input: LINE: 0 dB*2, MIC: -60 dB*2 PAD function (-20 dB*2, Phantom power ON/OFF (12V DC), volume adjustable removable terminal block (6 pins)
Audio Output	1 channel, electronically-balanced, 600 Ω or less Rated input: 0 dB*2, removable terminal block (6 pins)
Control Input	2 channels, no-voltage make contact inputs, open voltage: 5 V DC, short-circuit current: 2 mA or less, removable terminal block (6 pins)
Mute Control Input	1 channel, 24 V DC cut signal, control current: 5 mA or less, removable terminal block (2 pins)
Control Output	1 channel, open collector output, withstand voltage: 30 V DC, control current: 10mA or less, removable terminal block (6pins)
Indicator	STATUS (green/blue/yellow/red), LINE/MIC IN (green/red), OUTPUT (green), LINK/ACT (green)
Clock Accuracy	±13 seconds per month
Time Adjustment	Manual time setting, time adjustment by NTP server
Power Outage Protection Period	24 hours (RTC time retention, at 40 °C)
Operating Temperature	-30 °C to +55 °C
Operating Humidity	90% RH or less (no condensation)
Finish	Front case: surface-treated steel plate, black, paint Rear chassis: surface-treated steel plate
Dimensions	210(W) x 44(H) x 81.5(D) mm (excluding projection)
Weight	940g
Accessory	Removable terminal plug (6 pins, preinstalled on the unit) x2, removable terminal plug (2 pins, preinstalled on the unit) x1, rubber feet x4, mounting screw (M3 x 6) x4
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one IP-A1PA12 unit)*3, wall mounting bracket: MB-15B

IP Paging Gateway

IP-A1PG



Model	IP-A1PG
Power Source	PoE (IEEE802.3af Class 3)
Power Consumption	2.5 W
Audio Transmission Method	Multicast audio streaming
Audio Codec	PCMU(G.711u), PCMA(G.711a), G.722
Audio Delay Time	Min. 100ms*1
Network I/F	100BASE-TX, Auto MDI/MDI-X, RJ45 connector
Network Protocol	TCP/IP, UDP, HTTP, RTP, RTSP, RTCP, ARP, ICMP, IGMPv3, NTP, SIP(RFC3261)
Audio Input	1 channel, electronically-balanced, 10kΩ LINE/MIC selectable (Rated input: LINE: 0dB*2, MIC: -60dB*2 PAD function (-20dB*2, Phantom power ON/OFF (12V DC), volume adjustable removable terminal block (6 pins)
Monitor Output	1 channel, unbalanced, 600Ω or less Rated output: 0dB*2, RCA pin jack
Control Input	4 channels, no-voltage make contact inputs, open voltage: 5V DC, short-circuit current: 2mA or less, removable terminal block (6 pins)
Mute Control Input	1 channel, 24V DC cut signal, control current 5 mA or less, removable terminal block (2 pins)
Control Output	1 channel, open collector output, withstand voltage: 30 V DC, control current: 10 mA or less, removable terminal block (6 pins)
Indicator	STATUS (green/blue/orange/red), LINE/MIC IN (green/red), OUTPUT (green), LINK/ACT (green)
Functions Broadcasting	Audio transmission Transmit internal messages by multicast audio streaming Transmit audio from audio input connected devices by multicast audio streaming Audio conversion Convert SIP voice to multicast audio stream and transmit Convert ONVIF audio backchannel audio to multicast audio stream and transmit

*1 When using Monitor output, assume an audio delay time.
*2 0 dB = 1 V
*ONVIF is a registered trademark of ONVIF Inc.
*These specifications apply to the firmware verion 3.0.1 or later.

Scheduler	Scheduled broadcasting and control by WEB-UI (max. schedule settings: 2000) Configurable actions: Internal message broadcast, audio input broadcast, control output, command set transmission
Event	Execute event triggered by control input Configurable actions: Internal message broadcast, audio input broadcast, command set transmission, broadcast disable, system mute
Internal Message	Max. 20 messages (max. recording capacity: 80 MB) Supported fie format: WAV file: 8/16/44.1/48 kHz sampling frequency, 8/16 bit, monaural/stereo MP3 file: 32/44.1/48 kHz sampling frequency, 64-320 kbps, CBR/VBR, monaural/stereo Repeat playback: playcount (1-10 times) or Duration (5-3600 sec) Interval time: 0 - 99 sec, Delay time: 0 - 99 sec
Command Set	20 commands can be registered in each of 10 command sets
Clock Accuracy	±13 seconds per month
Time Adjustment	Manual time setting, time adjustment by NTP server
Power Outage Protection Period	24 hours (RTC time retention, at 40 °C)
Operating Temperature	0 °C to +40 °C
Operating Humidity	90% RH or less (no condensation)
Finish	Front case: Surface-treated steel plate, black, paint Rear chassis: Surface-treated steel plate
Dimensions	126(W) x 33(H) x 80(D) mm
Weight	390g
Accessory	Removable terminal plug (6 pins, preinstalled on the unit) x2, removable terminal plug (2 pins, preinstalled on the unit), rubber feet x4, mounting screw (M3x6) x4

IP Remote Microphone

IP-A1RM

Model	IP-A1RM
Power Source	PoE (IEEE802.3af Class 3)
Power Consumption	3.5 W
Audio Transmission Method	SIP broadcasting: Unicast Audio Streaming Group broadcasting: Multicast Audio Streaming
Network I/F	100BASE-TX, Auto MDI/MDI-X, RJ45
Network Protocol	TCP/IP, UDP, HTTP, RTP, RTCP, ARP, ICMP, NTP, SIP (RFC3261)
Microphone	Unidirectional electret condenser microphone (with microphone indicator and microphone volume control)
AUX Input	1 channel, unbalanced, 10kΩ LINE/MIC selectable (rated input: LINE: 0dB*[1], MIC: -60dB*[1] PAD function (-20dB*[1], AUX volume adjustable, Ø3.5mm mini jack
Monitor Speaker	Cone-type speaker, speaker volume adjustable, rated output: 1W
Control Input	2 channel, no-voltage make contact inputs, open voltage: 5V DC, short-circuit current: 2 mA or less, push-in terminal block
Mute Control Input	1 channel, 24 V DC cut signal, control current: 5 mA or less, push-in terminal block
Control Output	1 channel, open collector output, withstand voltage: 30 V DC, control current: 10 mA or less, push-in terminal block
Operation	Operation key: TALK, HOME, REC, MONITOR, SHIFT/KEY LOCK Function key: VOLUME, RIGHT, LEFT Selection key: 0-9
Indicator	LCD display: 3 (255 x 160 dots) with backlight Indicator: status indicator (green/blue/yellow/red), microphone indicator (blue), LINK/ACT indicator (green)
Functions Scheduler	Scheduled broadcasting and control by WEB-UI (Max. schedule settings: 2000) Configurable actions: Internal message broadcast, AUX input broadcast, control output, command set transmission
Event	Execute event triggered by control input Configurable actions: Internal message broadcast, AUX input broadcast, command set transmission, broadcast disable, system mute

Chime	Pre and post chime tones (applied for manual broadcast and internal audio file broadcast) Preset chime tone x5, editable tone x2
Internal Message	Max. 20 messages (max. recording capacity: 80 MB) Supported file format: WAV file: 8/16/44.1/48 kHz sampling frequency, 8/16 bit, monaural/stereo MP3 file: 32/44.1/48 kHz sampling frequency, 64-320 kbps, CBR/VBR, monaural/stereo Repeat playback: playcount (1-10 times) or Duration (5-3600 sec) Interval time: 0-99 sec, delay time: 0-99 sec Control trigger: key operation, scheduler, control input, remote API(HTTP)
Manual broadcast/ control	Manual broadcasting: microphone broadcast, recorded audio broascasting, AUX input broadcast Manual control: control output, command set transmission Control trigger: key operation
Recorded audio broadcast	Audio recording and playback broadcast with the built-in microphone; max. 2 minutes, 1 message
Command Set	20 commands can be registered in each of 10 command sets
Clock Accuracy	±13 seconds per month
Time Adjustment	Manual time setting, time adjustment by NTP server
Power Outage Protection Period	24 hours (RTC time retention, at 40 °C)
Language	English/ Japanese
Operating Temperature	0 °C to +40 °C
Operating Humidity	90% RH or less (no condensation)
Finish	ABS resin, black, paint
Dimensions	224(W) x 47.2(H) x 136(D) mm
Weight	630g
Accessory	Zip tie x2
Option	Wall mounting bracket: WB-RM500

*[1] 0 dB = 1 V
*These specifications apply to the firmware verion 3.0.1 or later.

Microphone Panel

IP-A1MP

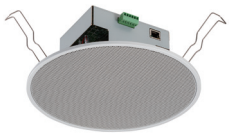
Model	IP-A1MP
Phantom Power	9V DC - 26V DC
Current Consumption	8mA or less (at 12V DV)
Microphone	Omni-directional electret condenser microphone
Frequency Response	100Hz - 10kHz
Microphone Output	0dB*[1], 200Ω, (volume adjustable), electronically-balanced, push-in terminal block
Push Switch	Momentary type (control output circuit is closed while pressed)
Control Input	No-voltage make contact input, open voltage: 5V DC, short-circuit current: 0.2 mA or less, push-in terminal block
Control Output	No-voltage make contact output, withstand voltage: 30V DC, control current: 100 mA, push-in terminal block
Indication	Green (Lit during control input)*[2]

*[1] 0dB = 1V
*[2] Lights only when phantom power is supplied.

Cable Requirement	Microphone output: two-core shielded cable or shielded twisted pair cable Control input/ output: twisted pair cable
Operating Temperature	-20°C to +55°C
Operating Humidity	90% RH or less (no condensation)
Finish	Front case: Surface-treated steel plate, white (RAL 9016 equivalent), semi-gloss, paint Rear case, bracket: Surface-treated steel plate, black zinc plating Plate: ABS resin, white (RAL 9016 equivalent), gloss
Dimensions	44.6(W) x 107(H) x 29(D) mm (excluding projection)
Weight	170g
Accessory	Plate x1, plate mounting screw (M3.5 x 5.5, preinstalled on the plate) x2, box mounting screw (M4 x 35) x2
Option	Flush-mount box: YC-801 Wall-mount box: YC-802

IP Ceiling Speaker 8W

IP-A1PC238



Model	IP-A1PC238
Power Source	PoE (IEEE802.3af Class 3)
Power Consumption	12.95W (rated output) 5W (IEC62368-1)
Amplifier Rated Output	8W
Sensitivity	94dB (1W, 1m) (500Hz - 5kHz, pink noise)
Maximum Sound Pressure Level	103dB (8W, 1m)
Frequency Response	60Hz - 20kHz (peak - 20 dB)
Speaker Component	16cm (6") cone-type
Audio Codec	PCMU (G.711u), PCMA (G.711a), G.722
Broadcasting Mode	SIP broadcasting mode: PCMU/PCMA/G.722, P2P/SIP server connection Multicast broadcasting mode: PCMU/PCMA/ G.722 auto codec recognition, 20 ports VMS broadcasting mode: ONVIF audio backchannel, PCMU Internal message broadcasting mode Note: each broadcast mode can be assigned an order of priority using the priority setting function.
Internal Message	Max. 20 messages (max. recording capacity: 80 MB) Supported file formats WAV file: 8/16/44.1/48 kHz sampling frequency, 8/16 bit, monaural/stereo MP3 file: 32/44.1/48 kHz sampling frequency, 64 - 320 kbps, CBR/VBR, monaural/stereo Repeat playback: playcount (1-10 times), duration (5-3600 sec) or timer (from start time to end time) Interval time: 0 - 99 sec, delay time: 0 - 99 sec Trigger: control input or remote API (HTTP)

*ONVIF is a registered trademark of ONVIF Inc.
*These specifications apply to the firmware verion 3.0.1 or later.

*0dB = 1V

Network I/F	100BASE-TX, Auto MDI/MDI-X, RJ45 connector
Network Protocol	TCP/IP, UDP, HTTP, RTP, RTSP, RTCP, ARP, ICMP, IGMPv3, NTP, SIP (RFC3261)
Control Input	2 channels, no-voltage make contact inputs, open voltage: 5V DC, short-circuit current: 2mA or less, removable terminal block (6 pins)
Control Output	1 channel, open collector output, withstand voltage: 30V DC, control current: 10mA or less, removable terminal block (6 pins)
Indicator	STATUS (orange), LINK/ACT (green)
Clock Accuracy	±13 seconds per month
Time Adjustment	Manual time setting, time adjustment by NTP server
Power Outage Protection Period	24 hours (RTC time retention, at 40 °C
Operating Temperature	0 °C to +50 °C
Operating Humidity	90 %RH or less (no condensation)
Dimensions for Fixing Hole	Mounting hole: Ø200 ±2 mm Ceiling thickness: 5 - 25 mm
Speaker Mounting Method	Spring clamp
Finish	Frame: Steel plate, white (RAL 9016 equivalent), paint Grill: Steel net, white (RAL 9016 equivalent), paint
Dimensions	Ø230 x 89(D) mm
Weight	880g
Accessory	Pattern paper x1, removable terminal plug (6 pins, preinstalled on the unit) x1

IP Horn Speaker

IP-A1SC15

Model	IP-A1SC15
Power Source	PoE+ (IEEE802.3at Class 4), PoE (IEEE802.3af Class 3)
Power Consumption	22W (at PoE+ powered, rated output) 12.95W (at PoE powered, rated output) 5W (IEC62368-1)
Amplifier Rated Output	15W (at PoE+ powered), 8W (at PoE powered)
Sensitivity	112dB (1W, 1m) (500Hz to 2.5kHz, peak level)
Maximum Sound Pressure Level	124dB (at PoE+ powered, 15W, 1m) (500Hz to 2.5kHz, peak level) 121dB (at PoE powered, 8W, 1m) (500Hz to 2.5kHz, peak level)
Frequency Response	280Hz to 12.5kHz
Audio Codec	PCMU(G.711u), PCMA(G.711a), G.722
Broadcasting Mode	SIP broadcasting mode: PCMU/PCMA/G.722 Multicast broadcasting mode: PCMU/PCMA/ G.722, max. 20ports VMS broadcasting mode: audio backchannel, PCMU Internal message broadcasting mode Note: each broadcast mode can be assigned an order of priority using the priority setting function.
Internal Message	Max. 20 messages (max. recording capacity: 80 MB) Supported file formats WAV file: 8/16/44.1/48 kHz sampling frequency, 8/16 bit, monaural/stereo MP3 file: 32/44.1/48 kHz sampling frequency, 64 - 320 kbps, CBR/VBR, monaural/stereo Repeat playback: playcount(1-10 times), Duration(5-3600 sec) or Timer (from start time to end time) Interval time: 0 - 99 sec, delay time: 0 - 99 sec Trigger: control input or remote API (HTTP)

*ONVIF is a registered trademark of ONVIF Inc.
*These specifications apply to the firmware verion 3.0.1 or later.

Network I/F	100BASE-TX, MDI/MDI-X, RJ-45
Network Protocol	TCP/IP, UDP, HTTP, RTP, RTSP, ARP, ICMP, IGMPv3, NTP, SIP (RFC3261)
Control Input	2 channels, no-voltage make contact inputs, open voltage: 5V DC, short-circuit current: 2mA or less, removable terminal block (3 pins)
Control Output	1 channel, open collector output, withstand voltage: 30V DC, control current: 10mA or less, removable terminal block (3 pins)
Indicator	LAN LINK/ACT (green), STATUS (orange)
Clock Accuracy	±13 seconds per month
Time Adjustment	Manual time setting, time adjustment by NTP server
Power Outage Protection Period	24 hours (RTC time retention, at 40 °C
Operating Temperature	–30 °C to +55 °C
Operating Humidity	90 %RH or less (no condensation)
Dust/ Water Protection	IP66
Finish	Horn flare and body: aluminum, off-white (RAL 9010 equivalent), paint Reflector horn: ABS resin, off-white (RAL 9010 equivalent) Rear cover: PC resin, off-white (RAL 9010 equivalent), paint Bracket, screws and bolts: stainless steel
Dimensions	222(W) x 211(H) x 276(D) mm
Weight	1.4kg
Accessory	Rear cover x1, removable terminal plug (3 pins) x2
Option	Speaker mount bracket: SP-131, SP-201, SP-301, pole band: YS-60B

IP Intercom Systems

Exchanges

IP Network Intercom Exchange

N-8000EX
N-8010EX

*0dB = 1V

Model	N-8000EX	N-8010EX
Power Source	230V AC (CE) or 220 - 230V AC (CE-GB), 50/ 60Hz	
Power Consumption	50W (at rated), 75W (max.)	
Interface Section for station	No. of lines: 16, No. of speech link: 4 internal, 8 external (N-8000EX)/ 1 internal, 2 external (N-8010EX) Type of speech path: space sharing/ time space sharing, transmission system: 2 wire 160 kbps echo canceller transmission system Signal level: 0db* or less, Transmission range: max. 1500m (ø0.65mm (AWG 22), loop resistance 170Ω) Speech method: simultaneous conversation by way of echo canceller (hands-free), simultaneous conversation by way of echo canceller or Half-duplex conversation by way of voice switch (handset), PTT conversation Connector: dedicated, wiring method: 1 set of twisted pair cable, feeding voltage/current: 48V DC, Max. 70mA	
Paging Output	Audio: 2 channels Max. 0dB*, 600Ω, balanced Control: 2 channels, relay contact output, contact capacity: 24V DC/ 0.5 A	Station paging only
Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destination Connector Voice Sampling Frequency Quantifying Bit No. Voice Encoding Method Audio Packet Omission Audio Delay Time	10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, Multicast Unicast (max.16), Multicast (max.191) RJ45 connector 16kHz, 8kHz (controllable on the software) 16 bit Sub-band ADPCM, Cryptosystem Silence insertion 80ms, 320ms (controllable on the software)	
Indication	Network LNK/ ACT indication, status lamp, power- on indication lamp	
Others	Firmware update function, system data hold function, forced air-cooling, time of day hold facility, reset switch (front panel)	Firmware update function, system registration data entry hold facility, forced air-cooling, time of day hold facility, reset switch (front panel)
Installation Method	Rack, desk, surface mount	
Operating Temperature	0°C to +40°C	
Operating Humidity	90% RH or less (no condensation)	
Finish	Pre-coated steel plate, black, 30% gloss	
Dimensions	420(W) × 44.3(H) × 356(D) mm	420(W) × 44.3(H) × 349(D) mm
Weight	4.1kg	4.2kg
Accessory	AC power cord (2m) ×1, CD (for PC setting, maintenance use) ×1, removable terminal plug (4 pins) ×2, mini-clamp plug (2 pins) ×20, plastic foot x 4, screw for fitting plastic foot x 4, rack mounting bracket x2, screw for rack mounting ×4, wall mounting bracket ×2, screw for mounting bracket ×8, screw for wall mounting ×4	AC power cord (2m) ×1, CD (for PC setting, maintenance use) ×1, mini-clamp plug (2 pins) x20, plastic foot x 4, screw for fitting plastic foot ×4, rack mounting bracket ×2, screw for rack mounting ×4 wall mounting bracket ×2, screw for mounting bracket ×8, screw for wall mounting ×4

Interfaces

Multi-Interface Unit

N-8000MI

*1 0dB = 1V
*2 0dB = 0.775V

Model	N-8000MI
Power Source	230V AC, 50/ 60Hz
Power Consumption	19W (180mA) (at rated), 24W (230mA) (max.)
Audio Input	Input: 2 inputs (2P/ input), Max. 0dB*1, 600Ω or less, balanced, with a semi-fixed volume for adjustment (0 to -25dB) Control: 2 inputs (2P/ input), no-voltage make contact input, open voltage: 12V DC, short-circuit current: 10mA Removable terminal block (8 pins)
Audio Output	Output: 2 outputs (2P/ output), Max. 0dB*1, 600Ω or less, balanced Control: 2 outputs (2P/ output), relay contact output, contact capacity: 24V DC/ 0.5A Removable terminal block (8 pins)
Contact Input	16 inputs, no-voltage make contact input, open voltage: 12V DC, short-circuit current: 10mA, removable terminal block (18 pins)
Contact Output	16 outputs, relay contact output, contact capacity: 24V DC/ 0.5A, removable terminal block (18 pins)
PBX I/F	PBX input and output: 2 channels, max.: 0dB*2 or less, Average: –15dB*2 or less, 600Ω, balanced, mini-clamp connector (2 pins), with adjustment functions for both input and output (Input: 0 to +15dB, output: –15 to 0dB), analog E&M interface
Tie-line I/F	Tie-line input and output: 2 channels, max.: 0dB*2 or less, Average: –15dB*2 or less, 600Ω, balanced, mini-clamp connector (2 pins) Signal method: EXES-2000/ EXES-6000 tie-line method Selective signal: DTMF signal
Others	Firmware update function, system registration data entry hold facility, yime of day hold facility, reset switch (front panel)

Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destinations Connector Voice Sampling Frequency Quantifying Bit No. Voice Encoding Method Voice Packet Loss Recovery Audio Delay Time	10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, Multicast Unicast (max.16), Multicast (max.191) RJ45 connector 16kHz, 8kHz (Controllable on the software) 16-bit Sub-band ADPCM, Cryptosystem Silence insertion 80ms, 320ms (controllable on the software)
Indication	Network LNK/ ACT indication, status Lamp, power-on indication lamp
Installation Method	Rack, desk, surface mount
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	420(W) × 44.3(H) × 239.5(D) mm
Weight	2.8kg
Accessory	Power cord (2m) ×1, CD (for PC setting, maintenance use) ×1, mini-clamp plug (2 pins) ×10, removable terminal plug (8 pins) ×2, removable terminal, plug (9 pins) x4, plastic foot x 4, screw for fitting plastic foot ×4, rack mounting bracket ×2, screw for rack mounting ×4, wall mounting bracket ×2, screw for mounting bracket ×8, screw for wall mounting ×4

Direct Select Unit

N-8000DI

Model	N-8000DI
Power Source	220 – 240V AC, 50/ 60Hz
Power Consumption	16W (Max.)
Contact Input	32 inputs, no-voltage make contact input, open voltage: 24V DC, short-circuit current: 5mA or less, removable terminal block (20 pins) (1 common terminal for 4 inputs)
Contact Output	32 outputs, relay contact output, contact capacity: 24V DC/ 2 – 500mA, removable terminal block (32 pins)
Network Section Network I/F Network Protocol Connector	 10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP RJ45 connector
Indication	Network LNK/ ACT indication, Status Lamp, Power-on indication lamp Channel indication lamps (32 channels)

Others	Firmware update function, System data hold function, Time of day hold facility, Reset switch (front panel)
Installation Method	Rack, Desk, Surface mount
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	420 (W) × 44.3 (H) × 267 (D) mm
Weight	2.8kg
Accessory	Power cord (2m) × 1, CD (for PC setting, maintenance use) × 1, Removable terminal plug (10 pins) × 4, Removable terminal plug (16 pins) x 4, Plastic foot x 4, Screw for fitting plastic foot x 4, Rack mounting bracket × 2, Screw for mounting bracket × 8, Screw for rack mounting × 4
Option	Wall mounting bracket: YC-850

Audio Interface Unit

N-8000AF

*0dB = 1V

Model	N-8000AF
Power Source	220 – 240V AC, 50/ 60Hz
Power Consumption	7W (max.)
Audio Input	1 input (transformer isolated), -58dB* to 0dB*, 2kΩ, balanced (MIC/ LINE input, controllable on the software) with input volume control knob, removable terminal block (3 pins)
Audio Output	1 output (transformer isolated), 0dB*, 600Ω, balanced, removable terminal block (3 pins)
Contact Input	8 inputs, no-voltage make contact input, open voltage: 24V DC, short-circuit current: 5mA or less, removable terminal block (10 pins), (1 common terminal for 4 inputs)
Contact Output	8 outputs, relay contact output, output capacity: 24V DC/ 2 – 500mA, removable terminal block (16 pins)
Time Sync Input	1 input, no-voltage make contact input, open voltage: 24V DC, short-circuit current: 5mA or less, removable terminal block (2 pins)
Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destinations Connector Voice Sampling Frequency	 10BASE-T/ 100BASE-TX (automatic-negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, multicast Unicast (max. 8), multicast (max. 191) RJ45 connector 16kHz, 8kHz (controllable on the software)

Quantifying Bit No. Voice Encoding Method Voice Packet Loss Recovery Audio Delay Time	16-bit Sub-band ADPCM, Cryptosystem Silence insertion 80ms, 320ms (controllable on the software)
Indication	Network LNK/ ACT indication, status lamp, power-on indication lamp, signal lamp, peak lamp
Others	Firmware update function, system data hold function, time of day hold facility, reset switch (front panel)
Installation Method	Rack, desk, surface mount
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	210(W) × 44.3(H) × 267(D) mm
Weight	1.7kg
Accessory	Power cord(2m) ×1, CD (for PC setting, maintenance use) ×1, removable terminal plug (2 pins) ×1, removable terminal plug (3 pins) ×2, removable terminal plug (5 pins) ×2, removable terminal plug (8 pins) ×2, plastic foot ×4, screw for fitting plastic foot x4
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one N-8000AF unit), MB-15B-J (for rack mounting two N-8000AF units), wall mounting bracket: YC-850

Telephone Interface Unit

N-8000AL

Model	N-8000AL
Power Source	220 – 240V AC, 50/ 60Hz
Power Consumption	8W (max.)
Line	No. of telephone line: 1 line Selective signal type: DTMF signal Monitoring function: line loop detection Control function: caller ID function Wiring method: 1 pair of twisted pair cables Short-circuit current: 120mA Open voltage: 24V DC Calling signal output voltage: max. 80V (0-p) AC (16Hz)
Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destinations Connector Voice Sampling Frequency Quantifying Bit No.	 10BASE-T/ 100BASE-TX (automatic-negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, multicast Unicast (max. 8), multicast (max. 191) RJ45 connector 16kHz, 8kHz, (controllable on the software) 16-bit Sub-band ADPCM, Cryptosystem Silence insertion 80ms, 320ms (controllable on the software)

Indication	Network LNK/ ACT indication, status lamp, power-on indication lamp, telephone status lamp
Other	Firmware update function, system data hold function, time of day hold facility, reset switch (front panel)
Installation Method	Rack, desk, surface mount
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	210 (W) × 44.3 (H) × 267 (D) mm
Weight	1.7kg
Accessory	Power cord (2m) × 1, CD (for PC setting, maintenance use) × 1, mini-clamp plug (2 pins) × 1, plastic foot × 4, screw for fitting plastic foot x 4
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one N-8000AL unit), MB-15B-J (for rack mounting two N-8000AL units), Wall mounting bracket: YC-850

C/O Interface Unit

N-8000CO

*0dB = 1V

Model	N-8000CO
Power Source	220 – 240V AC, 50/ 60Hz
Power Consumption	7W (max.)
C/O Interface	Public switched telephone networks No. of lines: 1 line Selective signal type: DTMF signal Signal system: compatible with loop start signaling Wiring method: 1 pair of twisted pair cables
Network Section	
Network I/F	10BASE-T/ 100BASE-TX (automatic-negotiation)
Network Protocol	TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP
Audio Packet Transmission System	Unicast, multicast
No. of Paging Destinations	Unicast (max. 8), multicast (max. 191)
Connector	RJ45 connector
Voice Sampling Frequency	16kHz, 8kHz (controllable on the software)
Quantifying Bit No.	16-bit
Voice Encoding Method	Sub-band ADPCM, Cryptosystem
Voice Packet Loss Recovery	Silence insertion
Audio Delay Time	80ms, 320ms (controllable on the software)

Indication	Network LNK/ ACT indication, status lamp, power-on indication lamp, line in-use lamp
Other	Firmware update function, system data hold function, time of day hold facility, reset switch (front panel)
Installation Method	Rack, desk, surface mount
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	210(W) × 44.3(H) × 267(D) mm
Weight	1.7kg
Accessory	Power cord (2m) ×1, CD (for PC setting, maintenance use) ×1, mini-clamp plug (2 pins) ×2, plastic foot ×4, screw for fitting plastic foot x4
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one N-8000CO unit), MB-15B-J (for rack mounting two N-8000CO units), wall mounting bracket: YC-850

Sub-Station Interface Unit

N-8000RS
N-8010RS
N-8400RS

Model	N-8000RS	N-8010RS	N-8400RS
Power Source	220 – 240V AC, 50/ 60Hz		
Power Consumption	40W (at rated), 50W (max.)	32W (at rated), 38W (max.)	30W (at rated), 45W (max.)
Interface Section for Sub-station			
No. of Lines	16	16	16
No. of Speech Link	2	1	Internal: 1 / External: 2
Transmission System	Analog baseband	Analog baseband	Analog baseband
Transmission Range	500m/ ø0.5mm (AWG24), 800m / ø0.65mm (AWG22), 1300m/ ø0.9mm (AWG19)	500m/ ø0.5mm (AWG24), 800m/ ø0.65mm (AWG22), 1300m/ ø0.9mm (AWG19)	1km/ ø0.5mm (AWG24), 1.5km/ ø0.65mm (AWG22), 2km/ ø0.9mm (AWG19)
Speech Method	Half-duplex conversation by way of voice switch	Half-duplex conversation by way of voice switch,	Half-duplex conversation by way of voice switch (hands-free), Full-duplex (Handset)
Connector	Removable terminal block (3 pins)	Removable terminal block (3 pins)	Removable terminal block (4 pins)
Wiring Method	Two-core shielded cable	Two-core shielded cable	2 sets of twisted pair cables
Audio Output	Conversation: max. 1W, Paging: max. 0.5W/ line	Conversation: max. 1W, Paging: max. 0.5W/ line	Conversation: max. 1W, Paging: max. 0.5W/ line
Feeding Voltage/ current	22V DC, 30mA max.	22V DC, 30mA max.	24V DC, 30mA max.
Control Signal	Call in button detection, privacy button detection, hook detection	Call in button detection, privacy button detection, hook detection	Call in button detection, hook detection
Network Section	10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, Multicast 0, *Reception only RJ45 connector 16kHz, 8kHz (controllable on the software) 16-bit Sub-band ADPCM, Cryptosystem Silence insertion 80ms, 320ms (controllable on the software)		
Network I/F			
Network Protocol			
Audio Packet Transmission System			
No. of Paging Destinations			
Connector			
Voice Sampling Frequency			
Quantifying Bit No.			
Voice Encoding Method			
Voice Packet Loss Recovery			
Audio Delay Time			
Indication	Network LNK/ ACT indication, status lamp, power- on indication lamp		
Other	Firmware update function, system data hold function, reset switch (front panel), forced air cooling		
Installation Method	Rack, desk, surface mount		
Operating Temperature	0°C to +40°C		
Operating Humidity	90% RH or less (no condensation)		
Finish	Pre-coated steel plate, black, 30% gloss		
Dimensions	420(W) × 44.3(H) × 325.5(D) mm		
Weight	3.9kg	3.8kg	4kg
Accessory	Power cord (2m) ×1, CD (for PC setting, maintenance use) ×1, removable terminal plug (3 pins) x16, plastic foot x4, screw for fitting plastic foot ×4, rack mounting bracket ×2, screw for mounting bracket ×8, screw for rack mounting ×4		Power cord (2m) ×1, CD (for PC setting, maintenance use) ×1, removable terminal plug (4 pins) x16, Plastic foot x4, screw for fitting plastic foot ×4, rack mounting bracket ×2, screw for mounting bracket ×8, screw for rack mounting ×4
Option	Wall mounting bracket: YC-850		

IP Network Intercom Exchange

N-8000EX-8Q

*0dB = 1V

Model	N-8000EX-8Q
Power Source	220 – 230V AC, 50/ 60Hz
Power Consumption	50W (at rated), 75W (max.)
Interface Section for station	No. of lines: 8 No. of speech link: 4 internal, 8 external Type of speech path: space sharing/ time space sharing Transmission system: 2 wire 160 kbps echo canceller transmission system Signal level: 0db* or less Transmission range: Max. 1500m (ø0.65mm (AWG 22), Loop resistance 170Ω) Speech method: Simultaneous conversation by way of echo canceller (Hands-free), simultaneous conversation by way of echo canceller or half-duplex conversation by way of voice switch (handset), PTT conversation Connector: Dedicated, wiring method: 1 set of twisted pair cable, feeding voltage/current: 48V DC, Max. 70mA
Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destinations Connector	 10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, Multicast Unicast (max. 16), Multicast (max. 191) RJ45 connector

Voice Sampling Frequency Quantifying Bit No. Voice Encoding Method Voice Packet loss recovery Audio Delay Time	16kHz, 8kHz, (controllable on the software) 16-bit Sub-band ADPCM, Cryptosystem Silence Insertion 80ms, 320ms (controllable on the software)
Indication	Network LNK/ ACT indication, status lamp, power-on indication lamp
Other	Firmware update function, system data hold function, time of day hold facility, reset switch (front panel)
Installation Method	Rack, desk, surface mount
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	420 (W) × 44.3 (H) × 356 (D) mm
Weight	4.1kg
Accessory	Power cord (2m) ×1, CD (for PC setting, maintenance use) ×1, mini-clamp plug (2 pins) ×20, plastic foot ×4, screw for fitting plastic foot x4, r mounting bracket x2, screw for rack mounting x4, wall mounting bracket x2, screw for mounting bracket x8, screw for wall mounting x4

Stations

IP Base Stations

IP Multifunctional Master Station

N-8600MS

*0dB = 1V

Model	N-8600MS
Power Source	Power supply device that complies with IEEE802.3af standard or 12V DC (use of the optional AC adapter)
Power Consumption	Use of the AC adapter (12V DC): 2.5W (station only), Use of the PoE (48V DC): 3W
Speech Method	Hands-free or handset conversation
Audio Frequency Range	300Hz – 7kHz
Hands-free	5.7cm cone-type, max. output 0.5W, 8Ω speaker Omni-directional electret condenser microphone
Handset	Receive path: Dynamic type, Send path: Electret condenser microphone
Headset Terminal	Speaker: 150Ω, ø3.5mm mini jack, Microphone: -49dB*, ø3.5mm mini jack
External Speaker Terminal	Max. output 0.5W, 8Ω, screwless connector (2 pins)
Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destinations Connector	 10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, Multicast Unicast (max. 16), Multicast (max. 191) LAN: RJ45 connector (compatible with PoE)

Voice Sampling Frequency Quantifying Bit No. Voice Encoding Method Voice Packet Loss Recovery Audio Delay Time	16kHz, 8kHz (controllable on the software) 16-bit Sub-band ADPCM, Cryptosystem Silence insertion 80ms, 320ms (controllable on the software)
Display	LCD: Alphanumeric characters (16 characters × 2 lines)
Indication	Status lamp
Installation Method	Desk or Surface mounted master station (When mounting to the wall, use the optional YC-280)
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Body, Handset: ABS resin, gray
Dimensions	148 (W) × 208 (H) × 69.7 (D) mm (excluding a curl cord section)
Weight	770g
Accessory	CD (for PC setting, maintenance use) × 1
Option	Wall mounting bracket: YC-280 AC adapter: AD-1210P, AD-1215P

IP Door Station
N-8640DS

IP Indoor Station
N-8650DS

Indoor Station Board
N-8640SB

Model	N-8640DS	N-8650DS	N-8640SB
Power Source	Power supply device that complies with IEEE802.3af standard or 12V DC (supplied from the AC adapter (option))		
Power Consumption	Use of the AC adapter (12V DC): 3.5W (station only), Use of the PoE (48V DC): 5W		
Speech Method	Hands-free conversation		
Audio Frequency Range	300Hz – 7kHz		
Hands-free	Speaker: 3.5cm cone-type, max. output 0.5W, 8Ω Microphone.: Omni-directional electret condenser microphone		
Contact Input	1 channel, no-voltage make contact input, open circuit voltage: 5V DC, short circuit current: 10mA or less, unterminated ends		
Contact Output	Open collector output, 4 channels, withstand voltage: 30V DC, control current: Max. 50mA (4 output 1COMMON), unterminated ends Relay contact output, 1 channel, withstand voltage: 30V DC. control current: Max. 500mA, unterminated ends		
External Speaker Terminal	Maximum output 0.5W, 8Ω, unterminated ends		
Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destinations Connector Voice Sampling Frequency Quantifying Bit No. Voice Encoding Method Voice Packet Loss Recovery Audio Delay Time	10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/ IP, UDP, ARP, ICMP, HTTP, RTP, IGMP Unicast, Multicast 0, *Reception only LAN: RJ45 connector (compatible with PoE) 16kHz, 8kHz (controllable on the software) 16-bit Sub-band ADPCM, Cryptosystem Silence insertion 80ms, 320ms (controllable on the software)		
Indication	Status lamp		-
Installation Method	Flush-mount or Surface-mount		-
Operating Temperature	-10°C to +50°C		
Operating Humidity	90% RH or less (no condensation)		
Housing Protection	BS EN62262: 2002: IK02 equivalent	-	-
Dust/ Water Protection	IP65 (Note that panel edges must be sealed at installation)	-	-
Finish	Panel: Stainless steel (SUS304), hairline Call button: Metal	ABS resin, dark gray	-
Dimensions	115 (W) × 162 (H) × 58.5 (D) mm	117.2 (W) × 162 (H) × 60 (D) mm	79 (W) × 134 (H) × 53 (D) mm (complete assembly of component parts)
Weight	780g	400g	350g (Total weight)
Accessory	Box mounting screw (No.6-32UNC × 20) × 4, Box mounting screw (M4 × 20) × 4, Waterproof washer × 4, LAN coupler × 1	Box mounting screw (No.6-32UNC × 20) × 4, Box mounting screw (M4 × 20) × 4, LAN coupler × 1	-
Option	AC adapter: AD-1210P, AD-1215P		
Applicable Box (option)	For flush-mount: 3-gang electrical box or Black Box YC-150 For wall surface-mount: Wall mount Box YS-13A		-

Notes: * An AC adapter, when used as power source, cannot be put in the YS-13A, YC-150, or a 3-gang electrical box together with the N-8640DS and N-8650DS because such boxes do not have enough room to accommodate both.
* Be sure to ground the frame ground terminal on the unit's rear for N-8640DS

IP Remote Microphone Station
N-8610RM

Model	N-8610RM
Power Source	Power supply device that complies with IEEE802.3af standard or 12V DC (use of the optional AC adapter)
Power Consumption	Use of the AC adapter (12V DC): 4W (microphone only), 8.5W (when connecting 4 RM-210 Extension units) Use of the PoE (48V DC): 5.2W (microphone only), 7.5W (when connecting 4 RM-210, Extension units)
Speech Method	Hands-free conversation (use of goose-neck microphone)
Audio Frequency Response	300Hz – 7kHz
Microphone	Unidirectional electret condenser microphone
Built-in Speaker	6.6cm cone-type, rated output 0.3W, 8Ω
Network Section Network I/F Network Protocol Audio Packet Transmission System No. of Paging Destinations Connector Voice Sampling Frequency Quantifying Bit No. Voice Encoding Method	10BASE-T/ 100BASE-TX (Automatic-Negotiation) TCP/ IP, UDP, HTTP, RTP, ARP, ICMP, IGMP Unicast, Multicast Unicast (max. 16), Multicast (max. 191) RJ-45 connector (PoE compatible) 16kHz, 8kHz (Controllable on the software) 16-bit Sub-band ADPCM, Cryptosystem

Voice Packet Loss Recovery Audio Delay Time	Silence insertion 80ms, 320ms (controllable on the software)
No. of Connectable Expansion	Max. 4 units (max. 2 units at PoE power supply)
Operation	Function keys (including a covered key), talk key
Indicator	Power indicator, Status indicator, Selection indicator, Broadcast status indicator, Microphone indicator
Installation Method	Desk/ Surface mounted master station (When mounting to the wall, use the optional WB-RM200.)
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	ABS resin, blueish gray
Dimensions	190 (W) x 76.5 (H) x 215 (D) mm (excluding microphone)
Weight	700g
Accessory	CD (for PC setting, maintenance use) x 1, Ferrite clamp (for power supply cable, LAN cable and extension unit cable) x 1 each
Option	Remote microphone extension: RM-210 Wall mounting bracket: WB-RM200, AC adapter: AD-1215P

2-Wire Stations

Multifunction Master Station
N-8000MS

Standard Master Station
N-8010MS

Standard Hands-Free Master Station
N-8011MS

*0dB = 1V

Model	N-8000MS	N-8010MS	N-8011MS
Power Source	48V DC (supplied from the IP intercom exchange (option))		
Power Consumption	1.8W (at rated), 2.4W (max.)		
Wiring Method	1 set of twisted pair cable		
Transmission System	2 wire 160kbps echo canceller transmission system		
Signal Level	0dB* or less		
Speech Method	Hands-free or handset conversation		Hands-free conversation
Audio Frequency Range	300Hz – 7kHz		
Transmission Range	Max. 1500m (ø0.65mm, Loop resistance 170Ω)		
Hands-free	Speaker: 0.6W, 8Ω, 5.7cm cone-type Microphone: Omni-directional electret condenser microphone		
Handset	Receive path: Dynamic type Send path: Electret condenser microphone		-
Display	LCD: Alphanumeric characters (16 characters × 2 lines)	-	-
Indication	Status lamp		
Line Connecting Terminal	RJ-11 modular jack		
Headset Terminal	Speaker: 3mW, 32Ω Microphone: –49dB*, ø3.5mm mini jack	-	-
External Speaker Terminal	0.6W, 8Ω, screwless connector (2 pins)	-	-
Installation Method	Desk or Surface mounted master station (When mounting to the wall, use the optional bracket: YC-280)		Desk or Surface mounted master station (When mounting to the wall, use the optional: YC-290.)
Operating Temperature	0°C to +40°C		
Operating Humidity	90% RH or less (no condensation)		
Finish	Body, Handset: ABS resin, gray		
Dimensions	148 (W) × 208 (H) × 69.7 (D) mm (excluding a curl cord section)		92 (W) × 195 (H) × 57.9 (D) mm
Weight	800g	700g	400g
Accessory	Connecting cord (3m) × 1		
Option	Wall mounting bracket: YC-280		Wall mounting bracket: YC-290

