TOA

audio & intercom
product catalogue

We supply sound, not equipment

www.TOAcanada.com

Founded in 1934 in Kobe Japan, we can draw upon more than 85 years of experience in researching, developing and selling commercial and professional audio and security equipment. Our pride is that we can use this knowledge to create acoustic sound fields for millions of people to make their lives safer and more pleasant. Since its founding, TOA has pursued its business based upon a solid Management Philosophy, which are the "Three Confidences". These important basic foundations will carry us into an even brighter and prosperous future.

TOA group has its headquarter in Kobe and consists of 19 subsidiaries, which are divided into 5 divisions. TOA Canada Corporation is located in Ontario, Canada, since 1990, and has a sales force across Canada.

TOA Canada is a complete sound solutions provider, specializing in commercial audio, including, public address, voice communications, voice evacuation and emergency paging requirements. TOA Canada Corporation offers complete solutions for all corporate and commercial audio communications and intercom requirements.

Furthermore our Canadian warehouse located centrally in Ontario ensures immediate access to thousands of TOA products to offer you a high delivery performance.

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 efforts.

We supply sound,
not equipment

Dr. Sound

Dear reader,

My name is Dr. Sound. I am the acoustic expert at TOA and am always seeking the perfect sound. At TOA we have made it our mission to supply you with high-quality equipment, and 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.

If you should have a question, please e-mail me at: techtips@drsound.ca.

Yours, Dr. Sound

Dr. Sound in TOA's Anechoic Chamber.

SYMBOL LEGEND

Network Connection Required | Network Connection Optional | PC & Software Required | PC & Software Optional | RS-232 Required | RS-232 Optional | iOS APP Available | USB Required

TOA CANADA CORPORATION

TOA Advantage

Experience:
- Over 85 years of experience
- World leader in commercial & professional audio products
- World renowned installations

Quality:
- Most products have a FIVE year limited warranty
- Reliable & Durable: best MTBF in the industry

Selection:
- Broad product range for applications in:
  - Corporate & Commercial
  - Correctional Facilities
  - Education
  - Government & Hospitals
  - Halls & Theatres
  - Hospitality & Retail
  - Houses of Worship
  - Intercom
  - Sports Complexes
  - Transportation
  - Voice Evacuation & Mass Notification Systems

Distribution:
- Canadian stocking warehouse for products and service parts

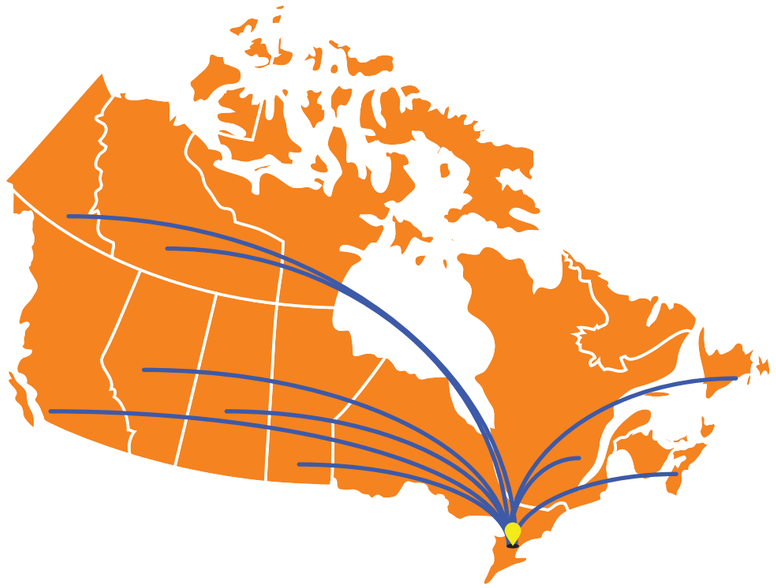
Customer Service:
- Canadian technical support & design team
- FREE Designs & Consultation
- Extensive field representation nationally
- Monthly web-based training
- Customized dealer sales & technical training

Commitment:
- Competitively priced, quality products and the utmost in customer service

Canadian Headquarters

Canadian Technical Support

Canadian Warehouse & Expedited Shipping



From coast to coast to coast and all parts in between

TOA Canada is dedicated to delivering quality service, and dependable support in every province and territory. Our home grown talent works hard to ensure we exceed the expectations of our customers.

IP-A1 Series, Network PA System

Contact TOA
for more details.

Key Features

- Integrates into existing facility network system (Serverless architecture)
- Flexible zone settings
- Broadcast Scheduling
- Trigger broadcast events
- Video Management System integration (ONVIF and HTTP)
- Several broadcasting options (from SIP phones and VMS software)

COMING SOON

IP Remote Micorphone

IP Ceiling Speaker

IP Audio Interface

IP Zone Amplifier

Paging Gateway

IP Ceiling Speaker

IP-A1SC15

UC-4SC615

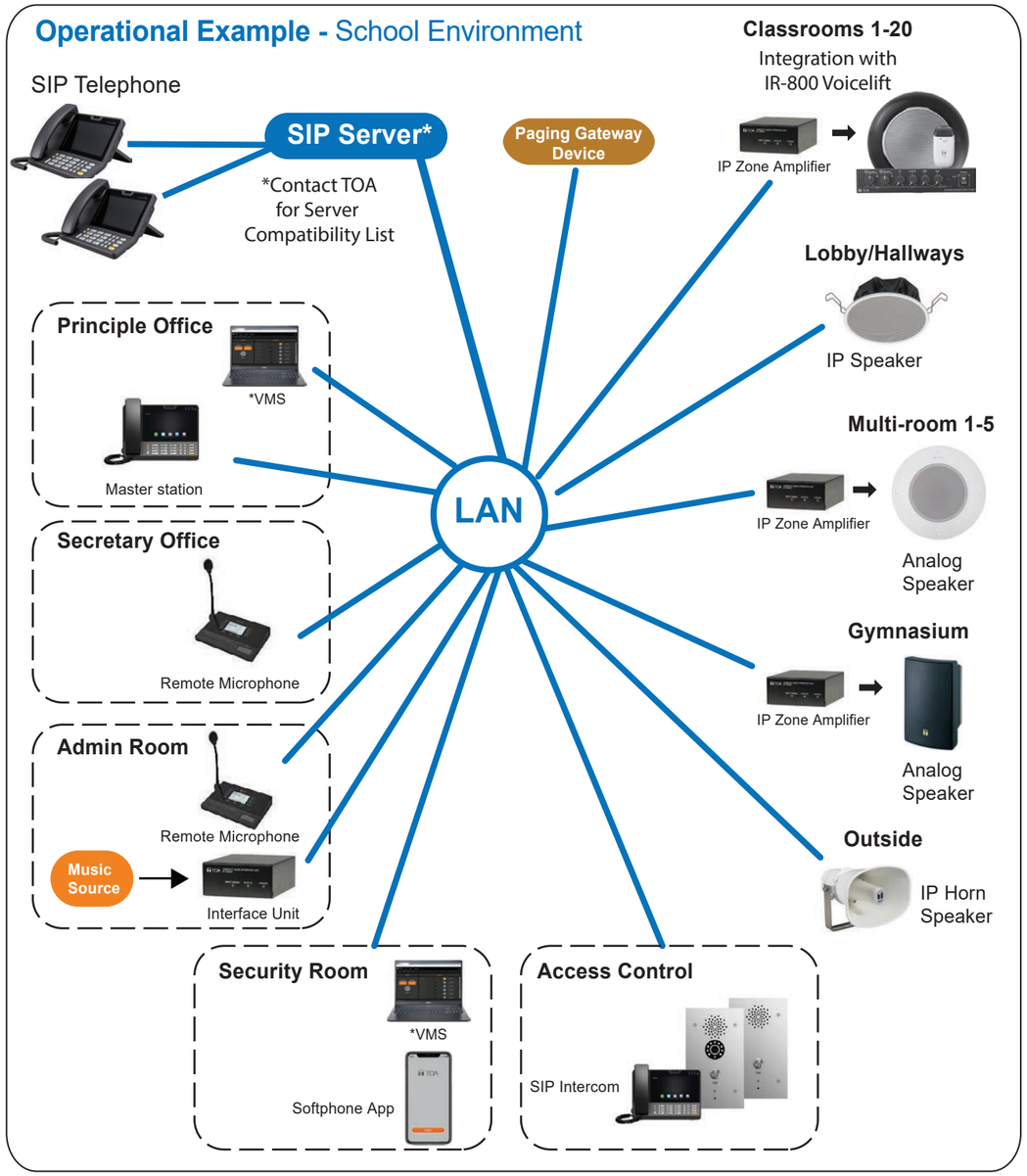
IP-A1 Series Integrates with N-SP80 SIP Intercom System

- N-SP80MS1 SIP Multimedia Station
- N-SP80AS1 Q SIP Audio Door Station
- N-SP80VS1 Q SIP Video Door Station

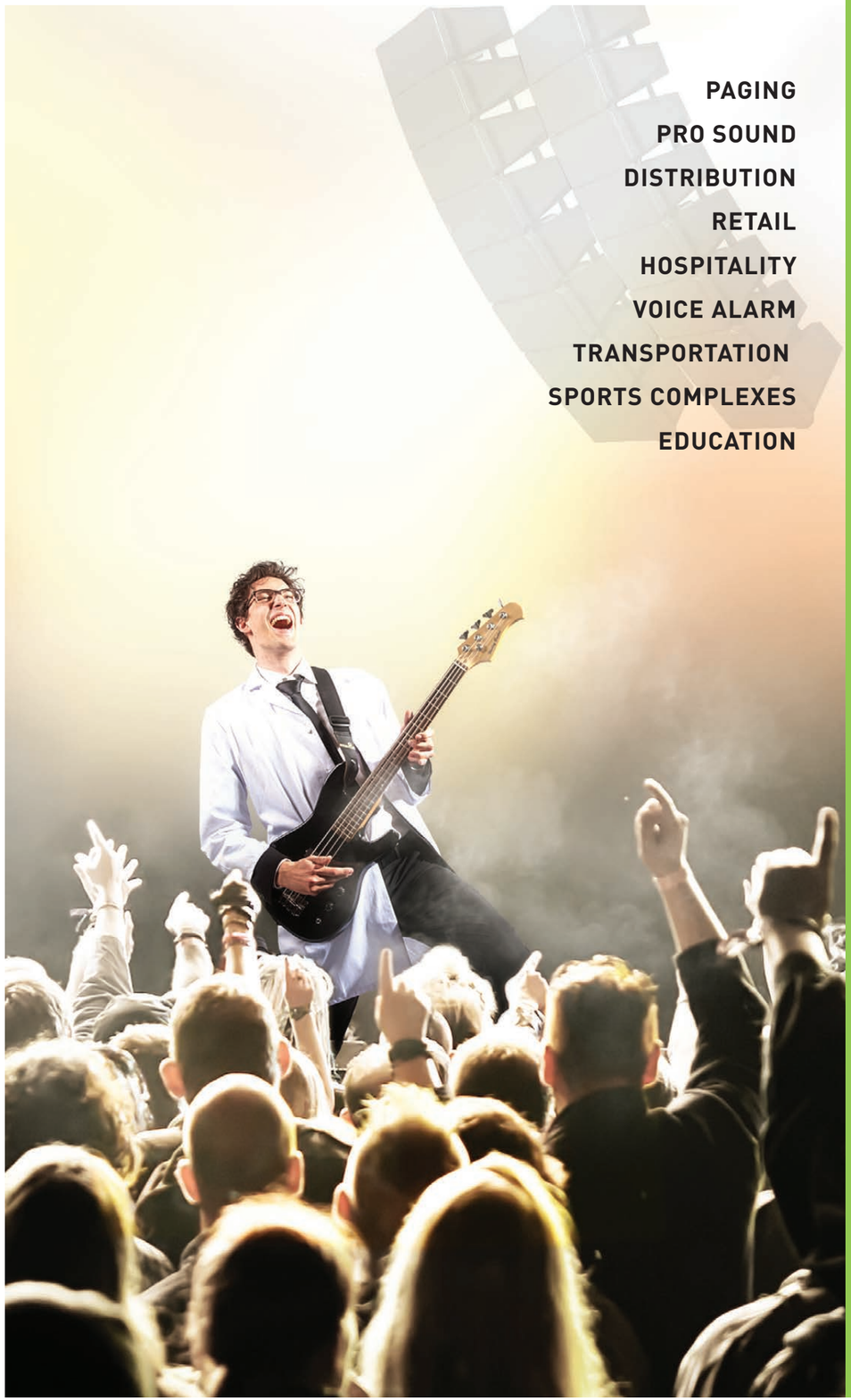
IP-A1 Series

In a network PA system, equipment such as microphones and speakers can directly connect to the network. TOA's full solution permits access to create pre-recorded messages, live event trigger's and a host of other incredible options.

*Integrates with a VMS or operates as a standalone solution



Education | Government & Hospitals | Corporate & Commercial | Voice Evacuation & Mass Notification | Theatres & Halls | Transportation | Hospitality & Retail | Sports Complexes



SPEAKERS

Speakers

Ceiling Speakers

Flush Mount Type Ceiling Speaker

PC-1860 F00

PC-1860S F00

- Speaker design that harmonizes with the venue's architecture and decor
- Quick and easy installation thanks to new SUS spring clamp installation method
- Wide frequency response
- 5" ceiling speaker diameter
- Thin panel does not clash with interior design
- Back box BB-1864 for use with PC-1860S F00**

Model	PC-1869 F00	PC-1869S F00**
Rated Input (100V line)	6W	
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 6.7kΩ (1.5W), 13kΩ (0.8 W); 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 6.7kΩ (0.8W), 13kΩ (0.4W)	
Sensitivity (1W, 1m)	90 dB (500 - 5,000 Hz, pink noise)	
Frequency Response	55 – 18,000 Hz (peak -20 dB)	
Mounting Hole Diameter	ø150 ±3 mm (5.9" ±0.12")	
Speaker Component	12cm (5") cone-type	
Finish	Frame: Steel plate, white; Grille: Surface-treated steel plate net, white	
Dimensions	ø180 x 72(D) mm (ø7.09" x 2.9")	ø180 x 111(D) mm (ø7.09" x 4.37")
Weight	620 g (1.37 lbs)	750 g (1.65 lbs)
Accessory	12" round baffle for 5-inch speakers	

Flush Mount Type Ceiling Speaker

PC-648R F00

PC-658R F00

- Spring clamp mechanism for easy speaker mounting to the ceiling
- High cost performance
- PP Resin, SECC punching net
- Back box BB-1864 for use with PC-648R F00
- *Available in lots of 4 (use part number: PC-648R F00-4, PC-658R F00-4)*

Model	PC-648R F00	PC-658R F00
Rated Input (100V line)	6W (100 V line), 3 W (70 V 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)	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)
Sensitivity (1W, 1m)	90 dB (500 - 5,000 Hz, pink noise)	
Frequency Response	100 – 18,000 Hz (peak -20 dB)	65 – 18,000 Hz (peak -20 dB)
Mounting Hole Diameter	ø145 ±5 mm (5.71" ±0.2")	ø170 ±5 mm (6.69" ±0.2")
Speaker Component	12cm (5") cone-type	16cm (6") cone-type
Finish	Baffle: Polypropylene resin, white/Grille: Surface-treated steel plate net, white	
Dimensions	ø168 x 77(D) mm (6.61" x 3.03")	ø192 x 73(D) mm (7.56" x 2.87")
Weight	470 g (1.04 lb)	500 g (1.1 lb)

Ceiling Mount Speaker

PC-580RU
PC-580RVU

- 8" in-ceiling speaker for high quality applications
- 25V & 70V transformer taps up to 5W
- Fits standard ceiling speaker template perfect for retrofits
- Unique "monocoque" design provides better structural integrity
- PC-580RU and PC-580RVU: High-performance, cost effective ceiling speaker for use in mass notification systems, voice evacuation, emergency paging and everyday paging and background music
- PC-580RU and PC-580RVU: Meets ULC S541, UL 1480 UUMW *(Fire alarm signaling)*, ULC S576 and UL 2043 (*use in air handling spaces)* when using the HY-BC580U back can
- PC-580S: High-performance, cost effective ceiling speaker for use in general paging and back ground music requirements
- *Available in lots of 10 (use part number: PC-580RU-10, PC-580RVU-10, PC-580S-10)*

Model	PC-580RU	PC-580RVU	PC-580S
Rated Input (100V line)	10W (speaker), 5 W (transformer, 70.7 V line and 25 V line)		
Rated Impedance	70.7V line: 20K (0.25W), 10K, (0.5W), 5K (1W), 2.5K (2W), 1K (5W) Ω 25V line: 2.5K (0.25W), 1.25K (0.5W), 625 (1W), 312.5 (2W), 125 (5W) Ω		
Sensitivity (1W, 1m)	97 dB (1W, 1m)		97 dB
Frequency Response	50 - 16.5 kHz		
Speaker Component	200mm (8") dual cone type		
Finish	Baffle: Steel plate, white Grille: Surface-treated steel plate net, white		Baffle: Steel plate, white Grille: Surface-treated steel plate net, white
Dimensions	Dia. 324 x 87.3 (d) mm (12.8" x 3.4")	Dia. 324 x 87.3 (d) mm (12.8" x 3.4)	318(W) x 318(H) x 84.5(D)mm (12.5"x12.5"x3.2")
Weight	1.50 kg (3.31 lbs)	1.52 kg (3.35 lbs)	1.74 kg (3.84 lbs)
UL Standards	ULC S541, UL 1480 UUMW, ULC S576 and UL 2043 when used with HY-BC580U		--
Optional Accessories	Back can (for UL/ULC certified installation): HY-BC580U Back can (for other installations): BB-580; Tile bridge, mounting channel: Q-HY-TB2		Flush mount back box: Q-BB-580S Surface back box: Q-BB-580W

Square Ceiling Mount Speaker

PC-580S

Optional Accessories - PC Series

Back Box

HY-BC580U

Back Box

BB-580

Square Flush Mount Back Box

Q-BB-580S

White Square Surface Mount Back Box

Q-BB580W

Mounting Channel

Q-HY-TB2

Back Box

for PC-1860S, PC-648R

BB-1864

Baffle

for PC-1860S

HY-RB1860

- *Available in lots of 10 (use part number: HY-BC580U-10, BB-580-10, Q-BB-580S-10, Q-BB580W-10, BB-1864-10)*

** Special Order Product

Accessory Reference on page 156

Ceiling Speakers

Clean Room Ceiling Speaker

PC-5CL

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

Model	PC-5CL
Rated Input (100V line)	5W
Rated Impedance	100V line: 2 kΩ (5W) 70V line: 2 kΩ (2.5W)
Sensitivity (1W, 1m)	87 dB
Frequency Response	150 – 20k Hz
Mounting Hole Diameter	ø98 mm (3.9")
Speaker Component	8 cm cone-type
Finish	Panel: Alloy-coated ABS resin/Enclosure: ABS resin, off-white/ Punching net: Stainless steel/Exposed fixing screw: Stainless steel
Dimensions	ø116 x 110 (D) mm (4.6" x 4.3")
Weight	620 g (1.37")
Operating Temperature	-20°C to +55°C (-4 ºF to 131ºF)

Combination Type Reflex Horn Speakers

Wide Range Horn Speaker

CS-64 / CS-64U**

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

Wide Range Horn Speaker

CS-154 / CS-154U**
CS-304 / CS-304U**

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

Model	CS-64	CS-64U**	CS-154	CS-154U**	CS-304	CS-304U**
Rated Input (100V line)	6W		15W		30W	
Rated Impedance	100V line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 830Ω (6W), 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)		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 (1W, 1m)	96 dB		97 dB		98 dB	
Frequency Response	130 Hz – 13 kHz		150 Hz – 15 kHz		120 Hz – 15 kHz	
Speaker Component	12 cm (5") cone-type (Treated for splash proof)		12 cm (5") cone-type			
Finish	Horn, cover: ABS resin, off-white, paint Bracket: Stainless steel Punched net: Surface treated steel plate, dark-gray, powder coating		Horn, cover: ABS resin, off-white, paint Bracket: Stainless steel Net: Aluminium, gray	Horn, cover: Fire-resistant ABS resin, off-white, paint Bracket: Stainless steel Net: Aluminium, gray	Horn, cover: ABS resin, off-white, paint Bracket: Stainless steel Net: Aluminium, gray	Horn, cover: Fire-resistant ABS resin, off-white, paint Bracket: Stainless steel Net: Aluminium, gray
Dimensions	233 (W) x 224 (H) x 208 (D) mm (9.2" x 8.1" x 8.2")		366 (W) x 230 (H) x 272 (D) mm (14.4" x 9.1" x 10.7")			
Weight	1.5kg (3.3 lbs)		2.8kg (6.2 lbs)		3.1kg (6.8 lbs)	
Dust/Water Protection	--		--	IP65	--	IP65
UL Code (outdoor use)	--	UL1480 UEAY	--	UL1480 UEAY	--	UL1480 UEAY

** Special Order Product

Network Horn Speaker

Spotlight

Network Horn Speakers

UC-4SC615 Q & IP-A1SC15

- Versatile, scalable and cost-effective
- Both ONVIF and SIP supported
- Delivers clear speech
- Easy integration with VMS software
- ONVIF back channel function applied for live announcement
- Up to 10 Multicast ports assignable for zone paging without SIP server
- Easy integration with existing SIP phone system
- Simple installation with PoE/PoE+ compatible

Model	UC-4SC615	IP-A1SC15
Power Source	PoE / PoE+ (IEEE802.3af/at) (via RJ-45)	PoE+ (IEEE802.3at) , PoE (IEEE802.3af) (via RJ-45)
Amplifier Rated Output	15W (at PoE+ powered), 8W (at PoE powered)	15W (at PoE+ powered), 8W (at PoE powered)
Sensitivity (1W, 1m)	121 dB (15 W, 1 m) (500 Hz - 2.5 kHz, peak level) 109 dB (1 W, 1 m) (500 Hz - 2.5 kHz, peak level) 110 dB (15 W, 1 m) (100 Hz - 10 kHz, peak level) 107 dB (8 W, 1 m) (100 Hz - 10 kHz, peak level)	112dB (1W, 1m) (500Hz - 2.5kHz, peak level)
Frequency Response	315 Hz - 12.5kHz	280 Hz – 12.5kHz
Finish	Horn flare and body: Aluminum, off white (RAL 9010 equivalent), paint Rear cover: ABS resin, off white (RAL 9010 equivalent), paint Reflector horn: ABS resin, off white (RAL 9010 equivalent) Bracket, screws and bolts: Stainless stell	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 231) (H) X 296 (D) mm (8.74" X 9.09" X 11.65")	222(W) ×211(H) ×276(D) mm (8.74" × 8.30 " × 10.87 ")
Weight	1.5 kg (3.31 lb)	1.4 kg (3.09 lb)
Dust/Water Protection	IP66	IP66
Options	Swivel bracket: YS-151S, Speaker mount bracket: SP-131, Pole band: YS-60B	

UC-4SC615

UC-4SC615 includes all features of IP-A1SC15 plus features below:

- A1 speaker +
- Integrated Microphone for talk-back (2-way communication) +
- USB2.0 Interface as a local source (emergency messages or music)

IP-A1SC15

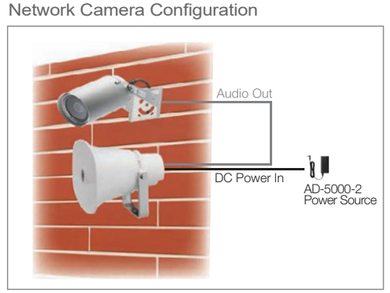
Powered Horn Speaker

Paging Horn Speaker

Q-SC-P620

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

Network Camera Configuration



Model	Q-SC-P620
Power Source	12V DC, 2A (DC Socket "+" Type A : 5.5 x 2.1mm)
Signal Gain	8, 16, 24 or 32db (Factory pre-set to 16db)
Sound Pressure Level	113dB (1 W, 1 m at 500Hz to 2.5KHz peak level) Max. SPL (above 120dB)
Frequency Response	250 - 10,000 Hz
Finish	Horn flare: HIPS resin, white (RAL9010 equivalent) Reflector horn and case: ABS resin, white (RAL9010 equivalent) Bracket, screws and bolts: Stainless stell
Dimensions	292 (W) x 230 (H) x 280 (D) mm
Weight	Approx. 1.8 kg
Dust/Water Protection	IP65
Operating Temperature	-20°C to +55°C (-4°F to 131°F)
Option	AD-5000-2 (LTE24E-S2-1) AC Adapter

Combination Type Reflex Horn Speakers

Paging Horn Speaker

SC-615
SC-615T

Paging Horn Speaker

SC-630
SC-630TU

- Both high-impedance (70V/100V lines) models and low impedance (8Ω) models available
- Stainless steel brackets and hardware (screws, bolts), and powder-coated horn ensure superb weatherproofing and corrosion-resistance
- Shock-resistant aluminum oval horn
- IP65 certified weatherproof construction
- SC-630TU is certified to UL 1480 UUMW and ULC-S541 standards

SIGNALING c UL LISTED

Model	SC-615	SC-615T	SC-630	SC-630TU
Rated Input (100V line)	15W (Mobile mount use: 15W)	15W	30W (Mobile mount use: 15W)	30W
Rated Impedance	8Ω	70V line: 330Ω (15W), 650Ω (7.5W), 1.3kΩ (3.8W); 25V line: 42Ω (15W), 83Ω (7.5W), 330Ω(1.9W), 650Ω; (1W), 1.3kΩ (0.5W)	6Ω	70V line: 170Ω (30W) , 330Ω (15W), 650Ω (7.5) 25V line: 21Ω (30W), 42Ω (15W), 170Ω (3.9W), 330Ω (2.1W), 650Ω (1.1W)
Sensitivity (1W, 1m)	112 dB		113 dB	
Frequency Response	280 Hz – 12.5 kHz		250 Hz – 10 kHz	
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)			Horn flare: Aluminum, white, powder coating; Reflector horn: ABS resin, white; Rear cover: ABS resin, gray; Bracket screws and bolts: Stainless steel
Dimensions	222 (W) x 179 (H) x 234 (D) mm (8.7" x 7.0" x 9.2")		285 (W) x 227 (H) x 277 (D) mm (11.2" x 8.9" x 10.9")	
Weight	1.1kg (2.4 lbs)	1.3kg (2.9 lbs)	1.7kg (3.1 lbs)	2kg (4.4 lbs)
Dust/Water Protection	IP65			
UL Code	--			UL 1480 UUMW, ULC-S541
Operating Temperature	-20°C to +55°C (-4°F to 131°F)			-40°C to +66°C (-40°F to 151°F)
Option	Swivel bracket: YS-151S (can be used with the supplied bracket)			

Pagin Horn Speaker

Paging Horn Speaker

SC-651

- Newly developed polymide diaphragm ensures durability during 50W output
- Paging horn speaker for voice paging and tone signaling distribution
- Weather-Resistant to withstand demanding environmental conditions
- Shock-resistant aluminum oval horn
- IP65 certified weatherproof construction
- Wide temperature range: -20°C to 55°C

Model	SC-651
Rated Input (100V line)	50W
Rated Impedance	16Ω
Sensitivity (1W, 1m)	109 dB
Frequency Response	250 Hz – 6 kHz
Finish	Horn flare: Aluminum, off-white, powder coating Reflector horn: ABS resin, off-white Bracket holder: Aluminum, gray, powder coating Bracket: Stainless steel
Dimensions	430 (W) x 297.5 (H) x 327 (D) mm (16.9" x 11.7" x 12.9")
Weight	3.4kg (7.5 lbs)
Dust/Water Protection	IP65
Operating Temperature	-20°C to +55°C (-4°F to 131°F)

Optional Accessories Network Horn and SC Series Horns

Swivel Bracket

YS-151S

Accessory Reference on page 156

cUL Safety Certified Models

Note:

- All TOA Canada Corporation products requiring AC power are cUL Safety Certified.