Industrial-Use Master Station
N-8020MS

Flush-Mount Master Station
N-8033MS

Flush-Mount Hands-Free Master Station
N-8031MS

*0dB = 1V

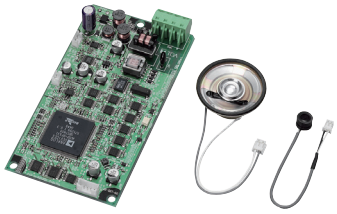
Model	N-8020MS	N-8033MS	N-8031MS
Power Source	48V DC (supplied from the IP intercom exchange (optional))		
Power Consumption	1.8W (at rated), 2.4W (max.)		
Wiring Method	1 set of twisted pair cable		
Transmission System	2 wire 160kbps echo canceller transmission system		
Signal Level	0dB* or less		
Speech Method	Hands-free or handset conversation	Hands-free conversation	Hands-free conversation (Handset conversation can be established in conjunction with the RS-191 (option))
Audio Frequency Range	300Hz – 7kHz		
Transmission Range	Max. 1500m (ø0.65mm, Loop resistance 170Ω)		
Hands-free	Speaker: 0.6W, 8Ω, 5.7cm cone-type Microphone: Omni-directional electret condenser microphone		
Handset	Receive path: Dynamic type Send path: Electret condenser microphone	-	-
Indication	Status lamp		
Dial-in Contact Output	Open collector output (polarized) Withstand voltage: Max. 30V DC Control current: Max. 50mA, screwless connector (2 pins)	-	-
Line Connecting Terminal	RJ-11 modular jack	Pin header (2 pins)	
External Dial Input	-	No-voltage make contact input, open voltage: 5V DC, short-circuit current: 1mA, screwless connector (5 pins)	
External Speaker Terminal	0.6W, 8Ω, screwless connector (2 pins)	-	-
Installation Method	Desk/Surface mounted master station (When mounting to the wall, use the optional YC-280)	Flush-mount or Surface-mount	
Operating Temperature	-10°C to +50°C	0°C to +40°C	
Operating Humidity	90% RH or less (no condensation)		
Dust/ Water Protection	IP54	IP65 (Note that panel edges must be sealed at installation)	-
Resistance to Environment	-	Passed our chemical-resistant test	-
Finish	Body, Handset: ABS resin, gray	Membrane switch (Front pasting): Polyester film	Panel: Stainless steel (SUS304), hairline
Dimensions	170 (W) × 220 (H) × 91 (D) mm (excluding a curl cord and projection sections)	115 (W) × 254 (H) × 51 (D) mm	115 (W) × 254 (H) × 54.6 (D) mm
Weight	1kg	850g	
Accessory	Rubber cap × 2	Box mounting screw (M4 × 35) × 4, Acoustic absorbent × 1, Removable terminal plug (2 pins, preinstalled on the unit) × 1	Box mounting screw (No.6-32UNC × 18) × 4, Box mounting screw (M4 × 25) × 4, Removable terminal plug (2 pins, preinstalled on the unit) × 1, Handset jumper (8 pins, preinstalled on the unit) × 1, Ferrite clamp ×1, Acoustic absorbent x 1
Option	Wall mounting bracket: YC-280	Back Box YC-841	For flush-mount: Back Box YC-241 Wall surface-mount: Wall mount Box YC-251 Handset: RS-191

Handset for N-8031MS
RS-191

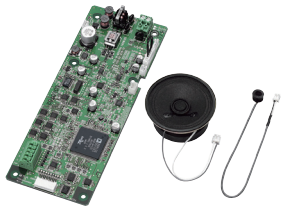
Handset Receiver: Dynamic type
Handset Transmitter: Electret condenser type
Operating Temperature: 0°C to +40°C
(Temperature range not to freeze the speaker and switch)
Finish: ABS resin, pale white
Dimensions: 116 (W) × 220 (H) × 70 (D) mm
Weight: 330g
Accessory: Box mounting screw (M4 × 25) × 4,
Box mounting screw (No.6–32UNC× 8) × 4

Door Station
N-8050DS

Door Station Board
N-8050SB



Master Station Board
N-8031SB



*0dB = 1V

Model	N-8050DS	N-8050SB	N-8031SB
Power Source	48V DC (supplied from the IP network intercom exchange (option))		
Power Consumption	1.8W (rated), 2.4W (max.)		
Wiring Method	1 set of twisted pair cable	Non-polar one pair stranded wire system	
Transmission System	2 wire 160kbps echo canceller transmission system		
Signal Level	0dB* or less		
Speech Method	Hands-free conversation		Hands-free conversation (Handset conversation can be established in conjunction with the RS-191(option)
Audio Frequency Range	300Hz – 7kHz		
Transmission Range	Max. 1500m (ø0.65mm), Loop resistance 170Ω)		
Hands-free	Speaker: 1W, 8Ω, 3.5cm cone-type, Microphone.: Omni-directional electret condenser microphone		Speaker: 0.6W, 8Ω, 5.7cm cone-type, Microphone: Omni-directional electret condenser microphone
Contact Output	Open collector output, withstand voltage: Max. 30V DC, control current: Max. 50mA, one shot: can be set from 1 to 9 sec, screw terminal (polarized)		-
Line Connecting Terminal	2 wire, screw terminal (non-polar)	2 wire, screw terminal (non-polar)	Pin header (2 pins)
Status Indicator LED Connecting Terminal	-	Solderless conn ector (5 pins, male), open voltage: 5V, max. load current: 4.1mA	Solderless connector (2 pins, male), open voltage: 5V, max. load current: 5mA
Dial Input	-	-	Solderless connector (10 pins, male), open voltage: 3.3V DC, short-circuit current: 1mA
External Dial Input	-	-	No-voltage make contact input, open voltage: 5V DC, short-circuit current: 1mA, screwless connector (5 pins)
Call Button Connecting Terminal	-	Solderless connector (5 pins, male), open voltage: 3.3V DC, short-circuit current: 1.5mA	-
Installation Method	Flush-mount or Surface-mount	-	-
Operating Temperature	-10°C to +50°C		0°C to +40°C
Operating Humidity	90% RH or less (no condensation)		
Housing Protection	BS EN62262: 2002: IK02 equivalent	-	-
Dust/ Water Protection	IP54 (note that panel edges must be sealed at installation)	-	-
Finish	Panel: stainless steel (SUS304), hairline Call button: metal	-	-
Dimensions	115(W) × 162(H) × 54(D) mm	67(W) × 128.3(H) × 26(D) mm	70(W) × 185(H) × 20.6(D) mm
Weight	680g	100g (including accessories)	205g (including accessories)
Accessory	Box mounting screw (No.6-32UNC ×18) ×4, box mounting screw (M4 ×25) ×4, acoustic absorbent (made of felt) x1	Hands-free speaker (with connection cord) ×1, hands-free microphone (with connection cord) ×1	Removable terminal plug (2 pins, preinstalled on the unit) ×1, handset jumper (8 pins, preinstalled on the unit) ×1, hands-free speaker (with connection cord) ×1, hands-free microphone (with connection cord) ×1, ferrite clamp ×1
Option	For flush-mount: 3-gang electrical box or Back Box YC-150 For wall surface-mount: Wall mount Box YS-13A	-	Handset: RS-191

N-8000 SIP Gateway
N-8000SG

Operating System:
Windows® 7 Professional (32/64bit)
License: "USB Dongle" required

2-Core Shielded Cable Type Stations

Substation (Emergency Use)
RS-180

Substation (Outdoor Vandal-Resistant)
RS-170

Substation (Indoor Vandal-Resistant)
RS-160

Substation (Indoor)
RS-150

Model	RS-180	RS-170	RS-160	RS-150
Rated Input	1W			
Rated Impedance	625Ω (1W/ 25V)			
Internal Speaker	4cm cone-type			
Control Output	Open collector, withstand voltage: 30V DC, control current 30mA (The open collector output is kept turned on till the conversation is finished after the call button was pressed.)	-	-	-
Wiring	Two-core shielded cable			
Transmission Range	0.5km, ø0.5mm (AWG24), 0.8km, ø0.65mm (AWG22), 1.3km, ø0.9mm (AWG19)			
Operating Temperature	-10°C to +50°C (temperature range not to freeze the speaker and switch)			
Finish	Panel: stainless steel, hairline; Call button: metal Printed circuit board: weather-resistant coating		Panel: stainless steel, hairline Call button: metal	Panel: stainless steel hairline Call button: resin
Dimensions	120(W) × 120(H) × 58.5(D) mm	120(W) × 120(H) × 57.5(D) mm		120(W) × 120(H) × 48.5(D) mm
Weight	570g	540g		410g
Accessory	Box mounting screw (No.6-32UNC ×8) ×4, box mounting screw (M4 ×25) ×4			Box mounting screw (No.6-32UNC ×18) ×4, box mounting screw (M4 ×25) ×4
Option	For flush-mount: 2-gang electrical box: YC-302, for surface mount: Indoor wall-mount box: YC-822, outdor wall-mount box: YC-823		For flush-mount: 2-gang electrical box: YC-302, for surface-mount: Indoor wall-mount box: YC-822	

IP Intercom Switch Panel
RS-144
RS-143
RS-140

Model	RS-144	RS-143	RS-140
Call-In Switch	Momentary (EMERGENCY, NORMAL)	Momentary	
Privacy Switch	Latching		
Indication	-	-	When called: Call LED (red) flashing In conversation: Call LED (red) In privacy: Privacy LED (red)
Wiring	Two-core shielded cable		
Transmission Range	0.5km/ ø0.5m (AWG24), 0.8km/ ø0.65mm (AWG22), 1.3km/ ø0.9mm (AWG19)		
Operating Temperature	0°C to +40°C		
Finish	Panel: Stainless steel, hairline Call-in Switch: Resin, red Privacy Switch: Resin, white	Panel: Stainless steel, hairline Call-in Switch: Resin, red	Panel: Stainless steel, hairline Call-in Switch: Resin, red Privacy Switch: Resin, white
Dimensions	70(W) × 115(H) × 28.6(D) mm		
Weight	80g		
Accessory	Mounting bracket ×1, Bracket mounting screw (No.6–32UNC ×18) ×2, box mounting screw (M4 ×30) ×2, box mounting screw (No.6–32UNC× 30) ×2		
Option	Flush-mount box: YC-801, wall-mount box: YC-802		

Handset for RS-144, RS-143 and RS-140
RS-141

Handset Receiver: Dynamic type
Handset Transmitter: Electret condenser type
Wiring: Two-core shielded cable
Handset Receiver Volume Control: Slide volume, Max. control level: 12 – 18dB
Operating Temperature: 0°C to +40°C
Finish: ABS resin, pale white
Dimensions: 116 (W) × 220 (H) × 71 (D) mm
Weight: 350g
Accessory: Box mounting screw (M4 × 25) × 4, Box mounting screw (No.6–32UNC× 18) × 4
Option: For flush-mount: 2-gang electrical box YC-302
For surface-mount: Indoor wall-mount box YC-822

IP Intercom Switch Board for RS-141, N-8000RS & N-8010RS
RS-142

Call-in Switch Wiring: 4 cables (for 2 momentary switches)
Wiring: Two-core shielded cable
Transmission Range: 0.5km/ ø0.5mm (AWG24), 0.8km/ ø0.65mm (AWG22) , 1.3km/ ø0.9mm (AWG19)
Operating Temperature: 0°C to +40°C
Weight: 30g

4-Wire Stations

Analogue Standard Master Station

N-8410MS

*0dB = 1V

Model	N-8410MS
Power Source	24V DC (supplied from the sub station interface unit N-8400RS)
Current Consumption	Max. 30mA
Wiring Method	2 set of twisted pair cable
Transmission System	4 wire baseband transmission system
Signal Level	25dB* (up), 0dB* or less (down)
Speech Method	Hands-free or handset conversation
Audio Frequency Range	300Hz – 7kHz
Transmission Range	1km/ ø0.5mm (AWG24), 1.5km/ ø0.65mm (AWG22), 2km/ ø0.9mm (AWG19)
Hands-free	Speaker: 0.6W, 8Ω, 5.7cm cone-type, Microphone: Omnidirectional electret condenser microphone Speaker volume control: 3-step switch (1-step, 4dB)
Handset	Receive path: Dynamic type Send path: Electret condenser microphone Handset receiver volume control: rotary volume Max. control level: 12 – 18dB
Indication	Status lamp
Line Connecting Terminal	RJ-11 modular jack
Installation Method	Desk or Surface mounted master station (When mounting to the wall, use the optional bracket: YC-280.)
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Body, Handset: ABS resin, Gray
Dimensions	148 (W) × 280 (H) × 70.5 (D) mm (excluding a curl cord section)
Weight	720g
Accessory	Connection cord (3m) x 1
Option	Wall mounting bracket: YC-280

Substation (Emergency Use)

RS-480

Substation (Outdoor Vandal-Resistant)

RS-470

Substation (Indoor Vandal-Resistant)

RS-460

Substation (Indoor)

RS-450

Model	RS-480	RS-470	RS-460	RS-450
Call-In Switch	Momentary (Emergency call: Press twice within 400ms)			
Rated Input	1W			
Control Output	Open collector, max. controlled Voltage: 30VDC, Control Current: 30mA	-	-	-
Internal Speaker	Cone-type			
Internal Mic	Electret condenser type			
Indicator	When called: LED (red) flashing In conversation: LED (red)	-	-	-
Wiring	Twisted pair cables (2-pair)			
Transmission Range	1km/ ø0.5mm (AWG24) 1.5km/ ø0.65mm (AWG22) 2km/ ø0.9mm (AWG19)			
Operating Temperature	-10°C to +50°C (Temperature range not to freeze the speaker and switch)			
Housing Protection	BS EN62262: 2002: IK02 equivalent		-	-
Dust/ Water Protection	IP54		-	-
Finish	Panel: stainless steel, hairline Call switch: metal, silver Circuit board: weather-resistant coating		Panel: stainless steel, hairline Call switch: metal, silver	Panel: stainless steel, hairline Call switch: resin, black
Dimensions	120(W) × 120(H) × 50.5(D) mm	120(W) × 120(H) × 49.5(D) mm		120(W) × 120(H) × 41.5(D) mm
Weight	575g	550g	540g	510g
Accessory	Box mounting screw (No.6-32UNC ×8) ×4, box mounting screw (M4 × 25) ×4	Box mounting screw (No.6-32UNC ×18) ×4, box mounting screw (M4 ×25) ×4		
Applicable Box	For flush-mount: 2-gang electrical box: YC-302 (option) For surface-mount: Indoor wall-mount box YC-822 (option) Outdoor wall-mount box YC-823 (option)		For flush-mount: 2-gang electrical box: YC-302 (option) For surface-mount: Indoor wall-mount box YC-822 (option)	

Handset for RS-480

RS-481

Handset Receiver: Dynamic type
Handset Transmitter: Electret condenser type
Handset Receiver Volume Control: Slide volume,
Maximum attenuation level: 12 – 18dB
Operating Temperature: 0°C to +40°C
Finish: ABS resin, pale white
Dimensions: 116 (W) × 220 (H) × 71 (D) mm
Weight: 365g
Accessory: Box mounting screw (No.6-32UNC × 18) × 4,
Box mounting screw (M4 × 25) × 4
Applicable Box: 2-gang electrical box: YC-302 (option)

IP Intercom Switch Board for RS-481, RS-142 and N-8400RS

RS-442

Call Button Wiring: 6 cables (for 3 momentary switches)
Rated Input: 1W
Control Output: Open collector,
Max. controlled voltage: 30 V DC
Control current: 30 mA
Microphone: Electret condenser microphone
Wiring: Twisted pair cables (2 pairs)
Transmission Range: 1 km/ ø0.5 mm (AWG24)
1.5 km/ ø0.65 mm (AWG22), 2 km/ ø0.9 mm (AWG19)
Operating Temperature: 0°C to + 40°C
Weight: 140 g

Mounting Brackets and Optional Accessories

Wall-Mount Bracket
YC-850

Wall-Mount Bracket
YC-290

Wall-Mount Bracket
YC-280

Model	YC-850	YC-290	YC-280
Finish	Surface-treated steel plate, black, 30% gloss	Surface-treated steel plate, gray, paint	Surface-treated steel plate, gray, paint
Dimensions	451 (W) × 220 (H) × 10 (D) mm	64 (W) × 131.5 (H) × 31.8 (D) mm	100 (W) × 140 (H) × 31.8 (D) mm
Applicable Model	N-8000RS, N-8010RS, N-8400RS, N-8000DI N-8000AF, N-8000AL, N-8000CO	N-8011MS	N-8000MS, N-8010MS, N-8020MS, N-8410MS N-8510MS, N-8600MS

Surface-Mount Back Box
YC-251

Flush-Mount Back Box
YC-241

Flush-Mount Back Box
YC-150

Surface-Mount Back Box
YS-13A

Model	YC-251	YC-241	YC-150	YC-13A
Finish	Surface-treated steel plate, white	Colored chrome painting	Zinc-plating	Zinc-plating
Dimensions	124 (W) × 258.5 (H) × 50.5 (D) mm	276 (W) × 119 (H) × 67 (D) mm	184 (W) × 119 (H) × 57 (D) mm	163.5 (W) × 114.5 (H) × 55 (D) mm
Applicable Model	N-8031MS	N-8031MS	N-8050DS, N-8640DS	N-8050DS, N-8640DS

2-Gang Electrical Box with Cover
YC-302

Back Box
YC-841

Outdoor Wall-Mount Box
YC-823

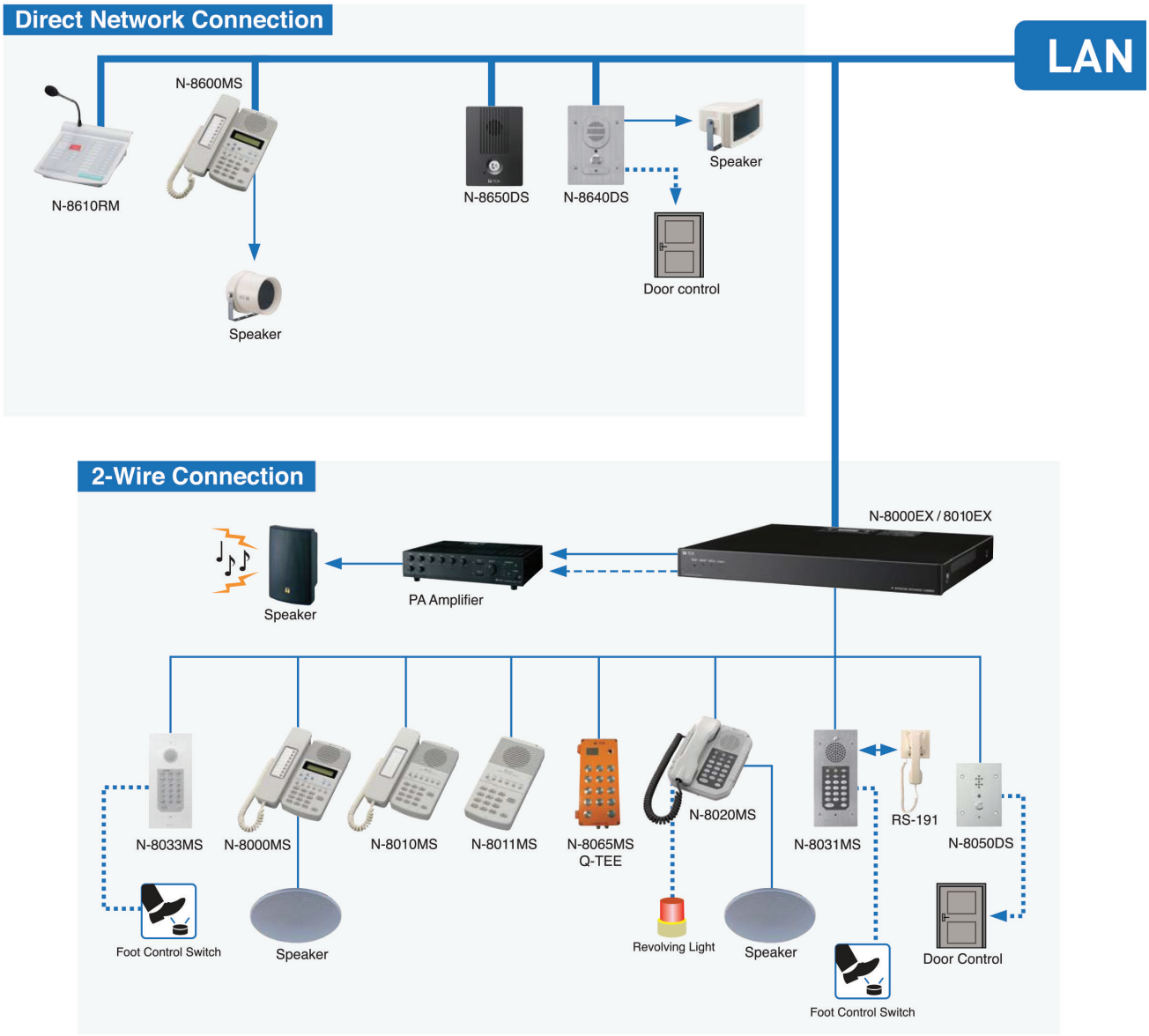
Indoor Wall-Mount Box
YC-822

Model	YC-302	YC-841	YC-823	YC-822
Finish	SPHT, MFZn4 (glazed chromate)	Surface-treated steel plate, white	Stainless plate, off-white	Surface-treated steel plate, off-white
Dimensions	Outlet box: 102 (W) × 102 (H) × 44 (D) mm Cover: 106 (W) × 106 (H) × 13 (D) mm	119 (W) x 258 (H) x 57 (D) mm	124 (W) x 124 (H) x 62 (D) mm	124 (W) x 124 (H) x 61 (D) mm
Applicable Model	RS-150, RS-160, RS-170, RS-180, RS-450, RS-460, RS-470, RS-480	N-8033MS	YC-823	YC-822

AC Adapter
AD-1210P

Model	AD-1210P
Power Source	100 - 240V AC, 50/60 Hz
Output	12V DC, 1.5A
Current Consumption	0.5A AC Input 100V(rated output)
Cord Length	1.8m
Plug	Conductor: center "+", ø5.5 x ø2.1 x L9.5mm
Operating Temperature	0°C to +40°C
Finish	Case: Polycarbonate, black
Weight	130g

N-8000 System Overview



System Specifications

LAN Connections
Max. 192 units (total no. of Exchanges, Interface Units and IP stations)

Station Connections
Max. 3,072 stations (16 stations connected to each of 192 Exchanges)

Voice Links
Max. 768 links (4 links for each of 192 connected N-8000EX Exchanges)

Paging
Zones
Max. 192 zones

Paging Outputs
Max. 384 outputs (2 outputs for each of 192 connected N-8000 Exchanges or Multi-Interface units)

BGM
Max. 8 channels (number of channels selectable from a station)

PBX Interface
Max. 384 units (2 units for each of 192 connected Multi-Interface units)

Tie-Line Interface
Max. 384 units (2 units for each of 192 connected Multi-Interface units)

Outside-Line Interface
Max. 192 units

Telephone Interface
Max. 192 units (when 192 Telephone Interface units are connected)

External Contact Output
N-8000MI
Max. 3,072 (16 outputs for each of 192 connected Multi-Interface units)
N-8000DI
Max. 6,144 (32 outputs for each of 192 connected Direct Select units)
N-8000AF
Max. 1,536 (8 outputs for each of 192 connected Audio Interface units)

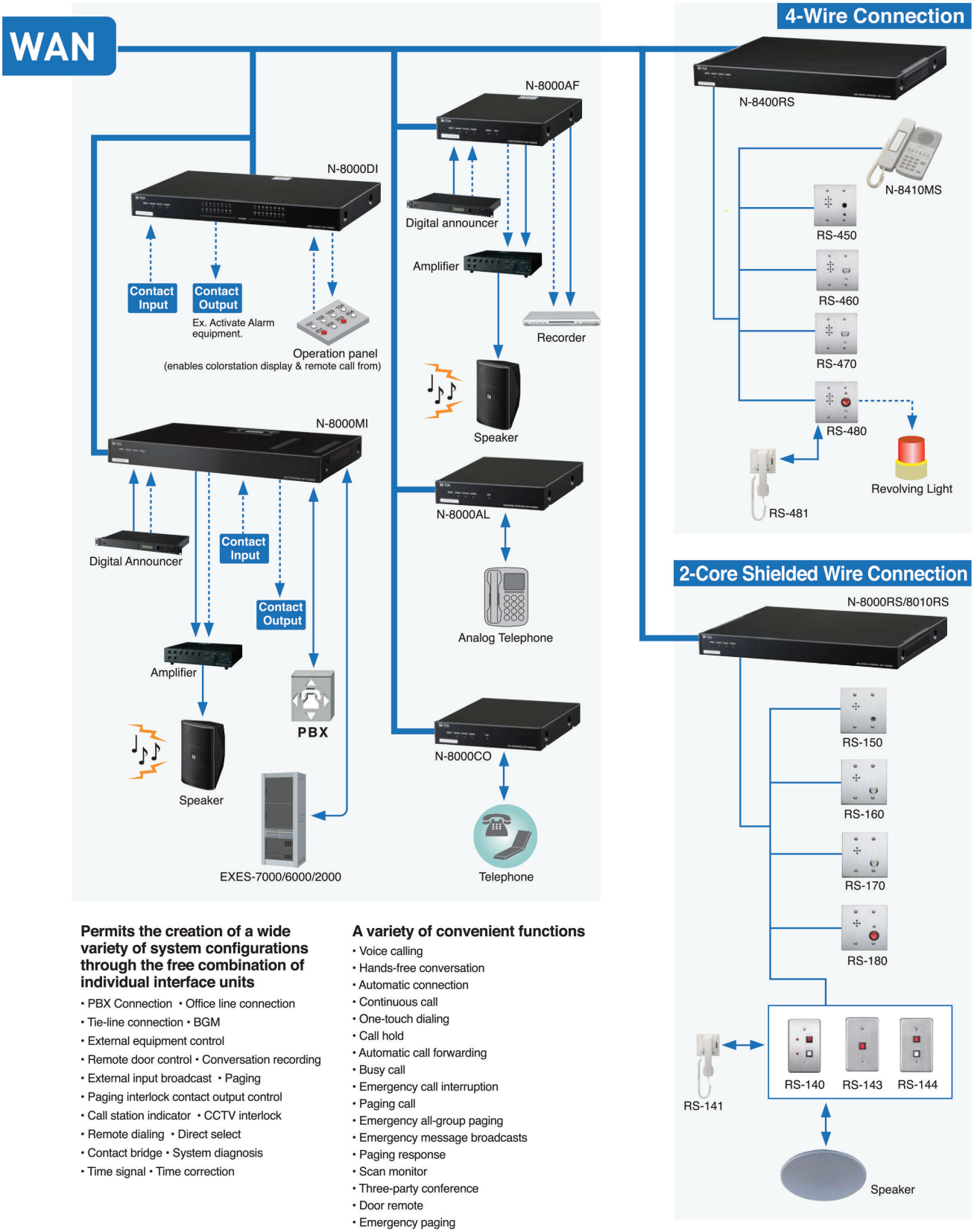
External Contact Input
N-8000MI
Max. 3,072 (16 inputs for each of 192 connected Multi-Interface units)
N-8000DI
Max. 6,144 (32 inputs for each of 192 connected Direct Select units)
N-8000AF
Max. 1,536 (8 inputs for each of 192 connected Audio Interface units)

[Network Relations]
Audio Delay Time
80 ms/320 ms; changeable

Connection Delay Time
Max. 1 second (when 191 multicast paging destinations are set)

Bandwidth Used
Max. 2.08 Mbps (one-way)/unicast paging to 16 locations

Max. 130 Kbps (two-way)/per call



Permits the creation of a wide variety of system configurations through the free combination of individual interface units

- PBX Connection • Office line connection
- Tie-line connection • BGM
- External equipment control
- Remote door control • Conversation recording
- External input broadcast • Paging
- Paging interlock contact output control
- Call station indicator • CCTV interlock
- Remote dialing • Direct select
- Contact bridge • System diagnosis
- Time signal • Time correction

A variety of convenient functions

- Voice calling
- Hands-free conversation
- Automatic connection
- Continuous call
- One-touch dialing
- Call hold
- Automatic call forwarding
- Busy call
- Emergency call interruption
- Paging call
- Emergency all-group paging
- Emergency message broadcasts
- Paging response
- Scan monitor
- Three-party conference
- Door remote
- Emergency paging
- Audio trigger

Amplifiers

Mixer Power Amplifiers

A-3600D Series

Digital Mixer Amplifier

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

*0dB = 1V

Model	A-3606D	A-3612D	A-3624D	A-3648D
Power Source	100 – 240V AC, 50/60Hz			
Rated Output	60W	120W	240W	480W
Power Consumption	96W (rated output), 40W (based on EN62368)	171W (rated output), 48W (based on EN62368)	314W (rated output), 70W (based on EN62368)	601W (rated output), 113W (based on EN62368)
Current Consumption	200mA or less (when power switch is OFF)			
Frequency Response	50Hz to 20kHz ±3dB (1/8 rated output)			
Distortion	1% or less at 1kHz, rated power (20kHz LPF (AUX-0025))			
Tone Control	Bass: ±10dB at 100Hz / Treble: ±10dB at 10kHz			
Signal to Noise Ratio	88dB or more (master volume: min) 76dB or more (master volume: max) 55dB or more (INPUT 1 to 6) 72dB or more (INPUT 7) (A-weighted)			
Audio Input				
INUT 1, 2	-60dB* (MIC)/-20dB* (LINE) selectable, 600Ω, electronically-balanced, removable terminal block (3.81mm, 3pins) Note: MIC inputs are equipped with phantom power (24V DC, ON/OFF switchable).			
INPUT 3, 4	-60dB*, 600Ω, electronically-balanced, removable terminal block (3.81mm, 3pins) Note: Equipped with phantom power (24V DC, ON/OFF switchable).			
INPUT 5, 6	MIC (BUS 1)/LINE (BUS 2) selectable MIC: -60dB* , 600Ω, electronically-balanced, removable terminal block (3.81mm, 3pins) LINE: -20dB*, 10kΩ, unbalanced, RCA pin jack x2			
INPUT 7	-20dB*, 10kΩ, unbalanced, RCA pin jack x2			
Power Amplifier Input	0dB*, 600Ω, unbalanced, RCA pin jack			
Input Bus				
INPUT 1 to 4	BUS 1			
INPUT 5, 6	BUS 1/ BUS 2 selectable			
INPUT 7	BUS 2			
Audio Output				
SPEAKER OUT	Low impedance (8 to 16 Ω)/ High impedance (DIRECT, ZONE 1/ZONE 2: 100V/ total 170Ω) (ZONE 1/ZONE 2 is selectable, max. 60W per output)	Low impedance (4 to 16 Ω)/ High impedance (DIRECT, ZONE 1/ZONE 2: 100V/ total 83Ω) (ZONE 1/ZONE 2 is selectable, max. 120W per output)	Low impedance (4 to 16 Ω)/ High impedance (DIRECT, ZONE 1/ZONE 2: 100V/ total 42Ω) (ZONE 1/ZONE 2 is selectable, max. 240W per output)	Low impedance (4 to 16 Ω)/ High impedance (DIRECT, ZONE 1/ZONE 2: 100V/ total 21Ω) (ZONE 1/ZONE 2 is selectable, max. 480W per output)
	Removable terminal block (5.00mm, 6pins)			
REC OUT	0dB *, 600Ω, unbalanced, RCA pin jack			
LINE OUT 1, 2	0dB *, 600Ω, unbalanced, RCA pin jack (Interlock with zone selection is possible.)			
Control Input				
CONTROL IN	4 channels, no-voltage make contact input, open voltage: 35V DC or less, short-circuit current: 10mA or less, removable terminal block (3.81mm, 4 pins)			
REMOTE VOLUME	Removable terminal block (3.50mm, 4 pins)			
ZONE CONTROL IN	No-voltage make contact input, open voltage : 35V DC or less, short-circuit current:10mA or less, removable terminal block (3.81mm, 4 pins)			
Control Output				
POWER REMOTE OUT	Open collector output, withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.50mm, 4 pins)			
EMERGENCY OUT	Open collector output, withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.50mm, 4 pins)			
ZONE CONTROL OUT	Open collector output (polarized), withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.81mm, 4 pins)			
Chime	1-note, 2-note, or ascending 4-note chime or None selectable with switch setting			
Indicators	LED level meter, power indicator, network connection confirmation indicator, priority broadcast indicator, emergency broadcast indicator, thermal protection indicator, over-current protection indicator, CPU running indicator, error indicator, and zone indicator			
Operating Temperature	-10 to +40 ℃			
Operating Humidity	85 % RH or less (no condensation)			
Finish	Panel: ABS resin, black Case: surface-treated steel plate, black, paint			
Dimensions (W x H x D)	420(W) x 96.1(H) x 313.1(D) mm			
Weight	5kg			5.2kg

A-3500D Series

Digital Mixer Amplifiers

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

*0dB = 1V

Model	A-3512D	A-3524D	A-3548D
Power Source	100 – 240 V AC, 50/60 Hz		
Rated Output	120W	240W	480W
Power Consumption	171W (rated output), 48W (based on EN62368)	314W (rated output), 70W (based on EN62368)	601W (rated output), 113W (based on EN62368)
Current Consumption	200mA or less (when power switch is OFF)		
Frequency Response	50Hz – 20kHz ±3dB (1/8 rated output)		
Distortion	1% or less at 1kHz, rated power (20kHz LPF (AUX-0025))		
Tone Control	Bass: ±10dB at 100Hz / Treble: ±10dB at 10kHz		
Signal to Noise Ratio	88dB or more (master volume: min) 76dB or more (master volume: max) 55 dB or more (INPUT 1 to 4) 72 dB or more (INPUT 5) (A-weighted)		
Audio Input			
Input 1, 2	-60 dB*(MIC) / -20 dB* (line), selectable, 600 Ω, electronically-balanced, removable terminal block (3.81 mm, 5 pins) / Ø6.3mm phone jack (2P) Note: MIC inputs are equipped with phantom power (24 V DC, ON/OFF switchable).		
Input 3	-60 dB*, 600 Ω, electronically-balanced, Ø6.3 mm phone jack (2P)		
Input 4	-60 dB* (MIC)/-20 dB* (LINE) selectable, 600 Ω, electronically-balanced, Ø6.3 mm phone jack (2P)		
Input 5	-20 dB*, 10 kΩ, unbalanced, RCA pin jack x 2		
Power Amplifier Input	0 dB*, 600Ω, unbalanced, RCA pin jack		
Audio Output			
Speaker Out	Low impedance (4 to 16Ω)/ High impedance (DIRECT, ZONE 1/ZONE 2: 100 V/total 83 Ω) (ZONE 1/ZONE 2 is selectable, Max. 120 W per output)	Low impedance (4 to 16 Ω)/ High impedance (DIRECT, ZONE 1/ZONE 2: 100 V/total 42 Ω) (ZONE 1/ZONE 2 is selectable, Max. 240 W per output)	Low impedance (4 to 16 Ω)/ High impedance (DIRECT, ZONE 1/ZONE 2: 100 V/total 21 Ω) (ZONE 1/ZONE 2 is selectable, Max. 480 W per output)
	Removable terminal block (5.00 mm, 6 pins)		
Rec Out	0dB*, 600Ω, unbalanced, RCA pin jack		
Input Out 1, 2	0dB*, 600Ω, unbalanced, RCA pin jack		
Control Input			
Control In	2 channels, no-voltage make contact input, open voltage: 35V DC or less, short-circuit current: 10mA or less, removable terminal block (3.81mm, 5pins)		
Zone Control In	No-voltage make contact input, open voltage : 35V DC or less, short-circuit current:10mA or less, removable terminal block (3.81mm, 4pins)		
Control Output			
Power Remote Out	Open collector output, withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.50mm, 4 pins)		
Emergency Out	Open collector output, withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.50mm, 4 pins)		
Zone Control Out	Open collector output (polarized), withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.81mm, 4 pins)		
Indicators	5-point LED level meter, power indicator, priority broadcast indicator, emergency broadcast indicator, thermal protection indicator, over-current protection indicator, and zone indicator (1, 2)		
Operating Temperature	-10 to +40 ℃		
Operating Humidity	85 % RH or less (no condensation)		
Finish	Panel: ABS resin, black Case: surface-treated steel plate, black, paint		
Dimensions	420(W) x 96.1(H) x 313.1(D) mm		
Weight	4.9kg		5.1 kg
Accessory	Power cord (2m) x1, audio input removable terminal plug (3.81mm, 5pins) x2, control I/O removable terminal plug (3.81mm, 4pins) x2, remote control removable terminal plug (3.50mm, 4pins) x1, speaker out removable terminal plug (5.00mm, 6pins) x1, volume control cover x4		
Option	Rack mounting bracket: MB-25B, perforated panel: PF-013B		

Power Amplifier

P-3548D 480W

Model	P-3548D
Power Source	100 – 240V AC, 50/60 Hz
Power Consumption	601W (rated output), 113W (based on EN62368)
Current Consumption	20mA or less (when power switch is OFF)
Audio Input	LINE IN: 0dB*/-20dB* switchable, 600Ω, transformer balanced, RCA pin jack x2 SPEAKER LINE IN: 40dB* (100 V line), 65kΩ, transformer balanced, removable terminal block (3P)
Rated Output	480W
Audio Output	SPEAKER OUT: low impedance (4 to 16 Ω)/ high impedance(21Ω), removable terminal block(3 pins) LINE OUT: 0dB *, 600Ω, unbalanced, RCA pin jack x2
Frequency Response	50 Hz to 20 kHz ±3dB (1/8 rated output)
Signal to Noise Ratio	90dB or more (master volume: min.) 76dB or more (master volume: max.) (A-weighted)
Distortion	1% or less at 1kHz, rated power (20kHz LPF (AUX-0025)
Indicators	5-point LED output level meter, power indicator, emergency indicator, thermal protection indicator, over current protection indicator
Tone Control	Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz

Control Input	POWER REMOTE IN: No-voltage make contact input, open voltage: 35V DC or less, short-circuit current: 10mA or less, removable terminal block (4pins) EMERGENCY IN: Novoltage make contact input, open voltage: 35V DC or less, removable terminal block (4pins)
Control Output	POWER REMOTE OUT: Open collector output, withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.50mm, 4pins) EMERGENCY OUT: Open collector output, withstand voltage: 30V DC or less, control current: 25mA or less, removable terminal block (3.50mm, 4pins)
Operating Temperature	-10℃ to +40 ℃
Operating Humidity	85 % RH or less (no condensation)
Finish	Panel: ABS resin, black Case: surface-treated steel plate, black, paint
Dimensions	420(W) x 96.1(H) x 313.1(D) mm
Weight	5 kg
Accessory	Power cord (2m x1, audio input removable terminal plug (5mm, 2pins) x1, control I/O removable terminal plug (3.5mm, 4pins) x2, speaker out removable terminal plug (5mm, 3pins) x1, volume control cover x1
Option	Rack mounting bracket: MB-25B, perforated panel: PF-013B

A-3200D Series

Digital Mixer Amplifiers

A-3212DMZ-EA4 120W
A-3224DMZ-EA4 240W
A-3248DMZ-EA4 480W

Model	A-3212DMZ-EA4	A-3224DMZ-EA4	A-3248DMZ-EA4
Power Source	100 – 240 V AC, 50/60 Hz		
Rated Output	120W	240W	480W
Power Consumption (EN60065)	44W	62W	99W
	(AC operation at 1/8 maximum output without clip)		
Frequency Response	50 Hz – 20 kHz		
Total Harmonic Distortion	Under 1% at 1 kHz, 1/3 rated power		
Input	MIC 1: 1mV (-60dB*), 600Ω, balanced, phone jack, selectable to RJ45 MIC 2 - 3: 1 mV (-60 dB*), 600Ω, balanced, phone jack MIC 4: 1mV (-60dB*), 600Ω, balanced, phone jack, selectable to AUX 1 AUX 1: 100mV (-20dB*), 10kΩ, unbalanced, RCA pin jack, selectable to MIC 4 AUX 2: 100mV (-20dB*), 10kΩ, unbalanced, RCA pin jack MP3: LED display, support USB, SD/MMC card (up to 32GB), bluetooth, radio FM, record		
Output			
Speaker Out:	Speaker output in screw type terminal		
Direct Line (Selectable):	83 Ω (100 V) or 4 Ω	42 Ω (100 V) or 4 Ω	21 Ω (100 V) or 4 Ω
Rec Out:	0 dB*, 600 Ω, Unbalanced, RCA pin jack		
Zone Selection	5 zone selector (all zones simultaneously selectable)		
Phantom Power	DC +21 V (MIC 1)		
S/N ratio	Over 60 dB		
Tone Control	Bass: ±10 dB at 100 Hz / Treble: ±10 dB at 10 kHz		
Muting	MIC 1: Mutes other input signals by 0 – 30 dB attenuation		
Ventilation	Natural air cooling	Fan Cooling	
Finish	Panel: ABS resin, black / Case: steel plate, black		
Dimensions	420(W) × 100.9(H) × 357(D) mm		

Digital Booster Amplifier

P-3248D-EA4 480W

Model	P-3248D-EA4
Power Source	100 – 240V AC, 50/60 Hz
Rated Output	480W
Power Consumption (EN60065)	99W (AC operation at 1/8 maximum output without clip)
Frequency Response	50 Hz – 20 kHz
Total Harmonic Distortion	Under 1 % at 1 kHz, 1/3 rated power
Input	Line in: 0dB*, 10kΩ, balanced, screw terminal / 100V Line in: 40dB*, 330kΩ, unbalanced, screw terminal
Output	
Speaker out: Direct Line (selectable): Loop out:	Speaker output in screw type terminal 21Ω (100V) or 4Ω 0dB*, 10kΩ, balanced, screw terminal

Control	Remote power control, screw terminal / Master through volume, screw terminal
S/N ratio	Over 60dB
Tone Control	Bass: ±10dB at 100Hz / Treble: ±10dB at 10kHz
Ventilation	Fan cooling
Finish	Panel: ABS resin, black / Case: steel plate, black
Dimensions (W x H x D)	420(W) × 100.9(H) × 351.3(D) mm
Weight	5kg

A-2000 Series

Digital Mixer Power Amplifier

A-2030D-EA 30W
A-2060D-EA 60W
A-2120D-EA 120W
A-2240D-EA 240W

*0dB = 1V

Model	A-2030D-EA	A-2060D-EA	A-2120D-EA	A-2240D-EA
Power Source	220 – 240V ~ 50/60Hz			
Rated Output	30W	60W	120W	240W
Power Consumption	12W (EN60065) AC operation at 1/8 maximum output without clip	16W (EN60065) AC operation at 1/8 maximum output without clip	30W (EN60065) AC operation at 1/8 maximum output without clip	48W (EN60065) AC operation at 1/8 maximum output without clip
Frequency Response	50Hz – 20kHz			
Distortion	1% or less (1kHz), 1/3 rated power			
Input	MIC 1-3: -60dB*, 600Ω, balanced, phone jack AUX 1, 2: -20dB*, 10kΩ, unbalanced, RCA pin jack			
Output Speaker out High impedance Rec. out	Balanced (floating) 330Ω (100V) 0dB*, 600Ω, unbalanced, RCA pin jack	Balanced (floating) 170Ω (100V) 0dB*, 600Ω, unbalanced, RCA pin jack	Balanced (floating) 83Ω (100V) 0dB*, 600Ω, unbalanced, RCA pin jack	Balanced (floating) 42Ω (100V) 0dB*, 600Ω, unbalanced, RCA pin jack
Phantom Power	DC + 21V (MIC 1)			
S/N Ratio	60dB or more			
Tone Control	Bass: ±10dB at 100Hz, Treble: ±10dB at 10kHz			
Muting	MIC 1: mutes other input signals by 0 – 30dB attenuation			
Indicator	Power LED, signal LED, peak LED			
Finish	Panel: ABS resin, black, case: steel plate, black			
Dimensions	420(W) × 100.6(H) × 280.3(D) mm			
Weight	4kg	4.6kg	4kg	4kg

Booster Amplifier

P-2240 240W

*0dB = 1V

Model	P-2240
Power Source	220 – 240V AC or 24 - 30V DC
Rated Output	240W
Power Consumption	238W (EN60065) 520W (AC operation at rated output) 15A (DC operation at rated output)
Frequency Response	50Hz – 20 kHz (±3dB)
Distortion	1% or less at 1kHz, 1/3 rated power
Input	Line in: 0dB*, 10kΩ, balanced, screw terminal, distance between barriers: 8.3mm 100V line in: 40dB*, 330kΩ Speaker line in: 40dB*, 330kΩ, unbalanced, screw terminal, distance between barriers: 8.3mm Power remote control: Make contact