SIGNALING c UL LISTED c UL

Model	UL 2043	ULC S541S	UL 1480 UUMW/UEAY	CAN/CSA C22.2 No. 205 UEAY7	UL60065
BS-680U		Yes	Yes		
CS-64U, CS-154U, CS-304U			Yes		
F-122CU2, F-2322C, F-2352CU2, F-2852CU2	Yes		Yes	Yes	
IR-820SP	Yes				Yes
PC-580RU, PC-580RVU	Yes[1]	Yes[1]	Yes[1]		
PE-304BU, PE-304WU, PE-604BU, PE-604WU		Yes	Yes		
SC-630TU		Yes	Yes		

Note: [1] When used with HY-BC580U

Combination Type Reflex Horn Speakers

Horn Speaker

TC-631
TC-631M

- Both high-impedance (70V/100V lines) models and low-impedance (8Ω/15W model, 16Ω/30W model) models available
- Two power ratings: 30W and 50W
- Stainless steel hardware (screws, bolts, nuts), and powder-coated horn and bracket ensure superb weatherproofing and corrosion-resistance.
- Shock-resistant aluminum round horn
- Compliance with IP65
- Requires drivers

Model	TC-631	TC-631M
Rated Input (100V line)	30W	
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 (1W, 1m)	110 dB	
Frequency Response	200 –6,000 Hz	
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	
Dimensions	ø500 (W) x 463(D) mm (ø19.7" x 18.2")	
Weight	4.1kg (9 lbs)	4.5kg (9.9 lbs)
Dust/Water Protection	IP65	
Operating Temperature	-20°C to +55°C (-4°F to 131°F)	

Separate Type Horn Speakers

Reflex Horn

TH-660

- External stainless steel hardware (screws, bolts, nuts), and powder-coated horn and bracket ensure superb weatherproofing and corrosion-resistance.
- Shock-resistant aluminum round horn
- Requires drivers

Model	TH-660
Sensitivity (1W, 1m)	110 dB*
Frequency Response	200 Hz – 6 kHz*
Finish	Horn flare: Aluminum, off-white, powder coating Bracket: Steel, gray, powder coating
Dimensions	ø600 – 425 (D) mm (23.6" x 16.7")
Weight	3.6kg (7.9 lbs)

*When operated with TU-631/631M/651/651M driver unit.

Separate Type Horn Speakers

Driver Unit

TU-631
TU-651

Driver Unit

TU-631M
TU-651M

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

Model	TU-631	TU-651	TU-631M	TU-651M
Rated Input	30W	50W	30W	50W
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)	100V line: 200Ω (50W), 330Ω (30W), 670Ω (15W) 70V line: 100Ω (50W), 200Ω (25W), 330Ω (15W), 670Ω (7.5W)
Sensitivity (1W, 1m)	110 dB*			
Frequency Response	150 Hz – 6 kHz *			
Finish	Flange: Aluminum, gray, powder coating; Rear cover: ABS resin, gray; Screws: Stainless steel			
Dimensions	ø139 x 106 (D) mm (ø5.5" x 4.2")		ø139 x 149 (D)mm (ø5.5" x 5.9")	
Weights	1.4kg (3.1 lbs)	2kg (4.41 lbs)	1.9kg (4.2 lbs)	2.7kg (6 lbs)
Dust/Water Protection	IP65*			
Operating Temperature	-20°C to +60°C (-4°F to 140°F)	-20°C to +55°C (-4°F to 131°F)	-20°C to +60°C (-4°F to 140°F)	-20°C to +55°C (-4°F to 131°F)

*When operated with TH-660.

Optional Accessories TH-660

Swivel Bracket

YS-151S

Accessory Reference on page 156

Wall Mount Box Speakers

BS-1034

BS-1034S

- Low profile
- Easy and quick installation
- Creates a distinctly different impression depending on whether it is installed horizontally or vertically
- Two colors selectable: off-white, which matches any interior style, and silver, which adds a quality appearance
- Ideally suited for BGM and announcements

Model	BS-1034	BS-1034S
Rated Input (100V line)	10W	
Rated Impedance	100V line: 1kΩ (10W), 2kΩ (5W), 3.3kΩ (3W), 10kΩ (1W) / 70V line: 500Ω (10W), 1kΩ (5W), 2kΩ (2.5W), 3.3kΩ (1.5W), 10kΩ (0.5W)	
Sensitivity (1W, 1m)	90 dB	
Frequency Response	120 Hz – 20 kHz	
Speaker Component	Low: 12 cm (5") cone-type, High: Balance dome-type	
Finish	Enclosure: HIPS resin, off-white Grille: Steel plate net, off-white	Enclosure: HIPS resin, silver Grille: Steel plate net, silver
Dimensions	210 (W) x 330 (H) x 80 (D) mm (8.3" x 13" x 3.1")	
Weight	1.4kg (3.1 lbs)	

BS-678

- Stylish, compact and unobtrusive design
- Quick and easy installation, which saves time on setting-up
- Horizontal / vertical installation
- A push-type input terminal allows easy cable connections and bridge wiring
- Ideally suited for BGM and announcements

BS-680U

- Innovative design
- Quick and easy installation
- Strong all-metal body
- Horizontal / vertical installation
- Wall / in-wall mounting
- Ideally suited for voice alarm system application
- Two steatite screw terminal blocks and thermal fuse
- BS-680U is certified to UL 1480 UUMW, ULC-S541

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Model	BS-678	BS-680U
Rated Input (100V line)	6W (100 V line), 3 W (70 V line)	6W
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)	70V line: 830Ω (6W), 1.67kΩ (3W), 5kΩ (1W) 25V line: 105Ω (6W), 210Ω (3W), 650Ω (1W)
Sensitivity (1W, 1m)	94 dB	
Frequency Response	150 Hz – 20 kHz	
Speaker Component	16 cm (6") double cone-type	
UL Code	--	UL 1480 UUMW, ULC-S541
Finish	Enclosure: Wood, white; Grille: Surface-treated steel plate net, white	Baffle, Cabinet: Steel plate, white, powder coating Grille: Surface-treated steel plate mesh, white, paint
Dimensions	250 (W) x 190 (H) x 110 (D) mm (9.8" x 7.5" x 4.3")	310 (W) x 190 (H) x 90 (D) mm (12.2"x7.5"x3.5")
Weight	1.7kg (3.7lbs)	2.6kg (5.7 lbs)

Box Speakers

Universal Speaker

BS-1030B
BS-1030W

- Aesthetically pleasing design blends in modern buildings and other facilities, such as boutique, restaurant and amusement park
- Cost-effective high power PA box speaker
- 2-Way bass reflex speaker
- Low impedance (8Ω) or high impedance (100V/70V) selectable by rotary switch
- Splashproof construction in compliance with IPX4

Model	BS-1030B/BS-1030W
Rated Input (100V line)	30W
Rated 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 (1W, 1m)	90 dB
Frequency Response	80 Hz – 20 kHz
Speaker Component	12 cm (5") dynamic cone-type + dome-type
Finish	Enclosure: ABS resin, black or white Grille: Surface treated steel plate, black or white, powder coating
Dimensions	196 (W) x 290 (H) x 150 (D) mm (7.7" x 11.4" x 5.9")
Weight	2.5kg (5.5 lbs)
Accessory	Bracket x 1, bracket mounting screw x 2, bracket mounting washer x 2

Optional Accessories BS-1030

Wall Mount Bracket

SP-410

Wall Mount Bracket

SP-420

Accessory Reference on page 156

Pendant/Projection Speakers

Pendant Speaker

PE-64
PE-304
Q-PE-304BK

- Stylish and outstanding design inspired by the finest lighting fixtures
- Sturdy cable extendable up to 5 meters
- Paintable
- Input impedance easily changeable
- Ideally suited for BGM and announcements
- Q-PE-304BK Black version

Projection Speaker

PJ-64
PJ-304
Q-PJ-304BK

- Stylish and outstanding design inspired by the finest lighting fixtures
- Flexible speaker direction adjustment with accessory brackets
- Paintable
- Input impedance easily changeable
- Ideally suited for BGM and announcements
- Q-PJ-304BK Black version

Pendant Speaker

PE-304BU
PE-304WU
PE-604BU
PE-604WU

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- Stylish and outstanding design inspired by the finest lighting fixtures
- Coaxial bass-reflex design featuring 12cm (5") cone-type woofer and a balanced-done tweeter
- 8Ω and 25V/70V/100V operation
- UL 1480 UUMW and ULC-S541 listed. Certified to work with emergency announcement systems
- Input impedance is easily changed with a rotary switch on the top of the speaker
- Ideally suited for BGM and announcements
- Hanging wire, safety wire, and speaker cable are pre-attached for quick and easy installation
- Gripple hangers facilitate speaker mounting height adjustment.

Model	PE-64	PE-304 / Q-PE-304BK	PE-304BU / PE-304WU	PE-604BU / PE-604WU	PJ-64	PJ-304 / Q-PJ-304BK
Rated Input (100V line)	6W	30W	30W	60W	6W	30W
Rated Impedance	100 line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)	100 line: 330Ω (30W), 500Ω (20W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V line: 170Ω (30W), 250Ω (20W), 330Ω (15W), 500Ω (10W), 1kΩ (5W)	100 line: 300Ω (30W), 1kΩ (10W), 3.3kΩ (3W), 10kΩ (1.3W) 70V line: 170Ω (30W), 330Ω (15W), 1kΩ (5W), 3.3kΩ (1.5W), 10 kΩ (0.6W) 25V line: 170Ω (3.7W), 330Ω (1.9W) 1kΩ (0.6W), 3.3kΩ (0.2W), 10 kΩ (0.1W) Low Impedance: 8Ω	100 line: 170Ω (60W), 330Ω (30W), 670kΩ (15W), 3.3kΩ (3W) 70V line: 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 3.3 kΩ (1.5W) 25V line: 83Ω (7.5W), 170Ω (3.7W) 330Ω (1.9W), 670Ω (0.9W), 3.3kΩ (0.2W) Low Impedance: 8Ω	100 line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 1.7kΩ (3W), 3.3kΩ (1.5W), 10kΩ (0.5W)	100 line: 330Ω (30W), 500Ω (20W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W) 70V line: 170Ω (30W), 250Ω (20W), 330Ω (15W), 500Ω (10W, 1kΩ (5W)
Sensitivity (1W, 1m)	90 dB	91 dB	90 dB		90 dB	91 dB
Frequency Response	100 Hz – 18 kHz	70 Hz – 20 kHz	95 Hz – 20 kHz (-10 dB)	110 Hz – 20 kHz (-10 dB)	100 Hz – 18 kHz	70 Hz – 20 kHz
Speaker Component	12cm (5") cone-type	12cm (5") cone-type + balanced dome tweeter	12cm (5") cone-type + balanced dome tweeter (coaxial)		12cm (5") cone-type	12cm (5") cone-type + balanced dome tweeter
Finish	**PE-64 & PE-304:** Enclosure: HIPS resin, off-white; Grille: Surface-treated steel plate net, off-white, paint **Q-PE-304BK:** Enclosure: HIPS resin, black; Grille: Surface-treated steel plate net, black, paint		**PE-304BU & PE-604BU :** Enclosure: ABS resin, black; Grille: Surface-treated steel plate mesh black, paint **PE-304WU & PE-604WU:** Enclosure: ABS resin, white; Grille: Surface-treated steel plate mesh, white, paint		**PE-64 & PE-304:** Enclosure: HIPS resin, off-white; Grille: Surface-treated steel plate net, off-white, paint **Q-PE-304BK:** Enclosure: HIPS resin, black; Grille: Surface-treated steel plate net, black, paint	
Dimensions	ø186 x 251 (H) mm (ø7.3" x 9.9") (unit only)		ø186 x 275 (H) mm (ø7.3" x 10.83") (unit only)		ø186 x 369 (H) mm (ø7.3" x 14.5")	
Weight	1.5kg (3.3 lbs)	2.1kg (4.6 lbs)	2kg (4.41 lbs)	2.9kg (6.39 lbs)	1.5kg (3.3 lbs)	2.1kg (4.6 lbs)
UL Code	--		UL1480 UUMW, ULC-S541		--	

Projection Speaker

PJ-100W

Projection Speaker

PJ-200W**

- Wide range projection speaker
- 2 rated input model 10W and 20W available
- *Available in lots of 2 (use part number: PJ-100W-2, PJ-200-2)*

Model	PJ-100W	PJ-200W
Rated Input (100V line)	10W	20W
Rated Impedance	50V line: 250Ω (10W), 500Ω (5W), 1kΩ (2.5W), 2kΩ (1.25W), 4kΩ (0.63W) 70V line: 500Ω (10W),1kΩ (5W), 2kΩ (2.5W), 4kΩ (1.25W) 100V line: 1kΩ (10W), 2kΩ (5W), 4kΩ (2.5W)	50V line: 125Ω (20W), 250Ω (10W), 500Ω (5W), 1kΩ (2.5W), 3kΩ (1.25W) 70V line: 250Ω (20W), 500Ω (10W), 1kΩ (5W), 2kΩ (2.5W) 100V line: 500Ω (20W), 1kΩ (10W), 2kΩ (5W)
Sensitivity (1W, 1m)	92 dB	95 dB
Frequency Response	65 Hz – 15 kHz	50 Hz – 20 kHz
Speaker Component	12cm (5")	16cm (6")
Finish	Cabinet, Cover: ABS Resin, off-white Bracket: SPCC, off-white	
Dimensions	160 (W) x 200 (H) x 195 (D) mm (6.3" x 7.9" x 7.7")	200 (W) x 255 (H) x 250 (D) mm (7.9" x 10" x 9.8")
Weight	1.8kg (3.97 lbs)	2.5kg (5.5 lbs)

Interior Design Speakers

- Sleek, stylish appearance blends well with modern architecture for background/foreground music and paging systems
- Minimum reflection design reduces sound wave reflections typical of conventional bracket-mounted "box" type speakers
- Two-way, sealed enclosure
- Weather-resistant versions (H-2WP/H-3WP)
- Wide coverage area: (H-1) 120°H x 100°V
  (H-2/H-2WP) 100°H x 60°V
  (H-3/H-3WP) 140°H x 70°V
- Loudspeaker components rotate internally to allow flexible aiming (H-1/H-2/H-2WP)
- Built-in passive crossover with optimized filter slopes
- Paintable grille
- Fire-resistant ABS resin enclosure (H-1/ H-2)

2-Way Flush Mount Speaker System

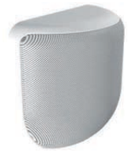
H-1

2-Way Surface Mount Speaker System

H-2
H-2WP

2-Way Wall Mount Speaker System

H-3
H-3WP



Model	H-1	H-2	H-2WP	H-3	H-3WP
Power Handling Capacity	90W (continuous program)	120W (continuous program)		150W (continuous program)	
Rated Input (100V line)	12W (16Ω)	12W (16Ω)		30W (16Ω)	
Rated Impedance	4Ω or 16Ω / 100V line: 830Ω (12W), 1.7kΩ (6W), 3.3kΩ (3W) 70V line: 420Ω (12W), 830Ω (6W), 1.7kΩ (3W), 3.3kΩ (1.5W)			8Ω or 16Ω/100V line: 330Ω (30W), 670Ω (15W), 1.3kΩ (7.5W) 70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1.3kΩ (3.75W)	
Sensitivity (1W, 1m)	85 dB	88dB		89dB	
Frequency Response	120Hz – 20kHz	100Hz – 20kHz			
Speaker Component	Low: 8 x 5cm cone-type, High: Balanced dome-type	Low: 10cm cone-type, High: Balanced dome-type		Low: 10cm cone-type x 2, High: 2.5cm dome-type (neodymium magnet)	
Finish	Cover: Fire-resistant ABS resin, white, paint Punched net: Steel plate, white paint Adapter frame: Stainless steel	Frame: Fire-resistant ABS resin, white, paint Base frame: Steel plate Punched net: Steel plate, white paint	Frame: Fire-resistant ABS resin, white, paint Base frame: Steel plate Punched net: Steel plate, white powder coating	Enclosure: Fire-resistant ABS resin, black Frame: Fire-resistant ABS resin, off-white Punched net: Stainless plate, off-white, paint Base Frame: Steel plate, plating	Enclosure: Fire-resistant ABS resin, black Frame: Fire-resistant ABS resin, off-white Punched net: Steel plate (zinc plating), off-white, powder coating Base Frame: Stainless steel
Dimensions	312 (W) x 126 (H) x 90(D) mm (12.3" x 5" x 3.5")	ø268 x 111 (H) mm (10.5" x 4.4")		295 (W) x 318 (H) x 129 (D) mm (11.6" x 12.5" x 5.1")	
Weight	1.5kg (3.3 lbs)	2.1kg (4.63 lbs)		3.3kg (7.3 lbs)	
Dust/Water Protection	—	—	IP64	—	IPX4

Wall/Ceiling Mount Subwoofer System

HB-1

- High-power 8" woofer with 110mm ferrite magnet and aluminum bobbin
- Acoustic super-woofer with acoustical bandpass filtering construction
- Thin-wall metal frame, with large interior volume for excellent low-frequency audio response, plus efficient heat dispersion
- Installs Between standard studs on 16 inches centers
- TOA designed brackets allow simplified "blind" flush mounting in wall or ceiling

Model	HB-1
Power Handling Capacity	240W (continuous program)
Rated Impedance	8Ω
Sensitivity (1W, 1m)	91dB
Frequency Response	45 – 200Hz
Speaker Component	20cm cone speaker
Finish	Enclosure; Steel plate, black paint Front Frame; Fire-resistant ABS resin, off-white, paint Punched net; Steel plate, off-white, paint
Dimensions	430 (W) x 544 (H) x 135 (D) mm (16.9" x 21.4" x 5.3")
Weight	11kg (24.3 lbs)
Option	Matching Transformer: MT-S0601

Optional Accessories

Adapter Frame

HY-H1

** Special order product

Equalization Module

E-04R
E-05R
E-06RB**
E-07S

Matching Transformer

MT-S0601

Accessory Reference on page 156

F Series Wide-dispersion Speakers

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

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

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

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

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

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

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

Model	F-1000BT F-1000WT	F-1000BTWP F-1000WTWP	F-1300BT F-1300WT	F-1300BTWP F-1300WTWP	F-2000BT F-2000WT	F-2000BTWP F-2000WTWP
Rated Input (100V line)	15W		30W		60W	
Rated Impedance	8Ω 100V line: 670Ω (15W), 2kΩ (5W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 330Ω (15W), 670Ω (7.5W), 2kΩ (2.5W), 3.3kΩ (1.5W), 10kΩ (0.5W)	100V line: 670Ω (15W), 2kΩ (5W), 3.3kΩ (3W), 10kΩ (1W) 70V line: 330Ω (15W), 670Ω (7.5W), 2kΩ (2.5W), 3.3kΩ (1.5W), 10kΩ (0.5W)	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)	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)	8Ω 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)	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)
Sensitivity (1W, 1m)	87 dB		90dB		92dB	
Frequency Response	85 Hz – 20 kHz		80 Hz – 20 kHz		65 Hz – 20 kHz	
Speaker Component	Low: 10cm (4") cone-type, High: Balanced dome tweeter		Low: 13cm (5") cone-type, High: 25mm (1") dome tweeter		Low: 20cm (8") cone-type, High: 25mm (1") dome tweeter	
Finish	Enclosure: HIPS, black or white Punched net: Surface-treated steel plate, black or white, paint		Enclosure: HIPS, black or white Punched net: Surface-treated steel plate, black or white, paint		Enclosure: HIPS, black or white Punched net: Surface-treated steel plate, black or white, paint	
Dimensions	130 (W) x 202 (H) x 131(D) mm (5.1" x 7.9" x 5.2")		162 (W) x 250 (H) x 161(D) mm (6.4" x 9.8" x 6.3")		244 (W) x 373 (H) x 235(D) mm (9.6" x 14.7" x 9.3")	
Weight	2kg (4.4 lbs)	2kg (4.4 lbs)	3.6kg (7.9 lbs)		7.4kg (16.3 lbs)	
Dust/Water Protection	—	IPX4	—	IPX4	—	IPX4
Option	Board hanger bracket: HY-BH10B,Ceiling mount bracket: HY-CM10B/W, Cluster braket: HY-CL10B, Pole mounting bracket: YS-60B**	Pole mounting bracket: YS-60B**	Board hanger bracket: HY-BH10B,Ceiling mount bracket: HY-CM10B/W, Cluster braket: HY-CL10B, Pole mounting bracket: YS-60B**	Pole mounting bracket: YS-60B**	Ceiling mount bracket: HY-CM20B/W, Cluster braket: HY-CL20B, Pole mounting bracket: YS-60B**, Speaker mount brakcket: SP-131	Pole mounting bracket: YS-60B**, Speaker mount brakcket: SP-131

F Series Optional Brackets

Cluster Bracket
HY-CL10B*

Ceiling Mounting Bracket
HY-CM10B*

Ceiling Mounting Bracket
HY-CM10W*

Board Hanger Bracket
HY-BH10B*

Cluster Bracket
HY-CL20B*

Ceiling Mounting Bracket
HY-CM20B*

Ceiling Mounting Bracket
HY-CM20W*

Pole Mounting Band
YS-60B**

Speaker Mount Bracket for F-2000
SP-131

* Indoor use only. ** Special Order Product

Accessory Reference on page 157

F Series Wide-dispersion Ceiling Speakers

- NOW AVAILABLE WITH A BLACK GRILL Q-F122GRBK for F-122C and F-2352C models
- Minimal high frequency roll off allows clear and well-balanced sound reproduction over a wide listening area
- Designed to blend into ceilings with a smooth, low-profile design, extra-wide dispersion
- Extra ease of use and higher cost-effectiveness with the metal "back can" enclosure for the speaker rear. (F-122C, F-2352C, F-2852C, F-2322C models)
- F-2852CU2, F-2322CU2, F-2352CU2, F-122CU2 are certified to UL1480 (UEAY), UL2043, CAN/CSA C22.2 No. 205 (UEAY7)

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F-2852C, F-2852CU2

- 2-way speaker for high power
- Applications e.g. for high ceilings (3 to 6m)
- Wide-dispersion: 120° conical (1-4k Hz avg.)
- Diffuser for wide dispersion of high frequencies
- Metal back can

F-2322C, F-2322CU2

- Full range speaker for medium ceiling height (2 to 4 m)
- Wide-dispersion: 170° conical (1-4k Hz avg.)
- Metal back can

F-2352C, F-2352CU2

- 2-way speaker for medium ceiling height (2 to 4 m)
- Wide-dispersion: 170° conical (1-4k Hz avg.)
- Diffuser for wide dispersion of high frequencies
- Metal back can

F-122C, F-122CU2

- Equalizing controlled type full range speaker for medium ceiling height (2 to 4 m)
- Wide-dispersion: 180° conical (1-4k Hz avg.)
- Cost effective if many speakers are installed
- Heat-resistant back can
- Optimized for use with optional digital processors
- Diffuser for wide dispersion of high frequencies

F-2352SC

- 2-way wide range speaker with diffuser for low power applications and medium ceiling height (2 to 4m)
- Wide-dispersion: 155° conical (1-4k Hz avg.)
- Diffuser for wide dispersion of high frequencies
- For use in ceilings with minimal depth

F-1522SC

- Cost-effective compact full range speaker for medium ceiling height (2 to 4 m)
- Wide-dispersion: 160° conical (1-4k Hz avg.)
- Only 117 mm mounting depth
- Flat front panel

Note: CU2 version comes with 2 speakers in a box and 2 tile bridges.

Model	F-2852C	F-2322C	F-2352C	F-122C	F-2352SC	F-1522SC
Rated Input (100V line)	60W	30W			6W	
Rated Impedance	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 (3.7W), 330Ω (1.9W), 1kΩ (0.6W), 3.3kΩ (0.2W), 10kΩ (0.06W) 8Ω			100V line: 1.7kΩ (6W), 3.3kΩ (3W), 10kΩ (1W), 20kΩ (0.5W) 70V line: 830Ω (6W), 1.7Ω (3W), 3.3kΩ (1.5W), 10kΩ (0.5W), 20kΩ (0.25W) 25V line: 830Ω (0.75W), 1.7Ω (0.4W), 3.3kΩ (0.2W), 10kΩ (0.6W), 20kΩ (0.03W) 8Ω	100V line: 1.7kΩ (6W), 3.3kΩ (3W) 70V line: 830Ω (6W), 1.7Ω (3W), 3.3kΩ (1.5W) 25V line: 830Ω (0.75W), 1.7Ω (0.4W), 3.3kΩ (0.2W) 8Ω
Sensitivity (1W, 1m)	91dB	90dB			89dB	88dB
Frequency Response	60 Hz – 20 kHz	70 Hz – 20 kHz (-10 dB), 50 Hz - 20 kHz (-20 dB)			80 Hz – 20 kHz (-10 dB), 50 Hz - 20 kHz (-20 dB)	65 Hz – 18 kHz (-10 dB), 45 Hz - 20 kHz (-20dB)
Mounting Hole Diameter	ø250 mm (9.84")	ø200 mm (7.87")				ø135 mm (5.32")
Speaker Component	Low: 16cm (6") cone-type, High: Dome-type	12cm (5") cone-type	Low: 12cm (5") cone-type, High: Balanced dome-type	12cm (5") cone-type	Low: 12cm (5") cone-type, High: Balanced dome-type	10cm (4") cone-type
Finish	Enclosure: Steel plate, plating; Baffle: Fire-resistant ABS resin, black Rim: Fire-resistant ABS resin, white; Punched net: Steel plate, white, paint				Baffle: Fire-resistant ABS resin, black Rim: Fire-resistant ABS resin, white Punched net: Steel plate, white, paint Dust cover: Spunbond Polypropylene Nonwoven Fabric	
Dimensions	ø280 x 227 (D) mm (ø11" x 8.9")	ø230 x 200 (D) mm (ø9.1" x 7.9")	ø230 x 229 (D) mm (ø9.1" x 9")		ø230 x 154 (D) mm (ø9.1" x 6.1")	ø155 x 117 (D) mm (ø6.1" X 4.6")
Weight	5.1kg (11.2 lbs)	3.7kg (8.2 lbs)			1.5kg (3.3 lbs)	1kg (2.2 lbs)
Accessory	Panel x1, Ceiling reinforcement ring x 1, Safety wire x 1, Paper pattern x 1				Panel x 1, Paper pattern x 1	
	FB-3862CU Ceiling Subwoofer					
Option	Anchor hanging bracket: HY-AH1**, Tile bar bridge: HY-TB1, Back can: Q-HY-BC28W	Anchor hanging bracket: HY-AH1**, Back can: HY-BC1, Tile bar bridge: HY-TB1, Trim ring: HY-TR1 F-2352C only: Black grill: Q-F122GRBK		Anchor hanging bracket: HY-AH1**, Back can: HY-BC1, Tile bar bridge: HY-TB1, Trim ring: HY-TR1 Controller module: E-03R Black grill: Q-F122GRBK	Back can: HY-BC1, Reinforcement ring: HY-RR2, Anchor hanging bracket: HY-AH1**Tile bar bridge: HY-TB1, Trim ring: HY-TR1 (HY-RR2 required for HY-AH1, HY-TB1, HY-TR1)	Reinforcement ring: HY-RR1 12" round baffle: HY-RB1860

Model	F-2852CU2	F-2322CU2	F-2352CU2	F-122CU2
Rated Input (100V line)	60W	30W		
Rated Impedance	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) 16Ω, 8Ω	70V line: 170Ω (30W), 330Ω (15W), 1kΩ (5W), 3.3kΩ (1.5W), 10kΩ (0.5W) 25V line: 170Ω (3.7W), 330Ω (1.9W), 1kΩ (0.6W), 3.3kΩ (0.2W), 10kΩ (0.06W) 16Ω, 8Ω		
Sensitivity (1W, 1m)	91dB	90dB		
Frequency Response	60 Hz – 20 kHz	70 Hz – 20 kHz		70 Hz – 20 kHz (-10 dB) 50 Hz - 20 kHz (-20 dB)
UL Code	CU Version Only: UL1480 (UEAY), UL2043, CAN/CSA C22.2 No.205 (UEAY7)			
Mounting Hole Diameter	ø250 mm (9.84")	ø200 mm (7.87")		
Speaker Component	Low: 16cm (6") cone-type, High: Dome-type	12cm (5") cone-type	Low: 12cm (5") cone-type, High: Balanced dome-type	12cm (5") cone-type
Finish	Enclosure: Steel plate, plating; Baffle: Fire-resistant ABS resin, black Rim: Fire-resistant ABS resin, white; Punched net: Steel plate, white, paint			
Dimensions	ø280 x 236 (D) mm (ø11" x 9.3")	ø230 x 209 (D) mm (ø9.1" x 8.2")	ø230 x 238 (D) mm (ø9.1" x 9.4")	
Weight	5.8kg (12.8 lbs)	4.3kg (9.5 lbs)		4.4kg (9.7 lbs)
Accessory	Front grille x 1, Tile bridge x 1, Safety wire (approx. 60cm (23.62")) x1, Paper pattern x1			
	FB-3862CU Ceiling Subwoofer			
Option	Back can: Q-HY-BC28W	Back can: HY-BC1, Trim ring: HY-TR1		Controller module: E-03R, Back can: HY-BC1, Trim ring: HY-TR1

Accessory Reference on page 158

F Series Wide-dispersion Ceiling Speakers

F Series Ceiling Speakers

FB-3862CU Ceiling Subwoofer

Spotlight

Model	FB-3862CU
Enclosure	Bandpass
Rated Output	60W (70/100V)
Power Handling Capacity	100W RMS 200W Peak
Impedance	70V line- 60W/30W/15W/7.5W/3.8W/1.9W with 8Ω bypass
Sensitivity	91dB 1W/1m
Frequency Response	45-200 Hz (-10dB)
Speaker Component	8" driver with oiled paper cone and foam surround
Certifications	UL2043/UL1480A. Baffle meets UL 94-V0 flammability rating. RoHS
Mounting Hole	350mm diameter (13.8")
Input Terminal	Phoenix-type with parallel outputs (max 12AWG stranded cable)
Recommended Cable	Max 12AWG stranded unshielded twisted pair (jacket per code)
Finish	White
Dimensions	383 mm diameter x 326.5 mm height (15.08" x 12.85")
Weight	6.71 kg (14.79 lbs.)
Included Accessories	Steel support ring (C-ring), qty 2 steel support rails, speaker hole template, operation manual
Optional Accessories	HY-BC2W Enclosure for FB-3862CU, White Support and safety cables (load rated chain or load rated aircraft cable)

New Subwoofer Enclosure

Low frequency range & high-quality sound output

F Series Ceiling Speakers Optional Accessories

Back Can
HY-BC1 (black)
Q-HY-BC1W (white)

Trim Ring
HY-TR1

Back Can for F-2852C
Q-HY-BC28W

Tile Bar Bridge
HY-TB1

HY-BC2W Enclosure, White
HY-BC2W Subwoofer only

Reinforcement Ring
HY-RR1

Reinforcement Ring
HY-RR2
- *Available in lots of 10 (use: HY-RR2-10)*

Shallow Back Can for F-2352SC
Q-HY-BC2
- *Available in lots of 10 (use: Q-HY-BC2-10)*

Anchor Hanging Bracket
HY-AH1**

Accessory Reference on page 158

F Series Ceiling Speakers Optional Accessories

Mounting Channel
Q-HY-TB2

TB-200 Tile Bridge for F-122CU2, F-2322CU2, F-2352CU2
5070723950

TB-250 Tile Bridge for F-2852CU2
5070724030

Ceiling Reinforcement Ring
7020116720

Drywall Rough-in Kit
F-DRYWALLKIT
- *Available in lots of 20 (use: F-DRYWALLKIT-20)*

Black Grill for F-122C, F-2352C, F-2352SC
Q-F122GRBK
- *Available in lots of 10 (use: Q-F122GRBK-10)*

Equalization for F-122C
E-03R

Accessory Reference on page 158

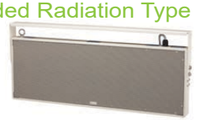
Plane Wave Speakers

Compact Double-Sided Radiation Type
PW-1230DB**
PW-1230DW**

Large Double-Sided Radiation Type
PW-1430DB**
PW-1430DW**

Compact Single-Sided Radiation Type
PW-1230SB**
PW-1230SW**

Compact Single-Sided Radiation Type
PW-1430SB**
PW-1430SW**



- Flat speaker system equipped with a plane wave unit consisting of a diaphragm, buffer, magnet and case
- Sound radiated in narrow horizontal and vertical directivity patterns to deliver clear audio to a limited targeted area with attenuation
- Splash-proof, IPX4
- Beam tilting function directs sound radiation about five degrees downward of the horizontal axis
- Built-in high-pass filter
- This speaker is ideal for information broadcast applications and can be found in railway stations

Model	PW-1230DB	PW-1230DW	PW-1230SB	PW-1230SW
Type of Radiation	Double-sided radiation (The side with the TOA logo affixed: Positive pressure wave, Rear: Negative pressure wave)		Single-side radiation	
Rated Impedance	100V line: 330Ω (30W), 670Ω (15W), 1kΩ (10W), 2kΩ (5W); 70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W)			
Sensitivity	86 dB (1W, 1m equivalent measured at 4m, 1-10 kHz) 86 dB (1W, 1m measured at 1m, 1-10 kHz) (Beam tilting: FLAT, High pass filter: OFF)		87 dB (1W, 1m equivalent measured at 4m, 1-10 kHz) 87 dB (1W, 1m measured at 1m, 1-10 kHz) (Beam tilting: FLAT, High pass filter: OFF)	
Frequency Response	300 Hz – 17.5 kHz (beam tilting: FLAT, high pass filter: OFF)		450 Hz – 17.5 kHz (beam tilting: FLAT, High pass filter: OFF)	
Speaker Unit	Plane wave unit (152 x 214 mm (5.98" x 8.43")) x 2			
Directivity Angle	Horizontal: 38° (2 kHz, 1/3 octave band), / Vertical: 75° (2 kHz, 1/3 octave band)			
Finish	Enclosure, Punched net and Mounting bracket: Stainless, black, semi-gloss, paint	Enclosure, Punched net and Mounting bracket: Stainless, light ivory, semi-gloss, paint	Enclosure, Punched net and Mounting bracket: Stainless, black, semi-gloss, paint	Enclosure, Punched net and Mounting bracket: Stainless, light ivory, semi-gloss, paint
Dimensions	524 (W) x 355 (H) x 60 (D)mm (20.63" x 13.98" x 2.36") (including mounting bracket)			
Weight	7.3 kg (16.09 lb) (including mounting bracket)		7.8 kg (17.2 lb) (including mounting bracket)	
Water Protection	IPX4			

Model	PW-1430DB	PW-1430DW	PW-1430SB	PW-1430SW
Type of Radiation	Double-sided radiation (The side with the TOA logo affixed: Positive pressure wave, Rear: Negative pressure wave)		Single-side radiation	
Rated Impedance	100V line: 330Ω (30W), 670Ω (15W), 1kΩ (7.5W), 2kΩ (5W); 70V line: 170Ω (30W), 330Ω (15W), 670Ω (7.5W), 1kΩ (5W), 2kΩ (2.5W)			
Sensitivity	88 dB (1W, 1m equivalent measured at 4m, 1-10 kHz) 85 dB (1W, 1m measured at 1m, 1-10 kHz) (Beam tilting: FLAT, High pass filter: OFF)		90 dB (1W, 1m equivalent measured at 4m, 1-10 kHz) 87 dB (1W, 1m measured at 1m, 1-10 kHz) (Beam tilting: FLAT, High pass filter: OFF)	
Frequency Response	250 Hz – 17.5 kHz (beam tilting: FLAT, high pass filter: OFF)		400 Hz – 17.5 kHz (beam tilting: FLAT, High pass filter: OFF)	
Speaker Unit	Plane wave unit (152 x 214 mm (5.98" x 8.43")) x 2			
Directivity Angle	Horizontal: 38° (2 kHz, 1/3 octave band), / Vertical: 75° (2 kHz, 1/3 octave band)			
Finish	Enclosure, Punched net and Mounting bracket: Stainless, black, semi-gloss, paint	Enclosure, Punched net and Mounting bracket: Stainless, light ivory, semi-gloss, paint	Enclosure, Punched net and Mounting bracket: Stainless, black, semi-gloss, paint	Enclosure, Punched net and Mounting bracket: Stainless, light ivory, semi-gloss, paint
Dimensions	831 (W) x 355 (H) x 60 (D)mm (32.72" x 13.98" x 2.36") (including mounting bracket)			
Weight	11.4 kg (25.13 lb) (including mounting bracket)		11.9 kg (26.23 lb) (including mounting bracket)	
Water Protection	IPX4			

** Special Order Product

Horn Array Speaker

The HA Series Horn Array is an outdoor long range speaker incorporating “line array speaker technology” for delivering the sound in the far distance. It consists of 4 steel long-throw CD horns with 4x50W @ 70 V (H version) or 16Ω (L version) weather-proof compression driver and metal hardware for stacking multiple horns.

»Horn Array Speaker

HA-450H**
HA-450L**

- Outdoor long range speaker incorporating "line array speaker technology"
- Less sound decay and can deliver sound about twice as far as conventional outdoor speakers for wireless system (when compared with reflex horn speaker and straight horn speaker made by TOA Corporation).
- The sound is mild near-by the speaker and clear far away from the speaker.

Model	HA-450H	HA-450L
Rated Input	50W x 4 (Max. at 70V)	50W x 4
Impedance	100Ω (50W), 200Ω (25W), 330Ω (15W, 670Ω (7.5W) (Individual Driver: Selectable by rotary switch)	16Ω
SPL Sensitivity	110dB (1W, 1m)	
Frequency Response	150 Hz – 6,000 Hz	
Finish	Horn: Aluminum die casting, beige, powder coating; Driver Unit Case: Weatherproof ABS resin, brown; Bracket: Rolled steel plate, powder coating	
Dimensions	503 (W) x 827 (H) x 599 (D) mm (19.8" x 32.55" x 23.62")	
Weight	50 kg (110 lb)	

** Special Order Product

Horn Array Speaker Optional Accessories

»Driver Unit
TU-651

»Driver Unit
TU-651M

For specifications and complete details see page 6

EASE Focus 2 - Generic Aiming & Acoustic Modeling Software

TOA Canada Corporation uses EASE Focus 2 for system design.
EASE Focus 2 is a three-dimensional, acoustic simulation software for the configuration and modeling of line array systems, digitally steered columns and conventional loudspeakers.
EASE Focus 2 is free for the end user but loudspeaker companies need to license their brand in order to add loudspeakers to the database.

- 3D modeling of direct sound, displayed in horizontal and vertical cutting planes.
- Support for EASE GLL files and data exchange with EASE and other AFMG software packages.
- Export your full array configuration for further use in EASE.
- Capability to use multiple sound sources, both line array systems and regular loudspeakers, in a single project.
- Support for digitally steered columns and other configurable loudspeakers; this requires an additional proprietary DLL that can provide e.g. beam steering filters.
- Virtual equalizer for tuning a line array in the simulation.
- Full frequency range from 20 Hz to 20 kHz.
- High accuracy due to high internal data resolution and GLL data format.
- Many helpful features for pre-production and on-site setup, e.g. extensive PDF-reports, additional rigging details, etc.

Long Range Slim Array Speaker

Spotlight

»Horn Array Speaker

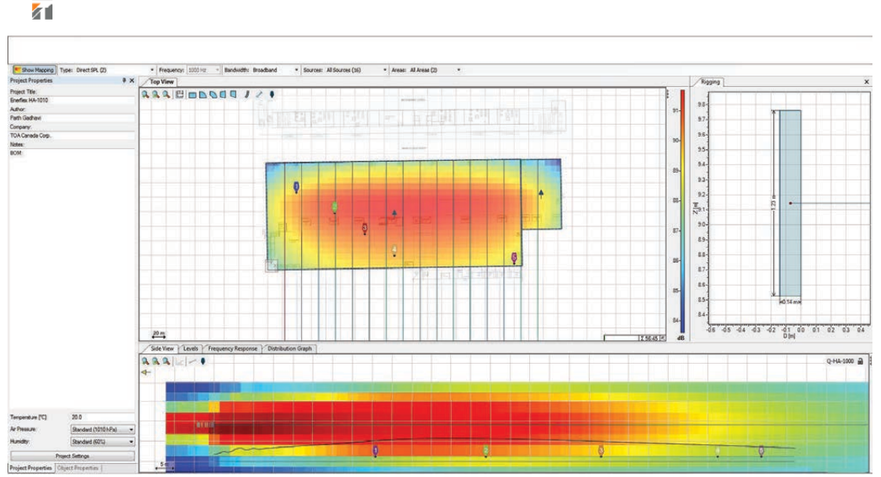
HA-1010

The TOA Long Range Slim Array Speaker is comprised of multiple horn speakers positioned in an array. It features long-range sound coverage, further than that of multiple conventional horn speakers grouped together. Narrowly focused vertical directivity allows high volumes to be controlled at closer proximity.

The HA-1010 speaker array provides a dispersion pattern of 90° horizontally x 15° vertically. This directivity high-frequency array horn speaker provides 2 70V taps of 30 and 60 watts, allowing for proper power sizing in almost any application. Best used for Mass Notification and Voice Message announcements in various outdoor areas, including parking lots, parks & recreation areas, hotel & resort grounds, sports arenas, military facilities & transportation terminals.

- Outdoor long range speaker incorporating "line array speaker technology"
- Less sound decay and can deliver sound about twice as far as conventional outdoor horn speakers for wireless system (when compared with reflex horn speaker and straight horn speaker made by TOA Corporation).
- The sound is mild nearby the speaker and clear far away from the speaker.

Model	HA-1010
Rated Input	60W
Rated Impedance	170Ω (60W), 330Ω (30W)
Sound Pressure Level	114 dB (1W, 1m)
Tappings	2 x 70V taps of 30 W & 60 W
MAX. Sound Pressure Level	132 dB (60W, 1m)
Frequency Response	350 Hz - 7 kHz
Directivity Angle	Horizontal: 90° (2kHz), Vertical: 15° (2kHz)
Speaker Component	Horn speaker unit x 8
Water Protection	IP 66
Operating Temperature	-20 °C to +55 °C
Finish	Case, Panel: Aluminum, salt-resistant, paint, grey Front Grille: Aluminum, black
Dimensions	167 (W) x 1233 (H) x 140.5 (D) mm
Weight	13.5 KG
Accessories	Washer (M10) x 8, Spring Washer (M10) x 4, Nut (M10) x 4



Recommended Accessory

EQ Box EQ-0101A

This EQ box is for exclusive use with HA-1010. It ensures clarity of long distance transmission and protects the speaker’s driver units. To be inserted on the Audio line feeding power amplifier input.

Line Array Speaker Type C

TOA's Type C Mid-Size, Two-Way Line Array Speakers feature wave front control technology that creates a sound field with high sound clarity and uniform sound pressure level. Recommended digital processor is the D-901 or D-2008 (optional). Easily converted to operate in bi-amplifier or full-range modes with simple internal adjustment.

SR-C8L
SR-C8LWP

SR-C8S
SR-C8SWP

- Superior sound quality - Sync-Drive technology keeps the audio in phase with its sources at the speakers to create an ideal linear sound source.
- High-fidelity sound - due to the design of the speakers phase wave-front control technology, high-fidelity sound is produced without causing attenuation of high-frequency sound
- Adjustable sound coverage
- Resistant to feedback and enjoy reflection-free operation
- Single or bi-amp mode - by changing the position of an internal connector

Model	SR-C8L	SR-C8LWP	SR-C8S	SR-C8SWP
Power Handling Capacity	Continuous program: 360 W (Single-amp mode; Low 360 W, High: 180 W (Bi-amp mode)			
Rated Impedance	16Ω (single-amp mode); Low: 16Ω, High: 16Ω (bi-amp mode)			
Sensitivity (1W, 1m)	98 dB (single-amp mode) Low: 95dB, High: 110dB (bi-amp mode)			
Frequency Response	65 – 20,000 Hz (when using an optional DSP processor)			
Speaker Component	Low Frequency: 20 (8") cm cone type; High Frequency: Wave front control horn 110° (horizontal) x 5° (vertical) + compression driver x 2		Low Frequency: 20 (8") cm cone type; High Frequency: Wave front control horn 110° (horizontal) x 15° (vertical) + compression driver x 2	
Directivity Angle	Horizontal: 110°, Vertical: 5°		Horizontal: 110°, Vertical: 15°	
Finish Enclosure:	Plywood, black, urethane paint	Plywood, black, urethane coating	Plywood, black, urethane paint	Plywood, black, urethane coating
Finish Front grille:	Punched steel plate, black, paint	Punched stainless steel, black, paint	Punched steel plate, black, paint	Punched stainless steel, black, paint
Dimensions	526.6 (W) x 293 (H) x 296 (D) mm (20.73" x 11.54" x 11.65")		526.6 (W) x 293 (H) x 294 (D) mm (20.73" x 11.54" x 11.57")	
Weight	17 kg (37.48 lb)		16 kg (35.27 lb)	
Water Protection	--	IPX4	--	IPX4
Accessory	M8 connection bolt x 4			
Option	Cluster bracket: SR-CL8, Rigging frame: SR-RF8WP, Tilt joint bracket: SR-TP8, Digital processor: D-901 or D-2008	Rigging frame: SR-RF8WP Digital processor: D-901 or D-2008	Cluster bracket: SR-CL8, Rigging frame: SR-RF8WP, Tilt joint bracket: SR-TP8, Digital processor: D-901 or D-2008	Rigging frame: SR-RF8WP Digital processor: D-901 or D-2008

Line Array Speaker Type C - Subwoofer

SR-C15B
SR-C15BWP

- Designed for use in conjunction with the SR-C Series Line Array Speakers
- Indoor and outdoor versions available, weather-resistant version has cable connection
- 15" high power woofer
- 450 W continuous power handling

Model	SR-C15B	SR-C15BWP
Power Handling Capacity	Continuous program: 450 W	
Rated Impedance	8Ω	
Sensitivity (1W, 1m)	93 dB	
Frequency Response	40 – 400 Hz (when using an optional DSP processor)	
Speaker Component	38 cm (15") cone-type	
Finish Enclosure:	Plywood, black, urethane paint	Plywood, black, urethane coating
Finish Front grille:	Punched steel plate, black, paint	Punched stainless steel, black, paint
Dimensions	526.6 (W) x 594.8 (H) x 550 (D) mm (20.73" x 23.42" x 21.65")	
Weight	41 kg (90.39 lb)	
Accessory	M8 Connection bolt x 4	
Option	Rigging frame: SR-RF8 Digital processor: D-901 or D-2008	Rigging frame: SR-RF8WP Digital processor: D-901 or D-2008

SR-C Series Optional Accessories

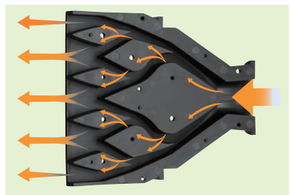
Cluster bracket, black
SR-CL8

Rigging support bracket
SR-SB8

Tilt joint bracket
SR-TP8

Accessory Reference on page 159

SYNC Drive™
Synchronous Nexus Drive Control



Sync-Drive™ - Synchronous Nexus Control Drive Technology is a wavefront control technology that keeps sound waves in phase with their sources at the speakers to create an ideal linear sound source. Sync-Drive™ offers a uniform, high frequency sound field providing excellent sound clarity and minimal interference.

Speakers featuring Sync-Drive™ Technology:

- *SR-C Line Array Speakers*
- *SR-H Line Array Speakers*
- *SR-D - Line Array Speakers*
- *SR-S - Line Array Speakers*
- *HX-7 - Compact Arrays*

Line Array Speaker Type D

TOA brought together its proprietary line array technology and digital signal processing (DSP) technology in developing the SR-D8 Steerable Line Array Speaker. As well as processing both analog and digital audio input, this innovative speaker harnesses 8 built-in digital amplifiers to project sound waves to targeted areas with greater precision than is possible with conventional speakers. By digitally shaping the width and angle of acoustic beams, it can steer sound precisely to desired areas without requiring a change of installation location.

SR-D8-S SR-D8-M

Steerable Active Line Array Speaker - Master
SR-D8-M**

Software

Steerable Active Line Array Speaker - Slave
SR-D8-S**

- A maximum total of 16 speakers (in up to four stacks) can be controlled as a single unit via GUI-operated software.
- The intuitive control software enables instant simulations that reduce the time required for designing systems and tuning their acoustic performance.
- The speaker comes with DSP functions, including gain, mute, compression, delay, auto -mixing, high/low pass filters, high/low shelving filters, and notch filters.
- Equipped with two analog audio input terminals and four digital audio input terminals for CobraNet™ connection, the speaker supports 6 x 2 matrix mixing.