Output	Loop out: 0dB*, 10kΩ, balanced, screw terminal, distance between barriers: 8.3mm Speaker out: balanced (floating) 42Ω (100V), 21Ω (70V) (High impedance) 4Ω (31V) (Low impedance)
S/N Ratio	60dB or more
Ventilation	Fan cooling
Tone Control	Bass: ±10dB at 100Hz, treble: ±10dB at 10kHz
Indicator	Power. signal, peak
Finish	Panel: ABS resin, black, case: steel plate, black
Dimensions	420(W) × 100.9(H) × 351.3(D) mm
Weight	13.2kg

Mixer Power Amplifiers

Multi-Channel Digital Power Amplifiers

4-Channel Power Amplifier

DA-500FH
DA-550F
DA-250FH
DA-250F

* 0dB = 0.775V

Model	DA-500FH	DA-550F	DA-250FH	DA-250F
Power Source	220 – 240V AC, 50/60Hz			
Amplification System	Class D			
Power Consumption	460W (based on EN standards) 2350W (rated output 100V line 20Ω x4)	480W (based on EN standards) 2750W (rated output 4Ω x4) 1550W (rated output 8Ω x4)	200W (based on EN standards) 1150W (rated output 100V line, 40Ω x4)	200W (based on EN standards) 1200W (rated output 4Ω x4) 800W (rated output 8Ω x4)
Input	4 circuits, +4dB* (1.23V, input level control in max. position), 10kΩ, electronically-balanced, removable terminal block (3 pins), XLR-3-31 type connector CH 1 mode ON/ OFF switch (ON: CH 1 to All ch, OFF: each ch)		4 circuits, +4dB* (1.23V, input level control in max. position), 10kΩ, electronically-balanced, removable terminal block (3 pins), CH 1 mode ON/ OFF switch (ON: CH 1 to All ch, OFF: each ch)	
Rated Output	4 channels: 500W x4 (100V line, 20Ω) M4 screw terminal, distance between barriers: 8.8mm	4 channels: 550W x4 (4Ω), 350W x4 (8Ω) 2 channels (BRIDGE): 1100W x2 (8Ω) M4 screw terminal, distance between barriers: 8.8mm	4 channels: 250W x4 100V line, 40Ω) M4 screw terminal, distance between barriers: 8.8mm	4 channels: 250W x4 (4Ω), 170W x4 (8Ω) 2 channels (BRIDGE): 500W x2 (8Ω) M4 screw terminal, distance between barriers: 8.8mm
Frequency Response	50Hz – 20kHz (–3dB, +1dB)	20Hz – 20kHz (–2dB, +1dB)	50Hz – 20kHz (–3dB, +1dB)	20Hz – 20kHz (±1dB)
Total Harmonic Distortion	0.1% (1kHz) 0.3% (100Hz – 20kHz)	0.1% (1kHz) 0.15% (20Hz – 20kHz)	0.1% (1kHz), 0.3% (100Hz - 20kHz)	
Protection Circuit	Protection against excessive current flow due to overload, short circuit, unusual DC voltage output, temperature rise at power amp. heat sink (100°C or more), temperature rise at power supply heat sink (80°C or more)		Protection against excessive current flow due to overload, short circuit, unusual DC voltage output, temperature rise at power amp. heat sink (100°C or more), temperature rise inside the unit (80°C or more)	
S/N Ratio	100dB (A-weighted)			
Crosstalk	70dB (A-weighted)			
Control/ Monitor				
Control Input	Power ON/ OFF status of the individual channels Photocoupler input, drive voltage: 9V DC (min.) – 14V (max.), 12V (typ)		-	
Monitor Output	Power ON/ OFF status of the individual channels, Protection status of the individual channels, Fan operation status photocoupler open collector output, withstand voltage: 30V DC, control current: under 12mA or less		-	
Connector	RJ45 connector x2		-	
Connection Cable	Shielded Category 5 twisted pair cable for LAN (CAT5-STP)		-	
Max. Cable Distance	600m		-	
LED Indicator	Power (blue) x1, input (green) x4, output (yellow) x4, peak (red) x4, protect (red) x4			
Cooling	Forced air cooling			
Operating Temperature	–10°C to +40°C			
Operating Humidity	90% RH or less (no condensation)			
Finish	Panel: aluminum, black, alumite Case: plated steel sheet			
Dimensions	482(W) x 88.4(H) x 404.2(D) mm		482(W) x 44(H) x 401.8(D) mm	
Weight	9kg		6.8kg	
Accessory	Power cord (2m) x1, removable terminal plug (3 pins) x4, rack mounting screw (with washer) x4, tamper-proof cap x4		Power cord (2m) x1, removable terminal plug (3 pins) x4, rack mounting screw (with plain washer) x4, tamper-proof cap x4	
Option	Matching transformer: MT-251H	-	Matching transformer: MT-251H	-

Dual-Channel Power Amplifier

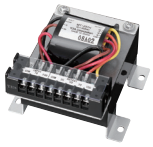
DA-250DH
DA-250D

* 0dB = 0.775V

Model	DA-250DH	DA-250D
Power Source	220 – 240V AC, 50/ 60Hz	
Amplification System	Class D	
Power Consumption	120W (EN standards) 580W (rated output 100V line, 40Ω x 2)	120W (EN standards) 620W (rated output 4Ω x 2) 400W (rated output 8Ω x 2)
Input	2 circuits, +4dB* (1.23V, input level control in maximum position), 10kΩ, electronically-balanced, removable terminal block (3 pins), XLR-3-31 type connector CH 1 mode ON/ OFF switch (ON: PARALLEL, OFF: STEREO)	
Rated Output	2 channels: 250W x 2 (100V line, 40Ω), M4 screw terminal, distance between barriers: 8.8mm	2 channels: 250 W x 2 (4Ω), 170 W x 2 (8Ω) 1 channel (BRIDGE): 500 W x 1 (8Ω), M4 screw terminal, distance between barriers: 8.8 mm
Frequency Response	50Hz – 20kHz (–3dB, +1dB)	20Hz – 20kHz (±1dB)
Total Harmonic Distortion	0.1% (1kHz), 0.3% (100Hz – 20kHz)	0.1% (1kHz), 0.3% (20Hz – 20kHz)
Protection Circuit	Protection against excessive current flow due to overload, short circuit, unusual DC voltage output, temperature rise at power amp. heat sink (100°C or more), temperature rise inside the unit (80°C or more)	
S/N Ratio	100dB (A-weighted)	
Crosstalk	70dB (A-weighted)	
LED Indicator	Power (blue) x1, input (green) x2, output (yellow) x2, peak (red) x2, protect (red) x2	
Cooling	Forced air cooling	
Operating Temperature	–10°C to +40°C	
Operating Humidity	90% RH or less (no condensation)	
Finish	Panel: aluminum, black, alumite Case: plated steel sheet	
Dimensions	482(W) x 44(H) x 401.8(D) mm	
Weight	5.3kg	
Accessory	Power cord (2m) x1, removable terminal plug (3 pins) x2, tamper+proof cap x2, rack mounting screw (with plain washer) x4	
Option	Matching transformer: MT-251H	

Matching Transformer for DA-500FH, DA-250FH and DA-250DH

MT-251H



Capacity: 0 – 250W
Primary Side: 100V line, 70V line
Secondary Side: 100V line, 70V line, 50V line, 35V line
Frequency Response: 30Hz – 18kHz (+0dB, –3dB)
Connection Terminal: M3 screw terminal, distance between barriers: 6.6mm
Dimensions: 108 (W) x 80 (H) x 122 (D) mm
Weight: 2.4kg

Mobile Amplifiers

Mobile Amplifier

CA-115
CA-130
CA-160

Model	CA-115	CA-130	CA-160
Power Source	Standard voltage : 14V DC Operating range : 10 – 16V DC (12V battery used)		
Power Consumption	3A or Less (rated output)	5A or Less (rated output)	9A or Less (rated output)
Rated Output	15W (35W max.)	30W (60W max.)	60W (120W max.)
Output Impedance	4Ω (BRN), 8Ω (ORG), Common (WHT) Changeable by changing lead wire connections		
Distortion	5% or less (1kHz rated output)		
Frequency Response	100Hz – 10kHz		
Input	Mic 1, 2 : 600Ω , 4mV, phone jack Aux : 10kΩ, 500mV, Phone jack		
Finish	Front panel : ABS resin, black Case : Zinc plated steel sheet		
Dimensions	178(W) x 50(H) x 132(D) mm (Mounting device excluded)	178(W) x 50(H) x 144(D) mm (Mounting device excluded)	178(W) x 50(H) x 170(D) mm (Mounting device excluded)
Weight	0.9kg	1.1kg	1.2kg
Accessory	Microphone holder x1, mounting bracket x1, mounting screw x1, fuse (4A) x1, connection cord x1 set	Microphone holder x1, mounting bracket x1, mounting screw x1, fuse (8A) x1, connection cord x1 set	Microphone holder x1, mounting bracket x1, mounting screw x1, fuse (12A) x1, connection cord x1 set
Accessory Microphone	Uni-directional dynamic microphone with talk switch, impedance : 600Ω, sensitivity : – 53dB (1kHz, 0dB = 1V/ Pa)		

Mixers

Digital Audio Processor

Digital Audio Processor

DP-X0808

* 0 dB = 0.775V

Model	DP-X0808
Power Supply	100V - 250V AC
Power Consumption	45W
Frequency Response	20Hz - 20kHz, ±1dB
Audio Sampling Rate	48KHz
Sampling & Quantization	A/D Converter 24bit, D/A Converter 24bit, DSP processing 16bit
Distortion	≤ 0.01%
DSP Functions	FBS/ AGC/ AFC /AEC/ ANC/ Auto Mixer/ Delay/ Compressor /LPF/ HPF/ GATE/ Matrix/ Paging/ PEQ
Analog Audio Input Interface	European standard terminals, 8 channels, microphone/line input selectable, phantom power on/off
Analog Audio Output Interface	European standard terminals, 8 channels, line output
USB Interface	TYPE-A, 1 port, 1 stereo input, 1 stereo output
Network Audio Module Interface	1 module slot, 4 network audio inputs, 4 network audio outputs

Control Input Interface	European standard terminals, 8 channels
Control Output Interface	European standard terminals, 8 channels
External Control Interface	European standard terminals, 1 RS485, 1 RS232
Network Interface	RJ-45 interface, 1 port
Operating Temperature	0°C to 40°C
Operating Humidity	90% RH (no condensation)
Finish	Panel: Aluminum, hair-line, black, Case: Surface-treated steel plate, black
Dimension	440(W) x 44(H) x 258(D) mm
Weight	3.1kg
Accessories	Power Supply Cord (1m) x1, Removable terminal plug (12P) x6, Removable terminal plug (5P) x2, Rack mounting bracket x2, Rack mounting screw x8, Plastic foot x4, Screw for fitting plastic foot x4
Option	Remote control panel: ZM-9011/9012/9013/9014 (TOA models)

9000 Series Digital Matrix Mixer

9000M2 Digital Matrix Mixer

M-9000M2

Model	M-9000M2
Power Source	220 – 240V AC, 50/ 60Hz
Power Consumption	40W
Audio Input	Max. 8 channels, modular construction (modules optional)
Audio Output	Preamplifier output 1, 2: 0dB*[1], 600Ω, balanced, removable terminal block (3 pins)
Module Slot	Analog input (slot 1 – 8) : –10dB*[1], 10kΩ, unbalance Digital input (slot 1 – 4) : 24 bit/ 48kHz MIX output (slot 1 – 8) : –14dB*[1], 330Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/ 48kHz Power supply (slot 1 – 8) : +24V, –24V, +6V DC
Digital Audio Signal Reference Level	–20dB FS
Frequency Response	20Hz – 20kHz, +1, -3dB
Total Harmonic Distortion	0.008% (at 22kHz LPF, 1kHz, +10dB*[1] output)
S/N Ratio	At Input short, 20Hz – 20kHz, ALL FLAT or OFF setting Output volume min. : 90dB Output volume max. : 61dB (input 1 volume: 0dB, other inputs: OFF)
Cross Talk	64dB or more (at 20kHz)
Tone Control	Bass: ±12dB (at 100Hz), Treble: ±12dB (at 10kHz)
Parametric Equalizer	10 bands, frequency: 20Hz – 20kHz, 31 points, variable range: ±12dB, Q: 0.3 – 5
Speaker Equalizer	10 (setup software has 30 TOA speaker presets)
High-/ Low-pass Filter	–12dB/ oct, variable frequency range: 20Hz – 20kHz, 31 points
Compressor	Depth: 1 – 5

Delay	0 – 40ms (1ms steps), max. 40ms (CH1 + CH2), mixer mode only
Scene Memory	32
Auxiliary Function	Key lock function
Control Input/ Output	RS-232C*[2], D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3V DC, short-circuit current: 1mA or less, removable terminal block (14pins) Control output: 4 outputs, open collector output, withstand voltage: 27V DC, control current: 50mA, removable terminal block (14pins) Remote volume : 2 channels, connect a 10kΩ/ linear taper variable resistor or input the DC voltage of 0 to +10V, removable terminal block (14pins)
Operating Temperature	–10°C to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint
Dimensions	420(W) x 107.6(H) x 353(D) mm
Weight	6kg
Accessory	Power cord (2m) x1, rack mounting bracket x2, bracket mounting screw x4, black panel x7, blank panel mounting screw x14, removable terminal plug (3P) x2, removable terminal plug (14P) x1, CD x1

*[1] 0dB = 1V

*[2] Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

Note: AMX is a trademark of AMX Corporation. Crestron is a trademark of Crestron Electronics, Inc.

9000 Series Modules and Optional Accessories

Ambient Noise Control Module

AN-001T

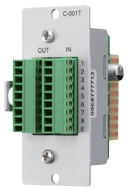
Model	AN-001T
Power Source	+24V DC, −24V DC, +6V DC
Current Consumption	20mA (at +24V DC), 20mA (at −24V DC), 60mA (at +6V DC)
Input	Sensor input (Ambient noise sensor microphone input): 2 channels, 3kΩ (when phantom power is ON) or 10kΩ (when phantom power is OFF), electronically-balanced, removable terminal block (3 pins)
Input Sensitivity	−60, −54, −48, −42, −36, −30, −24, −18, −10 dB* (selectable)
A/D Converter	24 bit ΔΣADC
Sampling Frequency	48kHz

* 0dB = 1V

Ambient Noise Control Function	Sensor input reference level adjustment function Max. output signal level control: −15 to 0dB Min. output signal level control: −18 to − 3dB Sample time setting: 10s, 15s, 20s, 30s, 1min, 2min, 3min, 5min Gain ratio setting (ambient noise to Output signal level): 6:3, 5:3, 4:3, 3:3, 3:4, 3:5, 3:6, 6:−3, 5:−3, 4:−3, 3:−3, 3:−4, 3:−5, 3:−6
Operating Temperature	−10°C to +40°C
Finish	Panel: aluminum, hair-line
Dimensions	35(W) x 78(H) x 91.5(D) mm
Weight	82g
Accessory	Removable terminal plug (3 pins) x2, module mounting screw x2
Option	Ceiling mount microphone: AN-9001

Input/Output Control Module

C-001T



Model	C-001T
Power Source	6V DC
Current Consumption	15mA
Control Input	8 channels, open voltage: 3.3V DC, short-circuit: under 1mA, removable terminal block (9 pins)
Control Output	8 channels, open collector output, withstand voltage: 27V DC, control current: max. 50mA, removable terminal block (9 pins)

Operating Temperature	−10°C to +40°C
Finish	Panel: aluminum, hair-line
Dimensions	35(W) x 78(H) x 91.5(D) mm
Weight	62g
Accessory	Removable terminal plug (9 pins) x2, module mounting screw x2

Line Input Module

D-001R

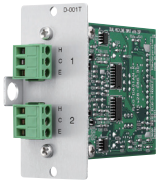
* 0dB = 1V

Model	D-001R
Power Source	+24V DC, −24V DC, +6V DC
Current Consumption	20mA (at +24V DC), 20mA (at −24V DC), 60mA (at +6V DC)
Input	2 channels, 2 RCA jacks/ ch mixed, 10kΩ, unbalanced, RCA pin jack
Input Sensitivity	−60, −54, −48, −42, −36, −30, −24, −18, −10dB* (selectable)
Frequency Response	20Hz – 20kHz +1, −3dB
Total Harmonic Distortion + N	0.008% (at 1kHz, 20Hz – 20kHz BPF, input sensitivity: −10dB)
S/N Ratio	Over 70dB (at 20Hz – 20kHz BPF, input short, input sensitivity: −10dB)
Cross Talk	Over 75dB (at 20kHz, input sensitivity: −10dB)
A/D Converter	24 bit ΔΣADC

Sampling Frequency	48kHz
Tone Control	Bass:±12dB (at 100Hz) Treble:±12dB (at 10kHz)
Parametric Equalizer	10 bands, frequency: 20Hz – 20kHz, 31 points, variable range: ±12dB, Q: 0.3 - 5
High-/ Low-pass Filter	−12dB/oct, variable frequency range: 20Hz – 20kHz, 31 points
Compressor	Depth: 1 – 5
Operating Temperature	−10°C to +40°C
Finish	Panel: aluminum, hair-line
Dimensions	35(W) x 78(H) x 91.5(D) mm
Weight	82g
Accessory	Module mounting screw x2

Dual Mic/Line Input Module with DSP

D-001T



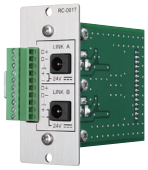
* 0dB = 1V

Model	D-001T
Power Source	+24V DC, −24V DC, +6V DC
Current Consumption	20mA (at +24V DC), 20mA (at −24V DC), 60mA (at +6V DC)
Input	2 channels, 3kΩ (when phantom power is ON) or 10kΩ (when phantom power is OFF), electronically-balanced, removable terminal block (3 pins)
Input Sensitivity	−60, −54, −48, −42, −36, −30, −24, −18, −10dB* (selectable)
Frequency Response	20Hz – 20kHz +1, −3dB
Total Harmonic Distortion + N	0.008% (at 1kHz, 20Hz – 20kHz BPF, input sensitivity: −10dB)
Input Equivalent Noise	−112dB or less (at 20Hz – 20kHz BPF, input short, input sensitivity: −60dB)
S/N Ratio	73dB or more (at 20Hz – 20kHz BPF, input short, input sensitivity: −10dB)
Cross Talk	75dB or more (at 20kHz, input sensitivity: −10dB)

CMRR	62dB or more (at 1kHz, input sensitivity: −60dB)
A/D Converter	24bit ΔΣADC
Sampling Frequency	48kHz
Tone Control	Bass:±12dB (at 100Hz) Treble:±12dB (at 10kHz)
Parametric Equalizer	10 bands, frequency: 20Hz – 20kHz, 31 points, variable range: ±12dB,Q: 0.3 – 5
High-/ Low-pass Filter	−12dB/ oct, variable frequency range: 20Hz – 20kHz, 31 points
Compressor	Depth: 1 – 5
Phantom Power	+24V DC
Operating Temperature	−10°C to +40°C
Finish	Panel: aluminum, hair-line
Dimensions	35(W) x 78(H) x 91.5(D) mm
Weight	82g
Accessory	Removable terminal plug (3pins) x2, module mounting screw x2

Remote Control Module

RC-001T



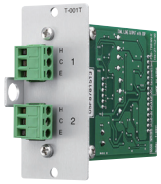
Model	RC-001T
Power Source	6V DC
Current Consumption	30mA or less
Terminal	Removable terminal block (10 pins)
Power Input	24V DC input x2 (applicable AC adapter: optional AD-246, power supply to remote controllers); Adaptable DC plug: 9.5(L) x 5.5(OD) x 2.1(ID) mm
Connection Cable	Shielded CPEV cable (paired data line and paired power line) or Category 5 twisted pair cable for LAN (CAT5-STP)

Operating Temperature	–10°C to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Max. Cable Distance	800m in total
Connectable No. of Remote Control Panels	Max. 16 units (2 link connectors used)
Finish	Panel: aluminum, hair-line
Dimensions	35(W) x 78(H) x 91.5(D) mm
Weight	80g
Accessory	Module mounting screw x2, removable termnal plug (10 pins) x1

Dual Line Output Expansion Module with DSP

T-001T

* 0dB = 1V



Model	T-001T
Power Source	+24V DC, –24V DC, +6V DC
Current Consumption	35mA (at +24V DC), 35mA (at –24V DC), 60mA (at +6V DC)
Output	2 channels, max. +20dB* (at 10kΩ load), 600Ω, electronically-balanced, removable terminal block (3 pins)
Frequency Response	20Hz – 20kHz +1, –3dB
Total Harmonic Distortion + N	0.005% (at 1kHz, 20Hz – 20kHz BPF, 5V output, 10kΩ load)
S/N Ratio	73dB or more (at 20Hz – 20kHz BPF)
Residual Noise	–91dB or less (at 20Hz – 20kHz BPF, VOL: –70dB)
Cross Talk	87dB or more (at 20kHz)
D/A Converter	24 bit ΔΣDAC
Sampling Frequency	48kHz

Tone Control	Bass:±12dB (at 100Hz) Treble:±12dB (at 10kHz)
Parametric Equalizer	10 bands, frequency: 20Hz – 20kHz, 31 points, variable range: ±12dB, Q: 0.3 – 5
Speaker Equalizer	10 (setup software has 30 TOA speaker presets.)
High-/ Low-pass Filter	–12dB/ oct, Variable frequency range: 20Hz – 20kHz, 31 points
Compressor	Depth: 1 – 5
Delay	0 – 40ms (1ms step), max. 40ms (CH1 + CH2), mixer mode only
Operating Temperature	–10°C to +40°C
Finish	Panel: aluminum, hair-line
Dimensions	35(W) x 78(H) x 91.5(D) mm
Weight	82g
Accessory	Removable terminal plug (3 pins) x 2, module mounting screw x 2

Telephone Zone Paging Module

ZP-001T

Model	ZP-001T
Power Source	+24V DC, +6V DC
Current Consumption	38mA (at +24V DC), 18mA (at +6V DC)
No. of Lines	1 line
Type of Selectable Signal	DTMF signal
Signaling System	Loop-start (or ground-start, selectable)
TEL Line	0dB, 600Ω, balanced, transformer-isolated, RJ-11 connector,loop voltage: 24V DC or more, which should be supplied from the PABX.
Paging Input	0dB, 600Ω, balanced, transformer-isolated audio input, removable terminal block (4 pins)

Control Input	1 channel, no-voltage make contact, open voltage: 5V DC, short-circuit: 0.5mA, removable terminal block (4 pins)
Control Output	4 channels, open collector output (isolated), withstand voltage: 35V DC,control current: max. 50mA, removable terminal block (4 pins)
Operating Temperature	–10°C to +40°C
Finish	Panel: aluminum, hair-line
Dimensions	35(W) x 78(H) x 91.5(D) mm
Weight	153g
Accessory	Removable terminal plug (4 pins) x3, module mounting screw x2

Remote Panel

ZM-9011
ZM-9012
ZM-9013
ZM-9014

Model	ZM-9011	ZM-9012	ZM-9013	ZM-9014
Power Source	24V DC (supplied from RC-001T)			
Current Consumption	50mA or less			
Terminal	Removable terminal block (10 pins)			
Connection Cable	Shielded CPEV cable (paired data line and paired power line) or Category 5 twisted pair cable for LAN (CAT5-STP)			
Operating Section	4 control buttons	1 volume control	8 control buttons	4 control buttons, 1 volume control
Indicator	4 function indicators (green LEDs)	Set volume level indicators (green LEDs)	8 function indicators (green LEDs)	4 in-use indicators (green LEDs) Set volume level indicators (green LEDs)
Operating Temperature	0°C to +40°C			
Operating Humidity	35% to 80% RH (no condensation)			
Finish	Surface-treated steel panel, white, paint			
Dimensions	72(W) x 127(H) x 49.5(D) mm	72(W) x 127(H) x 57.5(D) mm	120(W) x 127(H) x 50.5(D) mm	120(W) x 127(H) x 50.5(D) mm
Weight	208g		374g	
Accessory	Box mounting screw(No. 6-32UNC x30) x2, box mounting screw(M4 x30) x2, panel mounting screw x2, removable terminal plug (10 pins) x1		Box mounting screw(No. 6-32UNC x30) x4, box mounting screw(M4 x30) x4, panel mounting screw x4, removable terminal plug (10 pins) x1	

Ambient Noise Sensing Microphone

AN-9001

Model	AN-9001
Type	Electret condenser microphone
Phantom Power	14 – 26V DC
Current Consumption	7mA (at 24V DC)
Directivity	Omnidirectional (hemispherical)
Impedance	200Ω
Rated Sensitivity	–5dB (1kHz, 0dB = 1V/ Pa)
Frequency Response	100Hz – 10kHz
Output Terminal	Removable terminal block (3 pins)
Operating Temperature	–10°C to +40°C

Finish	Panel: ABS resin, white Case: surface-treated steel plate
Dimensions	ø130 x 37(D) mm
Weight	170g
Accessory	Removable terminal plug (3 pins) x1, box mounting screw (No. 6-32UNC x 30) x2, box mounting screw (M4 x 30) x2
Option	9000 series plug-in module: AN-001T

Speaker Selector

SS-9001

Model	SS-9001
Power Source	Supplied from the optional AD-246 AC adapter or an external 24V DC/ 200mA power supply.
Current Consumption	120mA
Control Signal	No-voltage make contact input (polarized), open voltage: 24V DC, short-circuit current: 3mA
Control Power	240W or less (70V/ 100V line)
Speaker Terminal	Removable terminal block (2 pins)
Control Terminal	Removable terminal block (10 pins)

Operating Temperature	–10°C to +40°C
Finish	Case: surface-treated steel plate
Dimensions	112(W) x 197(H) x 30(D) mm
Weight	530g
Accessory	Removable terminal plug (2 pins) x6, removable terminal plug (10 pins) x1, cord clamp x1, mounting screw x4
Option	AC adaptor: AD-246

Analog Mixer

Mixer

MX-113-EB

*0dB = 1V

Model	MX-113-EB
Power Source	19-33V DC
Current Consumption	0.2A
Input	MIC 1-5: 600Ω, -62dB*, unbalanced, phone jack (voice switch OFF) ; 600Ω, -54dB*, unbalanced, phone jack (voice switch ON) (optional IT-450 balance transformer) MIC 6: 600Ω, -62dB*, unbalanced, phone jack AUX 1: 10kΩ, -12dB*, unbalanced, phone jack/RCA jack (Microphone 6 and AUX 1 are switch type) AUX 2, 3: 10kΩ, -12dB*, unbalanced, phone jack/RCA jack AUX 4: 600Ω, -12dB*, unbalanced, phone jack (optional IT-450 balance transformer)
Output	Line output 1: 600Ω, 0dB*, balanced, phone jack Record out : 1kΩ, 0dB*, unbalanced, RCA jack
Remote Terminal	Withstand voltage: DC 30V, Current: 1A, M3 Screw terminal, 6.4mm
T.H.D	1% or less (1 kHz, rated output)
Frequency Response	30Hz - 20k Hz
S/N Ratio	60dB
Finish	Front panel: aluminium, black, paint
Dimensions	420(W) × 50(H) × 271(D) mm
Weight	3.2kg
Accessory	Power cable (2 pin)
Option	Rack mount bracket: MB-15B, balance transformer: IT-450

Digital Stereo Mixers

Digital Stereo Mixer

M-633D

*0dB = 1V

Model	M-633D
Power Source	220 – 240V AC, 50/ 60Hz (CE/ CE-AU) or 120V AC, 60Hz (CU)
Power Consumption	14W (CE/ CE-AU) or 13W (CU)
Frequency Response	20Hz – 20kHz
Sampling Frequency	48kHz
Dynamic range	90dB or more (IHF-A weighted)
Distortion	0.03% or less, 1kHz, -10dB* input, 0dB* output (20Hz – 20kHz, B
Input	6 monaural input channels (MONO IN 1 – 6), selectable independently from 3 types of inputs below for each channel LINE: –10dB*, 2.4kΩ, electronically balanced MIC: –46dB*, 2.4kΩ, electronically balanced PHANTOM: –46dB*, 2.4kΩ, supplies phantom power of +24V DC, 10 mA, electronically balanced removable terminal block (3 pins), phone jack 3 stereo inputs (L, R) (STEREO IN 1 – 3), –10dB*/ 10kΩ, RCA jack (STEREO IN 1 – 3), Stereo mini jack (ST IN 1)
Output	2 monaural output channels (MONO OUT 1, 2) 0dB* (applicable load: 1kΩ or more), electronically balanced, removable terminal block (3 pins) 1 stereo output (L, R) channel (ST OUT L, R) 0dB* (applicable load: 1kΩ or more), electronically balanced, removable terminal block (3 pins) 1 stereo reccording output (L, R) channel (REC OUT L, R) –10dB* (applicable load: 1kΩ or more), RCA jack
Bus Line	Monaural channel x2, Stereo channel x1
AD/ DA Converter	24 bit
Signal Processing Automatic Resonance Control (ARC) Function Feedback Suppressor(FBS) Function Automatic Clipguard(ACG) Function Automatic Mute Function	3 output channels (each monaural output channel, stereo output L, R), independent settings of each channel, automatic creation of EQ curves (for sound field compensation) ARC measurement start switch x1, function ON/ OFF check indicator x1 6 channels (each monaural input channel), independent settings for each channel, function ON/ OFF switch x6, function ON/ OFF check indicator x6 6 channels (each monaural input channel), independent settings for each channel Function ON/ OFF switch x1
Input/ Output Level Indicator	2-color LED indicator: green (for appropriate level) / red (for peak level)
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: aluminum, black, hairline Case: precoated steel sheet, black, 30% gloss
Dimensions	420(W) x 44(H) x 341.3(D) mm
Weight	4kg
Accessory	Power cord(2m) x1, removable terminal plug(3P) x10, rubber foot x4, rack mounting bracket x2, machine screw(M3x8) x6, rack mounting screw(5x12) x4

Digital Stereo Mixer

M-864D

* 0dB = 0.775V

Model	M-864D
Power Source	220 – 240V AC, 50/ 60Hz (CE/ CE - GB) or 220 - 240V AC, 50Hz (CE - AU) or 100 - 120V AC, 60Hz (CU)
D/A Converter	30W
Frequency Response	20Hz – 20kHz, ±1dB
Sampling Frequency	48kHz
Dynamic range	100dB or more
Distortion	0.03% or less, 1kHz, +4dB* input/ output, 20Hz – 20kHz BPF
Crosstalk	–80dB or less, 1kHz
Input	Monaural input, 8 channels, removable terminal block (3P) phantom power (+24V DC, 10mA, ON/ OFF switchable for each channel) Gain setting (settable for each channel): PAD ON Gain min., +4dB* (max. +24dB*), 10 kΩ, electronically-balanced, Gain max., –14dB* (max. +6dB*), 10kΩ, electronically-balanced PAD OFF Gain min., –10dB* (max. +10dB*), 7kΩ, electronically-balanced, Gain max., –56dB* (max. –36dB*), 7kΩ, electronically-balanced Stereo Input (L, R), 7 channels (1-A, 1-B, 1-C, 2-A, 2-B, 2-C, front-mounted input) RCA jack (stereo mini jack provided on the front panel):–10dB* (max. +10dB*), 10kΩ, Trim gain for each individual channel: –∞ to 0dB (except front-mounted input) 1-A (L), 1-B (L), and 1-C (L) are mixed after passing through each trim gain circuit (the same applies to R channel) 2-A (L), 2-B (L), and 2-C (L) are mixed with front-mounted input after passing through each trim gain circuit (the same applies to R channel)
Output	4 channels, +4dB* (max. +24dB*), applicable load 600Ω or more, electronically-balanced, removable terminal block (3 pins) REC OUT (L, R): –10dB* (max. +10dB*), applicable load 1kΩ or more, RCA jack. Gain is adjustable.
AD/ DA Converter	24 bit
Preset Memory	16
Signal Processing	Automatic Resonance Control (ARC) Function: automatic EQ curve creation by ARC, 4 channels (each output channel), settable independently on each channel, ARC measuring start switch x1, ON/ OFF LED x1 Feedback Suppressor (FBS) Function: feedback suppressor filter creation, 8 channels (each monaural input channel), settable independently on each channel, ON/ OFF switch x 8, ON/ OFF LED x8 Fliter: 8 channels (each monaural input channel), settable independently on each channel, high-pass flter: 20Hz – 20kHz Tone controller: BASS Low-shelving flter: 20 – 500Hz, ±15dB, MID parametric equalizer: 20Hz – 20kHz, ±15dB (Q: 0.267 – 69.249) TREBLE, high-shelving flter: 6 – 20kHz, ±15dB 10 channels (each monaural input channel, each stereo mixing input channel), settable independently on each channel Equalizer: parametric equalizer - 20Hz – 20kHz, ±15dB (Q: 0.267 – 69.249, 4 channels (each output channel)) Matrix: 12 x 4 Crosspoint Gain: –∞ to 0dB in 1dB steps Automatic Mute Function: Stereo input section matrix, independent control
Function	Input PAD (–16dB) control, low cut (cutoff frequency: 100Hz) control, analog output attenuator (–6dB, –12dB, –18dB, –24dB, –36dB, –42dB) control, front panel operation lock function, stereo summing function, function setting panel (3 rotary encoders)
Front Panel Section	Input level indication: 3-point LED, 12 channels (each monaural input channel, stereo 1L, 1R, 2L, 2R) Output level indication: 8-point LED, 4 channels (each output channel) Auto Resonance Control (ARC) measurement: ARC measuring start switch x1, ON/ OFF LED x1 Feedback Suppressor (FBS) Function: ON/ OFF switch x8, ON/ OFF LED x8 Low cut filter: ON/ OFF switch x8, ON/ OFF LED x8 Stereo summing: ON/ OFF switch x2, ON/ OFF LED x2 Tone control: BASS, MID, TREBLE / Settable with control knobs, 10 channels (each monaural input channel, stereo 1L, 1R, 2L, 2R) Monaural input, analog setting: gain setting, PAD ON/ OFF, phantom power ON/ OFF, settable on the function setting panel, 8 channels (each monaural input channel) Stereo input, analog setting: trim setting, settable on the function setting panel, 6 channels (1-A, 1-B, 1-C), (2-A, 2-B, 2-C) REC out, gain setting: gain setting, settable on the function setting panel, 2 channels (REC OUT L, REC OUT R) Preset memory switching: preset selection switch x4, ON/ OFF LED x4 Front panel operation lock: operation lock switch x1, ON/ OFF LED x1 Operation status indication: operation status LED x3 Function setting panel: rotary encoder x3, 10-point position indication LED x3, function mode LED x3, Analog volume fader: input volume fader x10, output volume fader x4, 2 faders linkable with supplied gang bar
Control Section	Contact input: 8 channels, open voltage: 24V DC, short-circuit current: 5mA, removable terminal block (10 pins) Contactoutput: 8 channels, no-voltage make contact, contact capacity: 24V DC/100mA, removable terminal block (10 pins) Remote control panel: 2 channels, max. no. of units: 8 units per channel, 24V DC input x2, termination switch x1, removable terminal block (10 pins) Max. total cable length (star wiring): 800m (total for 2 channels) Max. cable length (daisy chain wiring): 400m per channel (Note: in daisy chain wiring, the no. of units differs depending on the cable length. Star wiring and daisy chain wiring cannot be used together.) Type of cable: Shielded CPEV cable (a pair of data cable and a pair of power supply cable) or shielded Cat 5 twisted pair cable for LAN (CAT5-STP)
Network	Network I/F: 1 channel of 10BASE-T/ 100BASE-TX (auto-negotiation) RJ45 connector, connection via switching hub Network protocol: TCP/ IP Connection cable: Shielded Cat. 5 or higher twisted pair cable for LAN (Cat. 5-STP or better) Max. cable length: 100m (between M-864D and switching hub)
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH (no condensation)
Finish	Panel: aluminum, hairline, black, Case: surface-treated steel plate
Dimensions	482.6(W) x 177.1(H) x 157.2(D) mm
Weight	5.1kg
Accessory	Power cord(2m) x1, removable terminal plug(3 pins) x12, large type removable terminal plug(10 pins) x2, small type removable terminal plug(10 pins) x1, fader gang bar x4, protective cover x1, rack mounting screw x4, CD-ROM (setup software) x1
Option	Remote control panel: ZM-9011/ 9012/ 9013/ 9014 AC Adaptor: AD-246 (or equivalent, when removing the remote control panel)

Integrated DSP and Control Systems

Digital Speaker Processor

DP-SP3

* 0dB = 0.775V

Model	DP-SP3
Power Source	220 – 240V AC, 50/ 60Hz (CE) or 50Hz (CE-AU)
Power Consumption	25W
Frequency Response	20Hz – 20kHz, ±1dB
Sampling Frequency	96kHz
Dynamic Range	110dB or more
Distortion	0.03% or less, 1kHz, +4dB* input/ output, 20Hz - 20kHz BPF
Crosstalk	–80dB or less, 1kHz
Input	2 channels, +4dB* (max. +24dB*), 10kΩ,electronically-balanced, removable terminal block (3 pins)
Output	6 channels, +4dB* (max. +24dB*), applicable load 600Ω or more, electronically-balanced, removable terminal block (3 pins)
AD/DA Converter	24 bit
Preset Memory	16
Signal Processing Section	
Equalizer/Filter	
Parametric equalizer	20Hz – 20kHz, ±15dB, Q: 0.267 – 69.249
High/low pass filter	20Hz – 20kHz, 6dB/oct, 12dB/oct
Notch filter	20Hz – 20kHz, Q: 8.651 – 69.249
All-pass filter	20Hz – 20kHz, Q: 0.267 – 69.249
High shelving filter	5 – 20kHz, ±15dB
Low shelving filter	20 – 500Hz, ±15dB
Horn equalizer	20kHz, 0 – 18dB in 0.5dB steps
	2 ways, 3 ways, 4 ways
Crossover	
Crossover Filter	20Hz – 20kHz, 6dB/oct, 12dB/oct, 18dB/oct, 24dB/oct, –15 to +12dB, polarity switchable
Delay	0 – 170.656ms in 0.01ms steps
Compressor	Threshold: –20 to +20dB* in 1dB steps Ratio: 1:1, 1.1:1, 1.2:1, 1.3:1, 1.5:1, 1.7:1, 2:1, 2.3:1, 2.6:1,3:1, 4:1, 7:1, 8:1, 10:1, 12:1, 20:1, ∞:1 Attack time: 0.2ms – 5s, Release time: 10ms – 5s
Delay	0 – 682.656ms in 0.01ms steps
Matrix	2 x 6
Crosspoint Gain	–∞ to 0dB in 1dB steps
Function	Input PAD (–14dB) control, analog output attenuator (–∞ to 0dB in 1dB steps) control, EQ characteristic library for TOA speakers, input/output level indicator (4-point LED indicator), output MUTE switch x6
Control	
Contact input	
4 channels, open voltage	4 channel, open voltage: 5V DC, short-circuit current: 5mA, removable terminal block (5 pins)
Control function	preset memory selection, volume control, and mute
Network	
Network I/F	1 channel of 10BASE-T/100BASE (auto-negotiation), RJ45 connector, connection via switching hub
Network protocol	TCP/IP
Connection cable	Shielded Cat 5 or higher twisted pair cable for LAN (Cat 5-STP or better)
Max. cable length	100m (between DP-SP3 and switching hub)
Operating Temperature	0°C to 40°C
Operating Humidity	90% RH (no condensation)
Finish	Panel: aluminum, hairline, black Case: surface-treated steel plate
Dimensions	482(W) x 44(H) x 289(D) mm
Weight	3.1kg
Accessory	Power supply cord (2m) x1, removable terminal plug (3 pins) x8, removable terminal plug (5 pins) x1, rack mounting screw x4, CD-ROM (setup software) x1

Speakers (Pro-Sound)

Line Array Speaker Systems

Type A Series

Line Array Speaker

SR-A12L
SR-A12LWP
SR-A12S
SR-A12SWP

Model	SR-A12L	SR-A12LWP	SR-A12S	SR-A12SWP
Enclosure	Bass-reflex type			
Power Handling Capacity	Continuous program: low frequency: 450W, high frequency: 180W			
Rated Impedance	Low frequency: 8Ω, high frequency: 16Ω			
Sensitivity	Low frequency: 98dB (1W, 1m), high frequency: 110dB (1W, 1m)		Low frequency: 98dB (1W, 1m), high frequency: 109dB (1W, 1m)	
Frequency Response	50Hz – 20kHz (when using DP-0206 option)			
Crossover Frequency	1kHz (when using DP-0206 option)			
Directivity Angle	Horizontal: 90° Vertical: 5°		Horizontal: 90° Vertical: 5°	
Speaker Component	Low frequency: 30cm cone-type High frequency: wave front control horn 90° (horizontal) ×5° (vertical) + compression driver ×2		Low frequency: 30cm cone-type High frequency: wave front control horn 90° (horizontal) × 15° (vertical) + compression driver ×2	
Input Connector	M5 screw terminal, distance between barriers: 12.2mm and Neutrik NL4MP ×2 (usable cable connector: Neutrik NL4FC)	-	M5 screw terminal, distance between barriers: 12.2mm and Neutrik NL4MP ×2 (usable cable connector: Neutrik NL4FC)	-
Connected Cable	-	Direct cable withdrawal from internal speaker: ø8.6mm, conductor cross section: 1.25mm², 4-core cable, 3m	-	Direct cable withdrawal from internal speaker: ø8.6mm, conductor cross section: 1.25mm², 4-core cable, 3m
Water Protection	-	IPX4	-	IPX4
Operating Temperature	-	–10°C to +50°C	-	–10°C to +50°C
Finish **Enclosure** **Front Grille**	Plywood, black, paint Punched steel plate, black, acrylic paint	Plywood, black, urethane coating Punched stainless steel, black, paint	Plywood, black, paint Punched steel plate, black, acrylic paint	Plywood, black, urethane coating Punched stainless steel, black, paint
Dimensions	740(W) × 433(H) × 469(D) mm	740(W) × 433(H) × 469(D) mm (excluding connected cable)	740(W) × 433(H) × 469(D) mm	740(W) × 433(H) × 467(D) mm (excluding connected cable)
Weight	49kg (including accessories)	51kg (including accessories)	47kg (including accessories)	48kg (including accessories)
Accessory	Joint plate ×2, joint plate mounting bolt (M10) ×16			
Option	Rigging frame: SR-RF12 Digital processor: DP-SP3	Rigging frame: SR-RF12WP Digital processor: DP-SP3	Rigging frame: SR-RF12 Digital processor: DP-SP3	Rigging frame: SR-RF12WP Digital processor: DP-SP3

Subwoofer

SR-A18B

Model	SR-A18B
Enclosure	Bass-reflex type
Power Handling Capacity	Continuous program: 720W
Rated Impedance	8Ω
Sensitivity	95dB (1W, 1m)
Frequency Response	40Hz – 400Hz (when using DP-SP3 option)
Crossover Frequency	80Hz (when using DP-SP3 option)
Speaker Component	46cm cone-type
Input Connector	M5 screw terminal, distance between barriers: 12.2mm and Neutrik NL4MP ×2 (usable cable connector: Neutrik NL4FC)

Finish	Enclosure: plywood black, paint Front Grille: punched steel plate, black, acrylic paint
Dimensions	740(W) × 573(H) × 698(D) mm
Weight	66kg (including accessories)
Accessory	Joint plate ×2, joint plate mounting bolt (M10) ×16
Option	Rigging frame: SR-RF12, digital processor: DP-SP3