Model	SR-D8-M	SR-D8-S
Power Consumption	320 W (rated output), 72 W (based on UL/CSA standards)	315 W (rated output), 72 W (based on UL/CSA standards)
Amplification System	Class D, 8 Channels	
Coverage	Horizontal: 90°; Vertical Beam Width: up to 45°; Vertical Beam Angle: ±45° (adjustable by using the supplied SR-D8 setting software)	
Output	30 W, 1 channel (1% THD+N)	
Frequency Response	130 Hz – 20 kHz	
Speaker Component	Low Frequency: 10 cm cone-type x 8; High Frequency: 2.5 cm balanced dome-type x 24	
Maximum SPL	Max. 93 dB SPL (A-weighted, pink noise, 30 m)	
Finish	Enclosure: MDF, white, paint; Front Grille: Punched steel plate, white, acrylic paint	
Dimensions	160 (W) x 895 (H) x 255 (D) mm (6.3" x 10.04" x 35.24")	
Weight	21 kg (46.3 lb)	
Accessory	Power supply cord (2m (6.56ft)) x 1, Removable terminal plug (3 P) x2, Removable terminal plug (2 P) x 1, CD-ROM (Setting software) x 1	Power supply cord (2m (6.56ft)) x 1, Removable terminal plug (3 P) x1, Removable terminal plug (2 P) x 1
Option	Wall mounting adapter: SR-D8CL, or SR-D8CS, Extension plate: SR-D8EP, Fixing bar: SR-D8FB, Hoisting bracket: SR-D8HB, Wall mounting bracket: SR-D8WB	

SR-D Series Optional Accessories

Wall mounting adapter
SR-D8CL**

Wall mounting adapter
SR-D8CS**

Extension plate
SR-D8EP**

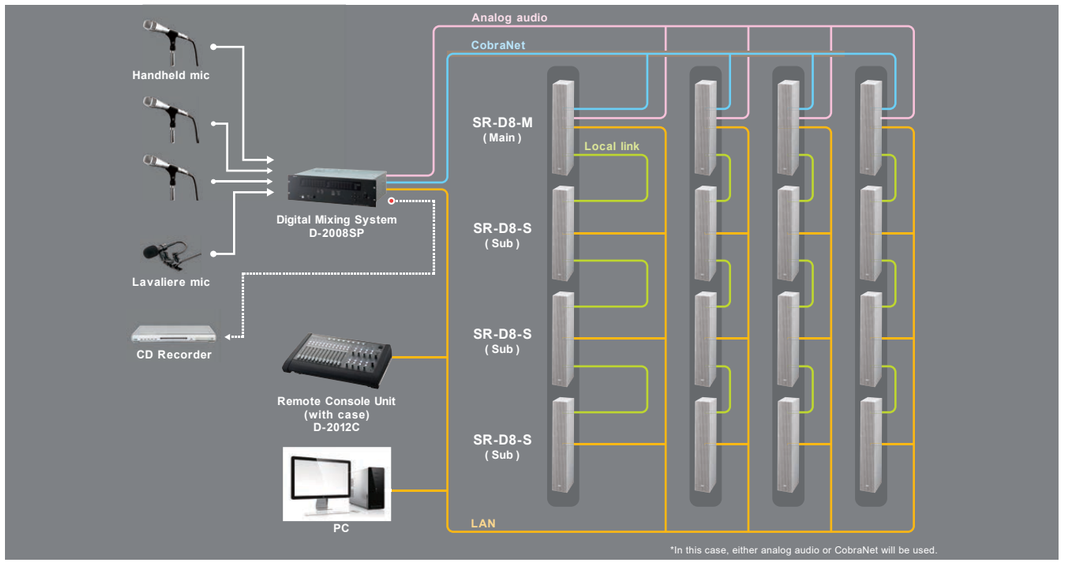
Fixing bar
SR-D8FB**

Hoisting bracket
SR-D8HB**

Wall mounting bracket
SR-D8WB**

Accessory Reference on page 159

SR-D Series System Example



Line Array Speaker Type S

SR-S4L
SR-S4LWP

SR-S4S
SR-S4SWP

- 2-way line array speaker with 8 10-cm (4") woofers and 24 high-frequency drivers, installed vertically
- Sync-Drive (Synchronous Nexus Control) technology create ideal linear sound source
- Clear sound with reduced attenuation over distance
- Speakers are reflection-free and feedback resistant
- Splashproof versions (SR-S4LWP/SR-S4SWP)
- Biamp or single amp drive possible
- A wide variety of optional mounting brackets are available
- Optional matching transformer MT-S0601 for high-impedance operation

Model	SR-S4L	SR-S4LWP	SR-S4S	SR-S4SWP
Power Handling Capacity	Continuous program: 600W			
Rated Impedance	8Ω			
Sensitivity (1W, 1m)	94dB		93dB	
Frequency Response	70 Hz – 20 kHz			
Speaker Component	Low: 10 cm (4") cone-type x 8, High: 2.5 cm (0.98") balanced dome-type x 24			
Directivity Angle	Horizontal: 90°; Vertical: 0°		Horizontal: 90°; Vertical: 10°	
Finish Enclosure:	MDF, white, paint	Plywood, white, urethane coating	MDF, white, paint	Plywood, white, urethane coating
Front grille:	Punched steel plate, white, acrylic paint	Punched stainless steel, white paint	Punched steel plate, white, acrylic paint	Punched stainless steel, white paint
Dimensions	160 (W) x 895 (H) x 255 (D) mm (6.3" x35.2" x 10")		160 (W) x 892 (H) x 303 (D) mm (6.3" x 35.1" x 11.9")	
Weight	16 kg (35.3 lbs)			
Dust/Water Protection	—	IPX4	—	IPX4

SR-S Series Optional Accessories

Extension Plate
SR-EP4

Wall Tilt Bracket
SR-TB4

Wall Mounting Bracket
SR-WB4
for SR-S4L/WP

Stand Adapter
SR-SA4

Protection Pad
SR-PP4

Extension Plate
SR-EP4WP

Wall Tilt Bracket
SR-TB4WP

Wall Mounting Bracket
SR-WB4WP
for SR-S4L/WP

Flying Bracket
SR-FB4

Floor Stand
SR-FS4
for SR-S4L/WP

Matching Transformer
MT-S0601

Accessory Reference on page 160

Line Array Speaker Type H

SR-H2L **SR-H2S** **SR-H3L** **SR-H3S**

- Slim line array with excellent directivity
- Narrow 84 mm design allows speakers to fit in well with the interior decor of the venue
- Sync-Drive (Synchronous Nexus Control) technology create ideal linear sound source
- Clear sound with reduced attenuation over distance
- Speakers are reflection-free and feedback resistant
- Curved speaker models for improved vertical dispersion
- A wide variety of optional mounting bracket is available
- Optional matching transformer MT-S0301 for high-impedance operation

Model	SR-H2L	SR-H2S	SR-H3L	SR-H3S
Power Handling Capacity	Continuous program: 180W		Continuous program: 360W	
Rated Impedance	8Ω			
Sensitivity (1W, 1m)	92dB	90dB	95dB	92dB
Frequency Response	80 Hz – 18 kHz	90 Hz – 17 kHz	110 Hz – 18 kHz	90 Hz – 17 kHz
Speaker Component	7cm (2.8") cone-type x 9		7cm (2.8") cone-type x 16	
Directivity Angle	Horizontal: 90°; Vertical: 0°	Horizontal: 90°; Vertical: 20°	Horizontal: 90°; Vertical: 0°	Horizontal: 90°; Vertical: 20°
Finish Enclosure:	MDF, white, urethane paint			
Front grille:	Punched steel plate, white, acrylic paint			
Dimensions	84 (W) x 668.4 (H) x 115 (D) mm (3.3" x 26.3" x 4.5")	84 (W) x 663.4 (H) x 115 (D) mm (3.3" x 26.1" x 4.5")	84 (W) x 1,186 (H) x 115 (D) mm (3.3" x 46.7" x 4.5")	84 (W) x 1,177.2 (H) x 157 (D) mm (3.3" x 46.3" x 6.2")
Weight	4.4 kg (9.7 lbs)	4.2 kg (9.3 lbs)	7.6 kg (16.8 lbs)	7.9 kg (17.4 lbs)

SR-H Series Optional Accessories

Wall Mounting Bracket
SR-WB3

Wall Tilt Bracket
SR-TB3

Flying Bracket
SR-FB3

Extension Plate
SR-EP3

Stand Adapter
SR-SA3

Matching Transformer
MT-S0301

Accessory Reference on page 159

Compact Array Speakers

Spotlight

From a *whisper* to a SCREAM

- SYNC-Drive™ waveguide technology
- Innovative modular speaker design includes four preassembled modules with four LF drivers and twelve HF dome tweeters
- Adjustable dispersion angle to 0, 15, 30, 46 and 60 degrees
- Improved intelligibility through tailored coverage
- In-line driver arrangement for superior vertical coverage control
- Contoured waveguide-baffle for distortion-free coverage control
- High power handling; 750W continuous (250W pink noise)
- Splashproof versions (HX-7B-WP/HX-7W-WP)
- Parallel connectors - dual speakon and screw terminal
- A wide variety of optional mounting bracket are available

HX-7B
HX-7B-WP

HX-7W
HX-7W-WP

Model	HX-7B	HX-7W	HX-7B-WP	HX-7W-WP
Power Handling Capacity	Continuous program: 750W			
Rated Impedance	8Ω			
Sensitivity (1W, 1m)	100dB			
Frequency Response	75 Hz – 20 kHz		105Hz – 20 kHz	
Speaker Component	Low: 13cm (5.5") cone-type x 8, High: Wave front control horn with compression driver x 4			
Directivity Angle	Horizontal: 100°; Vertical: 0°,15°,30°,45° and 60°			
Finish	Enclosure: Polypropylene, black or white; Punched net: Surface-treated steel plate, black or white, Hanging bracket: Steel plate, black or white paint		Enclosure: Polypropylene, black or white; Punched net: Surface-treated steel plate, black or white, rust proof coating	
Dimensions	497 (W) x 664 (H) x 274 (D) mm (19.6" x 26.1" x 10.8")			
Weight	30kg (66.1 lbs)			
Dust/Water Protection	—		IPX4 (Install with every speaker module tilted downward from the horizontal.)	
Accessory	Hanging bracket L, R (L and R are symmetrical to each other) x 1 each, Hanging bracket mounting bolt x 4		Terminal cover x 1, Terminal cover mounting screw x 4, Rubber packing x 1	
Option	Matching transformer: MT-200[1], Matching transformer: HY-MT7 Speaker mounting bracket: HY-60DB/W, HY-CN7B/W, HY-PF7B/W, HY-VM7B/W, HY-WM7B/W[2], HY-CO801/W[2], Speaker stand adapter: HY-ST7		Matching transformer: MT-200[1], Matching transformer: HY-MT7 Speaker mounting bracket: HY-TM7B-WP, HY-MS7B-WP, HY-60DB-WP, HY-CN7B-WP	

Note: (1) When mounting the MT-200 Matching Transformer to the speaker, an optional HY-MT7 Matching Transformer adapter is required. (2) HY-VM7B Speaker Mounting Bracket is separately required.

Mounting Options

Two speakers connected
HY-CN7W / HY-CN7W-WP / HY-CN7B / HY-CN7B-WP

On the wall
HY-WM7W / HY-WM7B

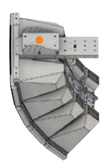
Dispersion angle 60 degrees
HY-60DW / HY-60DW-WP / HY-60DB / HY-60DB-WP

On building structures
HY-TM7W-WP / HY-TM7B-WP

Hanging vertically with subwoofer
HY-PF7W / HY-PF7B

On undereave walls
HY-MS7W-WP / HY-MS7B-WP

On the ceiling
HY-VM7W / HY-VM7B



On the stand
HY-ST7

Adjustable Dispersion

HX-7

Advantage of multi-unit configuration

Maximum four speaker units can be stacked.

*Make sure that 3 or 4-stacked HX units are suspended from 3 or more hanging points.

Subwoofers

FB-150B

FB-150W

- Compact subwoofer, ideal for use with HX-7 Series (indoor use)
- 38 cm (15”) woofer
- For floor-, wall-, corner- or ceiling-mount
- 600W continuous program high-power subwoofer system

Model	FB-150B/FB-150W
Power Handling Capacity	Continuous program: 600W
Rated Impedance	8Ω
Sensitivity (1W, 1m)	93 dB
Frequency Response	40 – 400 Hz
Speaker Component	38cm (15”) cone-type
Finish	Enclosure: Plywood, black or white, urethane paint Punched net: Surface-treated steel plate, white or black paint
Dimensions	504 (W) x 528 (H) x 477 (D) mm (19.9” x 20.8” x 19.2”)
Weight	30kg (66.1 lbs)
Option	Speaker rigging frame: HY-PF7B/W

HX-7 Series Optional Accessories

» Angle Adjustment Bar
HY-60DB-WP

» Angle Adjustment Bar
HY-60DW-WP

» Speaker Connection Bracket
HY-CN7B-WP

» Speaker Connection Bracket
HY-CN7W-WP

» Wall Mounting Bracket
HY-MS7BWP

› Wall Mounting Bracket
HY-MS7WWP

» Matching Transformer Adapter
HY-MT7

» Rigging Frame
HY-PF7B

» Rigging Frame
HY-PF7W

» Speaker Stand Adapter
HY-ST7

» Rigging Bracket
HY-TM7BWP

» Rigging Bracket
HY-TM7WWP

» Rigging Bracket
HY-VM7B

» Rigging Bracket
HY-VM7W

» Wall Mounting Bracket
HY-WM7B
(requires HY-VM7B)

» Wall Mounting Bracket
HY-WM7W
(requires HY-VM7W)

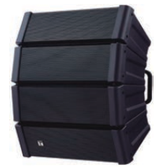
» Ceiling Mount Bracket
HY-C0801
(requires HY-VM7B)

» Ceiling Mount Bracket
HY-C0801W
(requires HY-VM7W)

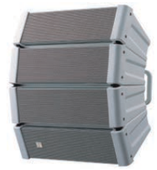
Accessory Reference on page 164

Compact Array Speakers

HX-5B
HX-5B-WP



HX-5W
HX-5W-WP



- Innovative modular speaker design includes four preassembled modules with four LF drivers and twelve HF dome tweeters
- Adjustable dispersion angle to 60, 45, 30 or 15 degrees
- Improved intelligibility through tailored coverage
- In-line driver arrangement for superior vertical coverage control
- Contoured waveguide-baffle for distortion-free coverage control
- High power handling; 600W continuous (200W pink noise)
- Splashproof versions (HX-5B-WP/HX-5W-WP)
- Parallel connectors - dual speakon and screw terminal
- A wide variety of optional mounting bracket is available

Model	HX-5B	HX-5W	HX-5B-WP	HX-5W-WP
Power Handling Capacity	Continuous program: 600W			
Rated Impedance	8Ω			
Sensitivity (1W, 1m)	96dB (60° mode), 97dB (45° mode), 98dB (30° mode), 99dB (15° mode)			
Frequency Response	70 Hz – 20 kHz (60° mode)		95Hz – 20 kHz (60° mode)	
Speaker Component	Low: 12cm (4”) cone-type x 4, High: Balanced dome-type x 12			
Directivity Angle	Horizontal: 100°; Vertical: 60°, 45°, 30°, 15° variable			
Finish	Enclosure: Polypropylene, black or white; Punched net: Surface-treated steel plate, black or white, (rust proof coating on WP versions)			
Dimensions	408 (W) x 546 (H) x 342 (D) mm (16.1” x 21.5” x 13.5”)			
Weight	16kg (35.3 lbs)			
Dust/Water Protection	—		IPX4	
Accessory	Hanging bracket x 2, Hex. wrench x 1			
Option	Matching transformer: MT-200, Speaker mounting bracket: HY-PF1B/W, HY-CW1B/W, HY-WM2B/W, HY-CN1B/W, Speaker stand: HY-ST1		Matching transformer: MT-200, Speaker mounting bracket: HY-PF1WP, HY-CW1WP, HY-WM1WP, HY-WM2WP, HY-CN1B/W-WP	

Subwoofers

FB-120B

FB-120W

- Compact subwoofer, ideal for use with HX-5 Series
- Extremely wide frequency range
- For floor-, wall-, corner- or ceiling-mount
- 600W continuous program high-power subwoofer system

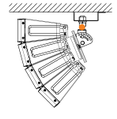
Model	FB-120B/FB-120W
Power Handling Capacity	Continuous program: 600W
Rated Impedance	8Ω
Sensitivity (1W, 1m)	90 dB
Frequency Response	40 Hz – 1.2 kHz
Speaker Component	30cm (12”) cone-type
Finish	Enclosure: Plywood, black or white Punched net: Surface-treated steel plate, white or black paint
Dimensions	408 (W) x 408 (H) x 450(D) mm (16.1” x 16.1” x 17.7”)
Weight	15kg (33.1 lbs)
Option	Speaker rigging frame: HY-PF1B/W

Mounting Options

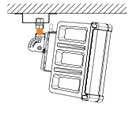
Hanging horizontally
HY-PF1B / HY-PF1W / HY-PF1WP

Hanging vertically with subwoofer
HY-PF1B / HY-PF1W / HY-PF1WP

On the ceiling vertically
HY-CW1B / HY-CW1W / HY-CW1WP



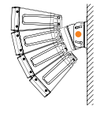
On the ceiling horizontally



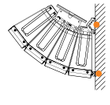
Two speakers connected
HY-CN1B / HY-CN1W / H
Y-CN1BWP / HY-CN1WWP

Hanging vertically with subwoofer
HY-PF7W / HY-PF7B

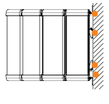
On the wall vertically
HY-WM1B / HY-WM1W / HY-WM1WP



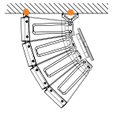
On the wall vertically
HY-WM2B / HY-WM2W / HY-WM2WP



On the wall horizontally



On the ceiling vertically



On the stand
HY-ST1

Compact Array Speakers

HX-5 Series Optional Accessories

Rigging Frame
HY-PF1B

Ceiling Mount Bracket
HY-CW1B

Mount Bracket
HY-WM1B

Mount Bracket
HY-WM2B

Extension Bracket
HY-CN1B

Rigging Frame
HY-PF1W

Ceiling Mount Bracket
HY-CW1W

Mount Bracket
HY-WM1W

Mount Bracket
HY-WM2W

Extension Bracket
HY-CN1W

Rigging Frame
HY-PF1WP

Ceiling Mount Bracket
HY-CW1WP

Mount Bracket
HY-WM1WP

Mount Bracket
HY-WM2WP

Extension Bracket
HY-CN1B-WP

Speaker Stand Adapter
HY-ST1

Matching Transformer
MT-200

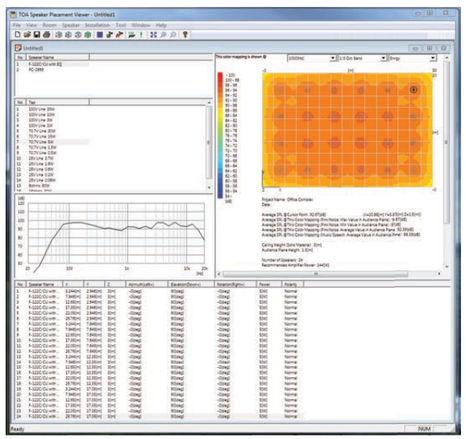
Extension Bracket
HY-CN1W-WP

Accessory Reference on page 161

TOA' s Design Team uses Speaker Software (SPV)

Free download at: www.TOAcanada.com! Design distributed ceiling or wall-mount speaker systems in minutes! The newest version of the TOA Speaker System Software is available with added features and more data files for all of your favorite TOA ceiling and wall-mount speakers. And, best of all, it's FREE!

- Easy to Use — design and layout systems in minutes!
- Automatic or Manual Layout Modes
- Color Display of Sound Pressure Level with adjustable resolution
- Interactive Frequency Response Display — changes in real-time as you move the mouse through the coverage area
- Updated Speaker Database includes most TOA models plus generic 4", 5" and 8" ceiling speakers
- Rectangular or Hexagonal Layout Patterns — Maximum Overlap, Minimum Overlap and Edge-to-Edge
- Adjust Individual Speakers — location, power and placement angles
- Minimum, Maximum and Average SPL Display for both pink noise and music/speech
- Selectable Frequency Centers — 1/12, 1/6, 1/3, 1, 2 and 4th octave
- Print Function includes color plots and speaker locations with Print Preview
- Recommended amplifier power calculation
- Energy or interference modes
- Normal or reverse polarity for individual speakers
- Metric or imperial units
- Zoom in/out and fit modes
- Distance between columns/rows



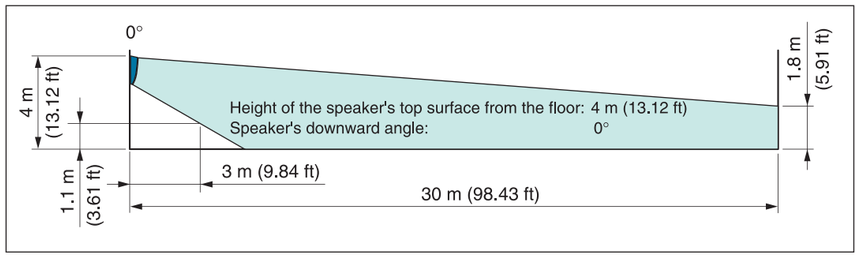
Line Array Speaker Type T

SR-T5

- Sturdy impact-resistant construction
- Easy mounting
- Internal two-way passive crossover network circuitry for single amplifier operation
- Speaker's downward angle adjustable with accessory mounting bracket
- Horizontal angle adjustable in conjunction with optional SR-PB5 bracket
- Optional matching transformer MT-S0601 for high-impedance operation
- Safety wire supplied to prevent the speaker from falling during installation work and after installation
- Ideal for installations in sports facilities with strong reverberation, including; school gymnasiums - additional protector grille not required.

Model	SR-T5
Power Handling Capacity	Continuous pink noise: 250 W; Continuous program: 750 W
Rated Impedance	8Ω
Sensitivity (1W, 1m)	96dB (1W, 1m equivalent, measured at 4m)
Frequency Response	70 – 20 kHz
Speaker Component	Low Frequency: 13 cm (5.12") cone-type x 8, High Frequency: balanced dome-type x 24
Directivity Angle	Horizontal: 100°; Vertical: 35°
Finish	Enclosure: Plywood, black, urethane paint; Baffle: Polypropylene, black; Punched net & Mounting Bracket: Steel plate, black, acrylic paint
Dimensions	310 (W) x 1,239 (H) x 341 (D) mm (12.2" x 48.78" x 13.43")
Weight	29 kg (63.93 lb) (including accessories)
Accessory	Mounting bracket A x 1, Mounting bracket B x1, Bracket mounting bolt x 6, Slide cover x 5, Slide cover mounting screw x 10, Eye bolt x 1, Safety wire x 1
Option	Wall pan bracket: SR-PB5, Matching transformer: MT-S0601

COVERAGE AREA EXAMPLE



SR-T Series Optional Accessories

Wall pan bracket
SR-PB5

Matching transformer
MT-S0601

Accessory Reference on page 160

Coaxial Array Speakers

HS-1500BT HS-1500WT

HS-1200BT HS-1200WT

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

Model	HS-1200BT/HS-1200WT	HS-1500BT/HS-1500WT
Power Handling Capacity	Continuous program: 300W (Low impedance)	
Sensitivity (1W, 1m)	97 dB	98dB
Rated Impedance	8Ω/100V line; 170Ω (60W), 330Ω (30W), 670Ω (15W) 70V line; 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W)	8Ω/100V line; 170Ω (60W), 330Ω (30W), 670Ω (15W) 70V line; 83Ω (60W), 170Ω (30W), 330Ω (15W), 670Ω (7.5W)
Frequency Response	70 Hz – 20 kHz	60 Hz – 20 kHz
Speaker Component	Low: 30cm (12") cone-type, High: Balanced dome tweeter x 6	Low: 38cm (15") cone-type, High: Balanced dome tweeter x 6
Finish	Enclosure: Polypropylene, black or white; Punched net: Surface-treated steel plate, black or white	
Dimensions	361 (W) x 448 (H) x 320 (D) mm (14.2" x 17.6" x 12.6")	451 (W) x 560 (H) x 400 (D) mm (17.8" x 22" x 15.7")
Weight	10kg (22 lbs)	14kg (30.9 lbs)
Accessory	Handle x 1, Handle fitting bracket x 2, Handle mounting screw x 2, Rubber foot x 2, Rubber foot mounting screw x 2	
Weight	Mounting bracket: HY-1200VB (vertical), HY-1200HB (Horizontal), Ceiling mount bracket: HY-C0801, Wall mounting bracket: HY-W0801	Mounting bracket: HY-1500VB (vertical), HY-1500HB (Horizontal), Ceiling mount bracket: HY-C0801, Wall mounting bracket: HY-W0801

HS Series Optional Brackets

For wall/ceiling
HY-1200HB

For wall/ceiling
HY-1200HW

For wall/ceiling
HY-1200VB

For wall/ceiling
HY-1200VW

For wall/ceiling
HY-1500HB

For wall/ceiling
HY-1500HW

For wall/ceiling
HY-1500VB

For wall/ceiling
HY-1500VW

For ceiling
HY-C0801*

For ceiling
HY-C0801W*

For wall
HY-W0801*

For wall
HY-W0801W*

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

Accessory Reference on page 161

Impedance Meter

Impedance Meter
ZM-104A

- Measures impedance of speaker lines up to 100k ohms
- Batteries: 4 (AA) (not included)
- Zero adjustment for accuracy on all ranges
- Easy to read meter calibrates directly in ohms
- Includes carrying case, test leads and impedance to power reference chart

Model	ZM-104A
Power Source	R6 x 4 (1.5 V DC x 4)
Current Consumption	39 mA
Reading	Direct reading meter, unit: Ω
Measurement Range	x 1 range: 5Ω - 1kΩ x 10 range: 50Ω - 10kΩ x 100 range: 500Ω - 100kΩ
Operating Temperature	-5 ºC to +40 ºC (23 ºF to 104 ºF)
Accuracy	±10%
Oscillation Frequency Battery life when continuously used	1 kHz, ±10% x 1 range: 30 H x 10 range: and 100 range: 60 h
Finish	ABS resin, black
Dimensions	120 (W) x 220 (H) x 63 (D) mm (4.72" x 8.66" x 2.48") (carrying case) 110 (W) x 180 (H) x 58 (D) mm (4.33" x 7.09" x 2.28") (unit only)
Weight	700g (1.54 lbs) (including carrying case, without batteries)

70 Volt Stepped Wall Attenuators

- Flush-mounted wall attenuators
- Volume can be adjusted in five steps
- Push-in terminals
- Accepts two conductors for easy bridging
- 2 wire connection for normal speaker line attenuation
- 3 wire connection for emergency paging attenuator override *(AT-063AP, ST-303AP, AT-603AP only)*

Attenuator
AT-063AP[1]

Attenuator
AT-303AP[1]

Attenuator
AT-603AP[1]

Model	AT-063AP	AT-303AP	AT-603AP
Input Range	0.5 W - 6 W	0.5 W - 30 W	0.5 W - 60 W
Attenuation	5 steps (0 dB, -6 dB, -12 dB, -18 dB, OFF)		
Applicable Cable	600 V vinyl-insulated cable (indoor vinyl or Heat-resistant Indoor Vinyl cable); Solid cable: Ø0.8 (0.03") - Ø1.6 (0.06") mm		
Terminal	Push-in connector		
Finish	Knob, panel, plate: ABS resin, ivory; Case: ABS resin, black		
Dimensions	70 (W) x 120 (H) x 52.4 (D) mm (2.76" x 4.72" x 2.06") (with plate); 41 (W) x 108 (H) x 52.4 (D) mm (1.61" x 4.25" x 2.06") (attenuator only)		
Weight	170 g (0.37 lb) (unit only)	210 g (0.46 lb) (unit only)	
Accessory	Plate x1, Plate mounting screw x2, Box mounting screw x2		

Attenuator
AT-025

Attenuator
AT-100

Attenuator
AT-100EMG[1]

Attenuator
AT-10K

Model	AT-025	AT-100	AT-100EMG	AT-10K
Input Capacity	25 W	100 W		--
Attenuation	13 steps (0 dB, -3 dB, -6 dB, -12 dB, -15 dB, -18 dB, -21 dB, -24 dB, -27 dB, -30 dB, -33 dB, OFF)			Continuous 10 kΩ
Wire Capacity	14-gauge			
Priority Relay	--		24 VDC @ 15 mA	--
Finish	White plate and sub-plate; Decora-style			
Dimensions With plate:	69.9 (W) x 114.3 (H) mm (2.75" x 4.5")			
Attenuator only:	47.6 (W) x 63.5 (H) x 44.5 (D) mm (1.9" x 2.5" x 1.8")	47.6 (W) x 63.5 (H) x 46 (D) mm (1.9" x 2.5" x 1.8")	47.6 (W) x 63.5 (H) x 53.9 (D) mm (1.9" x 2.5" x 2.1")	25.4 (W) x 44.5 (H) x 31.8 (D) mm (1" x 1.8" x 1.3")

Notes: 1 - Connection for emergency paging attenuator override.