Type C Series

Line Array Speaker

SR-C8L
SR-C8LWP
SR-C8S
SR-C8SWP

Model	SR-C8L	SR-C8LWP	SR-C8S	SR-C8SWP
Enclosure	Bass-reflex type			
Power Handling Capacity	Continuous program: 360W, (single-amp mode), low frequency: 360W, high frequency: 180W (bi-amp mode)			
Rated Impedance	16Ω (single-amp mode), low frequency: 16Ω, high frequency: 16Ω (bi-amp mode)			
Sensitivity	98dB (1W, 1m) (Single-amp mode), Low: 95dB (1W, 1m), High: 110dB (1W, 1m) (bi-amp mode)			
Frequency Response	65Hz – 20kHz (when using DP-SP3 option)			
Crossover Frequency	1.6kHz (when using DP-SP3 option)			
Directivity Angle	Horizontal: 110°, Vertical: 5°		Horizontal: 110°, Vertical: 15°	
Speaker Component	Low frequency: 20cm cone type High frequency: wave-front control horn 110° (Horizontal) x 5° (Vertical) + compression driver ×2		Low frequency: 20cm cone type High frequency: wave-front control horn 110° (Horizontal) x 15° (Vertical) + compression driver ×2	
Input Connector	M5 screw terminal, distance between barriers: 12.2mm and Neutrik NL4MP ×2	-	M5 screw terminal, distance between barriers: 12.2mm and Neutrik NL4MP ×2	-
Connected Cable	-	Direct cable withdrawal from internal speaker: ø8.6mm, conductor cross section: 1.25mm², 4-core cable, 3m	-	Direct cable withdrawal from internal speaker: ø8.6mm, conductor cross section: 1.25mm², 4-core cable, 3m
Water Protection	-	IPX4	-	IPX4
Finish Enclosure Front Grille	Plywood, black, urethane paint Punched steel plate, black, paint	Plywood, black, urethane coating Punched stainless steel, black, paint	Plywood, black, urethane paint Punched steel plate, black, paint	Plywood, black, urethane coating Punched stainless steel, black, paint
Dimensions	526.6(W) x 293(H) x 296(D) mm		526.6(W) x 293(H) x 294(D) mm	
Weight	17kg		16kg	
Accessory	M8 connection bolt x4			
Option	Cluster bracket: SR-CL8, rigging frame: SR-RF8, tilt joint bracket: SR-TP8, Digital processor: DP-SP3	Rigging frame: SR-RF8WP Digital processor: DP-SP3	Cluster bracket: SR-CL8, rigging frame: SR-RF8, tilt joint bracket: SR-TP8, Digital processor: DP-SP3	Rigging frame: SR-RF8WP Digital processor: DP-SP3

Subwoofer

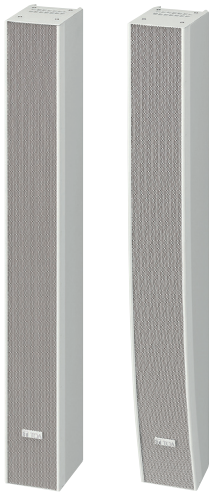
SR-C15B
SR-C15BWP

Model	SR-C15B	SR-C15BWP
Enclosure	Bass-reflex type	
Power Handling Capacity	Continuous program: 450W	
Rated Impedance	8Ω	
Sensitivity	93dB (1W, 1m)	
Frequency Response	40Hz – 400Hz (when equalized at recommended parameters)	
Crossover Frequency	125Hz (when equalized at recommended parameters)	
Speaker Component	38cm cone type	
Input Connector	M5 screw terminal, distance between barriers: 12.2mm (0.48") and Neutrik NL4MP x 2	-
Connected Cable	-	Direct cable withdrawal from internal speaker: ø8.6mm conductor cross section: 1.25 mm², 4-core cable, 3m
Operating Temperature	-	-10°C to +50°C
Water Protection	-	IPX4
Finish	Enclosure: plywood, black, urethane paint Front grille: punched steel plate, black, paint	Enclosure: plywood, black, urethane coating Front grille: punched stainless steel, black, paint
Dimensions	526.6(W) × 594.8(H) × 550(D) mm	
Weight	41kg	
Accessory	M8 connection bolt ×4	
Option	Rigging frame: SR-RF8, digital processor: DP-SP3	Rigging frame: SR-RF8WP, digital processor: DP-SP3

Type H Series

Line Array Speaker

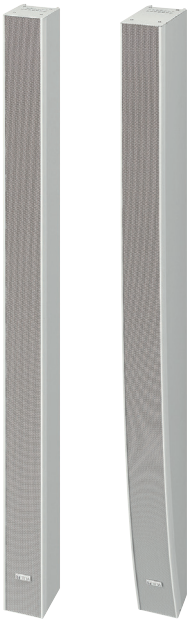
SR-H2L / SR-H2S



Model	SR-H2L	SR-H2S
Enclosure	Bass-reflex type	
Power Handling Capacity	Continuous program: 180W	
Rated Impedance	8Ω	
Sensitivity	92dB (1W, 1m equivalent, measured at 4m)	90dB (1W, 1m equivalent, measured at 4m)
Frequency Response	80Hz - 18kHz (when using an optional digital processor)	90Hz - 17kHz (when using an optional digital processor)
Directivity Angle	Horizontal: 90°, vertical: 0° (within the range of speaker height)	Horizontal: 90°, vertical: 20°
Speaker Component	7cm cone-type ×9	
Input Connector	Removable input connector	
Finish	Enclosure: MDF, white, urethane paint Front Grille: punched steel plate, white, acrylic paint	
Dimensions	84(W) × 668.4(H) × 115(D) mm	84(W) × 663.4(H) × 115(D) mm
Weight	4.4kg	4.2kg
Option	Matching transformer: MT-S0301, digital processor: DP-SP3, extension plate: SR-EP3, wall mounting bracket: SR-WB3, wall tilt bracket: SR-TB3, flying bracket: SR-FB3, speaker stand adapter: SR-SA3 (applicable stand: ST-34B)	

Line Array Speaker

SR-H3L / SR-H3S



Model	SR-H3L	SR-H3S
Enclosure	Bass-reflex type	
Power Handling Capacity	Continuous program: 360W	
Rated Impedance	8Ω	
Sensitivity	95dB (1W, 1m equivalent, measured at 8m)	92dB (1W, 1m equivalent, measured at 4m)
Frequency Response	110Hz - 18kHz (-10dB) (when equalized at recommended parameters)	90Hz - 17kHz (-10dB) (when equalized at recommended parameters)
Directivity Angle	Horizontal: 90°, vertical: 0° (within the range of speaker height)	Horizontal: 90°, vertical: 20°
Speaker Component	7cm cone-type × 16	
Input Connector	Removable input connector	
Finish	Enclosure: MDF, white, urethane paint Front Grille: punched steel plate, white, acrylic paint	
Dimensions	84(W) × 1186.4(H) × 115(D) mm	84(W) × 1177.2(H) × 157(D) mm
Weight	7.6kg	7.9kg
Option	Matching transformer: MT-S0301, digital processor: DP-SP3, extension plate: SR-EP3, wall mounting bracket: SR-WB3, wall tilt bracket: SR-TB3, flying bracket: SR-FB3, speaker stand adapter: SR-SA3 (applicable stand: ST-34B)	

Matching Transformer

MT-S0301

Rated Input Power: 30W
Primary Side: 100V line: 330Ω (30W), 1kΩ (10W)
70V line: 170Ω (30W), 330Ω (15W), 1kΩ (5W)
Secondary Side: 8Ω
Weight: 370g

Type S Series

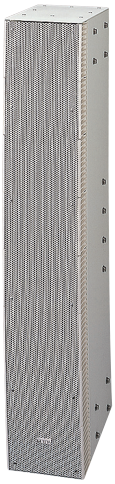
Line Array Speaker

SR-S4L / SR-S4LWP

Model	SR-S4L	SR-S4LWP
Enclosure	Bass-reflex type	Sealed type
Power Handling Capacity	Continuous program: 600W (single-amp mode), low: 240W, high: 240W (bi-amp mode)	
Rated Impedance	8Ω (single-amp mode), low: 8Ω, high: 8Ω (bi-amp mode)	
Sensitivity	94dB (1W, 1m)	
Frequency Response	70Hz – 20kHz (when using DP-SP3 option)	
Crossover Frequency	3.5kHz	
Directivity Angle	Horizontal: 90°, Vertical: 0° (within the range of speaker height)	
Speaker Component	Low frequency: 10cm cone-type ×8, high frequency: 2.5cm balanced dome-type ×24	
Input Connector	M5 screw terminal, distance between barriers: 12.2mm and Neutrik NL4MP x2 (usable cable connector: Neutrik NL4FC)	-
Connected Cable	-	Direct cable withdrawal from internal speaker: ø8.6mm, conductor cross section: 1.25mm², 4-core cable, 3m
Water Protection	-	IPX4
Operating Temperature	-	–10°C to +50°C
Finish	Enclosure: MDF, white, paint Front grille: punched steel plate, white, acrylic paint	Enclosure: plywood, white, urethane coating Front grille: punched stainless steel, white, paint
Dimensions	160(W) × 895(H) × 255(D) mm	160(W) × 895(H) × 255(D) mm (excluding connected cable)
Weight	16kg	
Accessory	Bi-amplifier drive rating label ×1, Bi-amplifier drive input indication label ×1	
Option	Matching transformer: MT-S0601, extension plate: SR-EP4, flying bracket: SR-FB4, wall mounting bracket: SR-WB4, wall tilt bracket: SR-TB4, stand adapter: SR-SA4, protection pad: SR-PP4, floor stand: SR-FS4, digital processor: DP-SP3	Matching transformer: MT-S0601, extension plate: SR-EP4WP, wall tilt bracket: SR-TB4WP, wall mounting bracket: SR-WB4WP, protection pad: SR-PP4, digital processor: DP-SP3

Line Array Speaker

SR-S4S / SR-S4SWP



Model	SR-S4S	SR-S4SWP
Enclosure	Bass-reflex type	Sealed type
Power Handling Capacity	Continuous program: 600W (single-amp mode), Low: 240W, High: 240W (bi-amp mode)	
Rated Impedance	8(single-amp mode), Low: 8Ω, High: 8(bi-amp mode)	
Sensitivity	93dB (1W, 1m)	
Frequency Response	70Hz – 20kHz (when using DP-SP3 option)	
Crossover Frequency	3.5kHz	
Directivity Angle	Horizontal: 90°, Vertical: 10°	
Speaker Component	Low frequency: 10cm cone-type ×8, High frequency: 2.5cm balanced dome-type ×24	
Input Connector	M5 screw terminal, distance between barriers: 12.2mm and Neutrik NL4MP x2 (usable cable connector: Neutrik NL4FC)	-
Connected Cable	-	Direct cable withdrawal from internal speaker: ø8.6mm, conductor cross section: 1.25mm², 4-core cable, 3m
Water Protection	-	IPX4
Operating Temperature	-	–10°C to +50°C
Finish	Enclosure: MDF, white, paint Front grille: punched steel plate, white, acrylic paint	Enclosure: plywood, white, urethane coating Front grille: punched stainless steel, white, paint
Dimensions	160(W) × 892(H) × 303(D) mm	160(W) × 892(H) × 303(D) mm (excluding connected cable)
Weight	16kg	
Accessory	Bi-amplifier drive rating label ×1, Bi-amplifier drive input indication label ×1	
Option	Matching transformer: MT-S0601, extension plate: SR-EP4, flying bracket: SR-FB4, wall tilt bracket: SR-TB4, stand adapter: SR-SA4, protection pad: SR-PP4, digital processor: DP-SP3	Matching transformer: MT-S0601, extension plate: SR-EP4WP, wall tilt bracket: SR-TB4WP, protection pad: SR-PP4, digital processor: DP-SP3

Matching Transformer

MT-S0601

Rated Input Power: 60W
Primary Side: 100V line: 170Ω (60W), 330Ω (30W), 670Ω (15W)
70V line: 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W)
Secondary Side: 8Ω
Weight: 1.2kg

Type T Series

Line Array Speaker

SR-T5

Model	SR-T5
Enclosure	Bass-reflex type
Power Handling Capacity	Continuous pink noise: 250W Continuous program: 750W
Rated Impedance	8Ω
Sensitivity	96dB (1W, 1m equivalent, measured at 4m)
Frequency Response	70Hz – 20kHz
Crossover Frequency	3kHz
Directivity Angle	Horizontal: 100°, Vertical: 35°
Speaker Component	Low frequency: 13cm cone-type ×8 High frequency: balanced dome type ×24
Recommended Installation Height	4 – 5.5m (speaker top, when installed in sport facilities 30m in length)
Adjustable Angle Range	Downward: 0°, 1°, 2°, 3° (when the supplied mounting bracket is used) Horizontal (left or right): 5°, 10° (when the optional SR-PB5 wall pan bracket is used)

Input Terminal	M5 screw terminal, distance between barriers: 12.2mm
Finish Enclosure Baffle Punched Net Mounting Bracket	 Plywood, black, urethane paint Polypropylene, black Steel plate, black, acrylic paint Steel plate, black, acrylic paint
Dimensions	310(W) × 1239(H) × 341(D) mm
Weight	29kg (including accessories)
Accessory	Mounting bracket A ×1, mounting bracket B ×1, bracket mounting bolt ×6, side cover ×5, side cover mounting screw ×10, eye bolt x1, safety wire ×1
Option	Wall pan bracket: SR-PB5 (to be used in conjunction with the supplied mounting bracket), matching transformer: MT-S0601

Line Array Series Speakers

Line Array Speaker

HX-5B
HX-5W
HX-5B-WP
HX-5W-WP

* Factory-preset: 60° mode

Model	HX-5B	HX-5W	HX-5B-WP	HX-5W-WP
Enclosure	Bass-reflex type		Sealed type	
Power Handling Capacity	Continuous pink noise: 200W, Continuous program: 600W			
Rated Impedance	8Ω			
Sensitivity (1W, 1m)	96dB (60° mode), 97dB (45° mode), 98dB (30° mode), 99dB (15° mode)*			
Frequency Response	70Hz – 20kHz (–10dB) (60° mode), 75Hz – 20kHz (–10dB) (45° mode), 80Hz – 20kHz (–10dB) (30° mode), 85Hz – 20kHz (–10dB) (15° mode)		95Hz – 20kHz (–10dB) (60° mode), 100Hz – 20kHz (–10dB) (45° mode), 105Hz – 20kHz (–10dB) (30° mode), 110Hz – 20kHz (–10dB) (15° mode)	
Crossover Frequency	4kHz			
Directivity Angle	Horizontal: 100° (2kHz or more) Vertical: 60° (800Hz or more), 45° (1.2kHz or more), 30° (1.6kHz or more), 15° (3.2kHz or more) variable			
Speaker Component	Low frequency: 12cm cone-type × 4, high frequency: balanced dome-type × 12			
Input Terminal	Speakon NL4MP ×2 and M4 screw terminal		-	
Speaker Cord	-		2-core cabtyre cord with diameter of 6mm	
Water Protection	-		IPX4 (Install with the every speaker module downward)	
Operating Temperature	-		–15°C to +50°C	
Finish Enclosure Punched Net	Polypropylene, black Surface-treated steel plate, black	Polypropylene, white Surface-treated steel plate, white	Polypropylene, black Surface-treated steel plate, black, rust-proof coating	Polypropylene, white Surface-treated steel plate, white, rust-proof coating
Dimensions	408(W) × 546(H) × 342(D) mm			
Weight	16kg			
Accessory	Hanging bracket ×2, hex. wrench ×1			
Option	Matching transformer: MT-200, speaker stand adapter: HY-ST1, speaker mounting bracket: HY-PF1B, HY-CW1B, HY-WM1B, HY-WM2B, HY-CN1B	Matching transformer: MT-200, speaker stand adapter: HY-ST1, speaker mounting bracket: HY-PF1W, HY-CW1W, HY-WM1W, HY-WM2W, HY-CN1W	Matching transformer: MT-200, speaker mounting bracket: HY-PF1WP, HY-CW1WP, HY-WM1WP, HY-WM2WP, HY-CN1B-WP	Matching transformer: MT-200, speaker mounting bracket: HY-PF1WP, HY-CW1WP, HY-WM1WP, HY-WM2WP, HY-CN1W-WP

Line Array Speaker

HX-7B
HX-7W
HX-7B-WP
HX-7W-WP

Model	HX-7B	HX-7W	HX-7B-WP	HX-7W-WP
Enclosure	Bass-reflex type		Sealed type	
Power Handling Capacity	Continuous pink noise: 250W (IEC60268-5: 350 W), continuous program: 750W			
Rated Impedance	8Ω			
Sensitivity (1W, 1m)	100dB			
Frequency Response	75Hz – 20kHz		105Hz – 20kHz	
Crossover Frequency	1.7kHz			
Directivity Angle	Horizontal: 100°, vertical: depending on directivity angle mode			
Speaker Component	Low frequency: 13cm cone-type ×8, high frequency: wave front control horn with compression driver x4			
Input Terminal	Speakon NL4MP ×2 and M4 screw terminal, distance between barriers: 9mm			
Water Protection	-		IPX4 (Install with the every speaker module downward)	
Finish Enclosure Punched Net Hanging bracket	Polypropylene, black Surface-treated steel plate, black, paint Steel plate, t3.0, black,paint	Polypropylene, white Surface-treated steel plate, white paint Steel plate, t3.0, white, paint	Polypropylene, black Surface-treated steel plate, black, rust-proof coating	Polypropylene, white Surface-treated steel plate, white, rust-proof coating
Dimensions	497(W) × 664(H) × 274(D) mm			
Weight	30kg			
Accessory	Hanging bracket L, R (L and R are symmetrical to each other) x1 each, hanging bracket mounting bolt x4		Terminal cover x1, terminal cover mounting screw x4, rubber packing x1	
Option	Matching transformer: MT-200, matching transformer adapter: HY-MT7, speaker mounting bracket: HY-60DB/W, HY-CN7B/W, HY-PF7B/W, HY-VM7B/W, HY-WM7B/W,HY-C0801W, speaker stand adapter: HY-ST7		Matching transformer: MT-200, matching transformer adapter: HY-MT7, speaker mounting bracket: HY-TM7B/W-WP, HY-MS7B/W-WP, HY-60DB/W-WP, HY-CN7B/W-WP	

Subwoofer

FB-120B
FB-120W

Model	FB-120B	FB-120W
Power Handling Capacity	Continuous pink noise: 200W, Continuous program: 600W	
Impedance	8Ω	
Sensitivity	90dB (1W, 1m) at installation in free sound field 96dB (1W, 1m) at installation in 1/2 free sound field	
Frequency Response	40Hz – 1.2kHz (–10dB)	
Speaker Component	30cm cone-type	
Input Terminal	Speakon NL4MP ×2 and M4 screw terminal, distance between barriers: 11mm	
Finish	Enclosure: plywood Punched net: surface-treated steel plate, black, paint	Enclosure: plywood Punched net: surface-treated steel plate, white, paint
Dimensions	408(W) × 408(H) × 450(D) mm	
Weight	15kg	
Option	Speaker rigging frame: HY-PF1B	Speaker rigging frame: HY-PF1W

Subwoofer

FB-150B
FB-150W

Model	FB-150B	FB-150W
Power Handling Capacity	Continuous pink noise: 200W, Continuous program: 600W	
Impedance	8Ω	
Sensitivity	93dB (1W, 1m)	
Frequency Response	40Hz – 400Hz (–10dB)	
Speaker Component	38cm cone-type	
Input Terminal	Speakon NL4MP ×2 and M5 screw terminal, distance between barriers: 12.2 mm	
Finish	Enclosure: MDF, black, urethane paint Punched net: surface-treated steel plate, black, paint	Enclosure: MDF, white, urethane paint Punched net: surface-treated steel plate, white, paint
Dimensions	505(W) × 528(H) × 477(D) mm	
Weight	30kg	
Option	Speaker rigging frame: HY-PF7B	Speaker rigging frame: HY-PF7W

Matching Transformer

MT-200

Rated Input: 200W
Primary Impedance: 100V line: 50Ω (200W), 83Ω (120W), 167Ω (60W); 70V line: 25Ω (200W), 50Ω (100W), 83Ω (60W), 167Ω (30W)
Secondary Impedance: 8Ω
Water Protection: IPX4 (the tilt angle must be within 45°)*
Finish: Cover: polypropylene, mounting bracket: stainless steel
Dimensions: 164(W) x 141(H) x 129(D) mm
Weight: 2.8kg
Accessory: Speaker mounting bolt (M8) with washer x2

Note: When the matching transformer is installed on the HX-5 series rear mounting plate, the optional HY-WM1 series and HY-CW1 series Speaker Mounting Brackets, and HY-ST1 Speaker Stand Adapter cannot be used.

Slim Array Speakers

Slim Array Speaker

TZ-S60W-EA

Model	TZ-S60W-EA
Enclosure	Bass-reflex type
Max. Input Power (Low imp.)	120W (continuous pink noise)
Rated Input (High imp.)	60W
Rated Impedance	Low Impedance: 8Ω 100V line: 167Ω (60W), 330Ω (30W), 500Ω (20W), 1kΩ (10W)
Sensitivity	95dB (1W, 1m)
Frequency Response	180Hz - 15kHz
Speaker Component	8cm cone-type x 9
Connector	Push-in terminals
Operating Temperature	-10°C to +50°C
Directivity Angle	Horizontal: 90°, Vertical: 0°
Impedance Change	Rotary switch (selectable)
Finish	Enclosure: MDF, paint, white Punched net, wall bracket, side, panel, metal cover: SECC, paint, white

Dimensions	100(W) x 883(H) x 130(D) mm
Weight	8.2kg
Accessory	Speaker bracket x1, joint bracket x1, wall bracket x1, fixing bolt (M5 x60) x1, Hexagon bolt (M6 x12, with plain washer and spring washer) x2, machine screw (M5 x15, with plain washer and spring washer) x4
Option	HY-S60W (side stack bracket x2, rear stack bracket x1)

Stacking Bracket

HY-S60W-EA

HS Series Speakers

Coaxial Array Speakers

Coaxial Array Speaker

HS-120B
HS-120W
HS-1200BT
HS-1200WT

Model	HS-120B	HS-120W	HS-1200BT	HS-1200WT
Enclosure	Sealed type			
Rated Input	-		60W (High impedance)	
Power Handling Capacity	Continuous pink noise: 100W, continuous program: 300W			
Rated Impedance	8Ω		8Ω 100V line: 170Ω (60W), 330Ω (30W), 670Ω (15W) 70V line: 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W)	
Sensitivity	97dB (1W, 1m)			
Frequency Response	80Hz – 20kHz		70Hz – 20kHz	
Crossover Frequency	3kHz			
Directivity Angle	Horizontal: 90°, vertical: 40°			
Speaker Component	Low frequency: 30cm cone-type, high frequency: balanced dome tweeter ×6			
Input Terminal	NEUTRIK NL4MP Speakon and M4 screw terminal, distance between barriers: 9mm			
Operating Temperature	–10°C to +50°C			
Finish Enclosure Punched Net	Polypropylene, black Surface-treated steel plate, black	Polypropylene, white Surface-treated steel plate, white	Polypropylene, black Surface-treated steel plate, black	Polypropylene, white Surface-treated steel plate, white
Dimensions	361(W) × 448(H) × 320(D) mm			
Weight	8.5kg		10kg	
Accessory	Handle ×1, handle fitting bracket ×2, handle mounting screw ×2, rubber foot ×2, rubber foot mounting screw ×2			
Option	Mounting bracket: HY-1200VB (vertical), HY-1200HB (horizontal), ceiling mount bracket: HY-C0801, wall mounting bracket: HY-W0801, speaker stand: ST-34B	Mounting bracket: HY-1200VW (vertical), HY-1200HW (horizontal), ceiling mount bracket: HY-C0801W, wall mounting bracket: HY-W0801W, speaker stand: ST-34B	Mounting bracket: HY-1200VB (vertical), HY-1200HB (horizontal), ceiling mount bracket: HY-C0801, wall mounting bracket: HY-W0801, speaker stand: ST-34B	Mounting bracket: HY-1200VB (vertical), HY-1200HB (horizontal), ceiling mount bracket: HY-C0801, wall mounting bracket: HY-W0801, speaker stand: ST-34B

Coaxial Array Speaker

HS-150B
HS-150W
HS-1500BT
HS-1500WT

Model	HS-150B	HS-150W	HS-1500BT	HS-1500WT
Enclosure	Sealed type			
Rated Input	-		60W (High impedance)	
Power Handing Capacity	Continuous pink noise: 100W, continuous program: 300W			
Rated Impedance	8Ω		8Ω 100V line: 170Ω (60W), 330Ω (30W), 670Ω (15W) 70V line: 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W)	
Sensitivity	98dB (1W, 1m)			
Frequency Response	70Hz – 20kHz		60Hz – 20kHz	
Crossover Frequency	3kHz			
Directivity Angle	Horizontal: 90°, vertical: 40°			
Speaker Component	Low frequency: 38cm (15") cone-type, high frequency: balanced dome tweeter ×6			
Input Terminal	NEUTRIK NL4MP Speakon and M4 screw terminal, distance between barriers: 9mm			
Operating Temperature	–10°C to +50°C			
Finish Enclosure Punched Net	Polypropylene, black Surface-treated steel plate, black	Polypropylene, white Surface-treated steel plate, white	Polypropylene, black Surface-treated steel plate, black	Polypropylene, white Surface-treated steel plate, white
Dimensions	451(W) × 560(H) × 400(D) mm			
Weight	12kg		14kg	
Accessory	Handle ×1, handle fitting bracket ×2, handle mounting screw ×2, rubber foot ×2, rubber foot mounting screw ×2			
Option	Mounting bracket: HY-1500VB (vertical), HY-1500HB (horizontal), ceiling mount bracket: HY-C0801, wall mounting bracket: HY-W0801, speaker stand: ST-34B	Mounting bracket: HY-1500VW (vertical), HY-1500HW (horizontal), ceiling mount bracket: HY-C0801W, wall mounting bracket: HY-W0801W, speaker stand: ST-34B	Mounting bracket: HY-1500VB (vertical), HY-1500HB (horizontal), ceiling mount bracket: HY-C0801, wall mounting bracket: HY-W0801, speaker stand: ST-34B	Mounting bracket: HY-1500VW (vertical), HY-1500HW (horizontal), mount bracket: HY-C0801W, wall mounting bracket: HY-W0801W, speaker stand: ST-34B

2-way Passive Speakers

2-way Passive Speaker System

SR-F04
SR-F08

Model	SR-F04	SR-F08
Enclosure	2-way,passive, bass-reflex type	
Power Handling Capacity	Continuous pink noise: 80W Continuous program: 240W	Continuous pink noise: 120W Continuous program: 360W
Rated Impedance	8Ω	
Sensitivity	88dB (1W, 1m)	91dB (1W, 1m)
Frequency Response	80Hz - 20k Hz	65Hz - 20k Hz
Crossover Frequency	3k Hz	1.5k Hz
Directivity Angle	70° conical	Horizontal: 90°, Vertical: 60° (Horn at 90° rotation, Horizontal: 60°, Vertical: 90°)
Speaker Component	Low frequency: 10cm cone-type ×2 High frequency: compression driver fitted with CD horn	Low frequency: 20cm cone-type High frequency: compression driver fitted with CD horn
Connector	Neutrik NL4MP × 2,M4 screw terminal, distance between barriers: 11mm	
Finish	Enclosure: birch plywood, black, polyurea coating Grille: steel plate, black, 40% gloss, paint	
Dimensions	165(W) × 400(H) × 177(D) mm	249(W) × 450(H) × 243(D) mm
Weight	5.8kg	11kg
Option	Speaker mounting bracket: HY-B0801, HY-UH04, HY-UV04, ceiling mount bracket: HY-C0801,speaker wall mount bracket: HY-W0801, HY-WM04, speaker stand adapter: HY-ST04, speaker stand: ST-34B Bracket x 1, Bracket mounting screw x 2, Bracket mounting washer x 2, Applicable bracket: WCB-13B, SP-410 ; Applicable stand: ST-16A	Speaker mounting bracket: HY-B0801, HY-UH08, HY-UV08, ceiling mount bracket: HY-C0801, speaker wall mount bracket: HY-W0801, HY-WM08, speaker stand: ST-34B, surface-treated steel plate, white (RAL9010 PURE WHITE), powder coating Mounting bracket: SP-420 ; Applicable bracket: WCB-13W, SP-410 ; Applicable stand: ST-16A

F Series Speakers

Surface Mount Speaker System

Surface Mount Speaker System

F-03BT/F-03BT-WP-UE
F-03WT/F-03WT-WP-UE

Model	F-03BT	F-03WT	F-03BT-WP-UE	F-03WT-WP-UE
Enclosure	Bass-reflex type		Sealed type	
Power Handling Capacity	Rated noise power: 30 W (8 Ω), Continuous program: 60 W (8 Ω) (*1)			
Rated Input	15 W (100 V line, 70 V line)			
Rated Impedance	8 Ω 100 V line: 670 Ω (15 W), 2 kΩ (5 W), 3.3 kΩ (3 W), 10 kΩ (1 W) 70 V line: 330 Ω (15 W), 670 Ω (7.5 W), 2 kΩ (2.5 W), 3.3 kΩ (1.5 W), 10 kΩ (0.5 W)			
Sensitivity	87 dB (1 W, 1 m) at installation in 1/2 free sound field		86 dB (1 W, 1 m) (1 - 10 kHz, pink noise)	
Frequency Response	85 Hz - 20 kHz, −10 dB at installation in 1/2 free sound field		100 Hz - 20 kHz, -10 dB at installation in 1 /2 free sound field	
Directivity Angle	Horizontal: 100°, Vertical: 100°			
Speaker Component	9 cm (3.5") Full-range, PP cone-type			
Input Terminal	Push-in Terminal		M4 screw terminal, distance between barriers: 9 mm (0.35")	
Cable Requirements	-		Cabtyre cable: Ø6 - Ø10 mm (0.24" - 0.39") Solid wire, Twisted wire: 0.3 - 3.3 mm² (AWG 22 - 12)	
Compliance/Certifications	-		EN 54-24: 2008, UL 1480A (UEAY (outdoor use)	
Dust/Water Protection	-		IP65	
Installation Environment	Indoor installation		Indoor installation, Outdoor installation (*2) (*3)	
EN 54-24 Specifications	-		Sensitivity: 73 dB (1 W, 4 m), Max. SPL: 85 dB (15 W, 4 m) Coverage Angle (-6 dB): Horizontal: 360° (500 Hz), 190° (1 kHz), 125° (2 kHz), 100° (4 kHz) Vertical: 360° (500 Hz), 150° (1 kHz), 130° (2 kHz), 110° (4 kHz) Environmental Type: B (outdoor applications) IP Code: IP33C	
Operating Temperature	-10 °C to +50 °C			
Finish	Enclosure: HIPS, black (RAL 9011 equivalent), paint Grille: Aluminum, black (RAL 9011 equivalent), paint Speaker bracket: Die-cast aluminum, black (RAL 9011 equivalent), paint Base bracket: Steel plate, t4, black (RAL 9011 equivalent), paint Base bracket cover: HIPS, black	Enclosure: HIPS, white (RAL 9016 equivalent), paint Grille: Aluminum, white (RAL 9016 equivalent), paint Speaker bracket: Die-cast aluminum, white (RAL 9016 equivalent), paint Base bracket: Steel plate, t4, white (RAL 9016 equivalent), paint Base bracket cover: HIPS, white	Enclosure: HIPS, black (RAL 9011 equivalent), paint Grille: Aluminum, black (RAL 9011 equivalent), paint U bracket, Speaker bracket: Stainless steel, t2, black (RAL 9011 equivalent), paint	Enclosure: HIPS, white (RAL 9016 equivalent), paint Grille: Aluminum, white (RAL 9016 equivalent), paint U bracket, Speaker bracket: Stainless steel, t2, white (RAL 9016 equivalent), paint
Dimensions	130 (W) x 221 (H) x 132 (D) mm			
Weight	1.7kg			
Accessory	Speaker bracket x 1, Base bracket x 1, Base bracket cover x 1, Bracket fixing screw x 1 set		U bracket x 1, Speaker bracket x 2, Bracket fixing screw x 1 set, Terminal cover x 1, Terminal cover mounting screw x 4	
Option	Adapter plate: HY-F03B Speaker stand: ST-34B Note: K&M 19780 or K&M 19610 is required.		-	

(*1) Rated noise power is defined by I EC60268-5. Continuous program is 3 dB above Rated noise power.
(*2) Avoid installing the speaker in areas with corrosive gases, such as coastal or hot spring areas, or in poorly ventilated indoor swimming facilities, or places with dust or strong wind. Corrosion may cause the speaker to fall, resulting in injury.
(*3) Keep the front part of speaker away from direct sunlight. Otherwise, ultraviolet rays deteriorate the speaker unit's cone, causing the speaker to malfunction.

Note : Bolts and nuts for mounting the bracket to the wall or ceiling are not included. Prepare them separately.

Surface Mount Speaker System

F-05BT/F-05BT-WP-UE
F-05WT/F-05WT-WP-UE

Model	F-05BT	F-05WT	F-05BT-WP-UE	F-05WT-WP-UE
Enclosure	Bass-reflex type		Sealed type	
Power Handling Capacity	Rated noise power: 60 W (8 Ω), Continuous program: 120 W (8 Ω) (*1)			
Rated Input	30 W (100 V line, 70 V line)			
Rated Impedance	8 Ω 100 V line: 330 Ω (30 W), 1 kΩ (10 W), 3.3 kΩ (3 W), 10 kΩ (1 W) 70 V line: 170 Ω (30 W), 330 Ω (15 W), 1 kΩ (5 W), 3.3 kΩ (1.5 W), 10 kΩ (0.5 W)			
Sensitivity	90 dB (1 W, 1 m) at installation in 1/2 free sound field		89 dB (1 W, 1 m) (1 - 10 kHz, pink noise)	
Frequency Response	60 Hz - 20 kHz, –10 dB at installation in 1/2 free sound field		80 Hz - 20 kHz, -10 dB at installation in 1 /2 free sound field	
Crossover Frequency	4.5 kHz			
Directivity Angle	Horizontal: 100°, Vertical: 100°			
Speaker Component	Low frequency: 13 cm (5") PP cone-type, High frequency: 25 mm (1") dome tweeter			
Input Terminal	Push-in Terminal		M4 screw terminal, distance between barriers: 9 mm (0.35")	
Cable Requirements	-		Cabtyre cable: Ø6 - Ø10 mm (0.24" - 0.39") Solid wire, Twisted wire: 0.3 - 3.3 mm² (AWG 22 - 12)	
Compliance/Certifications	-		EN 54-24: 2008, UL 1480A (UEAY (outdoor use)	
Dust/Water Protection	-		IP65	
Installation Environment	Indoor installation		Indoor installation, Outdoor installation (*2) (*3)	
EN 54-24 Specifications	-		Sensitivity: 76 dB (1 W, 4 m), Max. SPL: 91 dB (15 W, 4 m) Coverage Angle (-6 dB): Horizontal: 360° (500 Hz), 170° (1 kHz), 110° (2 kHz), 85° (4 kHz) Vertical: 360° (500 Hz), 150° (1 kHz), 130° (2 kHz), 110° (4 kHz) Environmental Type: B (outdoor applications) IP Code: IP33C	
Operating Temperature	-10 °C to +50 °C			
Finish	Enclosure: HIPS, black (RAL 9011 equivalent), paint Grille: Aluminum, black (RAL 9011 equivalent), paint Speaker bracket: Die-cast aluminum, black (RAL 9011 equivalent), paint Base bracket: Steel plate, t4, black (RAL 9011 equivalent), paint Base bracket cover: HIPS, black (RAL 9011 equivalent)	Enclosure: HIPS, white (RAL 9016 equivalent), paint Grille: Aluminum, white (RAL 9016 equivalent), paint Speaker bracket: Die-cast aluminum, white (RAL 9016 equivalent), paint Base bracket: Steel plate, t4, white (RAL 9016 equivalent), paint Base bracket cover: HIPS, white (RAL 9016 equivalent)	Enclosure: HIPS, black (RAL 9011 equivalent), paint Grille: Aluminum, black (RAL 9011 equivalent), paint U bracket, Speaker bracket: Stainless steel, t2, black (RAL 9011 equivalent), paint	Enclosure: HIPS, white (RAL 9016 equivalent), paint Grille: Aluminum, white (RAL 9016 equivalent), paint U bracket, Speaker bracket: Stainless steel, t2, white (RAL 9016 equivalent), paint
Dimensions	162 (W) x 274 (H) x 164 (D) mm			
Weight	2.7kg			
Accessory	Speaker bracket x 1, Base bracket x 1, Base bracket cover x 1, Bracket fixing screw x 1 set		U bracket x 1, Speaker bracket x 2, Bracket fixing screw x 1 set, Terminal cover x 1, Terminal cover mounting screw x 4	
Option	Adapter plate: HY-F05W Speaker stand: ST-34B Note: K&M 19780 or K&M 19610 is required.		-	

(*1) Rated noise power is defined by I EC60268-5. Continuous program is 3 dB above Rated noise power.
(*2) Avoid installing the speaker in areas with corrosive gases, such as coastal or hot spring areas, or in poorly ventilated indoor swimming facilities, or places with dust or strong wind. Corrosion may cause the speaker to fall, resulting in injury.
(*3) Keep the front part of speaker away from direct sunlight. Otherwise, ultraviolet rays deteriorate the speaker unit's cone, causing the speaker to malfunction.

Note : Bolts and nuts for mounting the bracket to the wall or ceiling are not included. Prepare them separately.

Surface Mount Speaker System

F-08BT/F-08BT-WP-UE
F-08WT/F-08WT-WP-UE

Model	F-08BT	F-08WT	F-08BT-WP-UE	F-08WT-WP-UE
Enclosure	Bass-reflex type		Sealed type	
Power Handling Capacity	Rated noise power: 90 W (8 Ω), Continuous program: 180 W (8 Ω) (*1)			
Rated Input	60 W (100 V line, 70 V line)			
Rated Impedance	8 Ω 100 V line: 170 Ω (60 W), 330 Ω (30 W), 670 Ω (15 W), 3.3k Ω (3 W) 70 V line: 83 Ω (60 W), 170 Ω (30 W), 330Ω (15 W), 670 Ω (7.5 W), 3.3k Ω (1.5 W)			
Sensitivity	91 dB (1 W, 1 m) at installation in 1/2 free sound field		90 dB (1 W, 1 m) (1 - 10 kHz, pink noise)	
Frequency Response	50 Hz - 20 kHz, –10 dB at installation in 1/2 free sound field		70 Hz - 20 kHz, -10 dB at installation in 1 /2 free sound field	
Crossover Frequency	3 kHz			
Directivity Angle	Horizontal: 100°, Vertical: 100°			
Speaker Component	Low frequency: 20 cm (8") PP cone-type, High frequency: 25 mm (1") dome tweeter			
Input Terminal	Push-in Terminal		M4 screw terminal, distance between barriers: 9 mm (0.35")	
Cable Requirements	-		Cabtyre cable: Ø6 - Ø10 mm (0.24" - 0.39") Solid wire, Twisted wire: 0.3 - 3.3 mm² (AWG 22 - 12)	
Compliance/Certifications	-		EN 54-24: 2008, UL 1480A (UEAY (outdoor use)	
Dust/Water Protection	-		IP65	
Installation Environment	Indoor installation		Indoor installation, Outdoor installation (*2) (*3)	
EN 54-24 Specifications	-		Sensitivity: 75 dB (1 W, 4 m), Max. SPL: 92 dB (60 W, 4 m) Coverage Angle (-6 dB): Horizontal: 170° (500 Hz), 130° (1 kHz), 100° (2 kHz), 110° (4 kHz) Vertical: 150° (500 Hz), 130° (1 kHz), 100° (2 kHz), 90° (4 kHz) Environmental Type: B (outdoor applications) IP Code: IP33C	
Operating Temperature	-10 °C to +50 °C			
Finish	Enclosure: HIPS, black (RAL 9011 equivalent), paint Grille: Aluminum, black (RAL 9011 equivalent), paint Speaker bracket: Die-cast aluminum, black (RAL 9011 equivalent), paint Base bracket: Steel plate, t4.5, black (RAL 9011 equivalent), paint Base bracket cover: HIPS, black (RAL 9011 equivalent)	Enclosure: HIPS, white (RAL 9016 equivalent), paint Grille: Aluminum, white (RAL 9016 equivalent), paint Speaker bracket: Die-cast aluminum, white (RAL 9016 equivalent), paint Base bracket: Steel plate, t4, white (RAL 9016 equivalent), paint Base bracket cover: HIPS, white (RAL 9016 equivalent)	Enclosure: HIPS, black (RAL 9011 equivalent), paint Grille: Aluminum, black (RAL 9011 equivalent), paint U bracket, Speaker bracket: Stainless steel, t3, black (RAL 9011 equivalent), paint	Enclosure: HIPS, white (RAL 9016 equivalent), paint Grille: Aluminum, white (RAL 9016 equivalent), paint U bracket, Speaker bracket: Stainless steel, t3, white (RAL 9016 equivalent), paint
Dimensions	251 (W) x 392 (H) x 216 (D) mm			
Weight	5.5kg			
Accessory	Speaker bracket x 1, Base bracket x 1, Base bracket cover x 1, Bracket fixing screw x 1 set		U bracket x 1, Speaker bracket x 2, Bracket fixing screw x 1 set, Terminal cover x 1, Terminal cover mounting screw x 4	
Option	Adapter plate: HY-F08W Speaker stand: ST-34B Note: K&M 19780 or K&M 19610 is required.		-	

(*1) Rated noise power is defined by I EC60268-5. Continuous program is 3 dB above Rated noise power.
(*2) Avoid installing the speaker in areas with corrosive gases, such as coastal or hot spring areas, or in poorly ventilated indoor swimming facilities, or places with dust or strong wind. Corrosion may cause the speaker to fall, resulting in injury.
(*3) Keep the front part of speaker away from direct sunlight. Otherwise, ultraviolet rays deteriorate the speaker unit's cone, causing the speaker to malfunction.

Note : Bolts and nuts for mounting the bracket to the wall or ceiling are not included. Prepare them separately.

Wide-Dispersion Ceiling Speakers

6W Series Full Range / 6W Series 2-Way Range

F-1522SC
F-2352SC

Model	F-1522SC	F-2352SC
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) 70V line: 830Ω (6W), 1.7kΩ (3W), 3.3kΩ (1.5W) 25V line: 830Ω (0.75W), 1.7kΩ (0.4W), 3.3kΩ (0.2W) 8Ω	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) 8Ω
Sensitivity	88dB (1W, 1m)	89dB (1W, 1m)
Frequency Response	65Hz – 18kHz (–10dB), 45Hz – 20kHz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.)	80Hz – 20kHz (–10dB), 50Hz – 20kHz (–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	High frequency: balanced dome- type, low frequency: 12cm cone-type
Mounting Hole	ø135mm (max. ceiling thickness: 37mm)	ø200mm (max. 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), black; Rim: fire-resistant ABS resin (resin material grade: UL-94 V-0), white, paint Punched net: steel plate, white, paint; Dust-proof bag: Artificial fiber, black	
Dimensions	ø155 x 117 (D) mm	ø230 x 154 (D) mm
Weight	1kg (including panel)	1.5kg (including panel)
Accessory	Panel x1, paper pattern x1,	Panel x1, paper pattern x1
Option	Reinforcement ring: HY-RR1	Reinforcement ring: HY-RR2, back can: HY-BC1, anchor hanging bracket: HY-AH1 (HY-RR2 required), tile bar bridge: HY-TB1 (HY-RR2 required), trim ring: HY-TR1 (HY-RR2 required)

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

F-2852C

30W Series Full Range (12cm cone)

F-2322C

30W Series 2-Way Range (12cm one)

F-2352C

30W Series Full Range (12cm cone, equalizing controlled type)

F-122C

Model	F-2852C	F-2322C	F-2352C	F-122C
Enclosure	Bass-reflex type			
Rated Input	60W (high impedance)	30W (high impedance)		
Power Handling Capacity	Continuous pink noise: 90W (8Ω), 60W (16Ω); Continuous program: 180W (8Ω), 120W (16Ω)	Continuous pink noise: 60W (8Ω), 30W (16Ω) Continuous program:120W (8Ω), 60W (16Ω)		
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) 8Ω	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 (3.7 W), 330Ω (1.9W), 1kΩ (0.6W), 3.3kΩ (0.2W), 10kΩ (0.06W) 8Ω		
Sensitivity	91dB (1W, 1m)	90dB (1W, 1m)		
Frequency Response	60Hz – 20kHz (–10dB), 45Hz – 20kHz (–20dB) at installation in 1/2 free sound field (measured by installing the unit in the center of a ceiling.)	70Hz – 20kHz (–10dB), 50Hz – 20kHz (–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	12cm cone-type	High frequency: balanced dome-type Low frequency: 12cm cone-type	12cm cone-type
Mounting Hole	ø250mm (max. ceiling thickness: 37mm)	ø200mm (max. 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), black Rim: Fire-resistant ABS resin (resin material grade: UL-94 V-0), white, paint; Punched Net: Steel plate, white, paint			
Dimensions	ø280 x 227 (D) mm	ø230 x 200 (D) mm	ø230 x 229 (D) mm	
Weight	5.1kg (including mounting accessories)	3.7kg (including mounting accessories)		
Accessory	Panel x 1, Ceiling reinforcement ring x 1, Safety wire x 1, Paper Pattern x 1			
Option	Anchor hanging bracket: HY-AH1 tile bar bridge: HY-TB1	Anchor hanging bracket: HY-AH1, back can: HY-BC1, tile bar bridge: HY-TB1, trim ring: HY-TR1		Anchor hanging bracket: HY-AH1, back can: HY-BC1, tile bar bridge: HY-TB1, Trim ring: HY-TR1, digital processor: DP-SP3

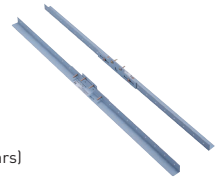
Back Can
HY-BC1

Finish: Surface-treated steel plate, t0.8, black, paint
Weight: 1.5kg
Accessory: Rubber grommet x2

Trim Ring
HY-TR1

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

Tile Bar Bridge
HY-TB1



Finish: Steel plate, plating
Weight: 500g (for set of 2 bars)

Anchor Hanging Bracket
HY-AH1

Finish: Steel plate, plating
Weight: 700g
Accessory: Paper pattern x1

Reinforcement Ring
HY-RR1

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

Reinforcement Ring
HY-RR2

Ceiling Hole Diameter: ø200m
Finish: Surface-treated steel plate
Weight: 280g

Speakers (Commercial Sound)

Column Speakers

Column Speaker

TZ-206BWP-EA / TZ-206WWP-EA

Model	TZ-206BWP-EA / TZ-206WWP-EA
Enclosure	Sealed type
Rated Input	20W
Rated Impedance	100V line: 500Ω (20W), 1kΩ (10W), 2kΩ (5W), 4kΩ (2.5W) 70V line: 500Ω (10W), 1kΩ (5W), 2kΩ (2.5W), 4kΩ (1.3W)
Sensitivity	89dB (1W, 1m)
Frequency Response	150Hz - 13kHz
Speaker Component	10cm cone-type x 2, waterproof
Input Terminal	Push-in terminal
Finish Enclosure Punched Net	 HIPS, black/white paint Surface-treated steel plate, black/ white anti-rust paint
Speaker Bracket Joint/Wall Bracket	Aluminum die-cast, black paint Steel plated, t1.6, black, paint (ED coating)
Operating Temperature	-10°C to +50°C
Dust/Water Protection	IP65
Dimensions	135(W) x 250(H) x 128(D) mm
Weight	1.9kg
Accessory	Speaker bracket x1, joint bracket x1, wall bracket x1, fixing bolt (M5x60) x1, hexagon bolt (M6x12, with plain washer and spring washer) x2, machine screw (M5x20, with plain washer and spring washer) x2, hexagon bolt (M8x15) x1, terminal cover x1, tapping screw x4
Option	Speaker stand: ST-16A

Column Speaker

TZ-406BWP-EA / TZ-406WWP-EA

Model	TZ-406BWP-EA / TZ-406WWP-EA
Enclosure	Sealed Type
Rated Input	40W
Rated Impedance	100V line: 250Ω (40W), 500Ω (20W), 1kΩ (10W), 2kΩ (5W) 70V line: 250Ω (20W), 500Ω (10W), 1kΩ (5W), 2kΩ (2.5W)
Sensitivity	92dB (1W, 1m)
Frequency Response	150Hz - 13kHz
Speaker Component	10cm cone-type x 4, waterproof
Input Terminal	Push-in terminal
Finish Enclosure Punched Net	 HIPS, black/white paint Surface-treated steel plate, black/white anti-rust paint
Speaker Bracket Joint/Wall Bracket	Aluminum die-cast, black paint Steel plated, t1.6, black, paint (ED coating)
Operating Temperature	-10°C to +50°C
Dust/Water Protection	IP65
Dimensions	135(W) x 498(H) x 128(D) mm
Weight	3.5kg
Accessory	Speaker bracket x1, Joint bracket x1, Wall bracket x1, Fixing bolt (M5x60) x1, Hexagon bolt (M6x12, with plain washer and spring washer) x2, Machine screw (M5x20, with plain washer and spring washer) x2, Hexagon bolt (M8x15) x1, Terminal cover x1, Tapping screw x4
Option	Speaker Stand: ST-16A

Column Speaker

TZ-606BWP-EA / TZ-606WWP-EA

Model	TZ-606BWP-EA / TZ-606WWP-EA
Enclosure	Sealed Type
Rated Input	60W
Rated Impedance	100V line: 170Ω (60W), 330Ω (30W), 670Ω (15W), 1.3kΩ (7.5W) 70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1.3kΩ (3.8W)
Sensitivity	94dB (1W, 1m)
Frequency Response	150Hz - 13kHz
Speaker Component	10cm cone-type x6, waterproof
Input Terminal	Push-in terminal
Finish Enclosure Punched Net	 HIPS, black/white paint Surface-treated steel plate, black/white anti-rust paint
Speaker Bracket Joint/Wall Bracket	Aluminum die-cast, black paint Steel plated, t1.6, black, paint (ED coating)
Operating Temperature	-10°C to +50°C
Dust/Water Protection	IP65
Dimensions	135(W) x 746(H) x 128(D) mm
Weight	5.5kg
Accessory	Speaker bracket x1, Joint bracket x1, Wall bracket x1, Fixing bolt (M5x60) x1, Hexagon bolt (M6x12, with plain washer and spring washer) x2, Machine screw (M5x20, with plain washer and spring washer) x2, Hexagon bolt (M8x15) x1, Terminal cover x1, Tapping screw x4
Option	Speaker Stand: ST-16A

Speaker Stand

ST-16A

Effective Extensible Length: 1130 - 1660mm
Load Capacity: 7kg (static load)
Finish:
Stand: Aluminum, silver, matte finish;
Speaker mounting bracket: Polyamide resin, black
Weight: 1.7kg (bracket included)
Accessory: Speaker mounting screw (M5 x 20) x2, hexagon headed bolt (M8 x 20) x1, washer x1, spacer x1, butterfly nut x1

Box Speakers

Wall Mount Box Speakers

Wall Mount Box Speaker

BS-680F
BS-680FC

Model	BS-680F	BS-680FC
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)	
Sensitivity	94dB (1W, 1m) (500Hz – 5kHz, pink noise)	94dB (1W, 1m) (500Hz – 5kHz, pink noise) 77dB (1W, 4m) (100Hz - 10kHz, pink noise) according to EN 54-24 89dB (1W, 1m) (100Hz - 10kHz, pink noise) converted based on EN 54-24
Max. Sound Pressure Level	-	84db (6W, 4m) (100Hz - 10kHz, pink noise) according to EN 54-24 96db (6W, 1m) (100Hz - 10kHz, pink noise) converted based on EN 54-24
Frequency Response	150Hz – 20kHz (peak –20dB)	150Hz – 20kHz
Coverage Angle (-6dB)	-	500Hz: 180°, 1kHz: 140° (horizontal and vertical) 2kHz: 120° (horizontal), 110° (vertical) 4kHz: 100° (horizontal), 80° (vertical) according to EN 54-24
Environmental Type	-	A (indoor applications) according to EN 54-24
Speaker Component	16cm (6") double cone-type	
Applicable Cable	Solid wire: ø0.8 – ø1.6mm (AWG 20 – 14) 7-core twisted wire: 0.75 – 1.25mm² (AWG 18 – 16)	Solid wire: ø1.0 – ø3mm (AWG 18 – 9)
Connection	Push-in connector (bridging terminal)	Screw connector (steatite terminal x2) bridging
Finish	Baffle, cabinet: steel plate, off-white (RAL 9010 or equivalent colour); Grille: surface-treated steel plate net, off-white (RAL 9010 or equivalent colour)	
Dimensions	310(W) × 190(H) × 90(D) mm	310(W) × 190(H) × 87.2(D) mm
Weight	2.6kg	
Accessory	Rubber grommet ×2, speaker mounting screw (4 × 16) ×4	

Wall Mount Box Speaker

BS-678
BS-678T
BS-678B
BS-678BT

Model	BS-678	BS-678T	BS-678B	BS-678BT
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)			
Sensitivity	94dB (1W, 1m) (500Hz – 5kHz, pink noise)			
Frequency Response	150Hz – 20kHz (peak –20dB)			
Speaker Component	16cm double cone-type			
Applicable Cable	600V vinyl-insulated cable (IV wire or HIV wire), solid wire: ø0.8 – ø1.6mm (equivalent to AWG 20 – 14) 7-core twisted wire: 0.75 – 1.25mm² (equivalent to AWG 18 – 16)			
Connection	Push-in connector (bridging terminal)			
Attenuation	-	OFF, 1(-12dB), 2(-6dB), 3(0dB)	-	OFF, 1(-12dB), 2(-6dB), 3(0dB)
Finish	Baffle: HIPS resin, off-white Cabinet: Particle board with pvc sheet, off-white Grille: Surface-treated steel plate net, off-white (RAL 9010 or equivalent color)		Baffle: HIPS resin, black Cabinet: Particle board with pvc sheet, black Grille: Surface-treated steel plate net, black (RAL 9011 or equivalent color)	
Dimensions	250(W) × 190(H) × 110(D) mm (excluding volume control knob)			
Weight	1.7kg			
Accessory	Speaker mounting screw (4 × 35) ×2			

Wall Mount Box Speaker

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

Model	BS-634	BS-634T	BS-1034	BS-1034S
Rated Input	6W		10W	
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W); 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W)	100V line: 1.7kΩ (6W) 70V line: 1.7kΩ (3W)	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)	
Sensitivity	90dB (1W, 1m)			
Frequency Response	120Hz – 18kHz		120Hz – 20kHz	
Speaker Component	12cm cone-type		Low frequency: 12cm cone-type, High frequency: balanced dome-type	
Input Connector	M4 screw terminal, distance between barriers: 11mm			
Attenuation	-	OFF (NC), 1 (-12dB), 2 (-6dB), 3 (0dB)	-	-
Finish	Enclosure: HIPS resin (fire resistant grade UL94 V-0 or its equivalent), off-white (RAL 9010 or equivalent colour) Net: surface-treated steel plate, off-white (RAL 9010 or equivalent colour), paint			Enclosure: HIPS resin (fire resistant grade UL94 V-0 or its equivalent), silver Net: steel plate, silver, paint
Dimensions	210(W) × 330(H) × 80(D) mm			
Weight	1.3kg		1.4kg	
Accessory	Speaker receptacle ×1, wall mounting screw ×2			

Universal Speakers

Universal Speaker

BS-1030B
BS-1030W

Model	BS-1030B	BS-1030W
Enclosure	2-way bass-reflex type	
Rated Input	30W	
Impedance	8Ω,100V line: 330Ω (30W), 500Ω (20W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V line: 170Ω (30W), 250Ω (20W), 330Ω (15W), 500Ω (10W), 1kΩ (5W)	
Sensitivity	90dB (1W, 1m)	
Frequency Response	80Hz – 20kHz	
Speaker Component	12cm cone-type + dome-type	
Speaker Cable	2-core cabtyre cable (diameter 6mm)	
Operating Temperature	–10°C to +50°C	
Water Protection	IP-X4 (can be installed vertically or horizontally*)	
Finish Enclosure Net Bracket	ABS resin, black (RAL9011 GRAPHITE BLACK), paint Surface-treated steel plate, black (RAL9011 Graphite Black), powder coating Surface-treated steel plate, black (RAL9011 Graphite Black), powder coating	ABS resin, white (RAL9010 PURE WHITE), paint Surface-treated steel plate, white (RAL9010 Pure White), powder coating Surface-treated steel plate, white (RAL9010 Pure White), powder coating
Dimensions	196(W) x 290(H) x 150(D) mm (unit only)	
Weight	2.5kg (unit only)	
Accessory	Bracket x1, bracket mounting screw x2, bracket mounting washer x2	
Option	Applicable bracket: WCB-13B, SP-410 Applicable stand: ST-16A	Mounting bracket: SP-420 Applicable bracket: WCB-13W, SP-410 Applicable stand: ST-16A

*** Install with the front facing downward. Note that the splash-proof capability will be lost if installed face-up. The logo mark needs to be located in the lower section when the speaker is installed vertically, and on the right side of the speaker (as viewed from the front) when installed horizontally.**

Interior Design Speakers

Pendant Speakers

Pendant Speaker

PE-64 / PE-304

Model	PE-64	PE-304
Enclosure	Bass-reflex type	
Rated Input	6W (100V line), 3W (70V line)	30W (100V, 70V line, 8Ω)
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)	8Ω; 100V line: 330Ω (30W), 500Ω (20W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V line: 170Ω (30W), 250Ω (20W), 330Ω (15W), 500Ω (10W), 1kΩ (5W)
Sensitivity	90dB (1W, 1m) (500Hz – 5kHz, pink noise)	91dB (1W, 1m) (500Hz – 5kHz, pink noise)
Frequency Response	100Hz – 18kHz (peak –20dB)	70Hz – 20kHz (peak –20dB)
Speaker Component	12cm (5") cone-type	12cm (5") cone-type + balanced dome tweeter
Speaker Cord	2-core cabtyre cord 5m	
Applicable Cable	600V vinyl-insulated cable (IV wire or HIV wire), solid copper wire: ø0.8 – ø1.6mm (equivalent to AWG 20 – 14) 7-core twisted copper wire: 0.75 – 1.25mm² (equivalent to AWG 18 – 16)	
Connection	Push-in connector (bridging terminal-2 branch type)	
Finish	Enclosure: HIPS resin, off-white (RAL 9010 or equivalent colour) Grille: Surface-treated steel plate net, off-white (RAL 9010 or equivalent colour), paint	
Dimensions	ø186 × 251(H) mm (unit only)	
Weight	1.5kg (unit only)	2.1kg (unit only)
Accessory	Ceiling bracket ×1, mounting hanger ×1, ceiling cover ×1, speaker mounting screw (4 × 16) ×4	

Projection Speaker

PJ-64 / PJ-304

Model	PJ-64	PJ-304
Enclosure	Bass-reflex type	
Rated Input	6W (100V line), 3W (70V line)	30W (100V, 70V line, 8Ω)
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ(1W) 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)	8Ω; 100V line: 330Ω (30W), 500Ω (20W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V line: 170Ω (30W), 250Ω (20W), 330Ω (15W), 500Ω (10W), 1 kΩ (5W)
Sensitivity	90dB (1W, 1m) (500Hz – 5kHz, pink noise)	91dB (1W, 1m) (500Hz – 5kHz, pink noise)
Frequency Response	100Hz – 18kHz (peak –20dB)	70Hz – 20kHz (peak –20dB)
Speaker Component	12cm (5") cone-type	12cm (5") cone-type + balanced dome tweeter
Speaker Cord	2-core cabtyre cord 60 cm (diameter 6mm)	
Finish	Enclosure: HIPS resin, off-white (RAL 9010 or equivalent colour) Grille: Surface-treated steel plate net, off-white (RAL 9010 or equivalent colour), paint	
Dimensions	ø186 × 369 (H) mm	
Weight	1.5kg (unit only)	2.1kg (unit only)
Accessory	Swivel bracket ×1, speaker mounting screw (4 × 16) ×3	

Projection Speaker

PJ-100W / PJ-200W

Model	PJ-100W	PJ-200W
Rated Input	10W (50V, 70V, 100V Line)	20W (50V, 70V, 100V Line)
Rated Impedance	100V Line : 1kΩ (10W), 2kΩ (5W), 4kΩ (2.5W) 70V Line: 500Ω (10W), 1kΩ (5W), 2kΩ (2.5W), 4kΩ (1.25W) 50V Line: 250Ω (10W), 500Ω (5W), 1kΩ (2.5W), 2kΩ (1.25W), 4kΩ (0.63W)	100V Line : 500Ω (20W), 1kΩ (10W), 2kΩ (5W) 70V Line: 250Ω (20W), 500Ω (10W), 1kΩ (5W), 2kΩ (2.5W) 50V Line: 125Ω (20W), 25Ω (10W), 500Ω (5W), 1kΩ (2.5W), 2kΩ (1.25W)
Preset Impedance	1kΩ	500Ω
Sensitivity	92dB (1m, 1W) at 1kHz	95dB (1m, 1W) at 1kHz
Speaker Diameter	12cm	16cm
Frequency Response	65Hz – 15kHz	50Hz – 20kHz
Finish	Cabinet, cover: ABS resin, off-white; Bracket : SPCC, off-white	
Dimensions	160(W) x 200(H) x 195(D) mm	200(W) x 255(H) x 250(D) mm
Weight	1.8kg	2.5kg

** Note: Avoid installing the speaker in locations which vibrate considerably or under environments easy to be oil-contaminated.

Ceiling Speakers

Flush Mount Ceiling Speakers

Ceiling Mount Speaker

PC-1860S

Model	PC-1860S
Rated Output	6W (100V Line), 3W (70V Line)
Rated Impedance	100V line: 1.7kΩ (6W), 3.3 kΩ (3W), 6.7kΩ (1.5W), 13kΩ (0.8W) 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 6.7kΩ (0.8W), 13kΩ (0.4W)
Sensitivity	94dB (1W, 1m) (500Hz - 5kHz, pink noise)
Frequency Response	80Hz - 20kHz (peak -20dB)
Speaker Component	12cm (5") cone-type
Dimensions for Fixing Hole	Mounting hole: ø150 ± 3mm (5.91" ± 0.12") Ceiling thickness: 5 - 25mm (0.2"- 0.98")
Speaker Mounting Method	Spring catch

Operating Temperature	-10 °C to +50 °C
Applicable Cable	Solid wire: 0.5 - 3 mm² (AWG 20 - 12)
Connection	Push wire connection (bridging terminal - 2 branch type)
Finish	Frame: steel plate, white (RAL 9016 equivalent), paint Grille: steel net, white (RAL 9016 equivalent), paint Mounting bracket: steel plate, plating
Dimensions	ø180 x5 (exposed section) + 101(D) mm
Weight	750 g
Accessory	Paper pattern x1

Surface Mount Ceiling Speaker

PC-1868HK2
PC-1868SW2

Model	PC-1868HK2	PC-1868SW2
Rated Input	6W (for 100V line), 3W (for 70V line)	
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W), Internal wiring must be changed 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W), Internal wiring must be changed	
Sensitivity	90 dB (1W, 1m) (330Hz – 3.3kHz, pink noise)	
Frequency Response	100Hz – 16kHz	
Speaker Component	12cm (5") cone-type	
Dimensions for Fixing Hole	ø150 (mounting hole) × 50mm (maximum ceiling thickness)	
Speaker Mounting Method	Spring catch	
Finish	Baffle: ABS resin, off-white (RAL9010 or equivalent color) Grille: Steel net, off-white (RAL9010 or equivalent color), paint	Baffle: ABS resin, signal-white (RAL 9003 or equivalent color) Grille: Steel net, signa-white (RAL 9003 or equivalent color), paint
Dimensions	ø180 x 11 (exposed section) + 110 (D) mm	
Weight	740g (bracket included)	
Accessory	600 V Vinyl-insulated cable (IV wire or HIV wire) Solid copper wire: ø0.8 - ø1.2mm 7-core twisted copper wire: 0.75 - 1.25 mm²	

Metal Back Can

BC-1868-EA

Dimensions: ø151-152 x 85(H) mm

Ceiling Mount Speaker

PC-2360

Model	PC-2360
Rated Output	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)
Sensitivity	94dB (1W, 1m) (500Hz - 5kHz, pink noise)
Frequency Response	60Hz - 20kHz (peak -20dB)
Speaker Component	16cm (5") cone-type
Dimensions for Fixing Hole	Mounting hole: ø200 ±3 mm (17.87" ± 0.12") Ceiling thickness: 5 - 25 mm (0.2"- 0.98")
Speaker Mounting Method	Spring clamp

Operating Temperature	-10 °C to +50 °C (14 °F to 122 °F)
Applicable Cable	Solid wire: 0.5 - 3 mm² (AWG 20 - 12)
Connection	Push wire connection (Bridging terminal - 2 branch type)
Finish	Frame: Steel plate, white (RAL 9016 equivalent), paint Grille: Steel net, white (RAL 9016 equivalent), paint
Dimensions	ø230 x 76 (D) mm
Weight	740g
Accessory	Paper pattern x1

Surface Mount Ceiling Speaker

PC-2668
PC-2268
PC-2268WP

Model	PC-2668	PC-2268	PC-2268WP
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)* 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 6.7kΩ (0.8W)*, 13kΩ (0.4W)* * Internal wiring must be changed.	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)	
Sensitivity	90dB (1W, 1m) (330Hz – 3.3kHz Pink noise)		
Frequency Response	100Hz – 16kHz	160Hz – 14kHz (20dB below peak)	160Hz – 16kHz (20dB below peak)
Speaker Component	12cm dynamic cone-type speaker	12cm cone-type	
Mounting Method	Spring catch	-	-
Applicable Cable	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	600V vinyl-insulated cable (IV wire or HIV wire) Solid copper wire: ø0.8 – ø1.6mm (equivalent to AWG 20 – 14) 7-core twisted copper wire: 0.75 –1.25mm² (equivalent to AWG 18 – 16)	
Connetion	Push-in connector (bridging terminal-2 branch type)	Push-in connector (bridging terminal)	
Operating Temperature	-	–10°C to +50°C	
Water Protection	-	-	IPX4 (conforms when the unit is installed to a flat horizontal ceiling)
Finish	Baffle: ABS resin, off-white (RAL9010 or equivalent color)	Front case, rear case: fire-resistant HIPS resin (resin material grade: UL-94 V-0), light gray	Front case, rear case: fire-resistant HIPS resin (resin material grade: UL-94 V-0 or its equivalent), light gray Speaker mounting bracket: Surface-treated steel plate, off-white, powder coating
Dimensions	ø260 x 92 (D) mm (Exposed section)	ø220 × 80.5 (D) mm (excluding projection)	ø220 × 80.5(D) mm (excluding projection) ø150 × 5 (D) mm (speaker mounting panel, excluding mounting screw)
Weight	820g (Bracket included)	880g	890g (unit only), 180g (speaker mounting panel)
Accessory	-	Switch box mounting screw (M4x35) ×2, ceiling mounting screw (4x35) ×2	Speaker mounting panel ×1, switch box mounting screw (M4 × 35) ×2, ceiling mounting screw (4 x 35) ×2, knob nut ×2

Flush Mount Ceiling Speaker

PC-2869 / PC-2852

Model	PC-2869	PC-2852
Rated Input	6W (100V line), 3W (70V line)	15W (100V line, 70V line)
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 6.7kΩ (1.5W), 13kΩ (0.8W) 70V line: 1.7 kΩ (3W), 3.3kΩ (1.5W), 6.7 kΩ (0.8W), 13 kΩ (0.4W)	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)
Sensitivity	94dB (1W, 1m) (500Hz – 5kHz, pink noise)	96dB (1W, 1m) (500Hz – 5kHz, pink noise)
Frequency Response	40Hz – 20KHz (peak -20dB)	45Hz – 20KHz (peak -20dB)
Speaker Component	20cm double cone-type	20cm coaxial cone-type
Dimensions for Fixing Hole	Mounting hole: ø250 ±3mm, ceiling thickness: 5 – 25mm	
Speaker Mounting Method	Spring clamp	
Applicable Cable	600V vinyl-insulated cable (IV wire or HIV wire), solid copper wire: ø0.8 – ø1.6mm (equivalent to AWG 20 – 14) 7-core twisted copper wire: 0.75 – 1.25mm² (equivalent to AWG 18 – 16)	
Connection	Push-in connector (bridging terminal-2 branch type)	
Finish	Baffle: steel plate, white (RAL9016 or equivalent colour), paint Grille: surface-treated steel plate net, white (RAL9016 or equivalent colour), paint	
Dimensions	ø280 × 92 (D) mm	
Weight	1.4kg	1.6kg
Accessory	Paper pattern x1	

Flush Mount Ceiling Speaker

PC-648R / PC-658R

Model	PC-648R	PC-658R
Rated Input	6W (100V line), 3W (70V line)	
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)	
Sensitivity	90dB (1W, 1m) (500Hz – 5kHz, pink noise)	
Frequency Response	100Hz – 18kHz (peak -20dB)	65Hz – 18kHz (peak -20dB)
Speaker Component	12cm cone type	16cm cone type
Dimensions for Fixing Hole	Mounting hole: ø145 ±5mm Ceiling thickness: 5 - 25mm	Mounting hole: ø170 ±5mm Ceiling thickness: 5 - 25mm
Speaker Mounting Method	Spring clamp	
Finish	Baffle: polypropylene resin, off white (RAL9010 or equivalent color) Grille: Surface-treated steel plate net, off white (RAL9010 or equivalent color), paint	
Dimensions	ø168 x 77 (D) mm	ø192 x 73 (D) mm
Weight	470g	500g
Accessory	Paper pattern x1	

Firedome Speakers

Firedome Speaker

PC-1860BS

Model	PC-1860BS
Rated Output	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), 3.3 kΩ (1.5W), 6.7kΩ (0.8W), 13kΩ (0.4W)
Sensitivity	95dB (1W, 1m) (500Hz - 5kHz, pink noise) 93dB (1W, 1m) (100Hz - 10kHz, pink noise) 81dB (1W, 4m) (100Hz - 10kHz, pink noise)
Maximum Sound Pressure Level	100dB (6W, 1 m) (100Hz - 10kHz, pink noise) 88dB (6W, 4 m) (100Hz - 10kHz, pink noise)
Frequency Response	170Hz - 20kHz (peak -20dB)
Coverage Angle (-6 dB)	Horizontal & vertical: 165°(500Hz), 175°(1kHz), 165°(2kHz), 70°(4kHz) according to EN 54-24
Environmental type	A (indoor applications)

Speaker Component	12 cm cone-type
Operating Temperature	-10 °C to +50 °C
Dimensions for Fixing Hole	Mounting hole: ø156 ±3 mm (6.14" ± 0.12") Ceiling thickness: 5 - 25 mm (0.2"- 0.98")
Speaker Mounting Method	Spring catch
Applicable Cable	Solid wire: 0.8 - 6 mm² (AWG 18 - 10)
Connection	2-Steatite connector (3 pole)
Finish	Frame: steel plate, white (RAL 9016 equivalent), paint Grille: steel net, white (RAL 9016 equivalent), paint Fire dome: steel plate, black, paint
Dimensions	ø180 x 5 (exposed section) + 100 (D) mm
Weight	1.1 kg
Accessory	Rubber grommet x2, paper pattern x1

Firedome Speaker

PC-1860F

Model	PC-1860F
Rated Output	6W (100V Line), 3W (70V Line)
Rated Impedance	100V line: 1.7kΩ (6 W), 3.3kΩ (3 W), 6.7kΩ (1.5 W), 13kΩ (0.8 W) 70V line: 1.7kΩ (3 W), 3.3kΩ (1.5 W), 6.7kΩ (0.8 W), 13kΩ (0.4 W)
Sensitivity	95dB (1W, 1m) (500Hz - 5kHz, pink noise)
Frequency Response	170Hz - 20kHz (peak -20 dB)
Speaker Component	12cm cone-type
Dimensions for Fixing Hole	Mounting hole: ø156 ±3 mm (6.14" ± 0.12") Ceiling thickness: 5 - 25 mm (0.2"- 0.98")
Speaker Mounting Method	Spring catch

Operating Temperature	-10 °C to +50 °C
Applicable Cable	Solid wire: 0.5 - 3 mm² (AWG 20 - 12)
Connection	Push wire connection (bridging terminal - 2 branch type)
Finish	Frame: steel plate, white (RAL 9016 equivalent), paint Grille: steel net, white (RAL 9016 equivalent), paint Fire dome: steel plate, black, paint
Dimensions	ø180 x 5 (exposed section) + 100 (D) mm
Weight	1kg
Accessory	Rubber grommet x2, paper pattern x1

Clean Room / Splashproof Ceiling Speakers

Splashproof Ceiling Speaker for Clean Rooms & Steam/Wet Sauna Rooms

PC-3CL

Splashproof Ceiling Speaker for Shower Rooms

PC-3WR

Model	PC-3CL	PC-3WR
Rated Input	3W	3W, 1W
Rated Impedance	100V line: 3.3kΩ (3W), 10kΩ (1W) 70V line: 3.3kΩ (1.5W), 10kΩ (0.5W)	3.3kΩ (3W), 10kΩ (1W)
Sensitivity	87dB (1W, 1m)	88dB (1W, 1m)
Frequency Response	150Hz – 20kHz	180Hz - 20kHz
Enclosure	-	-
Speaker Component	8cm cone-type (vibration section: high molecular substance)	-
Operating Temperature	-20°C to +60°C	-10°C to +50°C
Chemical Resistance	Resistive to formalin solvent and iodine liquid (disinfectant)	-
Dust/Water Protection	IP64	IP64
Dust Particle Prevention	-	-
Finish	Panel: Alloy-coated ABS resin Enclosure: ABS resin Punching net: stainless steel	Frame and case: ABS resin, off-white Punching net: stainless steel
Dimensions for Fixing Holes	ø100mm (ceiling panel: must be over 5mm in thickness, equivalent to plywood in material, and strong enough to hold tapping screws)	ø150mm (the speaker can be mounted to the ceiling panel with thickness of up to 50mm)
Dimensions	ø139 x 104.5 (D) mm	ø180 x 120 (D) mm
Weight	550g	700g
Accessory	Packing (material: silicon rubber) x1, paper pattern x1, ceiling mounting tapping screws (material: stainless steel) x4	-

** Note for PC-3CL: The speaker cannot be used in dry sauna rooms or locations where unit is splashed with water.
** Note for PC-3WR: Avoid using unit in locations where it is splashed with water.

Horn Speakers

Separate Reflex Horn Speakers and Driver Units

Separate Reflex Horn Speaker

TH-650 / TH-660

Model	TH-650	TH-660
Sensitivity	110dB (1W, 1m) (When operated with a driver.)	
Frequency Response	200Hz – 6kHz (When TU-631, TU-631M, TU-651, or TU-651M is used.) 200Hz – 8kHz (When TU-660 or TU-660M is used.)	
Dust/Water Protection	IP65 (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: aluminum, gray, powder coating Bracket: Steel, gray, powder coating Screws and bolts: Stainless steel	
Dimensions	ø500 × 394(D) mm	ø600 × 425(D) mm
Weight	2.9kg	3.6kg

Separate Reflex Horn Driver Unit

TU-631
TU-631M
TU-651
TU-651M

Model	TU-631	TU-631M	TU-651	TU-651M
Rated Input	30W	30W	50W	50W
Line Voltage	-	100V line or 70V line	-	100V line or 70V line
Rated Impedance	16Ω	100V line: 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W)	16Ω	100V line: 200Ω (50W), 330Ω (30W), 670Ω (15W) 70V line: 100Ω (50W), 200Ω (25W), 330Ω (15W), 670Ω (7.5W)
Sensitivity	110dB (1W, 1m) (When operated with JIS C 5504 standard horn)			
Frequency Response	150Hz – 6kHz (When operated with JIS C 5504 standard horn)			
Dust/Water Protection	IP65 (When operated with a horn)			
Horn Coupling	1 - 3/8 18 threads (inch screw)			
Polarity	Hot: Black, Com: White			
Operating Temperature	-20°C to +60°C (must be free from dew condensation)		-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, 600 mm in length)			
Dimensions	ø139 x 106(D) mm	ø139 x 149(D) mm	ø139 x 106(D) mm	ø139 x 149(D) mm
Weight	1.4kg	1.9kg	2kg	2.7kg
Option	Driver unit cover: UC-200A, matching transformer: TM-30T, TM-60T	Driver unit cover: UC-200A	Driver unit cover: UC-200A, matching transformer: TM-30T, TM-60T	Driver unit cover: UC-200A

** Note: Avoid installing the speaker in locations which vibrate considerably, or under environment easy to be oil-contaminated.

Separate Reflex Horn Driver Unit

TU-660
TU-660M

Model	TU-660	TU-660M
Rated Input	60W	
Line Voltage	-	100V line or 70V line
Rated Impedance	16Ω	100V line: 170Ω (60W), 330Ω (30W), 670Ω (15W) 70V line: 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W)
Sensitivity	110dB (1W, 1m) (when operated with JIS C 5504 standard horn)	
Frequency Response	150Hz – 8kHz (when operated with JIS C 5504 standard horn)	
Dust/Water Protection	IP65 (when 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 (no 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, 600 mm in length)	
Dimensions	ø139 x 108(D) mm	ø139 x 151(D) mm
Weight	2kg	2.7kg
Option	Driver unit cover: UC-200A, matching transformer: TM-30T, TM-60T	Driver unit cover: UC-200A

** Note: Avoid installing the speaker in locations which vibrate considerably, or under environment easy to be oil-contaminated.

Matching Transformer

TM-30T

Impedance: Primary: 1400Ω (7W), 1000Ω (10W), 670Ω (15W), 500Ω (20W), 400Ω (25W), 330Ω (30W)/ Secondary: 4Ω, 8Ω, 16Ω
Frequency Response: 80Hz – 16kHz
Dimensions: 96(W) x 98(H)
Weight: 1.1kg

Matching Transformer

TM-60T

Impedance: Primary: 290Ω (35W), 250Ω (40W), 220Ω (45W), 200Ω (50W), 180Ω (55W), 170Ω (60W)/ Secondary: 4Ω, 8Ω, 16Ω
Frequency Response: 80Hz – 16kHz
Dimensions: 96(W) x 98(H)
Weight: 1.3kg

SC Series Reflex Horn Speakers

SC Series Reflex Horn Speaker

SC-610 / SC-610M

Model	SC-610	SC-610M
Rated Input	10W (Mobile Mount use: 5W)	10W
Line Voltage	-	100V line or 70V line
Rated Impedance	8Ω	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)
Sensitivity	110dB (1W, 1m at 500Hz to 2.5kHz peak level)	
Frequency Response	315Hz – 12.5kHz	
Dust/Water Protection	IP65	
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 (6 mm in diameter, 600 mm in length)	
Dimensions	172(W) x 161(H) x 188(D) mm	
Weight	1kg	1.2kg
Option	Swivel bracket: YS-151S (can be used instead of the supplied bracket.)	

SC Series Reflex Horn Speaker

SC-615
SC-615M

Model	SC-615	SC-615M
Rated Input	15W (Mobile Mount use: 10W)	15W
Line Voltage	-	100V line or 70V line
Rated Impedance	8Ω	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)
Sensitivity	112dB (1W, 1m at 500Hz to 2.5kHz peak level)	
Frequency Response	280Hz – 12.5kHz	
Dust/Water Protection	IP65	
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) x 179(H) x 234(D) mm	
Weight	1.1kg	1.3kg
Option	Swivel bracket: YS-151S (can be used instead of the supplied bracket.)	

SC Series Reflex Horn Speaker

SC-630
SC-630M

Model	SC-630	SC-630M
Rated Input	30W (mobile mount use: 10W)	30W
Line Voltage	-	100V line or 70V line
Rated Impedance	8Ω	100V line: 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W)
Sensitivity	113dB (1W, 1m at 500Hz to 2.5kHz peak level)	
Frequency Response	250Hz – 10kHz	
Dust/Water Protection	IP65	
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) x 227(H) x 277(D) mm	
Weight	1.7kg	2kg
Option	Swivel bracket: YS-151S (can be used instead of the supplied bracket.	

Long Range Array Spaeker

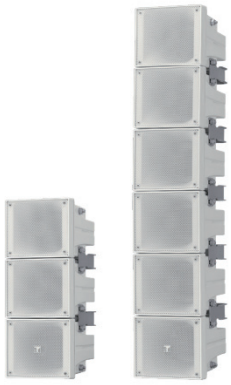
HA-1030EN
HA-1060EN

Notes:
The speaker must be installed upright or facing down. Installing the speaker in any other position may render the drainage hole ineffective, eventually leading to an electrical failure or other damage.

Model	HA-1030EN	HA-1060EN
Rated Input	30W	60W
Rated Impedance	100 V line: 330 Ω (30 W), 670 Ω (15 W) 70 V line: 170 Ω (30 W), 330 Ω (15 W)	100 V line: 170 Ω (60 W), 330 Ω (30 W) 70 V line: 83 Ω (60 W), 170 Ω (30 W)
Sensitivity	109 dB (1 W, 1 m) (500 Hz - 5 kHz, IEC60268-5)	111 dB (1 W, 1 m) (500 Hz - 5 kHz, IEC60268-5)
Max. SPL	123 dB (30 W, 1 m) (500 Hz - 5 kHz, IEC60268-5)	128 dB (60 W, 1 m) (500 Hz - 5 kHz, IEC60268-5)
Frequency Response	550 Hz - 4.8 kHz (-10 dB), 360 Hz - 12 kHz (-20 dB)	520 Hz - 4.6 kHz (-10 dB), 350 Hz - 11 kHz (-20 dB)
Speakers Component	Horn speaker unit X 4	Horn speaker unit X 8
IP Code	IP66	
EN 54-24 Specifications Sensitivity Coverage Angle(-6 dB): Horizontal: Vertical:	88dB (1W, 4m), Max. SPL: 103dB (30W, 4m) 190°(500Hz), 165°(1kHz), 85°(2kHz), 45°(4kHz) 80°(500 Hz), 45°(1 kHz), 20°(2 kHz), 15°(4 kHz) Environmental Type: B (outdoor applications) IP Code: IP33C	89 dB (1 W, 4 m), Max. SPL: 106 dB (60 W, 4 m) 190°(500 Hz), 165°(1 kHz), 85°(2 kHz), 45°(4 kHz) 40°(500 Hz), 25°(1 kHz), 15°(2 kHz), 15°(4 kHz) Environmental Type: B (outdoor applications) IP Code: IP33C
Speaker Cable	4-core cabtype cord 2 m	
Cable Gland	Size: PG 13.5 - 12 (gray) *1, Cable Diameter Range: 12.5 - 6.5 mm Size: PG 13.5 - 08 (black) *1, Cable Diameter Range: 9 - 4.5 mm, Two cable glands are factory-installed.	
Input Terminal	Ceramic terminal (3-pole), can be bridge-connected*1, Ceramic terminal (2-pole)*1, Thermal fuse is included.	
Applicable Wire Size	For Ceramic terminal (3-pole), Conductor: Solid wire or 7-core wire No bridge connection: 0.8 - 10 mm2 (AWG 18 - 7) for solid wire, 0.8 - 8 mm2 (AWG 18 - 8) for 7-core wire Bridge connection: 0.8 - 2.5 mm2 (AWG 18 - 13) for solid wire, 0.8 - 1.5 mm2 (AWG 18 - 15) for 7-core wire	
Operating Temperature	-20 °C to +55 °C	
Finish	Case: Aluminum, white (RAL 9016 equivalent), salt-resistant, paint Front grille: Aluminum, white (RAL 9016 equivalent), paint, Bolts: Stainless steel	
Dimensions	167 (W) X 665 (H) X 140.5 (D) mm (excluding projection)	167 (W) X 1233 (H) X 140.5 (D) mm (excluding projection)
Weight	8 kg (unit only)	14 kg (unit only)
Accessory	Terminal box *1	
Option	Speaker mounting bracket: YS-1100A	

Long Range Array Spaeker

HA-2120EN
HA-2240EN



Model	HA-2120EN	HA-2240EN
Rated Input	120W	240W
Rated Impedance	100 V line: 83 Ω (120 W), 170 Ω (60 W) 70 V line: 42 Ω (120 W), 83 Ω (60 W)	100 V line: 42 Ω (240 W), 83 Ω (120 W) 70 V line: 21 Ω (240 W), 42 Ω (120 W)
Sensitivity	113 dB (1 W, 1m) (500 Hz - 5 kHz, IEC60268-5)	115 dB (1 W, 1m) (500 Hz - 5 kHz, IEC60268-5)
Max. SPL	133 dB (120 W, 1m) (500 Hz - 5 kHz, IEC60268-5)	138 dB (240 W, 1 m) (500 Hz - 5 kHz, IEC60268-5)
Frequency Response	550 Hz - 4.3 kHz (-10 dB), 290 Hz - 8 kHz (-20 dB)	490 Hz - 4.2 kHz (-10 dB), 280 Hz - 8 kHz (-20 dB)
Speakers Component	Horn speaker unit X 3	Horn speaker unit X 6
IP Code	IP66	
EN 54-24 Specifications Sensitivity Coverage Angle(-6 dB): Horizontal: Vertical:	91 dB (1 W, 4 m), Max. SPL: 110 dB (120 W, 4 m) 200°(500 Hz), 120°(1 kHz), 65°(2 kHz), 40°(4 kHz) 80°(500 Hz), 40°(1 kHz), 20°(2 kHz), 15°(4 kHz) Environmental Type: B (outdoor applications) IP Code: IP33C	91 dB (1 W, 4 m), Max. SPL: 114 dB (240 W, 4 m) 200°(500 Hz), 120°(1 kHz), 65°(2 kHz), 40°(4 kHz) 40°(500 Hz), 20°(1 kHz), 10°(2 kHz), 15°(4 kHz) Environmental Type: B (outdoor applications) IP Code: IP33C
Speaker Cable	4-core cabtype cord 2 m	
Cable Gland	Size: PG 13.5 - 12 (gray) *1, Cable Diameter Range: 12.5 - 6.5 mm Size: PG 13.5 - 08 (black) *1, Cable Diameter Range: 9 - 4.5 mm, Two cable glands are factory-installed.	
Input Terminal	Ceramic terminal (3-pole), can be bridge-connected*1, Ceramic terminal (2-pole)*1, Thermal fuse is included.	
Applicable Wire Size	For Ceramic terminal (3-pole), Conductor: Solid wire or 7-core wire No bridge connection: 0.8 - 10 mm2 (AWG 18 - 7) for solid wire, 0.8 - 8 mm2 (AWG 18 - 8) for 7-core wire Bridge connection: 0.8 - 2.5 mm2 (AWG 18 - 13) for solid wire, 0.8 - 1.5 mm2 (AWG 18 - 15) for 7-core wire	
Operating Temperature	-20 °C to +55 °C	
Finish	Case: Aluminum, white (RAL 9016 equivalent), salt-resistant, paint Front grille: Aluminum, white (RAL 9016 equivalent), paint, Bolts: Stainless steel	
Dimensions	167 (W) X 665 (H) X 140.5 (D) mm (excluding projection)	167 (W) X 1233 (H) X 140.5 (D) mm (excluding projection)
Weight	8 kg (unit only)	14 kg (unit only)
Accessory	Terminal box *1	
Option	Speaker mounting bracket: YS-1100A	

Notes:
The speaker must be installed upright or facing down. Installing the speaker in any other position may render the drainage hole ineffective, eventually leading to an electrical failure or other damage.