Wall Plates

- Flush-mounted wall plates for MIC Connections
- YM-1J: 1/4" female TRS jack, single gang wall plate with cover.
- YM-3CF: XLR female jack, single gang wall plate with cover.
- *Available in lots of 2 (use part number: YM-1J-2, YM-3CF-2)*

MIC Connector
YM-1J

MIC Connector
YM-3CF

Model	YM-1J	YM-3CF
Jack	Double pole jack	XLM-3-31PCH-R
Usable Cable	Microphone vinyl cable with sectional area of 0.75 - 2.0 mm²	
Usable Plate	YP-1AF	
Usable Plug	Single or double pole plug	XLR-3-12C
Finish	Cover: ABS resin (ivory), Frame: Steel plate (t1.2)	
Dimensions	45 (W) x 110 (H) x 48.1 (D) mm (1.77" x 4.33" x 1.89")	45 (W) x 110 (H) x 53 (D) mm (1.77" x 4.33" x 2.1")
Weight	750 g (1.65 lb)	95 g (0.21 lb)
Accessory	Screw M4 x 35 x 2	

Notes: YM-1J/3CF: When routing a power or speaker line and microphone line through the same electric box, provide a barrier between the two for insulation.
For cables with sectional area of under 0.75 mm², fold back their cores to increase the sectional area before making a connection.
YM-1J H (hot), C (Cold), and E (ground) are shorted. Therefore, mixers or amplifiers using phantom power cannot be used.

Wall Plate
YP-1AF

Wall Plate for YM-1J, YM-3CF

AMPLIFIERS

BG-2000 Series Mixer Power Amplifiers

Spotlight

TOA's BG-2000 Series Mixer Power Amplifier is a 5-input mixer amplifier for background music and general announcements. It is suited for use in bars, retail stores, and banquet halls. It is equipped with MOH OUT that permits 2-channel broadcast when used in conjunction with the optional booster amplifier BA-235 (35W) or BA-260 (60 W).

BG-2000 Series Mixer/Amplifiers

BG-2035 35w
BG-2060 60w
BG-2120 120w
BG-2240D-AM 240w
BG-2480D-AM 480w

- Compact five channel Mixer-Amplifier for paging, background/foreground music distribution and music/messaging-on-hold.
- BG-2240D-AM: Class D 240W @70V Amplifier
- All inputs/outputs with removable terminal blocks allow quick and easy installation.
- Any of 5 inputs assignable to MOH/ZONE 2 out to fulfill specific BGM requirements
- 3 line inputs, with line 1 line/tel switchable, while line 2 and 3 are equipped with RCA pin jacks.
- Phantom Power (+ 24V DC) incorporated for MIC input.
- Module slot accepts optional 900 Series plug-in modules for custom system configurations. Optional 900 Series Modules required.
- Rear panel-mounted DIP switches allow easy configuring of settings.
- Provides auto/manual mute function with adjustable muting sensitivity.
- Incorporates Remote volume control connection.
- 2-channel broadcast capability together with ø ne 2 expansion capability in conjunction with BA-200 Series.
- Tamper-proof, front-panel bass and treble controls are recessed to protect their settings.
- Thermal protection circuitry prevents potential damage from excessive heat build-up.
- AC Mains Circuit Breaker.
- Supplied accessory security knobs for volume controls prevent unauthori ø d volume setting changes.
- Optional rack-mount kit (MB-1000).
- UL/cUL Listed.

Model		BG-2035	BG-2060	BG-2120	BG-2240D-AM	BG-2480D-AM
Power Source		120V AC, 60 Hz				
Rated Output		35W	60W	120W	240W	480W
Power Consumption		94 W (rated output), 50 W (based on cULus standards)	163 W (rated output), 80 W (based on cULus standards)	265 W (rated output), 120 W (based on cULus standards)	300 W (rated output), 55 W (based on cULus standards)	300 W (rated output), 55 W (based on cULus standards)
Input		MIC: -60 dB*, 600Ω, electronically balanced, removable terminal block Line 1: -10 dB*/TEL: -20 dB* Line 1/TEL selectable, 10 kΩ, electronically balanced, removable terminal block Line 2, 3: -10 dB*, 10 kΩ, unbalanced, removable terminal block and RCA jacks Module				
Output	Speaker:	4Ω, 25 V (18 Ω), 70 V (140 Ω) balanced, removable terminal block	4 Ω, 25 V (10 Ω), 70 V (83 Ω) balanced, removable terminal block	4 Ω, 25 V (5.2 Ω), 70 V (42 Ω) balanced, removable terminal block	70 V (21 Ω) balanced, removable terminal block	70 V (21 Ω) balanced, removable terminal block
	MOH:	0dB*, 600Ω, balanced, removable terminal block				
	Line:	0 dB*, 600 Ω, unbalanced, removable terminal block				
Phantom Power		On/Off switch for Mic, +24 V DC				
S/N ratio		Mic: 60 dB or more, Line 1/TEL, Line 2, 3, Module: 75 dB or more (Band Pass: 20 Hz - 20 kHz, Tone controls: Centered)			Mic: 60 dB or more, Line 1/TEL, Line 2, 3, Module: 73 dB or more (A-weighted, Tone controls: Centered)	Mic: 60 dB or more, Line 1/TEL, Line 2, 3, Module: 73 dB or more (A-weighted, Tone controls: Centered)
Tone Control		Bass: ±10dB at 100Hz; Treble: ±10dB at 10kHz				
Muting		Manual mute/Automatic mute				
Dimensions		264 (W) × 94.3 (H) × 276.3 (D) mm (10.39" x 3.71" x 10.52")				
Weight		5.3 kg (11.68 lbs)		6 kg (13.23 lbs)	3.5 kg (7.72 lbs)	3.5 kg (7.72 lbs)
Accessory		Volume control cover: YA-920 x 5; Removable terminal plug (2 pins) x 4, Removable terminal plug (3 pins) x 2, Removable terminal plug (4 pins) x 1, Removable terminal plug (5 pins) x 1				
Optional		Rack mounting bracket: MB-1000				

*0 dB = 1 V

Note: There is a spec difference between TOA's existing BG-2000 series amps and the new BG-2240D-AM. The 4Ω and 25V speaker output is not available on the BG-2240D-AM. If you require a 25V line with 240W output. We recommend A-724 as an alternative.

Enhance the customer experience with a sound systems for the retail environment.

Optional Accessories BG-2000 Series

»» Rack Mount Kit (2 RU)
MB-1000

»» Volume Control Cover *(included)*
YA-920

Optional Accessories BG-200 and BA-200 Series

»» Rack Mount Kit (2 RU)
MB-25B-BK

»» Rack Mount Kit for 2 units
MB-25B-J

»» Wall Mount Bracket
WB-900B

»» Volume Control Cover *(included)*
YA-920

Accessory Reference on page 155; Amplifier Selection Chart on page 163

Please see 900 Series Modules on page 39

BG-200 Series PA Amplifiers

TOA's BG-200 Series is a 20/35 W 3-input mixer amplifier for background music and general announcements. It is suited for use in bars, retail stores, and banquet halls. It is equipped with MOH OUT that permits 2-channel broadcast when used in conjunction with the optional booster amplifier BA-235 (35W) or BA-260 (60 W).

»» Mixer Amplifier

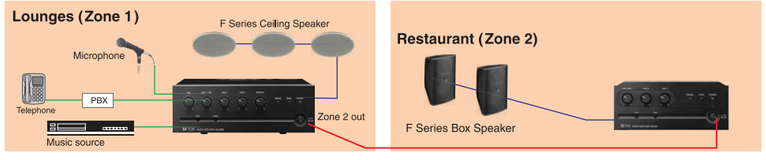
BG-220 20w
BG-235 35w

- Ideal for background music and paging applications
- 2-channel broadcasts possible for system expansion as required through MOH/ZONE 2 output on BG Series Amplifiers
- Tamper-proof bass and treble controls preserve system settings
- Security knobs for volume control included
- Any of 3 inputs can be assigned to MOH/ZONE 2 output
- Line 2 and 3 outputs equipped with RCA pin jacks
- Line 2 and 3 inputs equipped with summing RCA jacks
- Automatic Mute sensing control to set mute activation threshold and manual mute function also provided
- Removable terminal blocks and rear-mounted DIP switches for fast and easy installation/setup
- Thermal protection circuits against overheating
- Meets UL/cUL regulations
- Optional rack and wall-mount kits: MB-25B-BK (2 RU) and MB-25B-J (two units, 2 RU)

Model	BG-220	BG-235
Power Source	120V AC, 60 Hz	
Rated Output	20 W	35 W
Power Consumption	60 W (rated output), 36 W based on cULus standards)	90 W (rated output), 55 W based on cULus standards)
Input	MIC: -60 dB*/Line 1: -10 dB* MIC/Line 1 selectable, 600 Ω, electronically balanced, removable terminal block Line 2,3: -10 dB*, 10 kΩ, unbalanced, removable terminal block or RCA jack	
Output	Speaker: 4 Ω, 25 V (31 Ω) and 70 V (245 Ω), balanced removable terminal block MOH: 0 dB*, 600 Ω, balanced, removable terminal block; Line: 0 dB*, 600 Ω, unbalanced, removable terminal block	Speaker: 4 Ω, 25 V (18 Ω) and 70 V (140 Ω), balanced removable terminal block MOH: 0 dB*, 600 Ω, balanced, removable terminal block; Line: 0 dB*, 600 Ω, unbalanced, removable terminal block
S/N ratio	Mic/Line 1: 60 dB or more, Line 2, 3: 80 dB or more (Band Pass: 20 Hz - 20 kHz Tone Controls: Centered)	
Tone Control	Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz	
Control	Mic/Line 1 gain control, Line 2 gain control, Line 3 gain control, Bass tone control, Treble tone control, MOH out gain control, Mute control (Manual mute), Mute sense control, Auto mute switch (Mic/Line 1), Mic/Line 1 selector switch, Mute receive switch (Line 2,3), MOH assign switch (Mic/Line 1, Line 2,3) Power ON/OFF switch	
Dimensions	210 (W) × 94.3 (H) × 265 (D) mm (8.27" x 3.71" x 10.43")	
Weight	3.5 kg (7.72 lbs)	4 kg (8.82 lbs)
Accessory	Volume Control Cover: YA-920 x 3, Removable terminal plug (2 pins) x 3, Removable terminal plug (3 pins) x 1, Removable terminal plug (4 pins) x 1, Removable terminal plug (5 pins) x 1	
Option	Rack mounting bracket: MB-25B, MB-25B-J WB-900B	

*0 dB = 1 V

Multi-zone example using BG and BA amps



BA 200 Series PA Amplifiers

TOA's BA-200 Series is a 35/60 W power amplifier for background music and general announcement. It is suited for use in bars, retail stores, and banquet halls. 2-channel broadcast can be made when used in conjunction with the optional mixer amplifier BG-220 (20W) or BG-235 (35 W).

»» Power Amplifier

BA-235 35w
BA-260 60w

- Ideal for background music and paging applications
- 2-channel broadcast possible for system expansion as required through MOH/ZONE 2 output on BG Series Amplifiers
- Tamper-proof bass and treble controls preserve system settings
- Security knobs for volume control included
- Remote master volume control possible by using an external volume control
- RCA line input jacks
- Thermal protection circuits against overheating
- Meets UL/cUL regulations
- Optional rack kits: MB-25B-BK (2 RU) and MB-25B-J (two units, 2 RU)

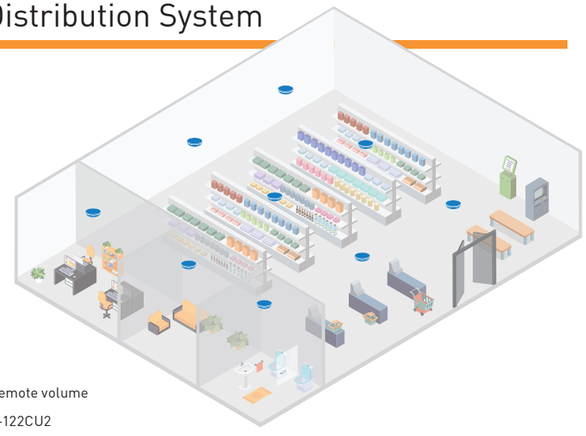
Model	BA-235	BA-260
Power Source	120V AC, 60 Hz	
Rated Output	35 W	60 W
Power Consumption	90 W (rated output), 52 W based on cULus standards)	130 W (rated output), 66 W based on cULus standards)
Input	Line In: 0 dB*/+4 dB* (selectable), 10 kΩ, unbalanced, removable terminal block or RCA jack	
Output	Speaker: 4 Ω, 25 V (18 Ω) and 70 V (140 Ω), balanced removable terminal block Bridge: Parallel in Line in, removable terminal block	Speaker: 4 Ω, 25 V (10 Ω) and 70 V (83 Ω), balanced removable terminal block Bridge: Parallel in Line in, removable terminal block
S/N ratio	80 dB or more (Band Pass: 20 Hz - 20 kHz Tone Controls: Centered)	
Tone Control	Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz	
Control	Master gain control, Bass tone control, Treble tone control, Input Level selector switch, Remote Volume control, Power ON/OFF switch	
Dimensions	210 (W) × 94.3 (H) × 265 (D) mm (8.27" x 3.71" x 10.43")	
Weight	4 kg (8.82 lbs)	4.6 kg (10.14 lbs)
Accessory	Volume Control Cover: YA-920 x 1, Removable terminal plug (2 pins) x 3, Removable terminal plug (4 pins) x 1	
Option	Rack mounting bracket: MB-25B-BK, MB-25B-J	

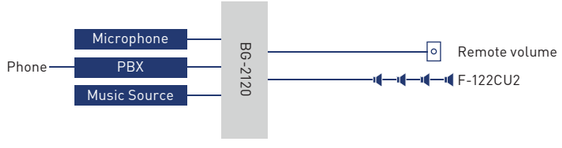
*0 dB = 1 V

Top choice for Background Music Distribution System

Mid Scale Single Zone
BGM/Paging Distribution System

A low-cost solution for mid-size supermarkets, with two-level priority broadcasting for paging, advertising, and background music. The BG-2000 series is a simple amplifier that is set up and ready to go with nothing more than the volume setting. Not only that, but all input/outputs have removable terminal blocks for quick and easy installation.





Accessory Reference on page 155; Amplifier Selection Chart on page 163

9000M2 Series Modular Digital Matrix Mixer/Amplifiers

The TOA 9000M2 Series Digital Matrix Mixer/Amplifiers redefines the conventional mixer/amplifier category by combining a modular matrix mixer, digital signal processor (DSP) and amplifiers in a compact, two rack space package. The versatile new series is ideal for multi-ø ne paging, music distribution and room-combining applications. The 9000 Series allows for easily configured, custom systems with up to eight mic/line inputs and eight outputs. Each 9000M2 Series chassis has two output channels with built-in DSP, including ten band parametric EQ, compressor, delay and more. Input and output modules include additional DSP. A new integrated operating mode provides powerful functionality for both simple mixing and complex multi-ø ne paging applications. Features include telephone ø ne paging, automatic microphone mixing and ambient noise control.

- Flexible modular design - up to 8 mic/line inputs and 8 outputs
- Detailed GUI software screens make even complex settings intuitive and easy to understand
- Any of the 30 EQ presets appropriate to the TOA speakers used may be selected for each output
- Up to 16 flush-mount remote panels connectable
- Programmed operating system - 32 scene memories and 32 paging memories
- Dual Channel Digital Signal Processor (DSP) on Input & Output channels:
  10-Band Parametric EQ/High and Low Pass Filters/Bass and Treble/Loudness/Compressor/Gate/Ducker/NOM (Automix)/ Delay (Output channel only)/TOA Speaker EQ Presets (Output channel only)/ DSP included on M-9000M2 Mainframe Outputs,D-001T, D-001R and T-001T modules (modules on page 39)

Model	A-9120SM2	A-9240SHM2	M-9000M2
Power Source	120 V AC, 60 Hz		
Rated Output	120 W	240 W	--
Power Consumption	150 W	250 W	40 W
Audio Input	Max. 8 channels, modular construction (modules optional) Power amplifier input: 0 dB*1, 10 kΩ, RCA pin jack		Max. 8 channels, modular construction (modules optional)
Audio Output	Preamplifier output 1: 0 dB*1, 300Ω, unbalanced, RCA pin jack Preamplifier output 2: 0 dB*1, 600 Ω, unbalanced, removable terminal block (3 pins)		Preamplifier output 1, 2: 0 dB*1, 600 Ω, balanced, removable terminal block (3 pins)
	Speaker output: Removable terminal block (7 pins); Direct: 120 W, 4Ω, unbalanced; Transformer: 120 W, 8Ω 25V & 70V, balanced	Speaker output: 240 W, 21 Ω, BTL output, removable terminal block (4 pins)	
Module Slot	Analog input (slot 1 - 8): -10 dB*1, 10 kΩ, unbalanced; Digital input (slot 1 - 4): 24 bit/48 kHz; MIX output (slot 1 - 8): -14 dB*1, 330 Ω (CH 1 prefader output), unbalanced; Digital output (slot 5 - 7): 24 bit/48 kHz; Power supply (slot 1 - 8): +24 V, -24 V, +6 V DC		
Digital Audio Signal Reference Level	-20 dBFS		
Power Bandwidth	(D): 20 Hz - 20 kHz 0.02% THD (T): 50 Hz - 20 kHz 0.5% THD	20 Hz - 20 kHz 0.008% THD	
Frequency Response	Power amplifier section: 20 Hz - 20 kHz +0, -1 dB Analog input module to speaker output: 20 Hz - 20 kHz +1, -3 dB		20 Hz - 20 kHz +1, -3 dB
Total Harmonic Distortion	Power amplifier section: 0.0008% (22 kHz LPF, 1 kHz, rated power) Analog input module to speaker output: 0.008% (22 kHz LPF, 1 kHz, rated power)		0.008% (at 22 kHz LPF, 1 kHz +10 dB*1 output)
S/N Ratio	At Input short, 20 - 20,000 Hz, set to ALL FLAT or OFF setting; Output volume min.: 90 dB (preamplifier output); Output volume max.: 61 dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF); Power amplifier section: 110 dB		At Input short, 20 Hz - 20 kHz, set to ALL FLAT or OFF setting; Output volume min.: 90 dB; Output volume max.: 61 dB (Input 1 volume: 0dB, Other Inputs: OFF)
Cross Talk	Over 64 dB (at 20 kHz)		
Tone Control	Bass: ±12 dB (at 100 Hz) , Treble: ±12 dB (at 10 kHz)		
Parametric Equalizer	10 bands, Frequency: 20 - 20,000 Hz, 31 points, Variable range: ±12 dB, Q: 0.3 - 5		
Speaker Equalizer	10 (set up software has 30 TOA speaker presets)		
High-pass Filter	-12 dB/oct, Variable frequency range: 20 - 20 kHz 31 points		
Low-pass Filter	-12 dB/oct, Variable frequency range: 20 - 20 kHz 31 points		
Compressor	Depth: 1 - 5		
Delay	0 - 40 ms (1 ms steps), maximum 40 ms (CH 1 + CH 2) (mixer mode only)		
Scene/Event 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: 3.3 V DC, short-circuit current: Under 1 mA, removable terminal block (14 pins); Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block (14 pins); Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resistor or input DC voltage of 0 to +10 V, removable terminal block (14 pins)		
Operating Temperature	-10° C to +40° C (14° F to 104° F)		
Operating Humidity	35% to 80% RH (no condensation)		
Finish	Panel: Aluminum, hair-line, black; Case: Surface-treated steel plate, black, paint		
Dimensions	420 (W) × 107.6 (H) × 355 (D) mm (16.54" x 4.24" x 13.98")	420 (W) × 107.6 (H) × 395 (D) mm (16.54" x 4.24" x 15.55")	420 (W) × 107.6 (H) × 353 (D) mm (16.54" x 4.24" x 13.9")
Weight	13kg (28.66 lbs)	11 kg (24.25 lbs)	6 kg (13.23 lbs)
Accessory	Power cord (2m (6.56ft)) x 1, Rack mounting bracket x 2, Bracket mounting screw x 4, Blank panel x 7, Blank panel mounting screw x 14, Removable terminal plug (3 pins) x 1, Removable terminal plug (7 pins) x 1,Removable terminal plug (14 pins) x 1 , CD x 1	Power cord (2m (6.56ft)) x 1, Rack mounting bracket x 2, Bracket mounting screw x 4, Blank panel x 7, Blank panel mounting screw x 14, Removable terminal plug (3 pins) x 1, Removable terminal plug (4 pins) x 1, Removable terminal plug (14 pins) x 1 , CD x 1	Power cord (2m (6.56ft)) x 1, Rack mounting bracket x 2, Bracket mounting screw x 4, Blank panel x 7, Blank panel mounting screw x 14, Removable terminal plug (3 pins) x 1, Removable terminal plug (14 pins) x 1 , CD x 1

*1 0dB = 1V; *2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port. (D) = Direct, (T) = Transformer
Note: AMX is a registered trademark of AMX Corporation. Crestron is a registered trademark of Crestron Electronics, Inc.

9000M2 Series Modular Digital Matrix Mixer/Amplifiers

Digital Matrix Mixer/Amplifier

A-9060DHM2 60W
A-9060SM2 60W
A-9120DHM2 120W
A-9120SM2 120W
A-9240SHM2 240W

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

Please see the 9000 Series Modules on page 33

Model	A-9060DHM2	A-9120DHM2	A-9060SM2
Power Source	120 V AC, 60 Hz		
Rated Output	60 W x 2 channels	120 W x 2 channels	60 W
Power Consumption	150 W	250 W	100 W
Audio Input	Max. 8 channels, modular construction (modules optional) Power amplifier input 1, 2: 0 dB*1, 10k Ω, RCA pin jack		
Audio Output	Preamplifier output 1, 2: 0 dB*1, 300Ω, unbalanced, RCA pin jack		Preamplifier output 1: 0dB*1, 300Ω, unbalanced, RCA pin jack; Preamplifier output 2: 0 dB*1, 600Ω, balanced, removable terminal block (3 pins)
	Speaker output 1, 2: 60W, 83Ω x 2, BTL output, removable terminal block (4 pins)	Speaker output 1, 2: 120W, 41Ω x 2, BTL output, removable terminal block (4 pins)	Speaker Output: Removable terminal block (7 pins); Direct: 60W, 4Ω, unbalanced, Transformer: 60W, 8Ω 25V & 70V, balanced
Module Slot	Analog input (slot 1 - 8): -10 dB*1, 10 kΩ, unbalanced; Digital input (slot 1 - 4): 24 bit/48 kHz MIX output (slot 1 - 8): -14 dB*1, 330Ω (CH 1 prefader output), unbalanced; Digital output (slot 5 - 7): 24 bit/48 kHz Power supply (slot 1 - 8) +24 V, -24V, +6V DC		
Digital Audio Signal Reference Level	-20 dBFS		
Power Bandwidth	20 Hz - 20 kHz 0.008% THD		(D): 20 Hz - 20 kHz 0.02% THD (T): 50 Hz - 20 kHz 0.5% THD
Frequency Response	Power amplifier section: 20 - 20,000 Hz +0, -1 dB; Analog input module to speaker output: 20 Hz - 20 kHz +1, -3 dB		
Total Harmonic Distortion	Power amplifier section: 0.0008% (22 kHz LPF, 1 kHz, rated power) Analog input module to speaker output: 0.008% (22 kHz LPF, 1 kHz rated power)		
S/N Ratio	At Input short, 20 Hz - 20 kHz, ALL FLAT or OFF setting Output volume min.: 90dB (preamplifier output) Output volume max.: 61dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF) Power amplifier section: 110dB		
Cross Talk	Over 64 dB (at 20 kHz)		
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)		
Parametric Equalizer	10 bands, Freq: 20 Hz - 20 kHz 31 points, variable range: ± 12 dB, Q: 0.3 - 5		
Speaker Equalizer	10 (set up software has 30 TOA speaker presets)		
High-pass Filter	-12 dB/oct, variable frequency range: 20 Hz - 20 kHz 31 points		
Low-pass Filter	-12 dB/oct, variable frequency range: 20 Hz - 20 kHz 31 points		
Compressor	Depth: 1 - 5		
Delay	0 - 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2) (Mixer mode only)		
Scene/Event Memory	32		
Auxiliary Function	Key lock function		
Control Input/Output	RS-232C*2; D-sub connector (9P, female); Control input: 4 input, no-voltage make contact input, open voltage: 3.3V DC, short-circuit current: Under 1 mA, removable terminal block (14 pins); Control output: 4 outputs, open collector output, withstand voltage: 27V DC, control current: 50 mA, removable terminal block (14 pins); Remote volume: 2 channels, connect a 10k Ω/linear taper variable resistor or input the DC voltage of 0 to +10 V, removable terminal block (14 pins)		
Operating Temperature	-10° C to +40° C (14° F to 104° F)		
Operating Humidity	35% to 80% RH (no condensation)		
Finish	Panel: Aluminum, hair-line, black; Case: Surface-treated steel plate, black paint		
Dimensions	420 (W) × 107.6 (H) × 395 (D) mm (16.54" x 4.24" x 15.55")		420 (W) × 107.6 (H) × 355 (D) mm (16.54" x 4.24" x 13.98")
Weight	9kg (19.84lbs)	11kg (24.25 lbs)	
Accessory	Power cord (2 m (6.56ft)) x 1, Rack mounting bracket x 2, Bracket mounting screw x 4, Blank panel x 7, Blank panel mounting screw x 14, Removable terminal plug (4 pins) x 1, CD x 1, Removable terminal plug (14 pins) x 1		Power cord (2 m (6.56ft)) x 1, Rack mounting bracket x 2, Bracket mounting screw x 4, Blank panel x 7, Blank panel mounting screw x 14, Removable terminal plug (3 pins) x 1, CD x 1, Removable terminal plug (14 pins) x 1

*1 0dB = 1V; *2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.
(D) = Direct, (T) = Transformer
Note: AMX is a registered trademark of AMX Corporation. Crestron is a registered trademark of Crestron Electronics, Inc.