TC Series Reflex Horn Speakers

TC Series Reflex Horn Speaker

TC-615
TC-615M

Model	TC-615	TC-615M
Rated Input	15W	15W
Line Voltage	-	100V line or 70V line
Rated Impedance	8Ω	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)
Sensitivity	108dB (1W, 1m)	
Frequency Response	250Hz – 7kHz	
Dust/Water Protection	IP65	
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(W) x 376(D) mm	
Weight	3kg	3.2kg

TC Series Reflex Horn Speaker

TC-631
TC-631M

Model	TC-631	TC-631M
Rated Input	30W	30W
Line Voltage	-	100V line or 70V line
Rated Impedance	16Ω	100V Line: 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V Line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W)
Sensitivity	110dB (1W, 1m)	
Frequency Response	200Hz – 6kHz	
Dust/Water Protection	IP65	
Polarity	Hot: black, Com: white	
Operating Temperature	-20°C to +60°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(W) x 463(D) mm	
Weight	4.1kg	4.5kg

TC Series Reflex Horn Speaker

TC-651M

Model	TC-651M
Rated Input	50W
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)
Sensitivity	111dB (1W, 1m)
Frequency Response	200Hz – 6kHz
Dust/Water Protection	IP65
Polarity	Hot: black, Com: white
Operating Temperature	–20°C to +60°C (must be free from dew condensation)

Finish	Horn flare: aluminum, off-white, powder coating Reflector horn: ABS resin, off-white Bracket holder: aluminum, white, 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	4kg

Explosion-Proof Combination Reflex Horn Speakers

Explosion-Proof Combination Reflex Horn Speaker

TP-M15E / TP-M15D

Model	TP-M15E	TP-M15D
Rated Input	15W	
Rated Impedance	670Ω (15W), 1kΩ (10W), 2kΩ (5W)	
Frequency Response	300Hz - 5.5kHz	350Hz - 4.5kHz
Sensitivity	104dB (1W, 1m)	
Category	eG4 (increased safety explosion-proof)	
Standard Environmental Condition	Temperature: -20°C to +40°C, Elevation: 1km or less, Relative Humidity: 45% to 85% Others: dust, corrosive gas or vibration which requires special considerations to be provided in the explosion-proof facility must not exist	
Finish	Horn: ivory, Others: dark brown Bracket materials: surface zinc treated steel plate (SECC, t3.2)	
Dimensions	ø392 x 475(D) mm	ø242 x 368(D) mm
Weight	4.9kg	4.3kg

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.

Wide Range Horn Speakers (Weatherproof)

Wide Range Horn Speaker (Weatherproof)

CS-64

Model	CS-64
Rated Input	6W
Rated Impedance	100V Line: 1.7kΩ (6W), 33kΩ (3W), 10kΩ (1W) 70V Line: 830Ω (6W), 1.7KΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)
Sensitivity	96dB (1W, 1m)
Frequency Response	130Hz - 13kHz
Speaker Component	12cm cone-type (treated for splash proof)
Speaker Cord	2-core cabtyre cord with diameter of 6mm
Operating Temperature	-20°C to +55°C

Finish	Horn, cover: ABS resin, off-white, paint Bracket: stainless steel Punched net: surface-treated steel plate, dark-gray, power coating Screw: stainless steel
Dimensions	233(W) x 224(H) x 208(D) mm
Weight	1.5kg

Note:
Do not install the speaker face-up from a horizontal plane nor in such a way that the paper cone is exposed to direct sunlight.
If water accumulates on the paper cone, or ultraviolet rays are radiated on it, it is may cause the paper cone to deteriorate, leading to speaker malfunction.

Wide Range Horn Speaker (Weatherproof)

CS-154
CS-304

Model	CS-154	CS-304
Rated Input	15W	30W
Rated Impedance	100V Line: 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V Line: 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W)	100V Line: 330Ω (30W), 500Ω (20W), 1kΩ (10W) 70V Line: 170Ω (30W), 330Ω (15W), 500Ω (10W), 1kΩ (5W)
Sensitivity	97dB (1W, 1m)	98dB (1W, 1m)
Frequency Response	150Hz – 15kHz	120Hz – 15kHz
Speaker Component	12cm cone-type	
Horizontal Directivity	Constant directivity horn 90° (±45° horizontal from front axis), 93dB or more (1W, 1m), 3kHz at ±45°	
Speaker Cord	2-core cabtyre cord with diameter of 6mm	
Operating Temperature	–20°C to +55°C	
Dust/Water Protection	IP65	
Finish	Horn, cover: ABS resin, off-white, paint; Bracket: stainless steel Net: aluminum, gray, paint; Screw: stainless steel	
Dimensions	366(W) × 230(H) × 272(D) mm	
Weight	2.8kg	3.1kg

Music Horn Speakers (Weatherproof)

2-Way Wearherproof Music Horn

CS-760B-AS / CS-760W-AS

Model	CS-760B-AS	CS-760W-AS
Rated Input	60W	
Rated Impedance	100V Line: 170 Ω (60 W), 330 Ω (30 W), 670 Ω (15 W), 1.3 kΩ (7.5 W) 70V Line: 83 Ω (60 W), 170 Ω (30 W), 330 Ω (15 W), 670 Ω (7.5W)	
Sensitivity	100 dB (1W, 1m)	
Maximum SPL (60W, 1m)	117 dB	
Frequency Response	100Hz - 20kHz	
Crossover Frequency	2.5kHz	
Directivity Angle	Horizontal: 90° ; vertical: 80°	
Speaker Component	Low Frequency: 16cm (6") cone-type High Frequency: 2.5 cm (1") dome tweeter	
Dust/Water Protection	IP66	
Connection	Speaker cord (Hot: black; Corn: white)	
Finish	Enclosure: ABS, black, paint coating Punched net: surface-treated steel plate, black, paint coating Bracket: stainless steel, black, powder coasting	Enclosure: ABS, white, paint coating Punched net: surface-treated steel plate, white, paint coating Bracket: stainless Steel, white, pwder coasting
Dimensions	388(W) × 310(H) × 367(D) mm	
Weight	7.4kg	

Ultra-High Power Speaker

Ultra-High Power Horn Speaker

SC-240

Model	SC-240
Rated Input	240W
Rated Impedance	8Ω × 4
Sound Pressure Level	107dB (1W, 1m)
Frequency Response	250 - 5,000 Hz
Adjustable Angle Range	Vertical: 8.5° upward, 14° downward
Required Terminals	φ21mm /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

Operating Temperature	-20 °C to +55 °C
Dimensions	598(W) × 251(H) × 654(D) mm
Weight	28kg
Accessory	Driver unit case x1, connection cord: YR-2120 x4
Speaker Input Method	φ21 mm /2-pin receptacle

Matching Transformer

TM-60T

Impedance:
Primary: 290Ω (35W), 250Ω (40W), 220Ω (45W), 200Ω (50W), 180Ω (55W), 170Ω (60W)/
Secondary: 4Ω, 8Ω, 16Ω
Frequency Response: 80Hz – 16kHz
Dimensions: 96(W) x 98(H)
Weight: 1.3kg

Garden Speaker

Garden Speaker

GS-302

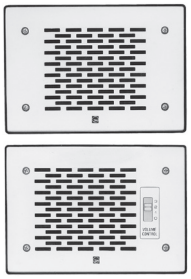
Model	GS-302
Enclosure	Sealed type
Rated Input	30W (100V line), 15W (70V line)
Rated Impedance	100V line: 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W), 3.3kΩ (3W) 70V line: 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W), 3.3kΩ (1.5W)
Sensitivity (1W, 1m)	87 dB
Frequency Response	100 – 8,000 Hz
Speaker Component	12cm splash proof cone-type
Dust/ Water Protection	Equivalent to IPX4

Input Terminal	Push-in terminal
Applicable Cable	Solid copper wire: φ0.8 - φ1.6 mm, Stranded copper wire: 0.75 - 1.25 mm²
Finish	Top cover and base: FRP resin, dark gray, semi-gloss, paint Speaker panel: ABS resin, dark gray, semi-gloss, paint Legs: aluminum, dark gray, semi-gloss, paint
Dimensions	ø270 x 335(H) mm
Weight	2.4kg
Accessory	TOA label x2

Wall Flush-Mount Speakers

Wall Flush-Mount Speaker

PC-391 / PC-391T



Model	PC-391	PC-391T
Rated Input	3W	
Rated Impedance	3.3kΩ, 10kΩ	3.3kΩ
Sensitivity	90.7dB (3W, 1m)	
Frequency Response	150Hz – 18kHz	
Speaker Component	7.7cm cone-type speaker	
Attenuation	-	0(OFF), 1(-12dB), 2(-6dB), 3(0dB)
Finish	Baffle: stainless steel; Grille: aluminum, silver	
Dimensions	162(W) x 115(H) x 43(D) mm (excluding the projected screw heads)	162(W) x 115(H) x 47(D) mm (excluding the projection parts such as a switch knob)
Weight	560g	600g
Accessory	Switch box mounting screw x4, speaker mounting screw x4, wood screw x4	

Flush Mount Back Box

YC-150

Finish: Zinc-plating, t1.6
Dimensions: 184(W) × 119(H) × 57(D) mm
Weight: 700g

Flush Mount Back Box

YC-150E

Finish: Heavy chrome plating, t1.2
Dimensions: 145(W) × 95(H) × 57(D) mm
Weight: 410g

Others

Attenuators

Attenuator

AT-063AP / AT-303AP / AT-603AP

Model	AT-063AP	AT-303AP	AT-603AP
Input Range	0.5W - 6W	0.5W - 30W	0.5W - 60W
Attenuation	5 steps (0dB, – 6dB, – 12dB, – 18dB,OFF)		
Applicable Cable	600V vinyl-insulated cable (Indoor vinyl or heat-resistant Indoor vinyl cable) Solid cable: ø0.8 – ø1.6mm		
Finish	Knob, panel, plate: ABS resin, white (RAL 1013 or equivalent color) Case: ABS resin, black		
Terminal	Push-in connector		
Dimensions	70(W) x 120(H) x 52.4(D) mm (with plate) 41(W) x 108(H) x 52.4(D) mm (attenuator only)		
Weight	170g (Unit only)	210g (Unit only)	
Accessory	Plate x1, plate mounting screw x2, box mounting screw x2		
Option	Applicable plate: YP-1AF, applicable box: YS-11A		

Attenuator

AT-4012B-EB / AT-4030B-EB
AT-4060B-EB / AT-4120B-EB
AT-4200B-EB

Model	AT-4012B-EB	AT-4030B-EB	AT-4060B-EB	AT-4120B-EB	AT-4200B-EB
Input Capacity	12W	30W	60W	120W	200W
Attenuation	8 Steps (0dB, -3dB, -9dB, -12dB, -15dB, -18dB, OFF)				
Override Indicator	Red LED (4-wire connection only)				
Overriding Voltage	24V, 11mA DC (4-wire connection only)				
Dimensions	86(W) x 86(H) x 24(D) mm	86(W) x 86(H) x 51(D) mm			
Weight	0.12kg	0.45kg	0.46kg	0.48kg	0.49kg
Finish	Knob, cover panel: ABS resin, white (RAL 9016 or equivalent) Front panel (plate): surface treated steel plate				
Terminal	Screw type x5				
Usable Cable	Cable range 22 - 14 AWG				
Accessory	-	Box (85.5(W) x 85.5(H) x 60(D) mm) x1, back plate mounting screw x2			

Impedance Meter

Impedance Meter

ZM-104A

Model	ZM-104A
Power Supply	R6 x 4 (1.5V DC x 4)
Current Consumption	39mA
Reading	Direct reading meter, unit: Ω
Measurement Range	x1 range: 5Ω – 1kΩ, x10 range: 50Ω – 10kΩ, x100 range: 500Ω – 100kΩ
Accuracy	±10%
Oscillation Frequency	1kHz, ±10%
Battery Life when continuously used	x1 range: 30 hours x10 range and x100 range: 60 hours

Operating Temperature	-5°C to +40°C
Dimensions	110(W) x 180(H) x 58(D) mm (unit) 120(W) x 220(H) x 63(D) mm (carrying case)
Finish	ABS resin, black
Weight	700g (including carrying case, without batteries)
Accessory	Test leads x1 set
Measurement Category	CAT I

Optional Accessories

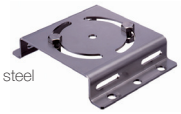
Pole Mount Bracket

SP-131

Load Capacity: 5kg
Finish: bracket & screw: stainless steel
Weight: 330g (bracket only)
Product Composition:
mounting bracket x2, mounting screw (M10 x25 bolt set, M8 x20 bolt set) each x1 set
Applicable Unit:
SC-610, SC-610M, SC-615, SC-615M, SC-630, SC-630M

Wall And Pole Mount Bracket

SP-201



Load Capacity: 10kg
Finish: bracket & screw: stainless steel
Weight: 610g (bracket only)
Product Composition:
mounting bracket x1, mounting screw (M10 x25 bolt set, M8 x20 bolt set) each x1 set
Applicable Unit:
TH-650, TH660, SC-610, SC-610M, SC-615, SC-615M, SC-630, SC-630M

Wall Mount Bracket

SP-301

Load Capacity: 5kg
Finish: bracket & screw: stainless steel
Weight: 910g (bracket only)
Product Composition:
mounting bracket x1, mounting screw (M10 x25 bolt set, M8 x20 bolt set) each x1 set
Applicable Unit:
SC-610, SC-610M, SC-615, SC-615M, SC-630, SC-630M

Swivel Bracket

YS-151S

Finish: bracket: Zinc, black, paint
Hexgon headed bolt, butterfly nut, coiled spring, and washer: stainless steel
Weight: 430g
Applicable Unit: SC-610, SC-610M, SC-615, SC-615M, SC-630, SC-630M
Mounting Method: mounting using (1) M6 bolt - 3pcs, (2) G16 cable pipe, (3) Band

Wall Mounting Back Box

YS-11A

Finish: high impact polystyrene resin, milky white
Dimensions: 70(W) x 120(H) x 40(D) mm
Weight: 60g
Accessory: countersunk head machine screw x2, round head wood screw x2
Application Unit: AT series attenuators (applicable plates: YP-1AF), YM/YS series connector units (applicable plates: YP-1AF)

Pole Band

YS-60B

Mounting Pole Diameter: approx. ø90 - ø340
Finish: electroless zinc plating
Weight: 360g (per band)
Product Composition: pole band x2

Conference Systems

TS-D1100 Series

Master Control Unit

TS-D1100-MU

Model	TS-D1100-MU
Power Source	100 – 240V AC, 50/60Hz (use of supplied AC adapter)
Power Consumption	60W or less
Audio Transmission System	Time division multiplexing (TDM), 10 channels, 16 bit PCM, 32 kHz sampling frequency
Frequency Response	100Hz - 13kHz
Total Harmonic Distortion	0.5% or less
Signal to Noise Ratio	80dB or more (A-weighted)
MIC Input	-54dB*, 600Ω, unbalance, ø6.3 phone jack (2 pins)
Output	LINE: -10dB*, 10kΩ, unbalance, ø6.3 phone jack (2P) REC: -10dB*, 10kΩ, unbalance, RCA pin jack, monaural HEADPHONE: ø3.5 mini jack, monaural
USB Audio Input/ Output	USB 2.0, type-B port
EQ Insert Input / Output Terminal	–10dB*[1], 10kΩ, unbalance, RCA pin jack
Video Conference System Input/ Output Terminal	–10dB*[1], 10kΩ, unbalance, RCA pin jack
No. of Connectable Chairman / Delegate Units	32 units*[2]
No. of Connectable Sub Control Units	5 units
Maximum Cable Distance	50m (between this Master control unit and terminal Chairman/Delegate unit at the end of daisy chain)*[2] 1m (between Master control unit and sub control units) (Use the cable supplied with sub control unit.)
Maximum No. of Open Microphone	2 chairman units, 8 delegate units
Chairman/Delegate Units Terminal	RJ45 connector x2
Sub Control Units Terminal	RJ45 connector
LED Indicator	Power indicator, conference mode indicator, no. of open microphones indicators, microphone auto off indicator, monitor speaker of conference units volume indicators, connection test indicator, external control indicator, setting lock indicator, recording status indicator, USB access status indicator, internal memory status indicator, USB memory status indicator, remaining internal memory capacity warning indicator, remaining USB memory capacity warning indicator, LINK/ACT indicator, 10BASE-T/100BASE-TX indicator
Function Key	No of open microphones selector key: 1/2/8 Microphone auto off setting key: ON/OFF Conference mode selector key: Standard/Override/Voice activation/Chairman Only Setting lock key: ON/OFF Monitor speaker of conference units volume setting key: -,+ Headphone volume setting key: -,+
Operation Key	Connection test, rec start, rec stop
Recording Parts	USB-A
Recording Function	Recordings can be made to a USB memory device*[3] or the internal memory. Recording format: MP3 (MPEG-1 Audio Layer-3), monaural Sampling frequency: 32 kHz, bit rate: 128 kbps
Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)
Network Protocol	TCP, HTTP, DHCP, ARP (APIPA), UDP (mDNS), UPnP
Network Connector	RJ45 connector
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: Surface-treated steel plate, black, 30% gloss, paint
Dimensions	361(W) × 100.4(H) × 184.2(D) mm
Weight	2.2kg
Accessory	AC adapter (cord length: 1.8m DC cord, and 2m detachable AC cord) ×1, USB cable(3m) x1
Option	Rack mounting bracket: MB-TS920

*[1] 0dB = 1V
*[2] Cable lengths can be extended to a maximum of 100m with the use of the Extension unit
*[3] A USB 2.0-compatible FAT32-formatted flash memory device of up to 32GB in capacity can be used. There may be cases in which a USB flash drive cannot be used with the TS-D1000-MU, depending on the drive's attributes or recording conditions
*[4] Relevant control software is supplied on a custom-made basis

Sub Control Unit

TS-D1000-SU

Model	TS-D1000-SU
Power Source	100 – 240V AC, 50/ 60Hz (use of the supplied AC adapter)
Power Consumption	80W or less
Number of Connectable Chairman/ Delegate Units	48 units
Chairman/ Delegate Units Terminal	RJ45 connector x3
Master/ Sub Control Units Terminal	RJ45 connector x2
Maximum Cable Distance	50m (between Sub control unit and terminal Chairman/ Delegate unit at end of daisy chain[*1]
LED Indicator	Power indicator

Operating Temperature	0ºC to +40ºC
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: aluminum, black, 30% gloss, paint Case: surface-treated steel plate, black, 30% gloss, paint
Dimensions	210(W) x 45.8(H) x 294.8(D) mm
Weight	1.6kg
Accessory	AC adapter (cord length: 1.8m DC cord, and 2m detachable AC cord) x1, connection cable (Cat5e STP, 1m) x1
Option	Ract mounting bracket: MB-15B-BK (for rack mounting one TS-D1000-SU unit), MB-15B-J (for rack mounting two TS-D1000-SU units)

[*1] Cable lengths can be extended to a maximum of 100m with the use of the Extension unit

Extension Unit

TS-D1000-EX

Model	TS-D1000-EX
Power Source	100 – 240V AC, 50/ 60Hz (use of the supplied AC adapter)
Power Consumption	25W or less
Connection Terminal	RJ45 connector x2
LED Indicator	Power indicator
Operating Temperature	0ºC to +40ºC

Operating Humidity	90% RH or less (no condensation)
Finish	ABS resin, white (RAL 9003 equivalent)
Dimensions	124.3(W) x 100.3(H) x 35(D) mm
Weight	150g
Accessory	AC adapter (Cord length: 1.8m cord, and 2m detachable AC cord x1)

Chairman Unit / Delegate Unit

TS-D1000-CU/ TS-D1000-DU

Model	TS-D1000-CU	TS-D1000-DU
Power Source	24 V DC (supplied from TS-D1000-MU Master control unit(option), TS-D1000-SU Sub control units (option) or TS-D1000-EX Extention unit (option))	
Power Consumption	1.5W or less	
Input	Microphone terminal: XLR-3-31 type	
Output	Monitor speaker: 8Ω, 0.4W Earphone: ø3.5 mini jack, (3P: monaural) x2	
Connecting Terminal	RJ45 connector x2	
LED Indicator	Power indicator, speech indicator	
Function	Speech function, priority speech function, earphone volume control x2	Speech function, earphone volume control x2
Operating Temperature	0ºC to +40ºC	
Operating Humidity	90% RH or less (no condensation)	
Finish	Case: ABS resin, black, mat finish, paint; Speaker net: black, mat finish, paint	
Dimensions	208.9(W) x 71.3(H) x 160.5(D) mm	
Weight	880g	875g
Option	Standard microphone: TS-D1000-M1, long microphone: TS-D1000-M2	

Standard Microphone Unit / Long Microphone Unit

TS-D1000-M1/ TS-D1000-M2

Model	TS-D1000-M1	TS-D1000-M2
Type	Electret condenser microphone	
Directivity	Unidirectional	
Rated Impedance	1.4kΩ	
Rated Sensitivity	–37dB (1kHz, 0dB = 1V/ Pa)	
LED Indicator	Speech indicator (ring type) Red	
Frequency Response	100Hz – 13kHz	
Output Connector	Combined type of XLR-3-32	
Operating Temperature	0ºC to +40ºC	
Operating Humidity	90% RH or less (no condensation)	
Finish	Gooseneck: stainless steel, black; Other: ABS resin, black	
Length	518mm	668mm
Weight	110g	125g
Compatible Model	Chairman unit: TS-D1000-CU, delegate units: TS-D1000-DU	

TS-920 / TS-820 Series

Central Unit

TS-920RC
TS-820RC
TS-820

* 0dB = 1V

Model	TS-920RC	TS-820RC	TS-820
Power Source	100 – 240V AC, 50/60Hz (use of supplied AC adapter)		
Power Consumption	72W		
Current Consumption	Max. 3A DC (when 24V DC is supplied from the accessory AC adapter)		
Current Frequency	Reception: audio channel 1: 7.35MHz, audio channel 2: 8.10MHz, audio channel 3: 8.55MHz, audio channel 4: 9.15MHz, control channel: 6.45MHz Transmission: base language channel: 1.95MHz Translation language channel: 2.25MHz	Reception: audio channel 1: 7.35MHz, audio channel 2: 8.10MHz, audio channel 3: 8.55MHz, audio channel 4: 9.15MHz, Control channel: 6.45MHz Transmission: base language channel: 1.95MHz	
Input	MIC 1 (base language): –60dB*, 600Ω, unbalanced, ø6.3mm phone jack (2 pins) MIC 2 (translation language): –60dB*, 600Ω, unbalanced, ø6.3mm phone jack (2 pins) AUX 1 (base language): –20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2 pins) AUX 2 (translation language): –20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2 pins) AUX 3 (bass and translation language): –20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2 pins)	MIC 1 (base language): –60dB*, 600Ω, unbalanced, ø6.3mm phone jack (2 pins) MIC 2 (translation language): –60dB*, 600Ω, unbalanced, ø6.3mm phone jack (2 pins)	
Output	LINE: -10dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2P) REC: -10dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2P), RCA pin jack HEADPHONE: ø3.5 mini jack (3P: monaural)		
External Equalizer	Input: –20dB*, 10kΩ, unbalanced, RCA pin jack Output: –20dB*, 10kΩ, unbalanced, RCA pin jack		
No. of Connectable Chairman/Delegate Units	192 units	64 units	
No. of Connectable Infrared Transmitter/ Receiver Units	Up to 4 units (with the use of distributor, up to 16 units connectable when they are all TS-905, and up to 12 units when they are all TS-907, or TS-905 and TS-907 are used in combination)		
Infrared Transmitter/ Receiver I/O Terminal	BNC jack		
External Contol Connection Terminal	D-sub connector (9P, male)/ USB-B selectable		
LED Indicator	Voting result indicators 1-3 (7-segment LED, 3 digits), short-circuit indicator, audio signal receiving indicators 1-4 CH, data signal receiving indicator, external control priority indicator, external control communication indicator, battery indicator (flashes when a Chairman/ Delegate unit's battery nears complete discharge), recording status indicator, format in-progress indicator, acess Indicator, Internal memory capacity warning indicator, USB memory status indicator, remaining internal memory capacity warning indicator, remaining USB memory capacity warning indicator	Audio signal receiving indicators 1-4 CH, data signal receiving indicator, external control priority indicator, external control communication indicator, battery indicator (flashes when a Chairman/ Delegate unit's battery nears complete discharge), recording status indicator, format in-progress indicator, acess Indicator, Internal memory capacity warning indicator, USB memory status indicator, remaining internal memory capacity warning indicator, remaining USB memory capacity warning indicator, short-circuit indicator	Audio signal receiving indicators 1-4 CH, data signal receiving indicator, external control priority indicator, external control communication indicator, battery indicator (flashes when a Chairman/ Delegate unit's battery nears complete discharge), short-circuit indicator
Record Switch	Recording start button, recording stop button, format button		-
Recording Parts	USB-A (for USB memory devices) and USB Mini-B (for PCs)		-
Recording Function	Recordings can be made to a USB memory device orinternal memory. Recording format: MP3 (MPEG-1 Audio Layer-3), monaural ; Sampling frequency: 32 kHz, bit rate: 128kbps		-
Function Switch	No. of open microphones setting switch: 1/2/3/4 Mic-off setting switch: TIME OUT ON/ OFF Speech priority selector switch: FIRST (First-in-first-out priority), LATEST (Last-in-first-out priority), FIRST:FIXED NEXT:LATEST (priority fixed for thefirst unit, and last-in-first-out priority for the subsequent units) FBS switch: Auto/OFF/EXT		
Operating Temperature	0°C to +40°C		
Operating Humidity	90% RH or less (no condensation)		
Finish	Panel: surface-treated steel plate, black, 30% gloss, paint		
Weight	2.8kg		2.7kg
Accessory	AC adapter (cord length: 1.8m DC cord, and 2m detachable AC cord) ×1		
Option	Rack mounting bracket: MB-TS920		

Infrared Chairman Unit
TS-921

Infrared Delegate Unit
TS-922

Infrared Chairman Unit
TS-821

Infrared Delegate Unit
TS-822

Model	TS-921	TS-922	TS-821	TS-822
Power Source	7.2 V DC (supplied from optional lithium-ion battery), 9V DC (AC adapter) (supplied from optional AC adapter)			
Current Consumption	Max. 390mA			
Infrared Emitter/ Detector **Wavelength** **Modulation Method** **Carrier Frequency** **Covering Range**	870nm (AM: brightness modulation) Frequency modulation Transmission: audio channel 1: 7.35MHz, audio channel 2: 8.10MHz, audio channel 3: 8.55MHz, audio channel 4: 9.15MHz control channel: 6.45MHz Reception: base language channel: 1.95MHz Translation language channel: 2.25MHz 7m (radius)		870nm (AM: brightness modulation) Frequency modulation Transmission: audio channel 1: 7.35MHz, audio channel 2: 8.10MHz audio channel 3: 8.55MHz, audio channel 4: 9.15MHz control channel: 6.45MHz Reception: audio channel: 1.95MHz 7m (radius)	
Input	Microphone terminal: XLR-4-31 type			
Output	Monitor speaker: 8Ω, 0.2W; Headphone: ø3.5mm mini jack (3 pins: monaural) ×2			
LED Indicator	Speech indicator, voting status indicators 1 – 3, power indicator		Speech indicator, power indicator	
Function	Monitor volume control, headphone volume control, priority speech function, voting function, monitor selector switch (MAIN/SUB)	Monitor volume control, headphone volume control, voting function, monitor selector switch (MAIN/SUB)	Monitor volume control, headphone volume control, priority speech function	Monitor volume control, headphone volume control
Battery Life	Approx. 10 hours			
Operating Temperature	0°C to +40°C			
Operating Humidity	90% RH or less (no condensation)			
Finish	Case: PC resin, black; Speaker net: black, mat finish, paint			
Dimensions	205.7(W) × 70.3(H) × 164.2(D) mm			
Weight	525g			
Option	Microphone: TS-923, TS-903, TS-924, TS-904 (Select either one), lithium-ion battery: BP-900A, AC adapter: AD-0910			

Standard Microphone Unit / Long Microphone Unit
TS-923 / TS-924

Model	TS-923	TS-924
Type	Electret condenser microphone	
Directivity	Unidirectional	
Rated Impedance	1.4kΩ	
Rated Sensitivity	–37dB (1kHz, 0dB = 1V/ Pa)	
LED Indicator	Speech Indicator (ring type) Red	
Frequency Response	100 Hz – 13 kHz	
Output Connector	Combined type of XLR-4-32	
Flexible Part	2 parts	
Operating Temperature	0ºC to +40ºC	
Operating Humidity	90% RH or less (no condensation)	
Finish	Body: aluminum, black, semi-gloss, paint Shaft: copper alloy, black, semi-gloss, paint	
Length	470mm	620mm
Weight	130g	150g
Applicable Unit (Option)	Chairman Units: TS-821, TS-921, TS-811, TS-911, delegate Units: TS-822, TS-922, TS-812, TS-912	

TS-910 Series

Central Unit

TS-910

Model	TS-910
Power Source	100 – 240V AC, 50/60Hz (use of supplied AC adapter)
Power Consumption	72W
Current Consumption	Max. 3A DC (when 24V DC is supplied from the accessory AC adapter)
Current Frequency	Reception: audio channel 1: 7.35MHz, audio channel 2: 8.10MHz, audio channel 3: 8.55MHz, audio channel 4: 9.15MHz, control channel: 6.45MHz Transmission: base language channel: 1.95MHz Translation language channel: 2.25MHz
Input	MIC 1 (base language): –60dB*, 600Ω, unbalanced, ø6.3mm phone jack (2 pins) MIC 2 (translation language): –60dB*, 600Ω, unbalanced, ø6.3mm phone jack (2 pins) AUX 1 (base language): –20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2 pins) AUX 2 (translation language): –20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2 pins) AUX 3 (bass and translation language): –20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2 pins)
Output	LINE: -20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2P) REC: -20dB*, 10kΩ, unbalanced, ø6.3mm phone jack (2P), RCA pin jack HEADPHONE: ø3.5 mini jack (3P: monaural)
External Equalizer	Input: –20dB*, 10kΩ, unbalanced, RCA pin jack Output: –20dB*, 10kΩ, unbalanced, RCA pin jack
No. of Connectable Chairman/Delegate Units	192 units
No. of Connectable Infrared Transmitter/ Receiver Units	Up to 4 units (with the use of distributor, up to 16 units connectable when they are all TS-905, and up to 12 units when they are all TS-907,or TS-905 and TS-907 are used in combination)

Infrared Transmitter/ Receiver I/O Terminal	BNC jack
No. of Connectable Expansion Unit	4 units (up to 8 units connectable when using a distributor)
LED Indicator	Voting result indicators 1-3 (7-segment LED, 3 digits), audio signal receiving indicators 1-4 CH, data signal receiving indicator, external control priority indicator, external control communication indicator, battery indicator (flashes in case of battery warning of infrared conference unit), short-circuit indicator
External Control Terminal	D-sub connector (9P, male)/USB-B selectable
Function Switch	Simultaneous speaker No. setting switch: 1/2/3/4 Mic-off setting switch: TIME OUT ON/ OFF Speech priority selector switch: A/B/C (A: First-in-first-out priority, B: Last-in-first-out priority, C: Fixed for the first unit, and last-in-first-out for the subsequent units), FBS selector switch: external equalizer/OFF/FBS Auto/FBS manual
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: surface-treated steel plate, gray metallic, paint, semi-gloss
Dimensions	359(W) × 118.8(H) × 138.2(D) mm
Weight	2.8kg
Accessory	AC adapter (cord length: 1.8m DC cord, and 2m detachable AC cord) ×1
Option	Rack mounting bracket: MB-TS900

Wired Chairman Unit

TS-911

Wired Delegate Unit

TS-912

Wired Chairman Unit

TS-811

Wired Delegate Unit

TS-812

Model	TS-911	TS-912	TS-811	TS-812
Power Source	24V DC (supplied from the optional TS-918 Expansion unit)			
Current Consumption	Max. 60mA			
Modulation Method	Frequency modulation			
Carrier Frequency	Transmission: audio channel 1: 7.35MHz, audio channel 2: 8.10MHz audio channel 3: 8.55MHz, audio channel 4: 9.15MHz control channel: 6.45MHz Reception: base language channel: 1.95MHz Translation language channel: 2.25MHz		Transmission: audio channel 1: 7.35MHz, audio channel 2: 8.10MHz audio channel 3: 8.55MHz, audio channel 4: 9.15MHz control channel: 6.45MHz Reception: audio channel: 1.95MHz	
Input	Microphone terminal: XLR-4-31 type (dedicated for connecting the optional TS-903 or TS-904)			
Output	Monitor speaker: 8Ω, 0.2W Headphone: ø3.5mm mini jack (3P: monaural) x2			
Connection Terminal	RJ45 connector			
LED Indicator	Speech indicator (flashes at communication failure), voting status indicators 1 – 3, power indicator (flashes at communication failure)		Speech indicator (flashes at communication failure), Power indicator (flashes at communication failure)	
Function	Monitor volume control, headphone volume control, priority speech function, voting function, monitor selector switch (MAIN/ SUB)	Monitor volume control, headphone volume control, voting function, monitor selector switch (MAIN/ SUB)	Monitor volume control, headphone volume control, priority speech function	Monitor volume control, headphone volume control
Operating Temperature	0°C to +40°C			
Operating Humidity	90% RH or less (no condensation)			
Finish	Top panel: ABS resin, gray metallic, paint, semi-gloss			
Dimensions	210(W) x 68.6(H) x 152(D) mm			
Weight	570g		560g	
Option	Microphone: TS-903, TS-904			

TS-910 Series Optional Accessories

Expansion Unit

TS-918

Model	TS-918
Power Source	100 – 240V AC, 50/ 60Hz (use of the supplied AC adapter)
Power Consumption	74.4W
Current Consumption	Max. 3.1A DC (when 24V DC is supplied from the accessory AC adapter)
Gain	Upstream: +16.5dB, downstream: +12.5dB
Connection Terminal	Central unit connection terminal: BNC jack Bridge unit connection terminal: RJ45 connector
LED Indicator	Connection status indicators (3 LEDs each on the front and rear panels), power indicator
No. of Connectable Chairman/ Delegate Units	Up to 24 units (when using 21 units of TS-919B1 or 6 units of TS-919B4, both optional Bridge units)

Operating Temperature	0ºC to +40ºC
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: aluminum, black, 30% gloss, melamine-baked paint Case: pre-coated steel plate, black
Dimensions	210(W) x 44(H) x 296.5(D) mm
Weight	1.6kg
Accessory	AC adapter (cord length: 1.8m DC cord, and 2m detachable AC cord x1, BNC plug-to-BNC plug cord (50cm) x1
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one units), MB-15B-J (for rack mounting two units)

Bridge Unit

TS-919B1 / TS-919B4

Model	TS-919B1	TS-919B4
Power Source	24V DC (supplied from the optional TS-918 Expansion Unit)	
Current Consumption	Max. 16mA	Max. 26 mA
Branching Loss	Upstream: 16.5dB Downstream: 16dB	Upstream: 17.5dB Downstream: 16.5dB
Insertion Loss	Upstream: 1dB Downstream: 0.5dB	Upstream: 3dB Downstream: 2dB
Connection Terminal	Communication cable: RJ45 connector x 2 Conference unit: RJ45 connector	Communication cable: RJ45 connector x2 Conference unit : RJ45 connector x4
LED Indicator	Connection status	Connection status x4
No. of Connectable Chairman/ Delegate Units	1 unit	4 units
Operating Temperature	0ºC to +40ºC	
Operating Humidity	90% RH or less (no condensation)	
Finish	ABS resin, black	
Dimensions	68(W) x 60.3(H) x 24(D) mm	176.2(W) x 75(H) x 29.8(D) mm
Weight	40g	160g

TS-910 / TS-920 / TS-820. Series Optional Accessories

Standard Microphone Unit / Long Microphone Unit

TS-903 / TS-904

Model	TS-903	TS-904
Type	Electret condenser microphone	
Directivity	Unidirectional	
Rated Impedance	1.8kΩ	
Rated Sensitivity	–37dB (1kHz, 0dB = 1V/ Pa)	
LED Indicator	Speech (ring type)	
Frequency Response	100Hz – 13kHz	
Output Connector	Combined type of XLR-4-32	
Operating Temperature	0ºC to +40ºC	
Operating Humidity	90% RH or less (no condensation)	
Finish	Gooseneck: stainless steel, black; Other: ABS resin, black	
Length	368mm	518mm
Weight	90g	105g
Applicable Unit (Option)	Chairman/ Delegate Units: TS-801, TS-802, TS-811, TS-812, TS-901, TS-902, TS-911 and TS-912	

Infrared Transmitter/Receiver

TS-905 / TS-907

Model	TS-905	TS-907
Power Source	24V DC (supplied from the optional TS-900 or TS-800)	
Current Consumption	Max. 150mA	Max. 180mA
Infrared Emitter/ Detector **Wavelength** **Modulation Method** **Carrier Frequency**	870nm (AM: Brightness modulation) Frequency modulation Transmission: Audio channel 1: 7.35MHz, audio channel 2: 8.10MHz, audio channel 3: 8.55MHz, audio channel 4: 9.15MHz, control channel: 6.45MHz Reception: Base language channel: 1.95MHz Translation language channel: 2.25MHz	870nm (AM: Brightness modulation) Frequency modulation Transmission: Audio channel 1: 7.35MHz, audio channel 2: 8.10MHz, audio channel 3: 8.55MHz, audio channel 4: 9.15MHz, control channel: 6.45MHz Reception: Base language channel: 1.95MHz Translation language channel: 2.25MHz
Acceptance Angle **Emission Angle** **Communication Area**	Vertical: 150° (75°+75°), Horizontal: 360° Vertical: 150° (75°+75°), Horizontal: 360° Approx. 6 – 7m in radius from the point underneath the unit (ceiling height: 2.5 – 4.5m)	Vertical: 90° (45°+45°), Horizontal: 360° Vertical: 90° (45°+45°), Horizontal: 360° Approx. 6m in radius from the point underneath the unit (ceiling height: 5 – 7m)
Connection Terminal	BNC jack	
LED Indicator	Power	
Operating Temperature	0°C to +40°C	
Operating Humidity	90% RH or less (no condensation)	
Finish	Dome: PC resin, visible light cut filter; Base: ABS resin, black	
Dimensions	ø120 × 71.3 (H) mm	
Weight	230g (unit only)	
Accessory	Mounting bracket ×1, stand mounting bracket ×1, stand mounting bracket attaching screw ×3, thread adapter (U5/16 - NS5/8) ×1	
Option	Microphone stand (the mounting thread size must be U5/16 or NS5/8)	

RF Distributor

YW-1022

Frequency Range:
1.6 – 1,000 MHz (excluding 50 – 70 MHz)
Distribution Loss:
4.5dB ±3dB (between the Mixing and each Distribution terminals)
Input/Output Impedance: 75Ω
Coaxial Connector:
Mixing terminal: BNC jack, power passing type (30V DC or less, under 2A or less)
Distribution 1 and 2 terminals: BNC jack, power passing type (30V DC or less, 1A or less)
Operating Temperature: –10°C to +50°C
Operating Humidity: 90% RH or less (no condensation)
Finish: ABS resin, gray
Dimensions: 75(W) x 122(H) x 34(D) mm
Weight: 105g
Accessory: Unit fixing wood screw (4.1 x 25) x2

RF Distributor

YW-1024

Frequency Range:
1.6 – 1,000 MHz (excluding 50 – 70 MHz)
Distribution Loss:
8.5dB ±3dB (between the Mixing & each Distribution terminal)
Input/Output Impedance: 75Ω
Coaxial Connector:
Mixing terminal: BNC jack, power passing type (30V DC or less, 2A or less)
Distribution 1 - 4 terminals: BNC jack, power passing type (30V DC or less, 1A or less)
Operating Temperature: –10°C to +50°C
Operating Humidity: 90% RH or less (no condensation)
Finish: ABS resin, gray
Dimensions: 75(W) x 122(H) x 34(D) mm
Weight: 120g
Accessory: Unit fixing wood screw (4.1 x 25) x2

Battery Charger

BC-920

Power Source:
100 – 240V AC, 50/ 60Hz (supplied from AC adapter)
Current Consumption: Max. 1.4A
Charging Time: Approx. 5 hours
Charging Capacity: 8 pieces BP-900A(option) or BP-920(option) batteries
LED Indicator: Charging status (Green: Full charge, Red: On charge), Power indicator
Operating Temperature: 0°C to +40°C
Operating Humidity: 90% RH or less (no condensation)
Finish: Case: Steel, black, paint, Battery receptacles: PPO resin, black
Dimensions: 240(W) x 70(H) x 115(D) mm
Weight: 1.1kg (unit only)
Accessory: AC adapter (cord length: 1m DC cord, 2m detachable AC cord) x1

Rechargeable Lithium Ion Battery

BP-900A

Nominal Voltage: 7.2V DC
Nominal Capacity: 2100mAh
Dimensions: 71.6(W) x 20.5(H) x 37.5(D) mm
Weight: 95g

Rack Mount Bracket

MB-TS920

Finish: Surface-treated steel plate, black 30% gloss, paint,
Dimensions: 65.5(W) x 177(H) x 61(D) mm
Weight: 680g
Accessory: Rack mounting screw x4, rack mounting washer x4

AC Adapter

AD-0910

Power Source: 100 – 240V AC, 50/ 60Hz
Output: 9V DC, 1 A
Ripple Voltage: 100mV (p-p)
Power Consumption: 400mA AC, Input 100V
Cord Length: 1.8m
Plug: RC6705, center "+"
Operating Temperature: 0°C to +40°C
Operating Humidity: 90% RH or less (no condensation)
Finish: Case: resin, black
Weight: 150g
Accessory: AC power cord (2m) x1

Rack Mount Bracket

MB-TS900

Finish: Surface-treated steel plate, gray metallic, paint, semi-gloss
Dimensions: 65.5(W) x 177(H) x 61(D) mm
Weight: 680g
Accessory: Rack mounting screw x4, rack mounting washer x4