Amplifier Selection Chart on page 163

9000M2 Series Modular Digital Matrix Mixer/Amplifiers

Model	Mic/Line	Digital Signal Processor	Power Amplifier Output(s)	Line Outputs
A-9060SM2	Up to 8 (4x **D-001T**)	2 Channels	1x 60 W @ 25/70V, 4/8 ohms	Up to 7 (1 built in plus 3x **T-001T**)
A-9120SM2	Up to 8 (4x **D-001T**)	2 Channels	1x 120 W @ 25/70V, 4/8 ohms	Up to 7 (1 built in plus 3x **T-001T**)
A-9240SHM2	Up to 8 (4x **D-001T**)	2 Channels	1x 240 W @ 70V	Up to 7 (1 built in plus 3x **T-001T**)
A-9060DHM2	Up to 8 (4x **D-001T**)	2 Channels	2x 60 W @ 70V	Up to 6 (3x **T-001T**)
A-9120DHM2	Up to 8 (4x **D-001T**)	2 Channels	2x 120 W @ 70V	Up to 6 (3x **T-001T**)
M-9000M2	Up to 8 (4x **D-001T**)	2 Channels	2x Line Level	Up to 8 (2 built in plus 3x **T-001T**)
P-9060DH	--	--	--	--
P-9120DH	--	--	--	--

Power Amplifier

P-9060DH 60W
P-9120DH 120W

- 2-Channel Power Amplifiers with 70.7V outputs
- 2-Channel Power Amplifier models feature flexible output power allowing 50% power from one amplifier channel to be allocated to the second amplifier channel
- Channel 1 & 2 inputs balanced (H=Hot, C=Cold and E=Shield) with selectable input sensitivity: 0dB or -20dB)
- Channel 1 input to ALL selectable switch
- 2 RU Rack Mounting hardware included
- Front panel LED indicators for: Protect, Peak, Signal and Power

Model	P-9060DH	P-9120DH
Power Source	120 V AC, 60 Hz	
Power Consumption	225W (rated output), 106 W (UL60065)	404 W (rated output), 208 W (UL60065)
Output	Speaker output CH 1, CH 2: 60W, 83Ω x 2, BTL output (70V line), M4 screw terminal, distance between barriers: 9 mm (0.35")	Speaker output CH 1, CH 2: 120W, 41Ω x 2, BTL output (70V line), M4 screw terminal, distance between barriers: 9 mm (0.35")
Input	CH 1, CH 2 input: -20 dB* or 0 dB* (switchable), 10 kΩ, electronically balanced, removable terminal block CH 1 mode ON/OFF switch (ON: CH 1 to All ch., OFF: Each ch)	
Power Band Width	20 Hz - 20 kHz, 0.08% T.H.D.	
Frequency Response	20 Hz - 20 kHz ±1, -3 dB	
S/N Ratio	At input short, 20 Hz - 20 kHz, Input level switch in 0 dB* position; Output volume min: 105 dB, Output volume max: 97 dB	
Total Harmonic Distortion	0.008% (22 kHz LPF, 1 kHz, rated output, input level switch in 0 dB* position)	
Function	Output disconnected for approx. 5 s after switching power on	
Dimensions	420 (W) x 107.6 (H) x 406 (D) mm (16.54" x 4.24" x 15.98")	
Weight	8.2 kg (18.08 lbs)	10 kg (22.05 lbs)
Accessories	Power cord 2m (6.56 ft) x 1, Volume control cover (YA-920) x 2, Rack mount bracket x 2, Bracket mounting screw (M4 x 16) x 4, Removable terminal plus (3 pins) x 2, Terminal cover x 1, Terminal cover mounting screw (M4 x 8) x 2	

*0 dB = 1 V

Optional Accessory

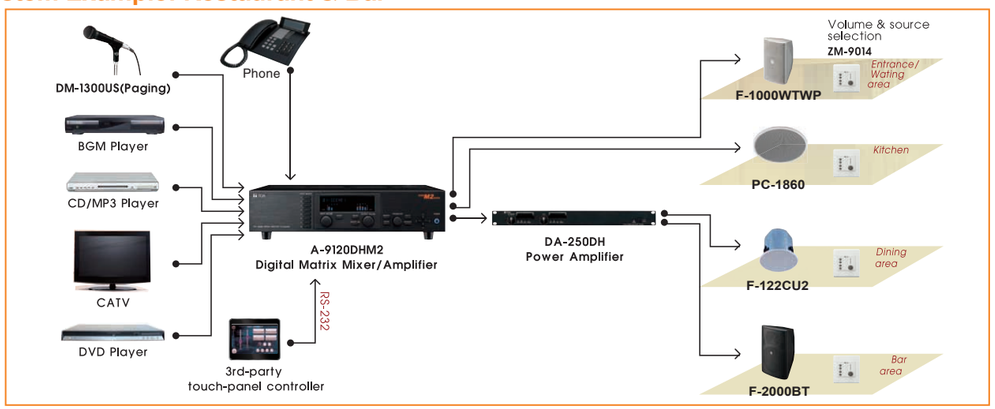
Optional Volume Control Cover *(included)*
YA-920

Amplifier Selection Chart on page 155

Software

TOA's 9000M2 Series Software can be downloaded at www.TOAcanada.com.

System Example: Restaurant & Bar



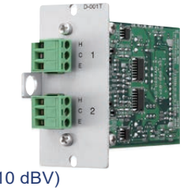
9000M2 Series Modular Digital Matrix Mixer/Amplifiers

9000 Series Modules

Ambient Noise Control Module

AN-001T
- Automatically adjusts output gain to compensate for changes in ambient noise level
- Each input can be assigned to control a specific output
- Two inputs with +24VDC phantom power for condenser mics
- 14 preset gain ratios
- Accessory sensing microphone available, model AN-9001
- Maximum two per chassis

Dual Mic/Line Input Module with DSP



D-001T
- Two balanced Mic / Line inputs
- Digital signal processing (10-Band Parametric EQ, Bass/ Treble, Loudness, High and Low Pass Filters, Compressor)
- Adjustable sensitivity (nine levels, -60 to -10 dBV)
- Phantom power (24 VDC)
- Removable terminal block
- Maximum four per chassis
- Required for VOX (Voice-Operated Switch) function and input level metering

Input/Output Control Module

C-001T
- Eight assignable control inputs for activating event volume, up/down, mute, power on/off, emergency mute or synch on/off
- Eight assignable control outputs for activating external relays
- Removable terminal block
- Maximum one per chassis

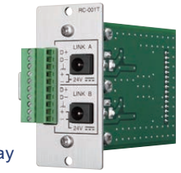
Line Input Module with DSP

D-001R
- Two RCA phone inputs per channel provides stereo summing
- Digital signal processing
- 10-Band parametric EQ
- Bass/Treble
- Loudness
- High and low pass filters
- Compressor

Dual Line Output Expansion Module with DSP

T-001T
- Two balanced line outputs
- Digital signal processing (10-Band Parametric EQ, Bass/ Treble, Loudness, High and Low Pass Filters, Compressor, TOA speaker EQ presets)
- Removable terminal block
- Maximum three per chassis

Remote Control Module



RC-001T
- Allows use of up to 16 RS-485 remote control panels
- Bi-directional RS-485 communication provides control and status feedback display for each remote function
- Dual ports allow independent home runs for up to 8 modules ea.
- 24 VDC power adapter (optional accessory AD-246) required for each port used
- May be used in any control option slot on 9000M2 frame and even in addition to a C-001T when spare slots are available
- Required Module: ZM-9011, ZM-9012, ZM-9013, ZM-9014
- Optional: AD-246 - AC adapter

Telephone Zone Paging Module

ZP-001T
- Telephone access paging to up to eight zones
- Uses DTMF dialing to access amplifier and/or line outputs
- Dial up to eight output zones in one operation
- Analog extension or page port compatible
- Page port operation requires contact closure activation
- RJ-11 telephone jack and removable terminal blocks
- Maximum one per chassis

Optional Power Supply

AD-246
- AC adapter
- Voltage 110 - 120 V AC, 50/60 Hz
- Current Output 24 V DC, 1 A

SIP Module

SP-11N
- VOIP phone paging module supported by SIP (Session Initiation Protocol)
- Auto-answer function
- Can be connected to IP network and directly registered as one SIP phone station on various SIP server management software
- VOX and mute functions
- Designed for use with TOA's 9000M2, 900, 700, and BG-2000 series amplifiers

Noise Masking Module

NM-01
- Generates a noise source to be used for sound masking and audio privacy applications
- Applications include; open-plan office environments or smaller spaces where distracting or private conversations need to be made unintelligible
- Allows connection of optional external signal processing equipment (i.e. an equalizer) as required
- Simple contact allows form muting of this noise source
- Designed for use with TOA's 9000M2, 900, 700, and BG-2000 series amplifiers

9000M2 Series Modular Digital Matrix Mixer/Amplifiers

9000 Series Modules

Remote Panel

ZM-9001

- Six buttons to activate preset selection or volume up/down
- Wiring: only one pair to chassis remote volume terminals
- Max. loop resistance: 100 ohms (3000 ft. 22AWG)
- Fits one gang electrical box
- Maximum two ZM-9001/ZM-9002 per chassis
- Uses built in 9000M2 REMT VOL port

Remote Volume Switch Panel

ZM-9002

- Four push buttons to activate preset selection or volume up/down
- Volume control knob
- Wiring: only one pair to chassis remote volume terminals
- Max. loop resistance: 100 ohms (3000 ft. 22AWG)
- Fits one gang electrical box
- Maximum two ZM-9001/ZM-9002 per chassis
- Uses built in 9000M2 REMT VOL port

Contact Closure Remote

ZM-9003

- Fits in a standard dual-gang electrical box
- Removable screw terminal connector block
- Works with contact inputs on 9000M2 mainframe and on C-001T
- Two momentary buttons and four latching buttons
- May be assigned to control program change, volume up/down, channel on/mute, emergency mute, power and paging prohibit function
- Removable terminal block
- Used built in 9000M2 REMT VOL port

Assignable Remote Button Panel

ZM-9011

- Fits in a standard dual-gang electrical box
- Four assignable buttons each with LED status indicator can control Xpoint settings (on/off, select), paging activation, scene and relay activation
- Assignable ID rotary adjustment on box
- Supplied matching decor plate
- Requires RC-001T and CAT5e shielded cable or better

Assignable Volume Controller

ZM-9012

- Fits standard single-gang electrical box
- Rotary encoder can be assigned to control any input or output volume
- Multiple input or outputs may be “ganged” for master volume control
- Multi-segment LED indicator provides visual volume level status
- Supplied matching decor plate
- Removable terminal block
- Requires RC-001T and CAT5e shielded cable or better

Assignable Remote Button Panel

ZM-9013

- Fits in a standard dual-gang electrical box
- Eight assignable buttons each with LED status indicator can control Xpoint settings (on/off, select), paging activation, scene and relay activation
- Assignable ID rotary adjustment on box
- Supplied matching decor plate
- Removable terminal block
- Requires RC-001T and CAT5e shielded cable or better

Assignable Remote Button Panel w/Volume Control

ZM-9014

- Fits in a standard dual-gang electrical box
- Four assignable buttons each with LED status indicator can control Xpoint settings (on/off, select), paging activation, scene and relay activation
- Assignable ID rotary adjustment on box
- Supplied matching decor plate
- Removable terminal block
- Requires RC-001T and CAT5e shielded cable or better

Ambient Noise Sensing Microphone

AN-9001

- Ceiling or wall-mount condenser microphone
- Fits one gang electrical box
- Use with AN-001T module or DP-L2 processor
- Electret condenser microphone
- Frequency Response: 100 - 10,000 Hz
- Phantom power (+24V) can be supplied for condenser microphone use

4-Zone Speaker Selector

SS-9001

- Switch up to four speaker lines on one amplifier output
- Two speaker amplifier inputs for Paging/BGM applications
- Works with built in 9000M2 I/O control output or optional C-001T module only
- Wall-mount bracket included
- Requires optional 24VDC power supply, model AD-246

9000M2 Series Modular Digital Matrix Mixer/Amplifiers

9000 Series Optional Accessories

The cost-effective Multi-Zone Paging System is achieved with TOA's ø ne selectable remote paging microphone and speaker line selector. The Q-SS9012 Multi-Zone Speaker Selector has 2 amplifier inputs and 12 individual relay switches to select the amplifier connected to each 12 speaker line/ø ne. This allows up to 12 ø nes for paging and BGM distribution with a dual channel amplifier or simple paging system with only a one channel amplifier. TOA's new concept offers a real cost effective multi-ø ne paging system. TOA's multi ø ne paging system allows paging up to 12 ø nes, utiliz ng a single channel amplifier by activating the speaker line selector from the desktop remote microphone.

Remote Microphone

Q-RM9012

- High-sensitivity electret-condenser gooseneck mic for clear voice
- 12 ø ne select buttons, All Call, Clear
- 12 Contact Outs corresponding to buttons (RJ 45 connector for use with shielded Cat5 wiring)
- Connects to C-IN on 9000M2 (mainframe & equipped with C-001T)
- AD-246 AC Adapter required

Speaker Selector

Q-SS9012

- 12 contact inputs and 12 speaker outputs. Power amp input is split into 12 ø nes with activation via contact closure
- Possible to expand number of 9000M2 paging ø nes along with conventional output ø nes (T-001T) up to 19 ø nes
- Can facilitate paging over BGM by switching between BGM output (amp input 2) and Page output (a mp input 1)
- May work with internal or external amplifier
- 19” rack-mountable (using optional MB-15B)
- Optional AD-246 AC Adapter required

Model	Q-RM9012
Power Source	24 V DC from AC adaptor AD-246 or the equivalent
Power Consumption	80 mA or less
Audio Output	0 dB*, 600Ω, transformer balanced, RJ45 connector
Microphone	Unidirectional electret condenser microphone
Control Output	12 channels, open collector output, withstand voltage: 27V DC, control current: max. 50 mA, (2) RJ45 connectors
Number of Keys	12 zone selection keys, All call key, Cancel key, Talk key
Volume Control	Microphone volume control
Finish	ABS resin, black
Dimensions	190 (W) x 76.5 (H) x 215 (D) mm (7.48” x 3.01” x 8.46”) (Gooseneck microphone excluded)
Weight	750 g (1.65 lbs)
Optional Accessory	AC Adaptor: AD-246

*0 dB = 1 V

Model	Q-SS9012
Power Source	24 V DC from AC adaptor AD-246 or the equivalent
Power Consumption	400 mA or less
Power Handling	250W or less (70V / 100V line) per channel (IN1, IN2)
Control Input	12 channels, dry (no voltage contact closures, open voltage: 3.3V DC, short-circuit current: under 1 mA, removable terminal block (24 pins)
Speaker Terminal	Removable terminal block (2 pins, IN1, In2, Zone 1-12)
Control Terminal	Removable terminal block (24 pins)
Finish	Case: Surface-treated steel plate, black
Dimensions	420 (W) x 44 (H) x 123 (D) mm (16.54” x 1.73” x 4.84”)
Weight	1.6 kg (3.53 lbs)
Accessory	Removable terminal plug (2 pins) x 2, Removable terminal plug (12 pins) x 3, Removable terminal plug (14 pins) x 1
Optional Accessory	AC Adaptor: AD-246, Rack mount bracket: MB-15B; Wall mount bracket: YC-850

*0 dB = 1 V

Optional Accessories Q-RM9012 and Q-SS9012

AC Adapter

AD-246

Connector board

IB-9012AM

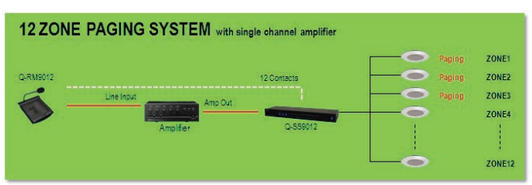
Rack Mount Bracket

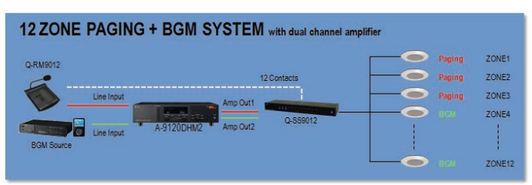
MB-15B

Wall Mount Bracket

YC-850

Multi-Zone Paging System Examples





900 Series Amplifiers

TOA's A-900MK2 Series Mixer Power Amplifier controls and mixes up to eight independent input signals. The Mixer Power Amplifier delivers up to 30/60/120 watts of output power. Optional plug-in modules are available for use with mixer power amplifier to provide versatility for a wide range of operating applications.

8-Channel Mixer Preamplifier (UL version)

A-903MK2 30W
A-906MK2 60W
A-912MK2 120W

- Eight module slots accept any combination of TOA plug-in modules for custom system configurations
- Direct low-impedance output mode bypasses output transformer
- Dual mute bus permits multiple levels of paging priority using optional mute-type modules
- External mute terminals for activating mute function with external switch-closure
- Low cut switch to limit low frequency response
- Bridging input/output for input expansion or recording device
- Over-current and thermal protection circuitry prevents potential damage from overload, short-circuit and over-heating
- Optional rack-mount kit, model MB-25B (2 RU)
- Optional 900 Series Modules required

Model	A-903MK2	A-906MK2	A-912MK2
Type	8-channel mixer power amplifier		
Power Requirement	AC mains, 120 V, 60 Hz		
Power Consumption	60 W	100 W	180 W
Output Power	30 W RMS	60 W RMS	120 W RMS
Power Band Width	(D) 20 - 20,000 Hz 0.5% THD, (T) 50 - 20,000 Hz 0.5% THD		
Frequency Response	(D) 20 - 20,000 Hz ±1 dB (T) 20 - 15,000 Hz ±1 dB, (T) 20 - 20,000 Hz +1 dB, -3 dB		
T.H.D	0.02% at 1 kHz rated output		
Inputs	Eight Input Ports: Each port accepts any input modules. One Bridging Input/Output port		
Input Sensitivity /Impedance	Input Port #1 to #8: 100 mV/10 kΩ Bridging Input/Output: 100 mV/3.3 kΩ		
Preamp OUT /Power Amp IN	1000 mV into 600 Ω/1000 mV, 10 kΩ		
Outputs	Main (T): 4 Ω, 25 and 70 volts, balanced, Main (D): 8 Ω, unbalanced Aux: 10 kΩ, 1 V		
Output Regulation (1kHz)	(D) Less than 0.5 dB, no load to full load, (T) Less than 1.0 dB, no load to full load		
S/N Ratio (Band Pass 20 - 20,000 Hz Tone defeat switch on	Master volume min: 90 dB Master volume max: 77 dB Power amplifier only: 105 dB		
Tone Controls	Bass: ±10 dB at 100 Hz Treble: ±10 dB at 10 kHz		
Controls	8 Input gain control 1 Master gain control 1 Bass control 1 Treble control 1 Power ON/OFF switch 1 Tone defeat switch 1 Low-Cut switch (60 Hz 6 dB/octave)		
Indicators	1 Power LED, 1 Protect LED, 1 Signal LED, 1 Normal LED, 1 Peak LED		
Protection	Self-protection, with AC fuse (inside)		
Connectors	Input No.1 to No.8: Card-edge connector Bridging, Mixer preamp. output, Power amp. input, Aux output: RCA phono jack Output: Screw-terminal strip Mute, Remote VR: Screw-terminal strip AC outlet: 3-pin grounding type AC power cord/plug: SJT , 3-prong type		
Temperature Range	-10°C - +60°C (12°F - 140°F)		
Finish	Black		
Dimensions (W×H×D)	16.54" (W) x 3.90" (H) x 12.52" (D) 420 × 99.1 × 318 mm	16.54" (W) x 3.90" (H) x 14.09" (D) 420 × 99.1 × 358 mm	
Weight	7.8 kg (17.20 lbs)	9.6 kg (21.16 lbs)	11.4 kg (25.13 lbs)
Accessories	Volume control cover: YA-920 x 4		
Option	Rack mounting bracket: MB-25B		

(T)=Transformer (D)=Direct

Optional Accessory

Rack Mount Kit
MB-25B

Volume Control Cover *(included)*
YA-920

Accessory Reference on page 155 Amplifier Selection Chart on page 163
Please see 900 Series Modules on page 39

900 Series Amplifiers

TOA's P-900MK2 Series Power Amplifier delivers up to 60/120/240 watts of output power. The Power Amplifier has an input port to accept one plug-in module.

Power Amplifier (UL version)

P-906MK2 60W
P-912MK2 120W
P-924MK2 240W

- Modular single channel power amplifiers for paging, background/ foreground music distribution and music/messaging-on-hold
- Input module slot accepts most TOA plug-in modules for custom system configurations
- Direct low-impedance output mode bypasses output transformer
- Direct input for connecting an external mixer or other source
- Selectable input sensitivity to accommodate high or low input levels
- Low cut switch to limit low frequency response
- Optional rack-mount kits: P-906/P-912MK2: MB-25B (2 RU) P-924MK2: MB-35B (3 RU)
- Optional 900 Series Modules required

Model	P-906MK2	P-912MK2	P-924MK2
Type	Power amplifier		
Power Requirement	AC mains, 120 V, 60 Hz		
Power Consumption	100 W	180 W	120 V / 3 A
Output Power	60 W RMS	120 W RMS	(D) 240 W RMS (T) 220 W RMS
Power Band Width	(D) 20 - 20,000 Hz 0.5% THD (T) 50 - 20,000 Hz 0.5% THD		
Frequency Response	(D) 20 - 20,000 Hz ±1 dB (T) 20 - 15,000 Hz ±1 dB, (T) 20 - 20,000 Hz +1 dB, -3 dB		
T.H.D	0.01% at 1 kHz rated output		
Inputs	One Input Port: Port accepts any input module except T-01 One Direct Input (Use of direct input prohibits use of modular input port.)		
Input Sensitivity /Impedance	Input Port: 100 mV or 1000 mV (switchable)/10 kΩ Direct Input: 100 mV or 1000 mV (switchable)/10 kΩ		
Outputs	Main (T): 8 Ω, 25 and 70 volts, balanced Main (D): 4 Ω, unbalanced		
Output Regulation (1kHz)	(D) Less than 0.5 dB, no load to full load (T) Less than 1.0 dB, no load to full load		
S/N Ratio (Band Pass 20 - 20,000 Hz	Input level switch in 0 dBV (1000 mV) position: 108 dB Input level switch in -20 dBV (100 mV) position: 90 dB		
Controls	1 Input gain control, 1 Input level switch, 1 Power ON/OFF switch, 1 Low-Cut switch		
Indicators	1 Power LED, 1 Protect LED, 1 Signal LED, 1 Normal LED, 1 Peak LED		
Protection	Self-protection, with AC fuse (inside)		Self-protection with 2 AC fuses (inside), plus 2 DC fuses
Connectors	Input: Card-edge connector and screw-terminal strip Output: Screw-terminal strip AC outlet: 3-pin grounding type AC power cord/plug: SJT , 3-prong type		
Temperature Range	-10 ºC - +60 ºC (12 ºF to 140ºF)		
Finish	Black		
Dimensions (W×H×D)	16.54" (W) x 3.9" (H) x 14.09" (D) 420 (W) × 99.1 (H) × 358 (D) mm		16.54" (W) x 6" (H) x 13.16" (D) 420 (W) × 151.3 (H) × 334.2 (D) mm
Weight	9.1 kg (20.06 lbs)	10.9 kg(24.03 lbs)	19.5 kg (43 lbs)
Accessory	Volume control cover: YA-920 x 1		
Option	Rack mounting bracket: MB-25B		Rack mounting bracket: MB-35B

(T)=Transformer (D)=Direct

Optional Accessory

Rack Mount Kit
MB-25B

Rack Mount Kit for P-924MK2
MB-35B

Volume Control Cover *(included)*
YA-920

Accessory Reference on page 155 Amplifier Selection Chart on page 163
Please see 900 Series Modules on page 39

900 Series Amplifiers

TOA's M-900MK2 Mixer Preamplifier controls and mixes up to eight independent input signals and delivers up to +20 dBm of output power. Optional plug-in modules are available for use with the mixer preamplifier to provide versatility for a wide range of operating applications.

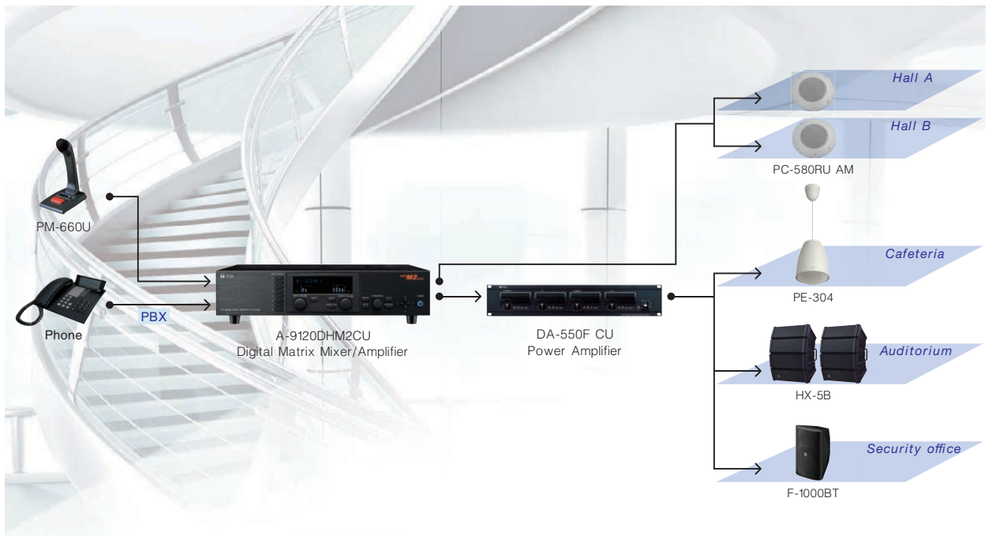
8-Channel Mixer Preamplifier (UL version)
M-900MK2

- Eight module slots accept any combination of TOA plug-in modules for custom system configurations
- Balanced, transformer-isolated output with selectable impedance, screw terminal connector and protective cover plate
- Dual mute bus permits multiple levels of paging priority using optional mute-type modules
- External mute terminals for activating mute function with external switch-closure
- Remote master volume terminals for control with an external 10k ohm linear-taper potentiometer
- Individual channel and master volume controls
- Auxiliary output for connecting an external mixer or recording device
- Bridging input/output for input expansion or recording device
- Normal, clip, power, protect, and signal indicators provide unit status
- Optional rack-mount kit, model MB-25B (2 RU)
- Optional 900 Series Modules required

Model	M-900MK2
Power Requirement	AC Mains, 120V, 60 Hz
Rated Output	+4 dBm, +20 dBm (max)
Frequency Response	20 Hz – 20 kHz ±1dB
Input	Eight input ports: each port accepts any input module. One bridging input/output
Output	Main: Balanced, 150/600 Ω; AUX: Unbalanced, 10 kΩ, 0 dBm
Indicators	1 Power LED, 1 Protect LED, 1 Signal LED, 1 Normal LED, 1 Peak LED
S/N Ratio	Master Volume Min.: 90 dB (Band Pass 20 - 20, 000 Hz ; Master Volume Max.: 77 dB (Band Pass 20 - 20, 000 Hz ;
Tone Control	Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz
Controls	8 Input gain controls; 1 Master gain control; 1 Bass control; 1 Treble control; 1 Power ON/OFF switch; 1 Tone defeat switch
Dimensions	420 (W) × 99.1 (H) × 307.5 (D) mm (16.54" x 3.90" x 12.11")
Weight	5.3 kg (11.68 lbs)
Accessories	Volume control cover: YA-920 x 4
Optional Accessory	Rack mounting bracket: MB-25B

Amplifier Example

Corporate Office



TOA amplifiers can work in a multitude of applications in various buildings.

Speakers
Amplifiers
Mixers
Voice Evacuation & Mass Notification
Rack Mount Equipment, Network Audio & Others
Conference Systems
Wired Microphones
Wireless Microphones
Megaphones
Intercom
Reference

900 Series Amplifiers

900 Series Modules - Microphone Input Modules

Microphone Input Modules
M-01 Series
(M-01F/M/P/S T)

- For balanced, low impedance microphone
- High and low cut filters for tone control
- Phantom power for condenser-type microphones
- Connectors: female XLR *(M-01F)*, male XLR *(M-01M)*, 1/4" phone jack *(M-01P)*, removable terminal block *(M-01S)*

Microphone Input with Mute-Receive
M-11S T

- For balanced, low impedance microphone
- High and low cut filters for tone control
- Phantom power for condenser-type microphones
- Responds to mute bus activation via mute send module or switch-closure
- Two mute response modes: Normally-on (OFF during mute activation) or Normally-off (ON during mute activation)
- Connector: removable terminal block

Microphone Preamplifier with Remote Volume Control
M-21S

- For balanced, low impedance microphone
- High and low cut filters for tone control
- Phantom power for condenser-type microphones
- Allows remote control of input signal using an external 10k ohm linear-taper potentiometer
- Connector: screw terminal

Microphone Paging Input with Mute-Send
M-41S

- For balanced, low impedance microphones
- For voice-activated over-ride of mute-receive modules
- High and low cut filters for tone control
- Phantom power for condenser-type microphones
- Signal at input terminals activates mute bus
- Connector: removable terminal block

Microphone Input with Voice Gate
M-51 Series
(M-51F/S T)

- For balanced, low impedance microphones
- Low cut filter for tone control
- Phantom power for condenser-type microphones
- Gate function keeps module muted until input signal exceeds threshold
- Connectors: female XLR *(M-51F)*, removable terminal block *(M-51S)*

Microphone Input with Compressor
M-61 Series
(M-61F/S T)

- For balanced, low impedance microphones
- High and low cut filters for tone control
- Phantom power for condenser-type microphones
- Compressor function prevents overload and distortion
- Connectors: female XLR *(M-61F)* or removable terminal block *(M-61S)*

High Impedance Microphone Input
M-03P

- For unbalanced, high impedance mics
- High and low cut filters for tone control
- Connector: 1/4" phone jack

Mic/Line Input w/Mute/Send Receive
ML-11

- Switchable mic/line input
- Adjustable Mute-Send threshold (VOX sensitivity)
- High and Low Cut Filters
- Combination Mute Send and Receive function
- Assign mute send or receive to each mute bus

900 Series Modules - Line Input Modules

SIP Module

SP-11N AM

- VOIP phone paging module supported by SIP (Session Initiation Protocol)
- Auto-answer function
- Can be connected to IP network and directly registered as one SIP phone station on various SIP server management software
- VOX and mute functions
- Designed for use with TOA's 9000M2, 900, 700, and BG-2000 series amplifiers

SIP Interface Chassis for SP-11N AM

SP-11NRB

- Stand-alone chassis for TOA's SP-11N AM SIP interface module
- Interface allows systems that do not support TOA's 900 series modules to work with SP-11N AM
- One module slot

Noise Masking Module

NM-01

- Generates a noise source to be used for sound masking and audio privacy applications
- Applications include; open-plan office environments or smaller spaces where distracting or private conversations need to be made unintelligible
- Allows connection of optional external signal processing equipment (i.e. an equalizer) as required
- Simple contact allows for muting of this noise source
- Designed for use with TOA's 9000M2, 900, 700, and BG-2000 series amplifiers

Balanced Line Input

B-01 Series

(B-01F/S T)

- For balanced or unbalanced line level sources such as mixer outputs, signal processors and wireless microphone receivers
- Transformer isolation (10kΩ)
- Connector: female XLR (B-01F), removable terminal block (B-01S)

Balanced Line Input with Mute-Receive

B-11S

- For balanced or unbalanced line level sources such as mixer outputs, signal processors and wireless microphone receivers
- Transformer isolation (10kΩ)
- Responds to mute bus activation via mute send module or switch-closure
- Connector: removable terminal block

Balanced Line Input with Remote Volume Control

B-21S

- For balanced or unbalanced, line level equipment such as tuners, tape decks and CD players
- Transformer isolation (10kΩ)
- Allows remote control of input signal using an external 10k ohm linear-taper potentiometer
- Connector: screw terminal

Balanced Line with Input with Mute-Send

B-41S

- For balanced or unbalanced, line level equipment
- For signal-active over-ride of mute-receive modules
- Transformer isolation (10kΩ)
- Signal at input terminals activates mute bus
- Connector: removable terminal block
- Recommended for phone paging applications

Line Matching Input

L-01 Series

(L-01F/S T)

- For applications requiring 600Ω line-matching
- Transformer isolation (600Ω)
- Connector: female XLR (L-01F); removable terminal block (L-01S)

Line Matching Input with Mute-Receive

L-11S

- For applications requiring 600Ω line-matching
- Responds to mute bus activation
- Transformer isolation (600Ω)
- Responds to mute bus activation via mute send module or switch-closure
- Connector: removable terminal block

900 Series Modules - Line Input Modules

Line Matching Input with Mute-Send

L-41S

- For applications requiring 600 Ω line-matching
- For signal-active over-ride of mute-receive modules
- Transformer isolation (600Ω)
- Signal at input terminals activates mute bus
- Connector: removable terminal block

Unbalanced Line Input

U-01 Series

(U-01F/P/R/S T)

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Use for adjacent sources (less than 15ft from the host unit)
- Connectors: female XLR (U-01F) 1/4" phone jack (U-01P), RCA jack (U-01R), removable terminal block (U-01S)

Unbalanced Line Input with High/Low Cut Filters

U-03 Series

(U-03R/S)

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Use for adjacent sources (less than 15ft from the host unit)
- High and low cut filters for tone control
- Connectors: dual RCA jack w/ passive summing (U-03R), removable terminal block (U-03S)

Unbalanced Line Input with Mute-Receive

U-11 Series

(U-11R/S T)

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Use for adjacent sources (less than 15ft from the host unit)
- Responds to mute bus activation via mute send module or switch-closure
- Connectors: RCA jack (U-11R), removable terminal block (U-11S)

Unbalanced Line Input with Variable Mute-Receive Depth

U-12S

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Use for adjacent sources (less than 15ft from the host unit)
- Responds to mute bus activation via mute send module or switch-closure
- Adjustable depth provides "ducking" rather than full muting
- Connector: removable terminal block

Unbalanced Line Input with High/Low Cut Filters and Mute-Receive

U-13 Series

(U-13R/S)

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Use for adjacent sources (less than 15ft from the host unit)
- High and low cut filters for tone control
- Responds to mute bus activation via mute send module or switch-closure
- Connectors: dual RCA jack w/passive summing (U-13R), removable terminal block (U-13S)

Dual Input Priority Module w/AGC

U-14R

- Dual input module for applications with business music plus an on-premises CD jukebox or other source
- Two line inputs – jukebox and BGM
- Auto-mute function with adjustable mute threshold (jukebox overrides BGM)
- Automatic Gain Control (AGC) on jukebox input for consistent signal levels
- Individual input level controls
- Stereo-summing dual RCA jacks

Unbalanced Line Input with Remote Volume Control

U-21S

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Use for adjacent sources (less than 15ft from the host unit)
- Allows remote control of input signal using an external 10kΩ linear-taper potentiometer
- Master Remote Volume mode
- Connector: screw terminal

Unbalanced Line Input with High/Low Filters and Mute-Send

U-43 Series

(U-43R/S)

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Use for adjacent sources (less than 15ft from the host unit)
- High and low cut filters for tone control
- Signal at input terminals activates mute bus
- Connectors: dual RCA jack w/ passive summing (U-43R), removable terminal block (U-43S)

Unbalanced Line Input with Compressor

U-61S T

- For unbalanced, line level sources such as tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- For adjacent sources (less than 15ft from the host unit)
- Compressor function prevents overload and distortion
- Master compressor mode
- Connector: removable terminal block

900 Series Amplifiers

900 Series Modules - Special Function Modules

Equalization for TOA Speakers

E-03R
(F-122C)

- Optimized preset equalization for F-122C speakers
- Connects between pre-amp output and power amp input

1 kHz Sine Wave Test Tone

S-01S T

- Generates 1 kHz sine wave tone via switch-closure. Ideal as a test tone for the audio system
- Connector: removable terminal block

Switch-Selectable Tone Generator

S-04S T

- Generates one of four tones via switch-closure
- Single or continuous tone activation
- Connector: removable terminal block

Unbalanced Line Input with Music-On-Hold Output and Input Mute-Receive

T-12S

- Unbalanced line input for AM/FM tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Balanced transformer-isolated uninterrupted output of module's input signal
- Output level control for adjusting the MOH output signal level
- Responds to mute bus activation via mute send module or switch-closure
- Connector: screw terminal

Remote Master Volume Control (VCA) Module

V-01S

- Voltage Controlled Amplifier (VCA) for applications requiring preset remote master volume control
- Line input and output connect to host amplifier's pre-amp output and power amp input
- 24 VDC output and control input interfaces directly to RDL RLC3 remote level control
- RCA and phoenix-style connectors
- For 10k potentiometer volume control, use U-21S

Equalization for TOA Speakers

E-04R *(H-1)*,
E-05R *(H-2/H-2WP)*,
E-07S *(FB-120 and HB-1)*

- Optimized preset equalization curve for TOA speakers
- Connects between pre-amp output and power amp input (except E-07S)
- Dual RCA cable included

E-07S
- Connector: dual RCA (in/out); removable terminal block
- Low pass output filter for powered subwoofer
- Subwoofer output is balanced or unbalanced
- Subwoofer phase can be changed

** The E-07S is a low-pass-filter output module with a mix bus output to drive a dedicated external subwoofer amplifier*

Buzzer/Yelp Tone Generator

S-02S T

- Generates buzzer or yelp tones via switch-closure
- Connector: removable terminal block

Balanced Line Output

T-01S T

- Transformer-Isolated line output of the mixing bus signal to feed other remote mixers, amplifiers, and tape recorders
- Output level control
- Connector: removable terminal block

Unbalanced Line Input with Music-On-Hold Output

T-02S

- Unbalanced line input for AM/FM tuners, cassette decks, CD players, computer sound cards, jukeboxes, mixers and satellite receivers
- Balanced transformer-isolated uninterrupted output of module's input signal
- Output level control for adjusting the MOH output signal level
- Connector: screw terminal

Equalization for TOA Speakers

E-06RB**
(H-3/H-3WP)

- Optimized preset equalization for H-3/H-3WP speakers
- Connects between pre-amp output and power amp input

MA Series Matrix Mixer & Amplifier

TOA's MA-725F matrix mixer and amplifier and MM-700F is all-in-one solution for multi-channel or multi-zone applications combining a 6x4 audio matrix, DSP and 4ch Class-D amplifier(*) into one chassis. It is equipped with 4 independent line inputs, 2 MIC/LINE priority inputs. Each output has independent DSP preset adjustment with input source matrix selection. It features high power (250Wx4 @ 70V/100V)(*) and various inputs capabilities. Its wide range of applications include general or emergency announcement and background music for restaurants, pubs, retail stores, schools, offices, etc.
(*)MA-725F only

MA Series Matrix Mixer & Amplifier

MA-725F-AM
MM-700F-AM

Smart Control

NEW FIRMWARE

- 4 stereo-summing line inputs with matrix routing to 4 amplifier outputs.
- Each line input has input level adjustment and assign restriction setting for each output to prevent routing selection.
- 2 priority MIC/LINE inputs with different priority level for paging or other pre-recorded source which can override the selected line input on assigned output channels.
- Each priority input also has input level, mute sensitivity and mute hold time adjustments.
- Each output channel is equipped with 250W Class-D amplifier at 70V/100V output voltage selectable with independent DSP preset selection and 50Hz HPF for the protection of connected speakers. (*)
- Selectable DSP preset selections include general EQs, like Loudness curves,TOA speaker EQs and crossover settings to be used with sub-woofers.
- Each output channel also has auxiliary line output to deliver audio to other systems.
- This matrix doesn't need any PC programming or network connection for setup at site. (Maintenance purpose only)
- Optional wall mount remote control, WP-700 can be connected via CAT-5 straight LAN cable to control the line input selection and output volume of each output.
- Class-D amplifier has various protection features against over current, high temperature and short circuit of speaker lines at each output channel.(*)
- Power supply with Power Factor Correction for reduced power consumption and world-wide operating range. (*)

(*) MA-725F only

Model		MA-725F-AM	MM-700F-AM
Power Source		100V-240V AC, 50Hz/60Hz	
Power Consumption		1350 W (rated output), 200 W (based on cULus standards), 42.5W (idle), 22 W or less (stand-by)	9W or less
Frequency Response		20 Hz - 20 kHz (-3 dB / + 1 dB, LPF OFF)	20 Hz - 20 kHz (-3 dB / + 1 dB)
Total Harmonic Distortion		1% or less, at 1kHz, rated output	
Certifications		cULus 60065, EN60065, EN55032, EN55020, FCC part 15 class A	
Input	Priority 1-2:	MIC -60 dB/Line -10 dB* selectable, 2.2 kΩ, electronically-balanced, removable terminal block	
	Line 1-4:	-10 dB*, 10 kΩ, unbalanced, 2 RCA jacks (Stereo summing)	
Output	Speaker 1-4:	70V (20 Ω), 100 V (40 Ω), removable terminal block	--
	Line Out 1-4:	0 dB*, 600 Ω, unbalanced, RCA jack	0 dB*, 600 Ω, unbalanced, removable terminal block
	MOH	0 dB*, 600 Ω, transformer balanced, removable terminal block	
DSP Preset		16 presets in 4 banks at each output channel, selectable	
S/N Ratio		MIC: 60 dB* or more, LINE: 75 dB* or more (A-weighted)	
Muting		Manual mute / Automatic mute	
Operating Temperature		0 ºC to +40 ºC (32 ºF to 104 ºF)	
Operating Humidity		35% to 80% RH (no condensation)	
Dimensions		420 (W) x 107.6 (H) x 350 (D) mm (16.54" x 4.24" x 13.")	
Weight		7.6 kg (16.7 lbs)	5.7 kg (12.3 lbs)
Accessories		Power cord (2m (5.65 ft)) x 1, Removable terminal plug (5 pins x 2, 3 pins x 1, 2 pins x 4), Rack mounting bracket x 2, Bracket mounting screws x 4, User manual x 1	
Optional Accessories		Remote Control Panel: WP-700-AM	

*0 dB = 1 V

Optional Accessory

Remote Control Panel

WP-700-AM

[A remote control switch/volume panel designed to be used with the MA-725F or MM-700F amplifiers. Provides remote select input source 1 and adjusts volume level through an Ethernet cable. It can be mounted in a 1-gang electrical box]

Amplifier Selection Chart on page 163

Digital Power Amplifiers

Spotlight

TOA's DA Series multi-channel power amplifiers offer a wider choice of power ratings, advanced digital Class D amplifications circuitry, and a highly efficient AC mains to output power ratio, for the complete technological superiority it takes to support long-term installation applications. These energy-efficient, space-saving amplifiers are designed to combine high levels of performance and efficiency, and are well-suited to ensure sound reinforcement reliability in a wide range of venue types. The low-impedance models are ideal for multi-zone applications such as presentation and press-conference rooms, restaurants and similar-sized locations. The high-impedance units are well-suited to such locations as exhibition halls, sports facilities, multipurpose halls and houses of worship.

Dual-Channel Power Amplifier

DA-250D
DA-250DH

4-Channel Power Amplifier

DA-250F
DA-250FH

4-Channel Power Amplifier

DA-550F
DA-500F-HL

- **DA-250D**
  - 2x 250W (8 Ω)
  - 2x 170W (8 Ω)
- **DA-250F**
  - 4x 250W (4 Ω)
  - 4x 170W (8 Ω)
  - 2x 500W bridged (8 Ω)
  - Limiter
- **DA-500F-HL**
  - 4x 500W (70V)
  - 4x 550W (8 Ω)
  - 4x 100W (4 Ω)
  - 2x 1000W bridged (140V)
  - 2x 1000W (16 Ω)
- **DA-250DH**
  - 2x 250W (70V)
  - 1x 500W bridged (140V)
  - High pass filter
- **DA-250FH**
  - 4x 250W (70V)
  - 2x 500W bridged (140V)
  - Limiter and High pass filter
- **DA-550F**
  - 4x 550W (4 Ω)
  - 4x 350W (8 Ω)
  - 2x 1100W bridged (8 Ω)

• High reliability
The DA amplifier has a comprehensive protection circuitry for protection against excessive current flow due to overload, short circuit, unusual DC voltage output, and power amplifier heat sink temperature rise (over 100°C), temperature rise inside the unit (over 80°C).

• Amplifier with lightweight design
Installation has become much easier thanks to the light-weight design.

• High efficiency
Extremely high amplification efficiency of 80-90%, resulting in reduction in power consumption by more than 60% compared with Class-AB amplifiers.

• Highly durable
Stands up to extended hours of operation. The DA amplifier has undergone a large number of rigorous tests to prove its durability. In addition, TOA has been conducting a "non-stop driving test" of the DA Series.

• Compact design
The DA-250 Series is 1-unit size, and they can be efficiently mounted on a rack, so they require only a small installation space. Because the amplifiers do not generate much heat, 5 units can be stacked together in a rack.

• Independent power supply
Each of the channels has its own power supply. If the power supply of Channel 1 should fail, this won't affect the operation of Channel 2. It is also possible to use the either channel as a spare amplifier.

Model	DA-250D	DA-250DH	DA-250F	DA-250FH	DA-550F	DA-500F-HL
Power Source	120 V AC, 50/60 Hz					
Number of Channels	2		4			
Power Consumption* Rated power consumption 1 kHz 8 ohms	420 W	—	850 W	—	1650 W	2600 W
4 ohms	650 W	—	1300 W	—	2800 W	580 W
70 Volts	—	580 W	—	1200 W	—	2350 W
S/N Ratio (A weighted)	100 dB					
Crosstalk at 10 kHz (A weighted)	70 dB					
Inputs Input impedance	10 kΩ (balanced)					
Input sensitivity	+4 dB (1.23V)					
Rated Output	2 channels: 250 W x 2 (4 Ω), 170 W x 2 (8 Ω) 1 channel (BRIDGE): 500 W (8 Ω)	2 channels: 250 W x 2 (70 V line, 19.6 Ω) 1 channel (BRIDGE): 500 W (140 V line, 39.2 Ω)	4 channels: 250 W x 4 (4 Ω), 170 W x 4 (8 Ω) 2 channels (BRIDGE): 500 W x 2 (8 Ω)	4 channels: 250 W x 4 (70 V line, 19.6 Ω) 2 channels (BRIDGE): 500 W x 2 (140 V line, 39.2 Ω)	4 channels: 550 W x 4 (4 Ω), 350 W x 4 (8 Ω) 2 channels (BRIDGE): 1,100 W x 2 (8 Ω)	4 channels: 500 W x 4 (70 V line, 9.8 Ω), 550 W x 4 (8 Ω), 100 W x 4 (4 Ω) 2 channels (BRIDGE): 1,000 W x 2 (140 V line, 19.6 Ω), 1,100 W x 2 (16 Ω)
	M4 screw terminal, distance between barriers: 8.8 mm (0.35")					
Protection Circuit	Protection against excessive current flow due to overload, short circuit, unusual DC voltage output, temperature rise at power amp heat sink (100 ºC or more (212 ºF)), temperature rise inside the unit (80 ºC or more (176 ºF))					
Dimensions	482 (W) × 44 (H) × 401.8 (D) mm (18.98" x 1.73" x 15.82")				482 (W) × 88.4 (H) × 404.2 (D) mm (19"x 3.5"x15.9")	
Weight	5 kg (11.02 lbs)		6.6 kg (14.5 lbs)		8.8 kg (19.4 lbs)	

*0 dB = 0.775 V

Optional Accessories

Matching Transformer

MT-251H

Accessory Reference on page 155; Amplifier Selection Chart on page 163

Micro Amplifier

The AV Series Micro Amplifier introduces a new standard in small amps for plenum use. With ultra-compact size, a flexible compliment of inputs & power configuration, control features and carrying both UL2043 & Energy Star 3.0 certification, the AV-20D is an ideal choice for corporate meeting rooms, POS/signage & kiosks or any place where space and placement limitations are a factor.

Micro Amplifier

AV-20D AM
AV-60S-AM

AV-20D AM

AV-60S-AM

- Micro Class D amplifier for use in meeting/board rooms & signage applications
- UL 2043-rated for plenum installation
- Energy Star certified including Auto Off/Standby
- Small size (approx. 6" x 6" x 1.75") allows convenient & flexible placement.
- L/R Line inputs via removable Transformer-Balanced Terminal Block, 1/8" TRS mini-jack and RCA connections
- Bass & Treble Controls
- Input signal present (-20dB) and Peak LED indicators
- Clip Limiter prevents distortion due to overload.
- Remote Volume Control port for use with 10k Ohm pot

Model		AV-20D AM	AV-60S-AM
Power Source		100V-240V AC, 50Hz/60Hz	
Rated Output		15W x 2 @ 8 Ohms, 20W x 2 @ 4 Ohms, 40W x 1 @ 8 Ohms (Bridge)	60W @ 4 Ohms, 60W @ 70V
Power Consumption	Rated Output	63W	Less than 85W @ 70V, Less than 110 W @ 4 Ohms
	Idle	<6 Watt	Less than 10W @ 70V, Less than 7W @ 4 Ohms
	Power Save Mode	<1 Watts	
Input	Line 1	-10/-20dB* (selectable), 10 K ohms, transformer-balanced, removable terminal block	
	Line 2	-10/-20dB* (selectable), 10 K ohms, unbalanced, 3.5mm stereo jack	
	Line 3	-10/-20dB* (selectable), 10 K ohms, transformer isolated unbalanced, RCA jacks	-10/-20dB* (selectable), 10 K ohms, unbalanced, RCA jacks
Output		Speaker output, removable terminal block (4P)	Speaker output, removable terminal block (2P)
Dimensions		150 (W) x 44 (H) x 156 (D) mm (5.9" x 1.73" x 6.14")	
Weight		1 kg (2.2 lbs)	1.12 kg (2.5 lbs)
UL Standards		UL 2043	
Optional Accessories		WPB-20, MB-AV20RM, MT-S0301	

*0 dB = 1 V

Micro Amplifier Optional Accessories

Metal Rack Mount Kit

MB-AV20RM
(1 or 2 amplifiers are mountable in 1 unit)

Surface & Pole Mount Bracket

WPB-20

Matching Transformer

MT-S0301

- The MT-S0301 allows for a 30W @ 70V output by connecting to the bridge output for AV-20D

Accessory Reference on page 155; Amplifier Selection Chart on page 163

A-800 Series Mixer Amplifiers

Spotlight

Equipped with 1 MIC/EMERGENCY, 1 MIC/TEL, 2 MIC, 2 MIC/LINE selectable inputs, and 2 MODULE inputs, the A-800 Series PA Amplifier is designed to suit PA system applications such as announcements, BGM and broadcasting, in venues such as; churches, large rooms and factories. The new A-800 series PA Amplifier encompasses **all*** the features of the A-700 amplifier series and has been updraded to include new features outlined below.