TS-790 Series

Central Unit

TS-7912DW-EA

Model	TS-7912DW-EA
Power Source	100 – 240V AC, 50/60Hz
Rated Output	120W (speaker output)
Power Consumption	235W (rated output, 64 units) 85W (1/8 of rated output, 64 units)
Current Consumption	200mA or less (when power switch is OFF)
Frequency Response	20Hz to 20kHz ±3 dB
Distortion	1% or less at 1kHz (20kHz LPF (AUX-0025)
Tone Control	Bass: ±10dB at 100Hz, Treble: ±10dB at 10kHz (speaker out)
Signal to Noise Ratio	83dB or more (speaker volume: min.) 76dB or more (speaker volume: max, input volume: min.) 55dB or more (speaker volume: max, input volume: max.) (A-weighted)
Audio Input	Mic: -60dB* (unbalanced) / -41dB* (balanced) selectable, 600 Ω, Ø6.3 mm phone jack Note: MIC input is equipped with phantom power (24V DC, ON/OFF switchable) AUX IN: -20dB*, 10kΩ, unbalanced, RCA pin jack x2 MODULE 1, 2: -20dB*, 10kΩ, compatible wireless tuner module WTU-M9800
Audio Output	SPEAKER OUT: high impedance (100V line / total 83Ω) / Low impedance (4-16Ω) selectable, removable terminal block (3 pins) REC OUT: -10dB*, 10kΩ, unbalanced, RCA pin jack x2
Equalizer Input / Output Terminal	-10dB*, 10 kΩ, unbalanced, RCA pin jack, ON/OFF switchable
Video Conference System Input / Output Terminal	-10dB*, 10 kΩ, unbalanced, RCA pin jack USB Audio Type-B port (for PC) Audio streaming data-in: 11.025/16/22.05/32/44.1/48 kHz sampling frequency (selectable on PC), 16-bit PCM Audio streaming data-out: 32/44.1/48 kHz sampling frequency (selectable on PC), 16-bit PCM

Chairman/Delegate Units Terminal	LINE 1, 2: 8 pin DIN socket
Number of Connectable Conference Units	Max. 64 units
Conference Unit Setting	MODE Switch: NORMAL / AUTO OFF / TEST MAX MIC UNIT Switch: Number of Delegate Units can be turned on microphone set to 0, 1, 2 or 4
Priority Speech Chime	Operation of Chairman Unit's priority button activates a single-tone chime (with volume control)
Volume Control	MIC volume, AUX volume, VIDEO CONFERENCE volume, MODULE1 volume, MODULE2 volume, SPEAKER volume, Microphone and Monitor speaker of Conference unit volume, CHIME volume.
LED Indicator	Power (Green) Amplifier: INPUT SIGNAL (Green), PEAK (Red), PROTECT (Red), ERROR (Red) Conference unit setting: NORMAL (Green), AUTO MIC OFF (Green), TEST (Red)
Operating Temperature	0°C to +40°C
Operating Humidity	90% RH or less (no condensation)
Finish	Panel: ABS resin, black Case: surface-treated steel plate, black, paint
Dimensions	420(W) x 96.1(H) x 313.1(D) mm
Weight	5.2 kg
Accessory	Power cord (2m) x1, USB cable (3m) x1, speaker out removable terminal plug (5mm, 3pins) x1
Option	Extension cord: TS-790-3-EA, TS-790-10-EA, rack mounting bracket: MB-25B

Chairman Unit / Delegate Unit

TS-791L-EA/ TS-792L-EA

*0dB = 1V

Model	TS-791L-EA	TS-792L-EA
Power Source	36V DC, 30 mA or less (supplied from the Central Unit TS-7912DW-EA)	
Output	Headphone/Recording: Ø3.5 mm, mini jack (3P: monaural) x2 Monitor speaker: 130Ω, 200mW	
Control	Speech: microphone, speaker on-off control by speech button Priority: microphone, speaker on-off, other microphone cut off and single-tone chime activation by priority button Volume control: headphone/ recording and monitor speaker volume adjustable x2	Speech: microphone, speaker on-off control by speech button Volume control: headphone/ recording and internal speaker volume adjustable x2
Microphone Unit	Electret condenser microphone Directivity: unidirectional Impedance: 1.8kΩ Sensitivity: -37dB (1kHz, 0dB = 1 V/Pa) Frequency response: 100Hz - 13kHz LED Indicator: speech indicator (ring type), blue Length: 518mm Weight: 105g	
Operating Temperature	0 °C to +40 °C	
Operating Humidity	90 %RH or less (no condensation)	
Finish	Upper case: ABS resin, dark grey, paint Lower case: ABS resin, black, paint	
Dimensions	45.3(W) x 70.7(H) x 150.5(D) mm (excluding microphone unit)	
Weight	800g (excluding microphone unit)	
Accessories	Long microphone unit x1	
Option	Extension cord: TS-790-3-EA, TS-790-10-EA	

Extension Cord

TS-790-3-EA

Cable Length: 3m
Connector: 8 pins DIN socket (going to the unit's base) x1, 8 pins DIN plug (going to the cord) x1

Extension Cord

TS-790-10-EA

Cable Length: 10m
Connector: 8 pins DIN socket (going to the unit's base) x1, 8 pins DIN plug (going to the cord) x1

Microphone (Wireless)

UHF Wireless Systems and Optional Accessories

UHF Wireless Tuner

WT-5800
WT-5805
WT-5810

* 0dB= 1V

Model	WT-5800	WT-5805	WT-5810
Power Source	AC mains (supplied AC adapter must be used)		
Power Consumption	250mA (12V DC)	200mA (12V DC)	130mA (12V DC)
Receiving Frequency	576–865 MHz, UHF	576–937.5MHz, UHF	576 – 865 MHz, UHF
Channel Selectable	64 selectable frequencies		16 channels
Receiving System	Double super-heterodyne		
Diversity System	Space diversity (true diversity)	Space diversity	
Mixing Output	MIC/LINE (selectable): -60dB* (MIC) / -20dB* (LINE), 600Ω phone jack (unbalanced), 600Ω, XLR-3-32 type connector (balanced)		MIC: –60dB*, 600Ω, balanced, XLR-3-32 type connector LINE: –20dB*, 600Ω, unbalanced, phone jack
Mixing Input	–20dB*, 10kΩ, unbalanced, phone jack		
Antenna	-		Whip antenna
Antenna Input	75Ω, BNC (phantom powering for antenna), 9V DC, 30mA (max.)		-
Antenna Output	75Ω, BNC (Gain 0dB)		-
Receiving Sensitivity	90dB or more, S/N ratio (20dBμV input, 40kHz deviation)		
Squelch Sensitivity	16 – 40dBμV variable		
Squelch System	Using together of noise SQ, carrier SQ and tone SQ		
Tone Frequency	32.768kHz		
Indicator	Audio (6 steps), RF (6 steps), ANT A/B, audio (peak), battery alarm		ANT A/B, audio (peak), battery alarm, channel no.
Channel Check	Usable frequencies scanning		
S/N Ratio	110dB or more (A-weight, unbalanced output)		104dB or more (A-weight, unbalanced output)
Harmonic Distortion	1% or less (typical)		
Frequency Response	100Hz – 15kHz, ±3 dB		
Operating Temperature	–10°C to +50°C		
Operating Humidity	30% to 85% RH (no condensation)		
Finish	Resin, black		
Dimensions	210(W) × 44(H) × 205(D) mm		206(W) × 40.6(H) × 152.7(D) mm
Weight	700g		590g
Accessory	AC adapter ×1, Whip antenna ×2, Rubber foot x4		AC adapter ×1
Option	Mounting bracket kit: MB-WT3 (for rack mounting one unit), MB-WT4 (for rack mounting two units)		-

UHF Hand-Held Wireless Microphone

WM-5270 / WM-5265 / WM-5225

Model	WM-5270 (Vocal)	WM-5265 (Vocal)	WM-5225 (Speech)
Microphone Element	Dynamic microphone unit: unidirectional		Electret condenser microphone unit: unidirectional
Modulation	Frequency modulation		
Frequency Response	576 – 865 MHz, UHF	576 – 937.5 MHz, UHF	
Channel Selectable	64 channels (the number of channels may differ from country to country.)		
RF Carrier Power	Less than 50mW (factory preset 10mW ERP)		
Tone Frequency	32.768kHz		
Oscillator	PLL synthesized		
Max. Input Level	142dB SPL	132dB SPL	126dB SPL
Max. Deviation	±40kHz		
Audio Frequency Response	80Hz – 15kHz	100Hz – 15kHz	100Hz – 15kHz
Dynamic Range (AF Circuit)	95dB or more (with WT-5800)		
Battery	AA alkaline dry cell battery	WB-2000 rechargeable battery (option) or AA alkaline dry cell battery	
Battery Life	Approx. 10h (when the alkaline battery is used)	Approx. 13h (when the WB-2000 rechargeable battery is used) Approx. 10h (when the alkaline battery is used)	
Indicator	Power/ Battery lamps		
Antenna	Built-in type		
Operating Temperature	–10°C to +50°C	–10°C to +50°C (except battery)	
Operating Humidity	30% to 85% RH (no condensation)		
Finish	Dark gray	Resin, coating	
Dimensions	ø48 × 244 mm	ø50 × 229 mm	ø43.6 × 231.5 mm
Weight	340g (with battery)	205g (with battery)	180g (with battery)
Accessory	Microphone holder (with stand adapter) ×1, screw driver (housed in the body) ×1, storage case ×1, rolling stopper ×1	Microphone holder W3/8" (with stand adapter) ×1, screw driver ×1, storage case × 1	Microphone holder W3/8" (with stand adapter) ×1, screw driver ×1, storage case ×1

UHF Wireless Transmitter

WM-5325

Model	WM-5325
Modulation	Frequency modulation
Frequency Range	576 – 937.5 MHz*1, UHF
Channel Selectable	64 channels (the no. of channels may differ from country to country)
RF Carrier Power	Less than 50mW (factory preset 10mW ERP)
Tone Frequency	32.768kHz
Oscillator	PLL synthesized
Max. Input Level	-14dB to -29dB*2 (audio level control: Min. to Max.)
Max. Deviation	±40 kHz
Audio Frequency Response	100Hz – 15kHz
Indicator	Power/ Battery lamps
Antenna	Built-in type
Connector	ø3.5mm mini plug

Battery	WB-2000 rechargeable battery or AA alkaline dry cell battery
Battery Life	Approx.13h (when WB-2000 rechargeable battery is used), approx. 10h (when alkaline battery is used)
Operating Temperature	–10°C to +50°C (except battery)
Operating Humidity	30% to 85% RH (no condensation)
Finish	Resin, coating
Dimensions	62(W) × 102.5(H) × 23(D) mm
Weight	90g (with battery)
Accessory	Screw driver ×1, storage case ×1, neck strap ×1
Option	Lavalier microphone: YP-M5300(unidirectional), YP-M5310(omnidirectional), headset microphone: WH-4000A, WH-4000H

*1 Frequency range dependent on individual country regulatory codes.
*2 0dB = 1V

Uni-Directional Lavalier Microphone

YP-M5300

Omni-Directional Lavalier Microphone

YP-M5310

Headset Microphone

WH-4000H

Headset Microphone

WH-4000A

Model	YP-M5300	YP-M5310	WH-4000H	WH-4000A
Type	Electret condenser type			
Directivity	Unidirectional	Omnidirectional	Unidirectional	Unidirectional
Sensitivity	–63dB ±3dB (0dB = 1V/0.1 Pa, 1kHz)	–64dB ±3dB (0dB = 1V/0.1 Pa, 1kHz)	–66dB ±3dB (0dB = 1V/0.1 Pa, 1kHz)	–66dB ±3dB (0dB = 1V/0.1 Pa, 1kHz)
Frequency Response	100Hz – 12kHz	100Hz – 15kHz	-	-
Max. Input Level	120dB SPL	110dB SPL	120dB SPL	
Cable Length	1.3m			
Terminal	ø3.5mm mini plug		ø3.5mm monaural plug	
Finish	Dark black		Frame: stainless, black (silicon rubber) Gooseneck: black (shrink tube)	Headband: EVA, black Frame: Stainless, black (silicon rubber) Gooseneck: black (shrink tube)
Weight	20g (cable included)		50g (cable included)	

Note: *WH-4000H and WH-4000A are expendable items. No warranty is provided for any trouble except incipient failure.
*Windscreen is also available as optional parts.

Ear-Hook Microphone

YP-M5000E

Type: Electret Condenser type
Directivity: Omnidirectional
Frequency Response: 20 Hz – 20 kHz
Sensitivity: -67 dB ±3 dB (0 dB = 1V/O, 1Pa, 1 kHz)
Max. Input Level: 115 dBSPL, 1 kHz at 1%
Cord Length: 1.3m
Terminal: ø3.5mm (0.14") Stereo plug
Finish: Beige color
Weight: 14g (cable included)

Headset Microphone

YP-M5000H

Type: Electret Condenser type
Directivity: Omnidirectional
Frequency Response: 20 Hz – 20 kHz
Sensitivity: -67 dB ±3 dB (0 dB = 1V/O, 1Pa, 1 kHz)
Max. Input Level: 115 dBSPL, 1 kHz at 1%
Cord Length: 1.3m
Terminal: ø3.5mm (0.14") Stereo plug
Finish: Beige color
Weight: 21g (cable included)

Microphone Waist Holder

WH-4000P

Length: 800mm (1300mm at full extension)
Finish: Elastic cloth, Black

Microphone Windscreen (10pcs/set)

WH-4000S

Finish: Urethane form, Black
Applicable Model (option):
WH-4000A, WH-4000H, ER-1000

UHF Wireless Tuner

WT-4820

* 0dB = 1V

Model	WT-4820
Power Source	AC mains (supplied AC adapter must be used)
Power Consumption	250mA (12V DC when operating with two tuner modules)
Receiving Frequency	576 - 865 MHz*, UHF
Mixing Input	–20dB*, 10kΩ, unbalanced, phone jack
Audio Output	Mixing/Channel 1 (selectable): -20dB* (+6dB* Max.), 600Ω, unbalanced, phone jack -14dB* (+12dB* Max.), 600Ω, balanced, XLR-3-32 type connector Channel 2: -20dB* (+6dB* Max.) 600Ω, unbalanced, phone jack 75Ω, BNC (phantom powering for antenna) 9V DC, 30mA (max.)
Antenna Input	75Ω, BNC (Gain 0dB)
Antenna Output	ANT A/B, audio (peak), power
Indicator	

S/N Ratio	102dB or more (A-weight, balanced output)
Harmonic Distortion	1% or less
Frequency Response	50 – 18kHz, ±3dB
Operating Temperature	–10°C to +50°C
Operating Humidity	30% to 85% RH (no condensation)
Finish	Resin, black
Dimensions	210(W) × 44(H) × 181(D) mm
Weight	770g (without tuner module)
Accessory	AC adapter ×1, whip antenna ×2, rubber foot x4
Option	Mounting bracket kit: MB-WT3 (for rack mounting one unit), MB-WT4 (for rack mounting two units)

UHF Wireless Tuner Unit

WTU-4800

* 0dB = 1V

Model	WTU-4800
Power Requirement	7 - 12V DC
Current Consumption	100mA
Receiving Frequency	576 - 865 MHz, UHF
Receiving System	Double super-heterodyne
Receiving Sensitivity	80dB or more, S/N Ratio (20dB µV input, 40kHz deviation)
Antenna Input Impedance	75Ω
Diversity System	Space diversity
Channel Selectable	16 channels
Squelch System	Noise SQ

Squelch Sensitivity	17dB µV
Output	0dB* max. deviation, 2.2kΩ load)
Harmonic Distortion	1% or less
Frequency Response	100Hz - 12kHz, ±3 dB
Operating Temperature	–10°C to +50°C
Operating Humidity	30% to 85% RH (no condensation)
Finish	Surface-treated steel plate
Dimensions	60(W) × 25(H) × 139(D) mm
Weight	130g
Accessory	Driver for channel changing x1

Antenna Distributor

WD-5800

Model	WD-5800
Power Source	AC mains (supplied AC adapter must be used)
Power Consumption	25W or less
Current Consumption	1.6A (12 - 15V DC)
Frequency Range	VHF/ UHF
Antenna Input	2 inputs per distribution channel (front ×1, rear ×1), 75Ω, BNC (phantom powering for antenna)
Antenna Output	4 output per distribution channel, 75Ω, BNC
DC Power Supply	4 output, (each output: 12V DC/250mA) (output voltage of this unit depends on that of AC adapters.)

Indicator	Power lamp
Operating Temperature	–10°C to +50°C
Finish	Panel: aluminum, black, paint Case: steel, black, paint
Dimensions	420(W) × 44(H) × 214(D) mm
Weight	2kg
Accessory	AC adapter x1, power cord(2m) x1, DC cable ×4, rubber foot x4
Option	Rack mounting bracket: MB-15B

UHF Wireless Antenna (Wall Mountable)

YW-4500

Power Source: 7 – 12V DC (supplied from amplifier or tuner)
Current Consumption: 15mA or less
Receiving Frequency: 550 – 932 MHz, UHF
Dipole Ratio Relative Gain: 8dB or more (780 MHz)
VSWR: 3.0 or less
Output Impedance: 75Ω
Mounting Hole Pitch: 83.5mm (dimensions for wiring box)
Finish: ABS resin, off-white
Dimensions: 105(W) × 140(H) × 126(D) mm
Weight: 270g
Accessory: M3.5 screw for wiring box ×2, tapping screw (M4) for wooden wall x2, RG-6/U or RG-11/U sleeve x1

Infrared Wireless Systems and Optional Accessories

Infrared Hand-Held Wireless Microphone / Infrared Hands-Free Wireless Microphone

IR-200M
IR-300M

Model	IR-200M	IR-300M
Battery	IR-200BT-2 rechargeable battery for the infrared wireless microphone or AA alkaline dry cell battery (2 pieces).	
Current Consumption	Typ. 250 mA (2.4V, power selector switch: N), typ. 340 mA (2.4 V, power selector switch: H)	
Infrared Emitter **Wavelength** **Modulation Method** **Carrier Frequency** **Transmission Distance**	870 nm (AM: brightness modulation) Frequency modulation Channel A: 3.100 MHz, channel B: 3.350 MHz Approx. 20m (power selector switch: H; In an unobstructed space.) Approx. 15m (power selector switch: N; In an unobstructed space.)	
Tone Signal	32.768 kHz	
Modulation Sensitivity	±4.8kHz (1kHz, when SPL of 84dB is input)	
Max. Input Sound Pressure	120dB SPL	
Input Sensitivity Adjustment	-	Adjustment range: –9dB to 0dB (factory preset: 0dB)
Microphone Unit	Unidirectional electret condenser microphone	
Frequency Response	100Hz – 12kHz	
Preemphasis	300 µs	
Input	-	External microphone input (ø3.5mm monaural mini jack)
Battery Operation Time	Approx. 8 hours (when the IR-200BT rechargeable battery for the infrared wireless microphone is used, power selector switch: N) Approx. 6 hours (when the alkaline battery is used, power selector switch: N)	
Operating Temperature	0°C to +40°C	
Operating Humidity	30 to 85% RH	
Finish	Control section: ABS resin, metallic gray, 50% gloss, paint; Filter section: polycarbonate, optical cut filter	
Dimensions	ø37 x 241.8(H) mm	64(W) x 91.3(H) x 27.3(D) mm
Weight	170g (with battery)	130g (with battery & strap)
Accessory	Screwdriver (for setting) x1, color label (6 colors) x1	

Tie-Clip Microphone
YP-M101

Close-Talking Microphone
YP-M201

Headset Microphone
YP-M301

Model	YP-M101	YP-M201	YP-M301
Type	Electret condenser type		
Directivity		Unidirectional	
Sensitivity	-46dB (0dB = 1V/Pa, 1kHz, load: 2kΩ)	-57dB (0dB = 1V/Pa, 1kHz, load: 2kΩ)	-44dB (0dB = 1V/Pa, 1kHz, load: 2kΩ)
Max. Input Level	115dB SPL		
Terminal	ø3.5 mm mono mini plug	ø3.5 mm stero plug	ø3.5 mm monaural plug
Finish	Dark gray	Black	Headband: ABS resin, black
Weight	20g (cable included)		45g
Accessory	Clip x1	-	Storage case x1, windscreen x2

Infrared Wireless Tuner
IR-702T

Model	IR-702T
Power Source	AC mains, 50/60Hz (use of the supplied AC adapter)
Power Consumption	15W or less
Receiving Frequency	Channel A: 3.100 MHz, channel B: 3.350 MHz
Receiver Sensitivity	S/N ratio: 50dB or more (40dB µV input, 1kHz modulation, ±4.8 kHz deviation)
S/N ratio	61dB or more (60dB µV input, ±4.8 kHz deviation, A-weighted)
Tone Squelch Frequency	32.768kHz
Infrared Receiver Input	75Ω, BNC jack x2 (Infrared wireless receiver's power source: 24V DC, 220 mA max. in total of 2 terminals)
No. of Connectable Conference Receiver	4 (YW-1022/YW-1024) 16 (IR-700D, YW-1024 x4)
Output	Channel A and B: –10dB* (±4.8kHz deviation, at volume level max.), 600Ω, electronically balanced, 3 pole phone jack Note: channel A switchable to mixer output

* 0dB = 1V

Frequency Response	100Hz – 12kHz
Operating Temperature	–10°C to +50°C
Operating Humidity	30% to 85% RH (no condensation)
Finish	Case: ABS resin, black
Dimensions	210(W) x 44(H) x 210.9(D) mm
Weight	630g (unit only)
Accessory	AC adapter (DC cord length: 1.8m) x1, power cord (2m) x1, cord with a phone plug (1m) x1, color label (6 colors) x1, rubber foot x4
Option	Rack mounting bracket: MB-WT3, MB-WT4 (for mounting with the optional IR-700D together)

Infrared Wireless Distributor

IR-700D

Model	IR-700D
Power Source	AC mains, 50/60Hz (use of the supplied AC adapter)
Power Consumption	25W or less
Input/Output	4 mixing inputs, 2 distribution outputs
Band-Pass Frequency	3.0 – 6.0 MHz
Gain	0dB (±3dB)
Infrared Receiver Input	75Ω, BNC jack x4 (Infrared wireless receiver's power source: 24V DC, 800mA max. in total of 4 terminals)
No. of Connectable Conference Receiver	16 (YM-1024 x 4)

Distribution Output	75Ω, BNC jack
Operating Temperature	–10°C to +50°C
Operating Humidity	30% to 85% RH (no condensation)
Finish	Case: ABS resin, black
Dimension	210(W) x 44(H) x 200.9(D) mm
Weight	640g (unit only)
Accessory	AC adapter (DC cord length: 1.8m) x1, power cord (2m) x1, BNC plug-to-BNC plug cord (50 cm) x1, rubber foot x4
Option	Rack mounting bracket: MB-WT3, MB-WT4 (for mounting with the optional IR-702T together)

Infrared Wireless Receiver

IR-500R
IR-510R
IR-520R

Model	IR-500R	IR-510R	IR-520R
Power Source	24V DC (supplied from IR-702T)		
Current Consumption	Max. 40 mA	Max. 60 mA	Max. 30 mA
Infrared Detector **Wavelength** **Carrier Frequency** **Reception Angle** **Communication Area**	870nm Channel A: 3.100 MHz, channel B: 3.350 MHz Vertical: 80° (up to 30° movable downward) Horizontal: 80° (up to 30° movable left or right) Approx. 15m (in a space without any obstacles)	870nm Channel A: 3.100 MHz, channel B: 3.350 MHz - Approx. 7m in radius from the point underneath the unit (ceiling height: 2.5 - 3.0m, in a space without any obstacles)	870nm Channel A: 3.100 MHz, channel B: 3.350 MHz - Approx. 15m (in a space without any obstacles)
	75Ω, BNC jack		
Connection Terminal	0°C to +40°C		
Operating Temperature	30% to 80% RH (no condensation)	30% to 85% RH (no condensation)	
Operating Humidity	Filter section: polycarbonate, optical cut filter	Filter section: polycarbonate, optical cut filter	Filter section: polycarbonate, optical cut filter
Finish	Base: ABS resin, off-white	Base: ABS resin, black	
	70(W) x 120(H) x 72(D) mm	ø120 x 71.3(H) mm	84.5(W) x 63.5(H) x 32(D) mm
Dimensions	220g (unit only)	205g (unit only)	100g (unit only)
Weight	-	Mounting bracket x1	Stand mounting bracket x1, bracket mounting screw x2
Accessory			

RF Distributor

YW-1022

Frequency Range:
1.6 – 1,000 MHz (excluding 50 – 70 MHz)
Distribution Loss:
4.5dB ±3dB (between the Mixing and each Distribution terminals)
Input/Output Impedance: 75Ω
Coaxial Connector:
Mixing terminal: BNC jack, power passing type (30V DC or less, under 2A or less)
Distribution 1 and 2 terminals: BNC jack, power passing type (30V DC or less, 1A or less)
Operating Temperature: –10°C to +50°C
Operating Humidity: 90% RH or less (no condensation)
Finish: ABS resin, gray
Dimensions: 75(W) x 122(H) x 34(D) mm
Weight: 105g
Accessory: Unit fixing wood screw (4.1 x 25) x2

RF Distributor

YW-1024

Frequency Range:
1.6 – 1,000 MHz (excluding 50 – 70 MHz)
Distribution Loss:
8.5dB ±3dB (between the Mixing and each Distribution terminal)
Input/Output Impedance: 75Ω
Coaxial Connector:
Mixing terminal: BNC jack, power passing type (30V DC or less, 2A or less)
Distribution 1 - 4 terminals: BNC jack, power passing type (30V DC or less, 1A or less)
Operating Temperature: –10°C to +50°C
Operating Humidity: 90% RH or less (no condensation)
Finish: ABS resin, gray
Dimensions: 75(W) x 122(H) x 34(D) mm
Weight: 120g
Accessory: Unit fixing wood screw (4.1 x 25) x2

Microphones (Wired)

Desktop Microphones

Paging Microphone

PM-660 / PM-660D / PM-660U

Model	PM-660	PM-660D	PM-660U
Type	Moving coil microphone		
Directivity	Unidirectional		
Rated Impedance	600Ω, unbalanced	600Ω, balanced	
Rated Sensitivity	-58dB (1kHz, 0dB = 1/Pa)		
Frequency Response	100Hz - 10kHz		
Output	ø4.5, 2-conductor shielded cable (2.5m) with stereo phone plug	ø5.0, 4-conductor (2-shielded) cable (2.5m) with 5-pin DIN plug	ø5.0, 4-conductor (2-shielded) cable (2.5m) without plug
Talk Switch	Push-to-talk type (short-off circuit, with lock lever)		
Remote Control	500mA or less at 30V DC		
Finish	Head: Zinc plated steel wire, gray baked paint Body: ABS resin, gray		
Dimensions	100(W) x 215(H) x 150(D) mm		
Weight	440g (cord excluded)		

Amplifier Control Unit for PM-660D

RU-2001 / RU-2002

Model	RU-2001	RU-2002
Power Requirement	12-24V DC or 12V AC adapter	
Current Consumption	60mA	
Microphone Input	-62dBV, 600Ω, unbalanced, 5-pin DIN socket	
Output	0dBV, 600Ω, balanced, M3 screw terminal, distance between barriers: 6.4mm	
Chime	-	4-tone chime, 2-tone chime, single-tone chime
Finish	Pre-coated steel plate, black	
Dimensions	124(W) x 42.5(H) x 159(D) mm	
Weight	700g	
Accessory	Mounting bracket x1	

Chime Microphone

EC-380-AS

Model	EC-380-AS
Power Source	6V DC (4 x "AA" batteries) or DC adapter: 9 - 24V
Current Consumption	13mA during chime and 6 mA microphone operation
Microphone Element	Condenser
Polar Pattern	Cardioid
Chime Tones	4-tone chime (up/ down)
Rated Impedance	600 Ω, balanced
Output	Microphone: -41dB ±3 dB (1 kHz 0dB = 1V/Pa) Chime tones: –31dB ±3 dB (max. position)
Frequency Response	50 Hz - 18 kHz

Output Connector	XLR-3-32 equivalent / RJ45: audio output, power supply and contact output
Operating Temperature	0 °C - 40 °C
Finish	Stand mic: ABS resin, black, paint MIC shaft: copper alloy, black, paint
Dimensions	110(W) x 145(L) x 532(H) mm
Weight	558g (excludes batteries)
Accessory	Windscreen x1, XLR cable stereo phone plug (7.5m) x1
Option	AD-246 AC adapter

Note:
Batteries & AC adapter are not supplied with the unit. Please purchase separately.

Handheld Microphones

Uni-Directional Dynamic Microphone

DM-1100
DM-1200
DM-1300
DM-1500

Model	DM-1100	DM-1200	DM-1300	DM-1500
Type	Moving coil microphone			
Directivity	Unidirectional			
Rated Impedance	600Ω, unbalanced	600Ω, balanced		
Rated Sensitivity	-55dB (1kHz 0dB = 1V/Pa)	-52dB (1kHz 0dB = 1V/Pa)	-54dB (1kHz 0dB = 1V/Pa)	-56dB (1kHz 0dB = 1V/Pa)
Frequency Response	100Hz - 12kHz	50Hz - 12kHz	70Hz - 15kHz	
Connection Cable	Single-core shielded cable	Single-core shielded cable, unbalanced	Single-core shielded cable, unbalanced	2-core shielded cable, unbalanced
Cable Length	7.5m	10m		
Terminal of Cable	Phone plug			
Talk Switch	Short-off, slide switch			
Finish	Body: die-cast aluminum, black Head: ABS resin/zinc-plated steel wire, black	Body: die-cast zinc, metallic gray Head: die-cast aluminum/zinc-plated steel wire, metallic gray	Body: die-cast zinc, metallic gray Head: steel/zinc-plated steel wire, metallic gray	Body: die-cast zinc, metallic gold Head: brass/zinc-plated steel wire, metallic gold
Dimensions	ø55 x 178mm	ø39.5 x 163mm	ø51 x 170mm	ø40.5 x 173mm
Weight	155g (without connection cable)	265g (without connection cable)	245g (without connection cable)	280g (without connection cable)
Accessory	Microphone holder (U5/16, NS5/8) x1	Microphone holder (U5/16, NS5/8, W3/8) x1	Microphone holder (U5/16) x1	

Paging Microphone

PM-120 / PM-222

Model	PM-120	PM-222
Type	Moving coil microphone	
Directivity	Unidirectional	
Frequency Response	50Hz - 12kHz (close-talking characteristic)	100Hz - 10kHz
Rated Sensitivity	-56dB (1kHz, 0dB = 1V/Pa)	-47dB (1kHz, 0dB = 1V/Pa)
Rated Impedance	250Ω, unbalanced	600Ω, unbalanced
Cable	Coiled cable ø6 x 2.5m (at a max. extended length)	1-core shielded cable, 2m (when extended)
Terminal	-	Phone plug
Talk Switch	Push-to-talk switch	Short-off type with lock
Finish	Front: ABS resin, matte, champagne gold Rear: ABS resin, matte, black	ABS resin, gray
Dimensions	-	44(W) x 160(H) x 38(D) mm
Weight	230g	200g
Accessory	-	Microphone holder x1, metal fitting x1,tapping screw(4x16) x2
Option	Microphone hanger: 2202	-

Other Microphones

Gooseneck Microphone
EM-380-AS

Gooseneck Microphone
EM-800

Fixed Lo-Z Gooseneck Microphone
DM-524B

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

Model	EM-380-AS	EM-800	DM-524B	DM-524S
Type	Electret condenser microphone		Moving coil microphone	
Directivity	Cardioid			
Rated Impedance	750Ω, balanced	120Ω, balanced	600Ω, balanced	
Rated Sensitivity	–41dB ±3 dB (1kHz 0dB = 1V/Pa)	–35dB (1kHz 0dB = 1V/Pa)	–56dB (1kHz 0dB = 1V/Pa)	
Phantom Power Power	9 – 52V DC or 3V DC (2xAA batteries)	9 – 52V DC	-	-
Frequency Response	50Hz – 16kHz	60Hz – 20kHz	-	-
Frequency Range	-	-	100Hz - 10kHz	
Switch	-	-	-	Slide/ short-off type
Connector	XLR-3-12 equivalent	XLR-3-12 equivalent	ø21, 3-pin plug (BTS21P3B)	
Operating Temperature	0°C to +40°C	0°C to +40°C	-	-
Finish	Stand mic: ABS resin, black, paint Mic shaft: copper alloy, black, paint	Body, shaft: copper alloy, black, semi-gloss, paint	Microphone body: gold, sparkling paint Gooseneck shaft: nickel-pear, skin-plating	
Dimensions	110 (W) x 145 (L) x 532 (H) mm	ø12 × 420mm	-	-
Weight	550g (exclude batteries)	135g	465g	475g
Accessory	Windscreen x1, XLR to phone jack cable (7.5m) x1	Windscreen x1	ø21 3-pin receptacle (BTS21R3A) x1, screw (M3x10) x3, W3 washer x3, SW3 spling washer x3, M3 nut x3	
Applicable Stand	-	ST-800 (option)	ST-73A (option) or ø21mm 3-pin socket	

Lavalier Microphone
EM-410

Flush-Mount Boundary Microphone
EM-600

Model	EM-410	EM-600
Type	Electret condenser microphoto	
Directivity	Hypercardioid	Omnidirectional
Rated Impedance	120Ω, balanced	
Rated Sensitivity	–47dB (1kHz, 0dB = 1V/Pa)	–36 dB (1kHz, 0 dB = 1V/Pa)
Phantom Power	9 – 52V DC	
Frequency Response	100Hz – 15kHz	30Hz - 20kHz
Low Cut	-	-
Connector	Balanced-phone plug	XLR-3-12 equivalent
Connection Cable	-	-
Cable Length	5m	-
Operating Temperature	0°C to +40°C	
Finish	Body: copper alloy, black,semi-gloss, paint	Body: Steel, white, semi-gloss, paint Head: Zinc-plated steel wire, white, semi-gloss, paint
Dimensions	ø8.9 × 28.6mm	ø28 × 68mm
Weight	100g	85g
Battery	-	-
Accessory	Windscreen ×1, clip holder ×1	Rubber isolation ring ×2, M20 nut ×1

Optional Accessories

Desk Stands

Microphone Desk Stand

ST-800
ST-73A
ST-65A
ST-66A

Model	ST-800	ST-73A	ST-65A	ST-66A
Mounting Screw	-	-	U5/16 thread (thread adapter), NS5/8 thread (inner pipe)	
Application Microphone	-	-	ø18 - ø35mm in diameter, mountable weight: max. 500g	
Input Connector	XLR-3-31 or equivalent	BTS21R3A	-	-
Output Connector	XLR-3-32 or equivalent	XLR-3-14 or equivalent	-	-
Usable Connector	-	Input: BTS21R3B Output: XLR-3-11C or equivalent	-	-
Finish	Die-cast zinc, black, matte finish, paint	Zinc die-casting, black, paint	Shaft: Steel pipe for general use; Inner pipe: chrome plating Outer pipe: black, semi-gloss, paint Base: iron casting, black, semi-gloss, paint	
Dimensions	115(W) x 40(H) x 124(D) mm	ø165 x 58.5(H) mm	-	-
Weight	715g	2.3kg	1kg (without accessory)	1.1kg (without accessory)
Accessory	-	-	Clip type microphone holder (U5/16 thread) x1	

Microphone Stands

Microphone Stand

ST-303A
ST-304A
ST-321B

Model	ST-303A	ST-304A	ST-321B
Effective Extensible Length	940 - 1,600mm	890 - 1,530mm	1,045 - 1,706mm (Boom enlarged extensible length: 53 - 660 mm)
Mounting Screw	NS5/8 (pipe thread), U5/16 (adapter)		NS5/8 (pipe thread), U5/16 (adapter)
Finish	Steel pipe for general use, chrome plating	Outer pipe: steel for general use, black semi-gloss paint Inner pipe: steel for general use, chrome plating Base: Iron casting, black, semi-gloss paint	Steel pipe for general use, black, matte finish, paint
Weight	1.7kg	3.6kg	2.9kg
Accessory	Thread adapter x1	Thread adapter x1, cord clip x1	Thread adapter x1

Megaphones

Hand Grip Megaphones

Hand Grip Megaphone

ER-1215

Hand Grip Megaphone with Siren

ER-1215S

Hand Grip Megaphone with Shoulder Strap and Detachable Microphone

ER-3215

Model	ER-1215	ER-1215S	ER-3215
Power Source	R14P (C) × 6 (9V DC)		
Rated Output	15W		
Max. Output	23W		
Battery Life	Approx. 14 hours (JEITA)*	Voice: approx. 14 hours (JEITA)* Siren: approx. 20 min (JEITA)*	Approx. 9 hours (JEITA)*
Audible Range	Approx. 315m (JEITA)*	Voice: approx. 315m (JEITA)* Siren: approx. 500m (JEITA)*	Approx. 400m (JEITA)*
Signal Sound	-	Siren (sounds at 5 seconds intervals)	-
Diaphragm	Polyimide film (voice coil, bobbin)		
Operating Temperature	–10°C to +40°C		
Finish	Horn: ABS resin, light gray Mouth, battery case and handle: ABS resin, gray Strap: Nylon, black	Horn, mouth, battery case and handle: ABS resin, red Strap: Nylon, black	Horn: ABS resin, light gray Mouth, battery case and handle: ABS resin, gray Strap: Nylon, black
Dimensions	210(W) × 291(H) × 346(D) mm		210(W) × 291(H) × 381(D) mm (when attaching the microphone)
Weight	1.1kg (without batteries)	1.2kg (without batteries)	1.15kg (body, without microphone and batteries) Microphone: 150g

* JEITA: Japan electronics and information technology industries association. (EIAJ TT-4501A)
Note: Batteries are optional

Waterproof Hand Grip Megaphones

Splash Proof Megaphone

ER-1203

Splash Proof Megaphone

ER-1206

Splash Proof Megaphone with Whistle

ER-1206W

Splash Proof Megaphone with Siren

ER-1206S

Model	ER-1203	ER-1206	ER-1206W	ER-1206S
Power Source	R6P(AA) × 4(6V DC)	R6P(AA) ×6 (9V DC) or R6P(AA) ×4 (6V DC)		
Rated Output	3W	6W (when using six R6P batteries)		
Max. Output	4W	10W (when using six R6P batteries)		
Battery Life	Approx. 8 hours (JEITA)*1	When using six R6P batteries approx. 8 hours (JEITA)*1 When using four R6P batteries*2 approx. 5 hours (JEITA)*1	When using six R6P batteries Voice: approx. 8 hours (JEITA)*1 Whistle: approx. 20 minutes When using four R6P batteries*2(JEITA)*1 Voice: approx. 5 hours, Whistle: approx. 10 minutes	When using six R6P batteries Voice: approx. 8 hours (JEITA)*1 Siren: approx. 20 minutes When using four R6P batteries*2 (JEITA)*1 Voice: approx. 5 hours, Siren: approx. 10 minutes
Audible Range	Approx. 125m (JEITA)*1	Approx. 250m (JEITA)*1	Voice: approx. 250m (JEITA)*1 Whistle: approx. 315m (JEITA)*1	Voice: approx. 250m (JEITA)*1 Siren: approx. 315m (JEITA)*1
Signal Sound	-	-	Whistle	Siren (sounds at 5 seconds intervals)
Frequency Response	500Hz - 6kHz (SPL -20dB)	450Hz - 6kHz (SPL -20dB)		
Magnetic Circuit	Neodymium magnet, inner magnet type			
Diaphragm	Polyimide film (voice coil, bobbin)			
Water Protection	IPX5			
Operating Temperature	–10°C to +40°C			
Finish	Horn: ASA resin, clear dark gray Other: ASA resin, dark gray Strap: Nylon, black		Horn: ASA resin, clear dark gray Other: ASA resin, yellow Strap: Nylon, black	Horn: ASA resin, clear red Other: ASA resin, red Strap: Nylon, black
Dimensions	137(W) × 257.8(H) × 210(D) mm	154(W) × 266(H) × 250(D) mm		
Weight	610g (without batteries)	660g (without batteries)	680g (without batteries)	
Accessory	-	Battery spacer ×1		

Note: Batteries are optional
*1 JEITA: Japan electronics and information technology industries association. (EIAJ TT-4501A)
*2 With the additional use of the supplied battery spacer.

Shoulder Megaphones

Shoulder Megaphone
ER-2215

Shoulder Megaphone with whistle
ER-2215W

Shoulder Megaphone with whistle
ER-2230W

Shoulder Megaphone with whistle
ER-2930W

Model	ER-2215	ER-2215W	ER-2230W	ER-2930W
Power Source	R14P (C) × 6 (9V DC)		Battery: R20P (D) x 10 (15V DC), External Power: 12V DC Battery	
Rated Output	15W		30W	
Max. Output	23W		45W	
Battery Life	Approx. 9 hours (JEITA)*2 -	Voice: Approx. 9 hours (JEITA)*2 Whistle: Approx. 20 min (JEITA)*2	Voice: Approx. 17 hours (JEITA)*2 Whistle: Approx. 90 min (JEITA)*2	
Audible Range	Voice: Approx. 400m (JEITA)*2 -	Voice: Approx. 400m (JEITA)*2 Whistle: Approx. 500m (JEITA)*2	Voice: Approx. 800m (JEITA)*2, Whistle: Approx. 1,000m (JEITA)*2	
Signal Sound	-	Whistle (1.6kHz to 2.4kHz)		
AUX Input Sensitivity	-	-	–10dB*1(300mV), 10kΩ(ø3.5 mini jack, stereo plug acceptable), volume control	
EXT Mic Input	-	-	600Ω, unbalanced, ø6.3 phone jack, volume control	
Receiving Frequency	-	-	-	UHF (800MHz band) VHF (200MHz band)
Antenna	-	-	-	Fold-down flexible antenna
Diaphragm	Polyimide Film (voice coil, bobbin)			
Remaining Battery Indication	-	-	LED (also serves as a power indicator) Steady ON: normal use, Flashing: batteries need replacement	
Operating Temperature	–10°C to +40°C			
Finish	Horn: ABS resin, light gray Microphone and others: ABS resin, gray Strap: Nylon, black		Horn ring: Vinyl chloride, gray Horn: Aluminum, light gray, paint Case top: Die-cast aluminum, gray, paint Strap: Nylon, black; Others: ABS resin, gray	
Dimensions	ø210 × 336 mm		ø351 x 512mm	
Weight	1.1kg (body, without microphone and batteries), microphone: 150g	1.2kg (body, without microphone and batteries), microphone: 150g	3.6kg (without batteries) Microphone: 150g	3.8kg (without batteries) Microphone: 150g
Accessory	-	-	ø3.5 mini plug(AUX input) x1, external power supply cord(1m) x1, splash-proof cover x1*3	
Option	Speaker stand: ST-16A		Speaker stand: ST-16A Microphone: DM series	Speaker stand: ST-16A, microphone: DM series, wireless tuner: WTU-4800

Note: Batteries are optional
*1 0dB = 1V
*2 JEITA: Japan electronics and information technology industries association. (EIAJ TT-4501A)
*3 Do not use the unit in heavy rains or strong winds, or in locations where the unit is directly exposed to water even using with the supplied splash-proof cover.

Hands-Free Megaphones

Compact Power Megaphone
ER-604W

Model	ER-604W
Power Source	R6 battery x8 (12V DC) 12V DC / 0.8A or more (AC adapter or DC power supply unit usable.)
Rated Output	6W
Max. Output	10W
Battery Life	Voice: approx. 10 hours (R6P manganese dioxide battery use) Whistle: approx. 30 minutes (continuous use)
Audible Range	Voice: 160m (under noise level of 55dB) Whistle: 160m (under noise level of 55dB)
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
Input	MIC 1: –40dB*, 1.5kΩ, ø6.3mm phone jack MIC 2: –18dB*, 3kΩ, ø3.5mm mini jack, phantom powering AUX: –12dB*, 18kΩ, ø3.5mm mini jack External power supply: 12V 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.

* 0dB = 1V

Other Function	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
Operating Temperature	-10°C to +40°C
Finish	Body, microphone: ABS resin, off-white Shoulder pad, belt: black
Dimensions	102(W) × 258(H) × 216(D) mm (excluding shoulder belt)
Weight	1.6kg (without batteries)
Accessory	ø3.5 mini plug x1, external power supply cord(1m) x1
Options	Headset microphone: WH-4000A, WH-4000H, dynamic microphone: DM series, speaker stand: ST-16A

Note:
- Batteries are optional.
- Do not use the battery from a starting car as its voltage is high, otherwise, the megaphone may fail.
- Battery life assumes that the megaphone is used for 30 minutes a day.
- Audible range assumes that the megaphone employs new batteries and is used on a quiet street. It varies depending on such conditions as battery consumption, ambient noise, wind direction and obstacles.

Selection Charts

Speaker Mounting Accessories Selection Chart

Speakers / Installation Configurations	Wide-Dispersion Speakers			
	F-03BT	F-03WT	F-03BT-WP-UE	F-03WT-WP-UE
Adapter Plate	HY-F03B	HY-F03W		
Speaker Stand	ST-34B			

Speakers / Installation Configurations	Wide-Dispersion Speakers			
	F-05BT	F-05WT	F-05BT-WP-UE	F-05WT-WP-UE
Adapter Plate	HY-F05B	HY-F05W		
Speaker Stand	ST-34B			

Speakers / Installation Configurations	Wide-Dispersion Speakers			
	F-08BT	F-08WT	F-08BT-WP-UE	F-08WT-WP-UE
Adapter Plate	HY-F08B	HY-F08W		
Speaker Stand	ST-34B			

Speakers / Installation Configurations	Subwoofer System	
	FB-08BT	FB-08WT
Wall Mounting Braket	HY-WM-FB08B	HY-WM-FB08W
Ceiling Mounting Braket	HY-CM-FB08B	HY-CM-FB08W

Speakers / Installation Configurations	Compact Array Speakers					
	HX-5B	HX-5W	HX-5B-WP	HX-5W-WP	FB-120B	FB-120W
Rigging Frame	HY-PF1B	HY-PF1W	HY-PF1WP		HY-PF1B	HY-PF1W
Ceiling Mount Bracket	HY-CW1B	HY-CW1W	HY-CW1WP			
Mount Bracket	HY-WM1B HY-WM2B	HY-WM1W HY-WM2W	HY-WM1WP	HY-WM2WP		
Extension Bracket	HY-CN1B	HY-CN1W	HY-CN1B-WP	HY-CN1W-WP		
Speaker Stand Adapter	HY-ST1					

Speakers / Installation Configurations	Compact Array Speakers					
	HX-7B	HX-7W	HX-7B-WP	HX-7W-WP	FB-150B	FB-150W
Speaker Connection Bracket	HY-CN7B	HY-CN7W	HY-CN7B-WP	HY-CN7W-WP		
Angle Adjustment Bar	HY-60DB	HY-60DW	HY-60DB-WP	HY-60DW-WP		
Rigging Frame	HY-PF7B	HY-PF7W			HY-PF7B	HY-PF7W
Rigging Bracket	HY-VM7B	HY-VM7W	HY-TM7B-WP	HY-TM7W-WP		
Wall Mounting Barcket	HY-WM7B	HY-WM7W	HY-MS7B-WP	HY-MS7W-WP		
Matching Transformer Adapter	HY-MT7					
Speaker Stand Adapter	HY-ST7					

Speakers / Installation Configurations	Line Array Speakers Type A	
	Indoor Use SR-A12L / SR-A12S / SR-A18B	**Outdoor Use** SR-A12LWP / SR-A12SWP
Rigging Frame	SR-RF12	SR-RF12WP
Tilt Joint Plate	SR-TP12	

Speakers / Installation Configurations	Line Array Speakers Type S				Slim Array Speakers
	SR-S4L	SR-S4LWP	SR-S4S	SR-S4SWP	TZ-S60W-EA
Extension Plate	SR-EP4	SR-EP4WP	SR-EP4	SR-EP4WP	
Wall Tilt Bracket	SR-TB4	SR-TB4WP	SR-TB4	SR-TB4WP	
Wall Mounting Bracket	SR-WB4	SR-WB4WP			
Stacking Bracket					HY-S60W-EA
Stand Adapter	SR-SA4				
Protection Pad	SR-PP4				

Speakers / Installation Configurations	Line Array Speakers Type C	
	Indoor Use — SR-C8L / SR-C8S / SR-C15B	Outdoor Use — SR-C8LWP / SR-C8SWP / SR-C15BWP
Rigging Frame	SR-RF8	SR-RF8WP
Cluster Bracket	SR-CL8	
Rigging Support Bracket	SR-SB8	
Tilt Joint Plate	SR-TP8	

Speakers / Installation Configurations	Line Array Speakers Type H			
	SR-H2L	SR-H2S	SR-H3L	SR-H3S
Extension Plate	SR-EP3		SR-EP3	
Wall Mount Bracket	SR-WB3			
Wall Tilt Bracket	SR-TB3			
	SR-SA3			

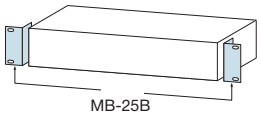
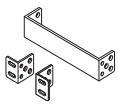
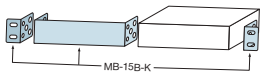
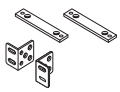
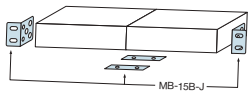
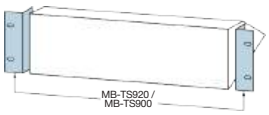
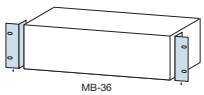
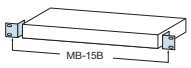
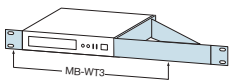
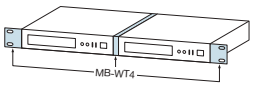
Speakers / Installation Configurations	2-way Passive Speakers	
	SR-F04	SR-F08
Speaker Mount Bracket	HY-B0801 HY-UV04 HY-UH04	HY-B0801 HY-UV08 HY-UH08
Ceiling Mount Bracket	HY-C0801	HY-C0801
Wall Mount Bracket	HY-W0801 HY-WM04	HY-W0801 HY-WM08
	ST-34B	
	HY-ST04	

Speakers / Installation Configurations	FGM Speakers		
	H-1	BS-1030B	BS-1030W
Ceiling Mount Bracket / Wall Mount Bracket	HY-H1 Adaptor Frame	SP-410	SP-420
Speaker Stand		ST-16A	

Speakers / Installation Configurations	Line Array Speaker Type T
	SR-T5
Wall Pan Bracket	SR-PB5

Speakers / Installation Configurations		HS Series Speakers			
		HS-120B HS-1200BT	HS-120W HS-1200WT	HS-150B HS-1500BT	HS-150W HS-1500WT
Wall/Ceiling Mount Bracket	Vertical Installation	HY-1200VB	HY-1200VW	HY-1500VB	HY-1500VW
	Horizontal Installation	HY-1200HB	HY-1200HW	HY-1500HB	HY-1500HW
Ceiling Mount Bracket		HY-C0801	HY-C0801W	HY-C0801	HY-C0801W
Wall Mount Bracket		HY-W0801	HY-W0801W	HY-W0801	HY-W0801W
Speaker Stand		ST-34B			

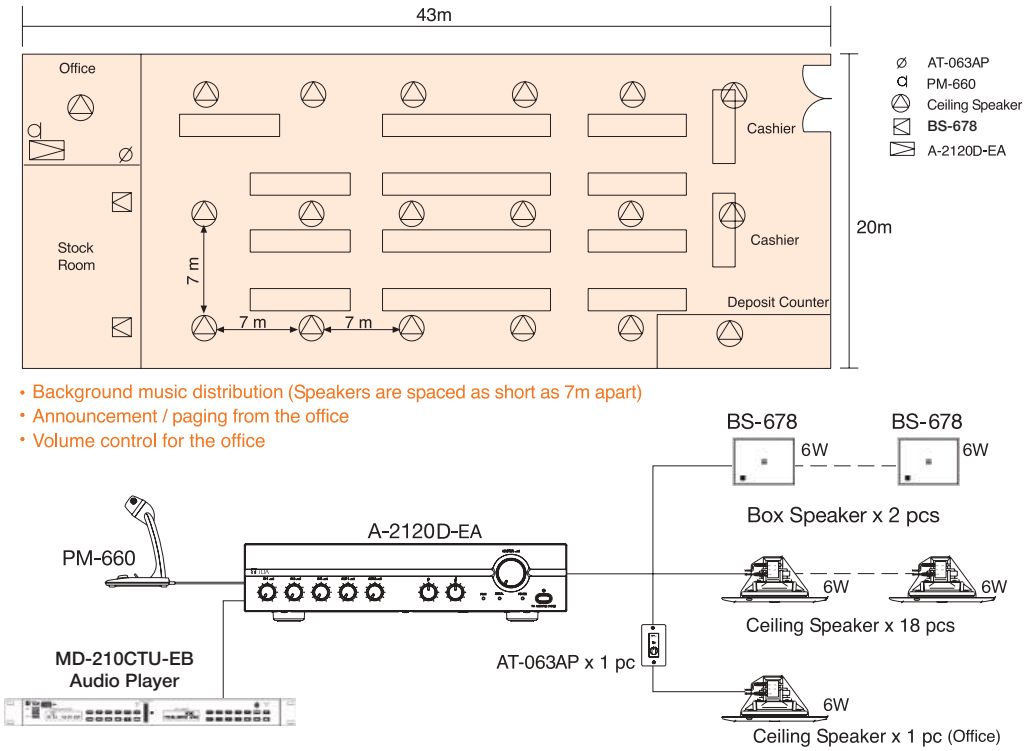
Rack Mount Selection Chart

Mountable Equipment				Rack Mounting Brackets	
	Name	Model	Appearance	Appearance, Size and Color	Setting
Amplifiers	Mixer Amplifier	A-2030D-EA A-2060D-EA A-2120D-EA A-2240D-EA		**MB-25B (2-size)** Color: Black	
		A-3212DMZ-EA4 A-3224DMZ-EA4 A-3248DMZ-EA4			
		A-3512D A-3524D A-3548D			
		A-3606D A-3612D A-3624D A-3648D			
	Power Amplifier	P-2240			
		P-3248D-EA4			
		P-3548D			
IP Intercom Systems	Audio Interface Unit	N-8000AL		**MB-15B-BK (1-size)** Color: Black 	
	Telephone Interface Unit	N-8000AF			
	CO Interface Unit	N-8000CO			
Network-Related Systems	Network Audio Adapter	NX-100		**MB-15B-J (1-size)** Color: Black 	
		NX-100S			
		NX-300			
Conference Systems	Expansion Unit	TS-918			
	Sub Control Unit	TS-D1000-SU			
	Central Unit	TS-D1100-MU		**MB-TS920 (4-size)** Color: Black	
		TS-920RC TS-820RC TS-820			
		TS-910		**MB-TS900 (4-size)** Color: Gray	
Voice Evacuation Systems	VM-2000 Series	VM-2120		**MB-36 (3-size)** Color: Gray	
		VM-2240			
Wireless Microphone Systems	Power Antenna Distributor	WD-5800		**MB-15B (1-size)** Color: Black	
	UHF Wireless Tuner	WT-5800		**MB-WT3 (1-size)** Color: Black	
		WT-5805			
		WT-4820			
	Infrared Wireless Tuner	IR-702T			
	Infrared Wireless Distributor	IR-700D		**MB-WT4 (1-size)** Color: Black	
Rack Mount Equipment	Sound Repeater	EV-20R			

Technical Column

System Application 1

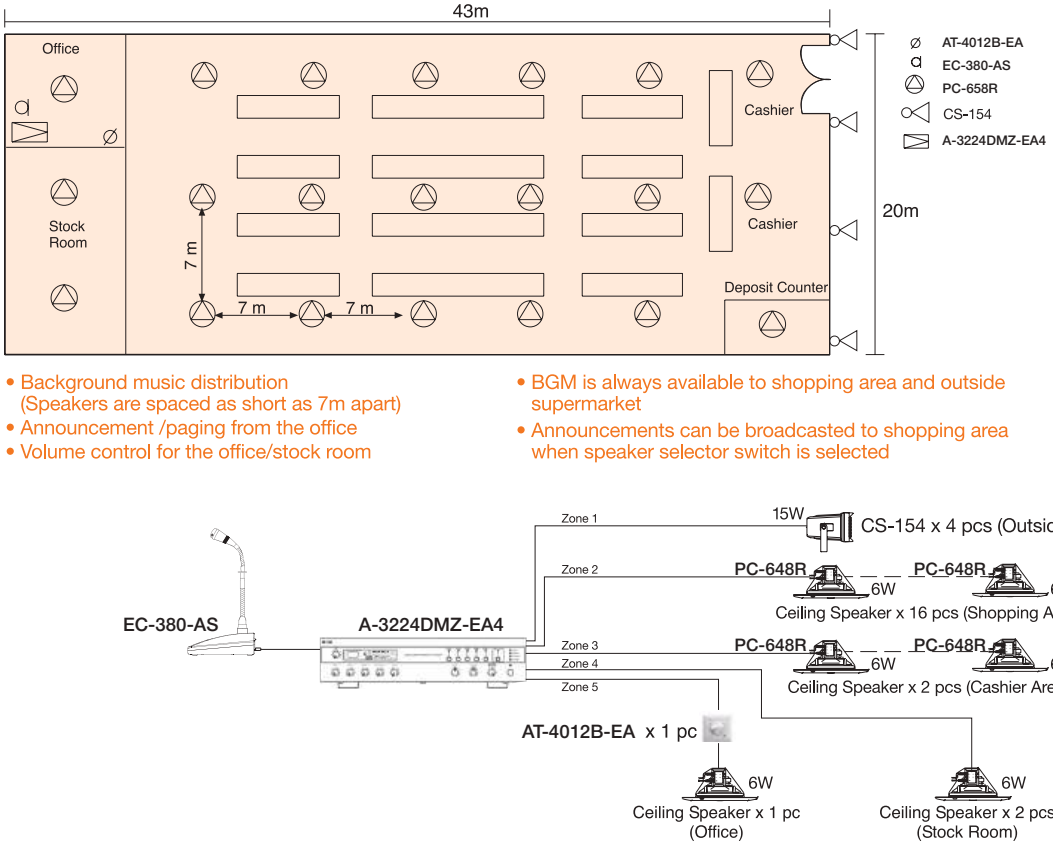
SUPERMARKET SYSTEM (SINGLE ZONE)



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

System Application 2

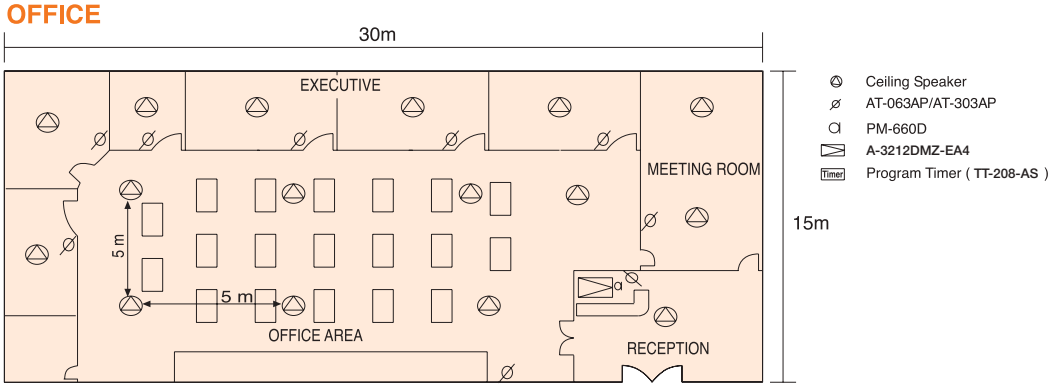
SUPERMARKET SYSTEM (5 ZONES)



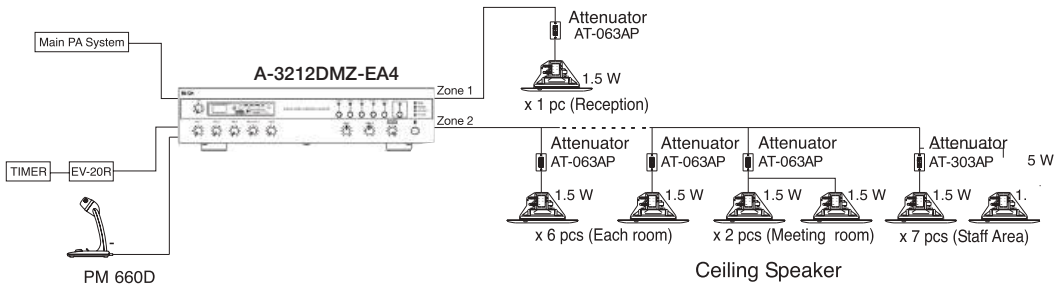
- Background music distribution (Speakers are spaced as short as 7m apart)
- Announcement /paging from the office
- Volume control for the office/stock room
- BGM is always available to shopping area and outside supermarket
- Announcements can be broadcasted to shopping area when speaker selector switch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

System Application 3

OFFICE

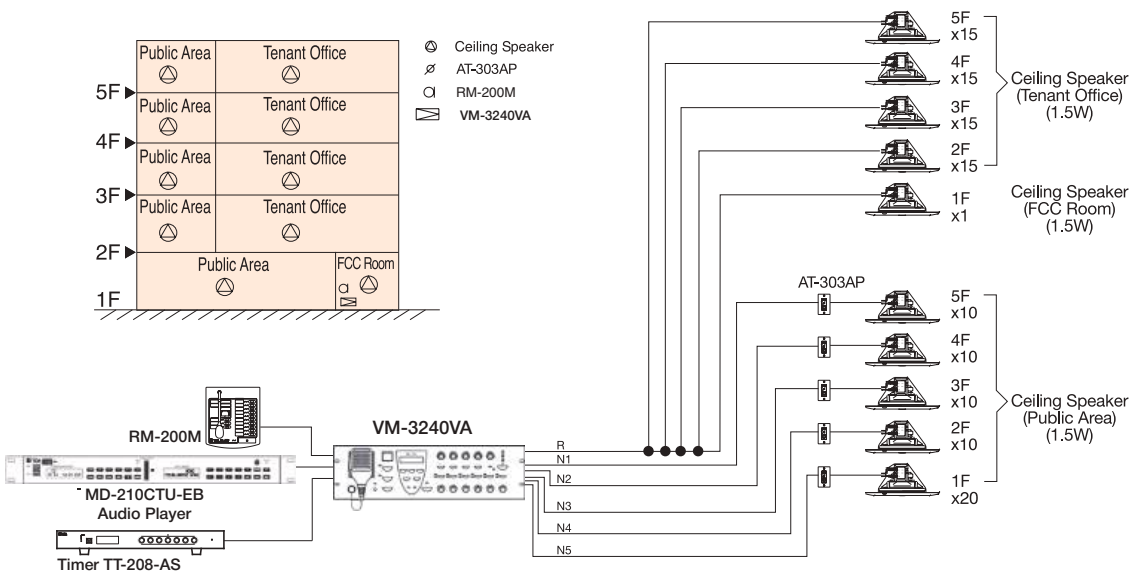


- Uniform background music distribution level in office area (Speakers are spaced as short as 5m apart)
- Background music of better sound quality (**A-3000D** series amplifier)
- Announcement with chime from reception desk
- Volume control in individual rooms
- Emergency broadcast is possible from main Building PA System
- Pre-recorded messages can be activated by timer for announcements (periodic broadcasting)



System Application 4

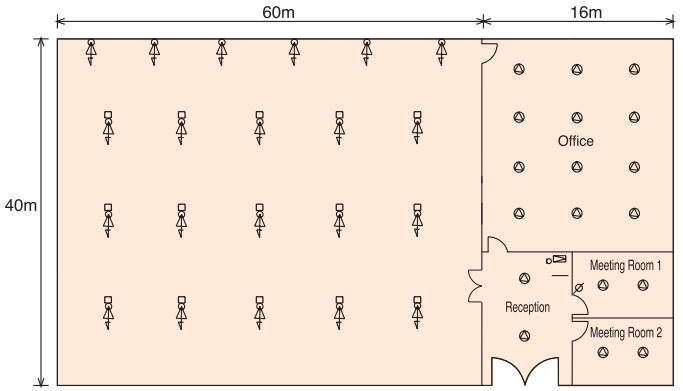
OFFICE BUILDING



- Pre-recorded messages can be activated by timer for announcements (periodic broadcasting)
- BGM is always available to Public Area
- Announcement/paging can be made from the FCC room

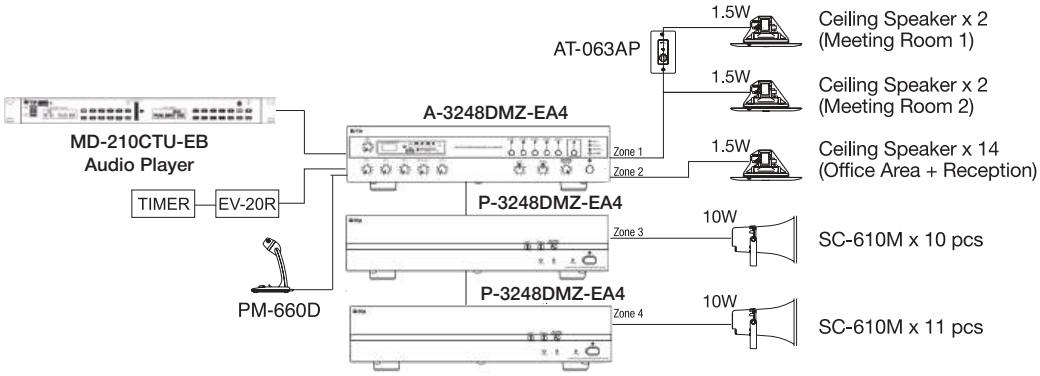
System Application 5

FACTORY



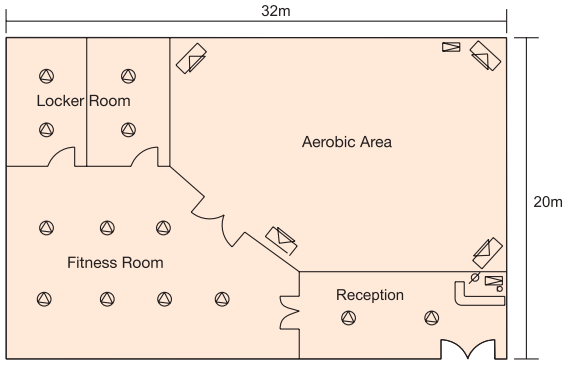
Ceiling Speaker
SC-610M
AT-063AP
PM-660D
A-3248DMZ-EA4, P-3248D-EA4

- Pre-recorded messages can be activated by timer for announcements (Periodic broadcasting)
- Music distribution during recess
- Announcement with chime from reception desk
- Selectable paging area from speaker selector
- Uniform paging distribution level in noisy workshop



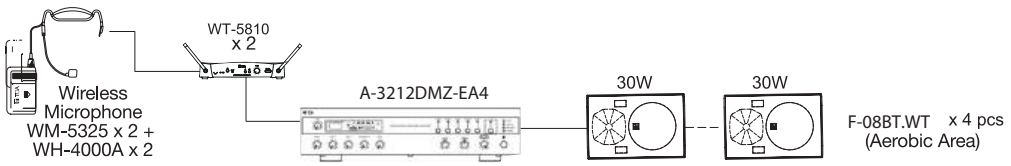
System Application 6

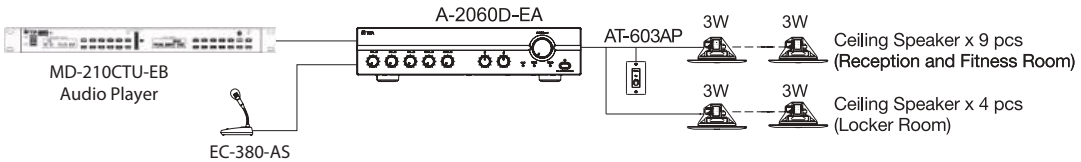
GYMNASIUM



AT-603AP
Ceiling Speaker
EC-380-AS
F-2000 BT/WT
A-3212DMZ-EA4 and A-2060D-EA

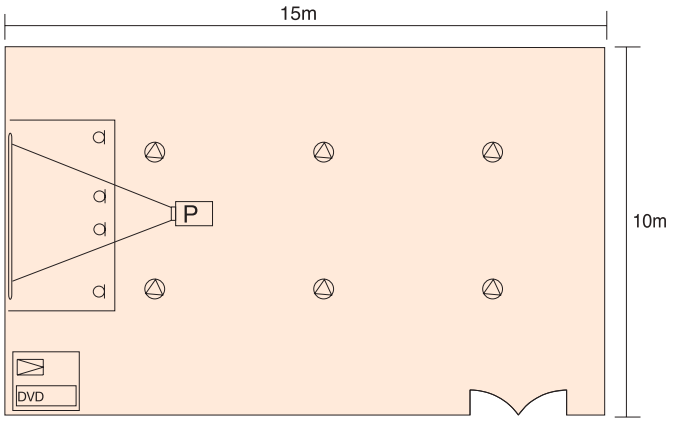
- Good Sound Quality (**A-3200D** series amplifier and F-2000 Speakers)
- Wireless microphone makes instructors' movement free
- Announcement with chime from reception desk
- Speakers are spaced with less than 5 m apart because of low height ceiling (less than 2.5 m)





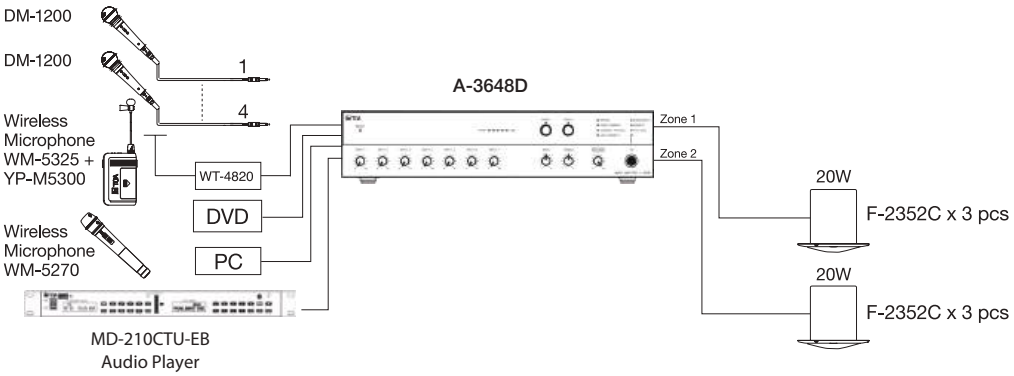
System Application 7

TRAINING / SEMINAR ROOM



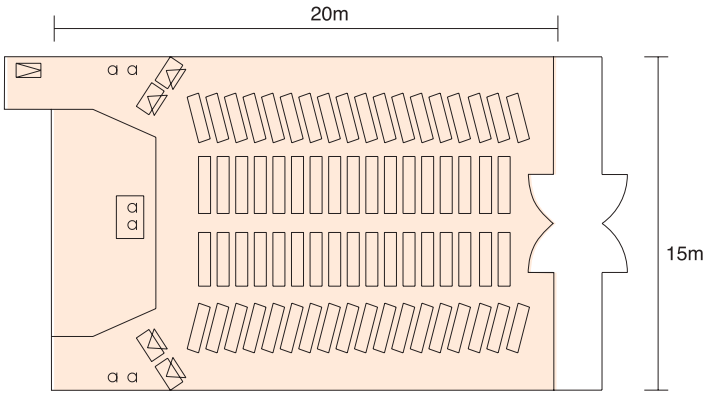
DM-1200
A-3648D
F-2352C

- Good Sound quality (Amplifier and speaker system)
- Wireless microphones makes speakers movement free
- Total 4 microphones can be used
- DVD and PC sound can be broadcasted



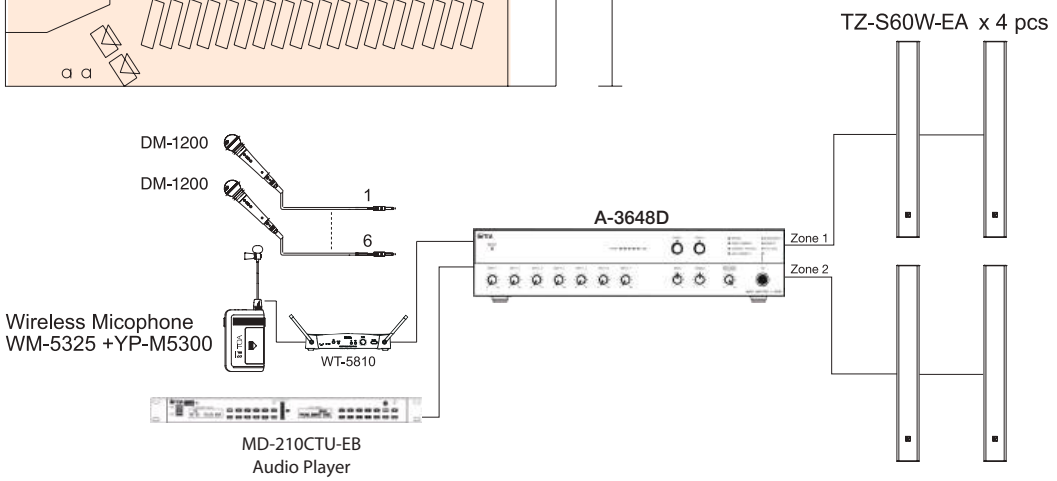
System Application 8

CHURCH



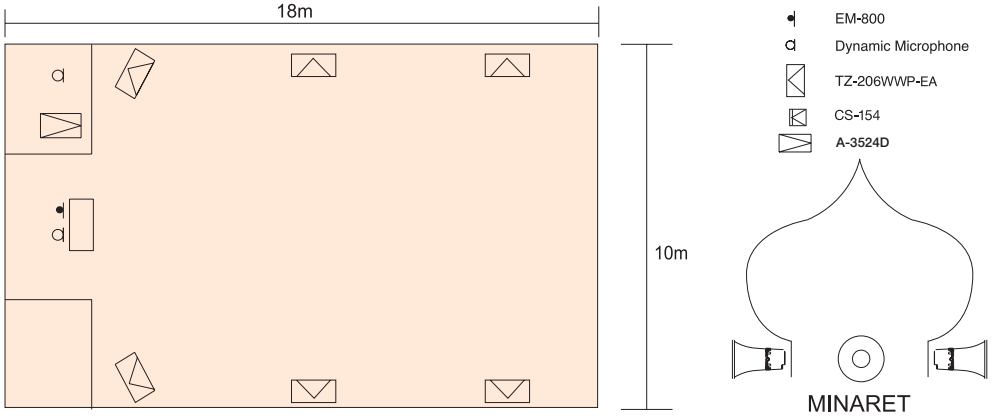
Dynamic Microphone
TZ-S60W-EA
A-3648D

- Good Sound Quality (**A-3600D** series Amplifier and TZ-S60W Slim Array Speakers)
- High speech clarity
- **Wireless microphone allows priests move freely**

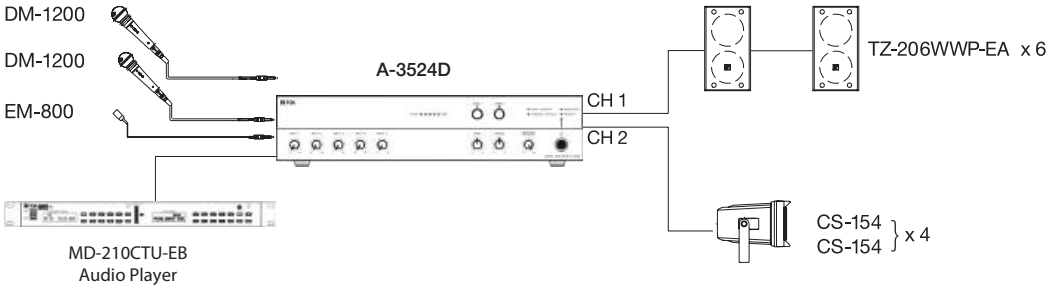


System Application 9

WORSHIP PLACE

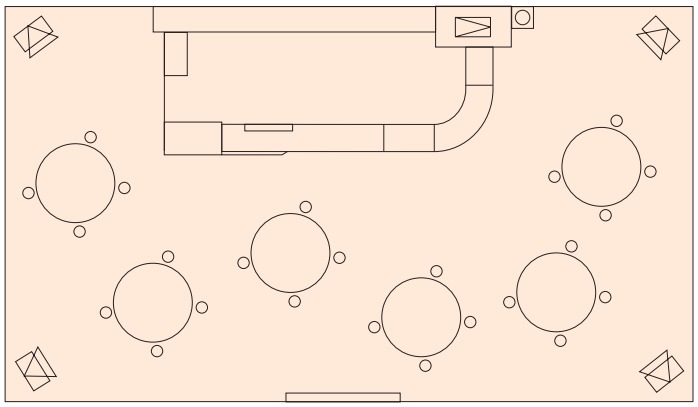


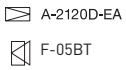
- Economic system that can meet the budget
- One amplifier with Independent volume controls



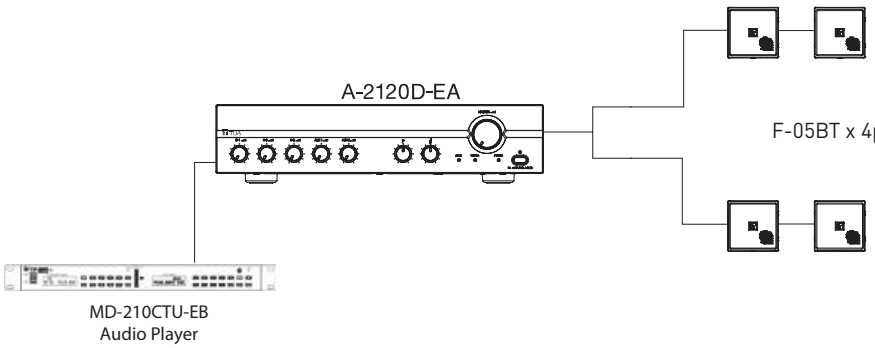
System Application 10

CAFE



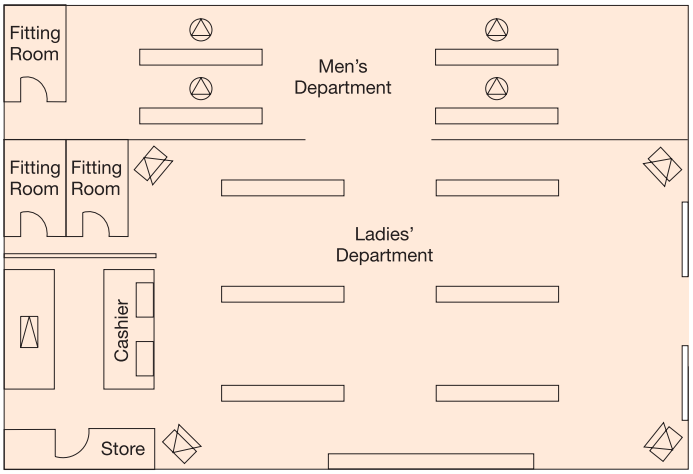


- Uniform background music distribution
- Speakers fit the interior space design



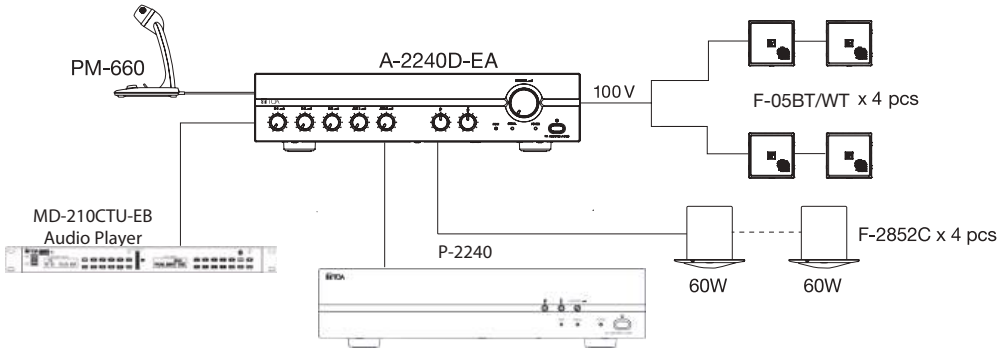
System Application 11

RETAIL SHOP



A-2240D-EA
F-2852C
F-05BT/WT

- Economic system
- Announcement/paging can be made

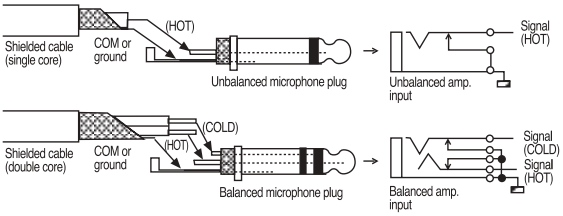


Microphone

Wiring of microphones

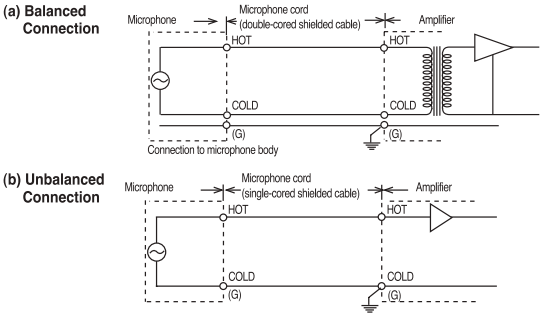
Output from a microphone is rather weak; therefore, it is important to use shielded cable for microphones to prevent line noise. The low impedance shielded cable intended for microphones are commercially available. The shielded cable is generally used to transmit the audio signals from microphones (-70dB/0.3mV)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

Balanced and unbalanced type



Balanced and unbalanced output

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



Distance of extension for microphone cords

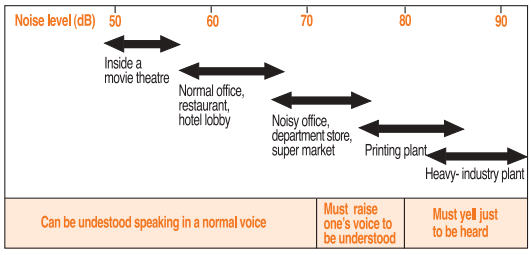
The following table shows the maximum extension distance for microphone cords. when distance extends beyond the following figures, exessive noise will make the microphone impractical,and therefore it will be necessary to use a microphone mixer to boost the signal level to minimize the influence of noise.

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

Speaker 1

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

Noise levels are expressed in decibels (dB). Below are some typical examples..



When transmitting voice or music through a speaker, it is necessary to transmit at a level that is higher than the ambient noise level. In the case of voice transmission, it should be transmitted at a level 5 to 10 dB higher than the noise level, background music 3 to 5 dB higher, and foreground music 15 to 20 dB higher.

Computation of intensity of sound

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

SPL (dB) = SPL (1W/1m) − Attenuation of SPL due to distance + Amount of increase of SPL due to electric input

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

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

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

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

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

■ **Example of calculation:**

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

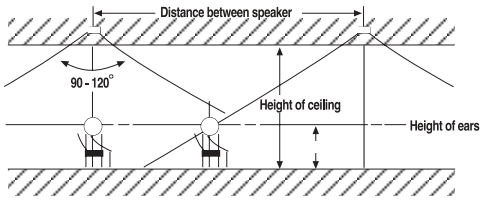
SPL = 112 dB - 20 dB (10m) + 10 dB (10W) = 102 dB

Arrangement of speakers in a general office (Ceiling speakers)

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

Speaker 2

Arrangement of speakers

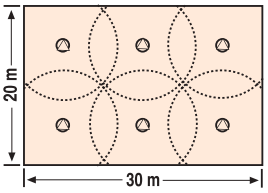


Area of coverage of one speaker

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

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

Example of arrangement



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

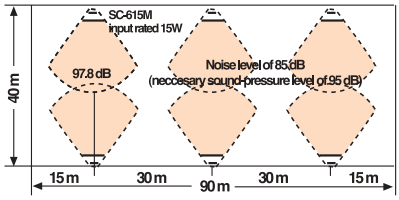
Number of speakers necessary: 6 to 8

Arrangement of speakers in a factory (Horn speakers)

Factories with high noise levels generally use horn speakers, which can produce high levels of sound. If you know where people are working in the factory, speakers are best arranged to cover such locations. If that is unknown, speakers should be arranged in accordance with the floor space.

Here is an example of a 40 m x 90 m room in factory with a noise level af 85 dB. In this factory, SC-615M speakers are installed; therefore, the sound pressure that can be obtained at a point 20 meters away with electric input of 15 W will be:
[112 dB (1W/1m) - 26.0 dB (20 m) + 11.8 dB (15 W)]=97.8 dB

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



Speaker wiring

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

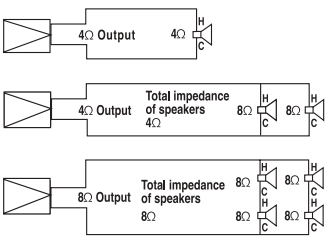
Speaker 3

High-impedance connection and low-impedance connection

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

■ Example of low-impedance connection:

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



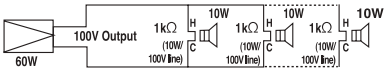
$$4\Omega = \frac{1}{\frac{1}{8\Omega} + \frac{1}{8\Omega}}$$

$$8\Omega = \frac{1}{\frac{1}{8\Omega} + \frac{1}{8\Omega} + \frac{1}{8\Omega} + \frac{1}{8\Omega}}$$

■ Example of high-impedance connection:

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

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



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

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

● Amplifier output impedance

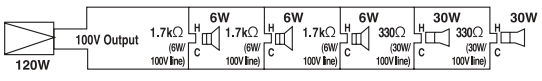
$$Z = \frac{100\ (V)^2}{60\ (W)} = 167\ (\Omega)$$

● Total impedance of speakers

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

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

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



● Amplifier output impedance

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

● Total impedance of speakers

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

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

Certifications & Standards

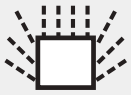
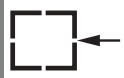
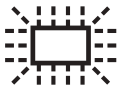
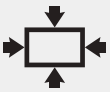
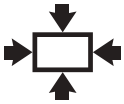
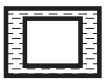
IP Grade Panel

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

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

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

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

1st Numeral: Protection against solid foreign objects			2nd Numeral: Protection against ingress of water		
0		Non-protected	0		Non-protected
1		Protected against solid foreign objects of 50mm ø and greater.	1		Protected against vertically falling water drops.
2		Protected against solid foreign objects of 12.5mm ø and greater.	2		Protected against vertically falling water drops when enclosure titled up to 15°.
3		Protected against solid foreign objects of 2.5mm ø and greater.	3		Protected against spraying water.
4		Protected against solid foreign objects of 1.0mm ø and greater.	4		Protected against splashing water.
5		Dust-protected	5		Protected against water jets.
6		Dust-tight	6		Protected against powerful water jets.
X		Not tested	7		Protected against the effects of temporary immersion in water.
			8		Protected against the effects of continuous immersion in water.
			X		Not tested

ISO & European Standards

Certificate No. 21896

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

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

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