*** (Except for 25V speaker output)**

⋙A-800D Series Mixer Amplifiers

A-812D 120W
A-824D 240W
A-848D 480W

- AGC Control for MIC inputs
- Feedback Supression
- Ducker
- Chime (1/2/4 tone)
- Mute control by GPIO for Inputs 1,2 and 2 modules inputs
- Protocol Control (Volume and Power)
- Web Browser Control
  - -Volume and Power Control
  - -Priority Setting
  - -3 points EQ Control (HPF/LPF/PEQ)
  - -Remote Status Check
  - -Operation Log (storage size up to 6KB)
- Module slot accepts 900 Series plug-in modules with additional features
- Optional rack-mount kit, model MB-25B (2 RU)
- UL/cUL Listed

Model	A-812D	A-824D	A-848D
Power Source	120 V AC, 60 Hz		
Rated Output	120 W	240 W	480 W
Power/Current Consumption	170 W (rated output), 46 W (based on UL62368), 200 mA or less (when power switch is OFF)	317 W (rated output), 62 W (based on UL62368), 200 mA or less (when power switch is OFF)	621 W (rated output), 103 W (based on UL62368), 200 mA or less (when power switch is OFF)
Frequency Response	50 - 20 kHz (±3 dB) (1/8 rated output)		
Distortion	1 % or less at 1kHz, rated power (20kHz LPF (AUX-0025))		
Input	INPUT 1, 2: -60 dB (*1) (MIC) / -20 dB (*1) (LINE) selectable,, 600 Ω Electronically-balanced, removable terminal block (3 pins) Note: MIC inputs are equipped with phantom power (24 V DC, ON/OFF switchable). INPUT 3, 4: -60 dB (*1), 600 Ω, electronically-balanced, removable terminal block (3 pins) Note: Equipped with phantom power (24 V DC, ON/OFF switchable). INPUT 5, 6: MIC/LINE selectable MIC: -60 dB (*1), 600 Ω, electronically-balanced, removable terminal block (3 pins) LINE: -20dB (*1), 10 kΩ, unbalanced, RCA pin jack x 2 MODULE 1, 2: -20 dB (*1), 10 kΩ PWR AMP IN: 0 dB (*1), 600 Ω, unbalanced, RCA pin jack (An equalizer or other signal processor connectable between PRE MAP OUT and PWR AMP IN terminals)		
Output	SPEAKER OUT: High impedance (70 V line / 42 Ω), Low impedance (4-16 Ω) selectable, removable terminal block (3 pins) REC OUT: 0 dB (*1), 600 Ω, unbalanced, RCA jack x 2 PRE AMP OUT: 0 dB (*1), 600 Ω, unbalanced, RCA jack	SPEAKER OUT: High impedance (70 V line / 21 Ω), Low impedance (4-16 Ω) selectable, removable terminal block (3 pins) REC OUT: 0 dB (*1), 600 Ω, unbalanced, RCA jack x 2 PRE AMP OUT: 0 dB (*1), 600 Ω, unbalanced, RCA jack	SPEAKER OUT: High impedance (70 V line / 10 Ω), Low impedance (4-16 Ω) selectable, removable terminal block (3 pins) REC OUT: 0 dB (*1), 600 Ω, unbalanced, RCA jack x 2 PRE AMP OUT: 0 dB (*1), 600 Ω, unbalanced, RCA jack
Phantom Power (+23 V DC)	ON or OFF switchable for each INPUT 1 - 4		
S/N Ratio	88 dB or more (Master volume: min) 76 dB or more (Master volume: max) 55 dB or more (INPUT 1-6) - (A-weighted		
Tone Control	Bass: ±10 dB at 100 Hz; Treble: ±10 dB at 10 kHz		
Control Input	4 channels, no-voltage make contact input, open voltage: 35 V DC or less, short circuit: 10mA or less, removable terminal block (4pins) REMOTE VOLUME: No-voltage make contact input, open voltage: 35 V DC or less, short circuit: 10mA or less, removable terminal block (4pins)		
Indicator	5-point LED output level meter, Power indicator LED, LAN Connect / Priority / Emergency / Thermal protection / Over current protection / CPU RUN / Error indicator LED		
Operating Temperature	-10 ºC to +40 ºC (14 ºF to 104 ºF)		
Finish	Panel: ABS resin, black, Case: Surface-treated steel plate, black, paint		
Dimensions	420 (W) × 96.1 (H) × 313.1 (D) mm (16.53" x 3.78" x 12.33")		
Weight	5.2 kg (11.5 lbs)	5.4 kg (11.9 lbs)	
Accessory	AC power cord 2m (6.6ft) x 1, Audio input removable terminal plug (3 pins) x 6, Control input removable terminal plug (4 pins) x 2, Remote control removable terminal plug (4 pins) x 2, Speaker out removable terminal pluf (3 pins) x 1 Volume control cover x 4		
Option	Rack mounting bracket: MB-25B, Input transformer: IT-450**, Perforated panel : PF-013B		

* 1 - 0 dB = 1 V

Optional Accessory

⋙Rack Mount Kit
MB-25B

⋙Input Transformer
IT-450**

⋙Perforated Panel
PF-013B

Accessory Reference on page 155; Amplifier Selection Chart on page 163

Please see 900 Series Modules on page 39

A-700 Series Mixer Power Amplifiers

Equipped with 6 LINE/MIC selectable inputs, 2 LINE inputs and 2 MODULE inputs, the A-700 Series PA Amplifier is designed to suit PA system applications such as announcements, BGM and broadcasting, in venues such as; churches, large rooms and factories.

⋙A-700 Series Mixer Power Amplifiers

A-706 60W
A-712 120W
A-724 240W

- Nine channel integrated mixer/amplifiers for paging and background/foreground music distribution
- Proven TOA quality and reliability with wide frequency response, very low noise and distortion, and excellent output regulation
- Six Mic/Line inputs, balanced, with mic trim, 23 VDC phantom power and removable terminal block connector
- Two Auxiliary inputs, unbalanced, with dual-RCA jacks for convenient connection of stereo sources
- Module slot accepts 900 Series plug-in modules with additional features
- Transformer-isolation for telephone paging applications (Input #1) (optional on additional channels)
- 25 V, 70.7 V and 4 ohm speaker outputs with removable terminal block connector
- Auto-mute priority function assignable via external switches:
  Channels 1-3 and Module configurable as Mute Send;
  Channels 1-8 and Module configurable as Mute Receive
- Auto-mute sense control for adjusting mute activation threshold
- External mute terminals for activating mute function with external switch-closure
- Remote AC turn-on for activating power with an external switch-closure
- Turn-On delay disconnects output during power-up
- Over-current and thermal protection circuitry prevents potential damage from overloads, short-circuit and overheating
- Optional rack-mount kit, model MB-25B (2 RU)
- UL/cUL Listed

Model	A-706	A-712	A-724
Power Source	120 V AC, 60 Hz		
Rated Output	60 W	120 W	240 W
Power/Current Consumption	155 W (rated output), 68 W (based on UL60065), under 250 mA (when power switch is OFF)	285 W (rated output), 110 W (based on UL60065), under 400 mA (when power switch is OFF)	565 W (rated output), 215 W (based on UL60065), under 60 mA (when power switch is OFF)
Frequency Response	50 - 20,000 Hz (±3 dB)		
Distortion	Under 2% at 1 kHz, rated power		
Input	INPUT 1 - 6: -70 to -50 dB*, 600 Ω (MIC)/ -10 dB*, 600 Ω (LINE) INPUT 1: Transformer-balanced, removable terminal block (3 pins) INPUT 2 - 6: Electronically-balanced, removable terminal block (3 pins) INPUT 7 - 8 (LINE): -20 dB*, 10 kΩ, unbalanced, RCA jack MODULE: -20 dB*, 10 kΩ PWR AMP IN: 0 dB*, 10 kΩ, unbalanced, RCA jack (An equalizer or other signal processor connectable between PRE AMP OUT and PWR AMP IN terminals)		
Output	REC OUT: 0 dB*, 600 Ω, unbalanced, RCA jack PRE AMP OUT: 0 dB*, 600 Ω, unbalanced, RCA jack SPEAKER OUT: 70 V line (83 Ω), 25 V line (10 Ω), and 4 - 16 Ω, removable terminal block (4 pins)		
Phantom Power (+23 V DC)	ON or OFF for each INPUT 1 - 6 (MIC input) with switch setting		
S/N Ratio (Band pass: 20 - 20,000 Hz)	Over 55 dB (INPUT 1 - 6, mic trim volume: max., 600 Ω terminated) Over 70 dB (INPUT 1 - 6, mic trim volume: min., 600 Ω terminated) Over 76 dB (Master volume: max.) Over 90 dB (All input volume: min.)		
Tone Control	Bass: ±10 dB at 100 Hz; Treble: ±10 dB at 10 kHz		
Control Input	REMOTE VOLUME: Removable terminal block POWER REMOTE: No-voltage make contact input, open voltage: under 14 V DC, short-circuit: under 0.5 mA, removable terminal block MUTE CONTROL: No-voltage make contact input, open voltage: under 17 V DC, short-circuit: under 1.5 mA, removable terminal block		
Indicator	5-point LED output level meter, Power indicator LED		
Operating Temperature	-10 ºC to +40 ºC (14 ºF to 104 ºF)		
Finish	Panel: ABS resin, black, hair line; Case: Steel plate, black		
Dimensions	420 (W) × 107.7 (H) × 351.5 (D) mm (16.53" x 4.24" x 13.84")		
Weight	9.5 kg (21 lbs)	12 kg (26 lbs)	13.5 kg (30 lbs)
Accessory	AC power cord 2m (6.6ft) x 1, Removable terminal plug (3 pins) x 6, Removable terminal plug (4 pins) x 1, Removable terminal plug (6 pins) x 1, Volume control cover x 4		
Option	Rack mounting bracket: MB-25B, Input transformer: IT-450**, Volume control cover: YA-920		

* 0 dB = 1 V

Optional Accessory

⋙Rack Mount Kit
MB-25B

⋙Input Transformer
IT-450**

⋙Volume Control Cover *(included)*
YA-920

Accessory Reference on page 155; Amplifier Selection Chart on page 163

Please see 900 Series Modules on page 39

CA Series Mobile Mixer Amplifiers

CA Series Mobile Mixer Amplifiers

CA-115 15W
CA-130 30W
CA-160 60W

- Mobile mixer/amplifiers for remote applications
- 12 VDC powered
- Two microphone inputs with volume controls
- Supports 4 or 8 ohm speaker loads
- Handheld microphone included - unidirectional, dynamic-type with talk switch, 6' cord and mounting hardware
- Auxiliary input for connecting an external CD player, radio, tape deck or tone generator
- Mounting hardware included - mounts under dashboard or into standard DIN-size console cutout
- Applications: Automobiles; Boats; Buses; Construction Vehicles; Emergency Vehicles; Law Enforcement Vehicles; Parade Floats; Theme Park Rides

Model	CA-115	CA-130	CA-160
Power Source	Standard voltage: 14 V DC; Usable voltage: 10 - 16 V DC (12 V battery used)		
Power Consumption	3 A or less at rated output	5 A or less at rated output	9 A or less at rated output
Rated Output	15 W	30 W	60 W
Output Impedance	4 Ω (BRN), 8 Ω (ORG), Common (WHT) Changeable by changing lead wire connections		
Distortion	Less than 5% (at 1 kHz rated output)		
Frequency Response	100 Hz - 10 kHz		
Input	Mic 1, 2: 600 Ω, 4 mV, phone jack; AUX: 10 kΩ, 500 mV, phone jack		
Finish	Front panel: ABS resin, black; Case: Zinc plated steel sheet		
Dimensions	178 (W) × 50 (H) × 132 (D) mm (7" x 2" x 5.2") (mounting device excluded)	178 (W) × 50 (H) × 144 (D) mm (7" x 2" x 5.7") (mounting device excluded)	178 (W) × 50 (H) × 170 (D) mm (7" x 2" x 6.7") (mounting device excluded)
Weight	900 g (2 lbs)	1.1 kg (2.4 lbs)	1.2 kg (2.6 lbs)
Accessory	Microphone holder x 1, Mounting bracket x 1, Mounting screw x 1 set, Fuse (4 A) x 1, Connection cord x 1 set		
Accessory Microphone	Unidirectional dynamic type with talk switch Impedance: 600 Ω Sensitivity : -53 dB (1 kHz, 0 dB = 1 V/Pa)		

A-2000 Series Mixer Power Amplifiers

TOA's A-2000 Series is an economical performance mixer power amplifier suited for broadcasting paging or background music in schools, offices, shops, factories, mosques, churches and large rooms.

Mixer Power Amplifier

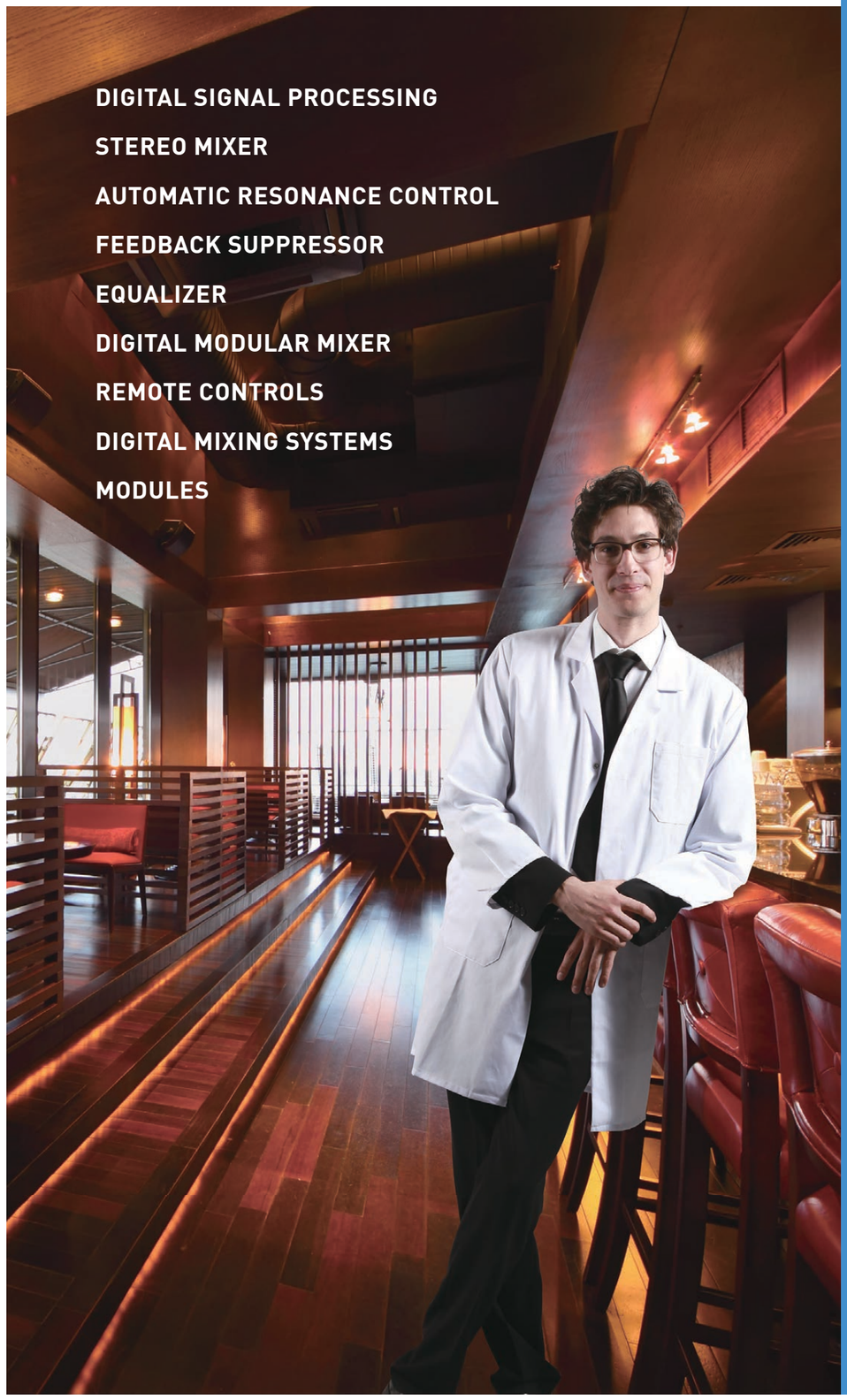
A-2060 60W
A-2120 120W
A-2240 240W

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

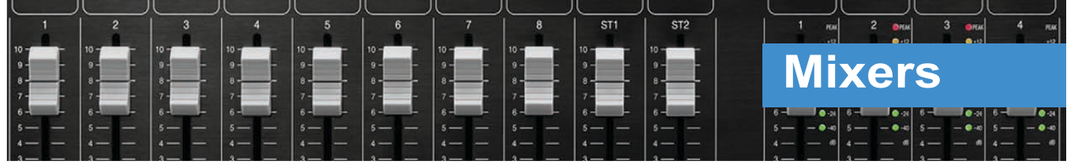
Model	A-2060	A-2120	A-2240
Power Req.	120V AC		
Rated Output	60W	120W	240W
Frequency Response	50 Hz – 20 kHz (±3dB)		
Input	MIC 1, 2: -60 dB*, 600Ω, balanced, M3.5 screw terminal, distance between barriers: 8.3 mm (0.33") TEL: -10 dB*, 10 kΩ, balanced, M3.5 screw terminal, distance between barriers: 8.3 mm (0.33") AUX 1, 2: -20 dB*, 10 kΩ, unbalanced, RCA pin jack		
Output	Speaker Out: Balanced (floating), M3.5 screw terminal, distance between barriers: 8.3m (0.33"); High impedance: 83Ω (70V), 10Ω (25V); Low impedance: 4Ω (15.5V); Rec out: 0 dB* 600Ω, unbalanced, RCA pin jack	Speaker Out: Balanced (floating), M3.5 screw terminal, distance between barriers: 8.3m (0.33"); High impedance: 42Ω (70V), 5Ω (25V); Low impedance: 4Ω (22V); Rec out: 0 dB* 600Ω, unbalanced, RCA pin jack	Speaker Out: Balanced (floating), M3.5 screw terminal, distance between barriers: 8.3m (0.33"); High impedance: 21Ω (70V), 2.6Ω (25V); Low impedance: 4Ω (31V); Rec out: 0 dB* 600Ω, unbalanced, RCA pin jack
Phantom Power	DC +21V (MIC 1)		
S/N ratio	Over 60dB		
Tone Control	Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz		
Muting	MIC 1, MIC 2, and TEL have a priority function to attenuate AUX1 and AUX2 input signals by 30 dB. (Sensitivity level for MIC 1, MIC 2 , TEL adjustable) Priority level among MIC 1, MIC 2 and TEL is the same.		
Dimensions	420 (W) × 100.9 (H) × 280.3 (D) mm (16.54" x 3.97" x 11.04")		420 (W) × 100.9 (H) × 360.3 (D) mm (16.54" x 3.97" x 14.19")
Weight	7.5 kg (16.53 lbs)	10.8 kg (23.15 lbs)	15.5 kg (34.17 lbs)

*0 dB = 1 V

Amplifier Selection Chart on page 163



MIXERS



Digital Stereo Mixer

Spotlight

The M-864D is a 4U rack mountable Digital stereo mixer. It features 8 monaural Mic/Line input channels and 2 stereo input channels (7 sources), 6 output channels including 4 bus assignable monaural output channels and 1 stereo recording output channel. It is equipped with digital signal processing functions such as Automatic Resonance Control function (ARC) Feedback Suppressor function (FBS), Automatic stereo input mute function (AUTO MUTE or Ducker), and Parametric Equalizer. Advanced acoustic compensation can be automatically performed without using any acoustic measuring instruments. Furnished with various function setting buttons and 14 analog volume faders, the M-864D can be operated without the need for a PC. However, it can also be operated by connecting the PC or optional Remote control panel. It can be mounted in an EIA standard component rack (4U size).

»» Digital Stereo Mixer

M-864D

- Automatic Resonance Control function (ARC)
- Feedback Suppressor function (FBS)
- Automatic stereo input mute function (AUTO MUTE or Ducker)
- Parametric Equalizer
- Paging function with optional PP-001T Priority Paging Interface

»» Software

Control at your fingertips.
iPad software now available.

TOA's M-864D Software can be downloaded at www.TOAcanada.com

* 0 dB = 0.775V

Model	M-864D
Power Source	100-120 V AC, 60 Hz
Power Consumption	30 W
Input	Monaural input, 8 channels, removable terminal block (3P); Phantom power (+24 V DC, 10 mA, ON/OFF switchable for each terminal); Gain setting (settable for each channel) : PAD ON Gain min., +4 dB* (max. +24 dB*), 10 kΩ, electronically-balanced; Gain max., -14 dB* (max. +6 dB*), 10 kΩ, electronically-balanced : PAD OFF Gain min., -10 dB* (Max. +10 dB*), 7 kΩ, electronically-balanced; Gain max., -56 dB* (max. -36 dB*) 7 kΩ, 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) : -110 dB* (max. +10 dB*), 10 kΩ Trim gain for each individual channel: - ∞ to 0 dB (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 apples to R channel)
Output	Output, 4 channels, +4 dB* (max. +24 dB*), applicable load 600 Ω or more, electronically-balanced, removable terminal block (3P); REC OUT (L, R): -10 dB* (max. +10 dB*), applicable load 1 kΩ or more, RCA jack Gain is adjustable.
Feedback Suppressor Function	Feedback suppressor filter creation, 8 channels (each monaural input channel), settable independently on each channel, ON/OFF switch x8, ON/OFF LED x8
Equalizer	Parametric equalizer: 20 Hz - 20 kHz ±15 dB, Q: 0.267 - 69.249, 4 channels (each output channel)
Matrix	12 x 4
Auto Resonance Control (ARC) Measurement	ARC measuring start switch x1, ON/OFF LED x1
Control Input	8 channels, open voltage: 24 V DC, short-circuit current: 5 mA, removable terminal block (10P)
Contact Output	8 channels, no-voltage make contact, contact capacity. 24 V DC/100 mA, removable terminal block (10P)
Operating Temperature	0 °C to +40 °C (32 °F to 104°F)
Finish	Panel: Aluminum, hairline, black, Case: Surface-treated steel plate
Dimensions	482.6 (W) x 117.1 (H) x 157.2 (D) mm (19" x 6.97" x 6.19")
Weight	5.1 kg (11.24 lb)
Accessory	Power cord (2 m (6.5 ft)) x 1, removable terminal plug (3P) x 12, large type removable terminal plug (10P) x2, small type removable terminal plug (10P) x1, fader gang bar x4, protective over x1, CD-ROM (containing setup software) x1
Option	Priority Paging Interface PP-001T Remote control panel: ZM-9011, ZM-9012, ZM-9013, ZM-9014; AC adapter: AD-246 (when using the Remote Control Panel)

M-864D Optional Interface

»» Priority Paging Interface

PP-001T

- Connects TOA's 9000 series Modular Digital Matrix Mixer/Amplifiers to TOA's M-864D Digital Stereo Mixer
- Connects to any 3rd party mixer/amplifier that can provide Dry Contact Output
- Adds paging function with priority to the M-864D
- Requires 12VDC 1A AC Adapter (included)

M-864D Optional Remote Control Modules

»» Assignable Remote Button Panel
ZM-9011

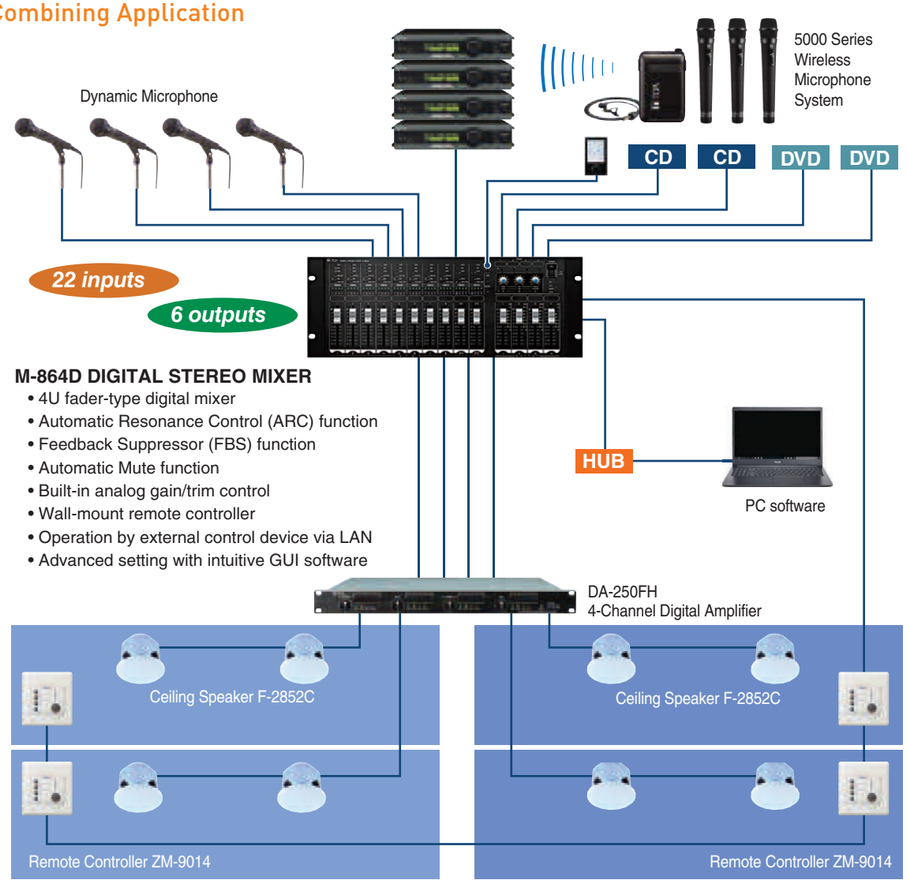
»» Assignable Volume Controller
ZM-9012

»» Assignable Remote Button Panel
ZM-9013

»» Assignable Remote Button Panel with Volume Control
ZM-9014

For specifications and complete details refer to 9000M2 Series Modules and Accessories on page 34

Room Combining Application



Remote Mixer

»» Remote Mixer

SO-MIX-T-24V

- Microphone and line level input
- Two inputs, one balanced output
- Individual volume control with joint bass and treble control
- Automatic mix with selectable Talkover function. 30dB, Talkover time: 3 seconds.
- Accessory 2-gang wall plate: SO-MIX-PLATE

Model	SO-MIX-T-24V
Power Source	24 V DC
Output	p dBV
Power/Current Consumption	40 mA
Input	Microphone XLR balanced input, Sensitivity -20/-40 dBV
Output	Euroblock connector line level 0 dBV
Phantom Power	24 V selectable
Tone Control	Bass: ±10 dB at 100 Hz, Treble: ±10 dB at 10 kHz
Dimensions	85 (W) x 86 (H) x 36 (D) mm (3.35" x 3.39" x 1.42")
Finish	White
Accessory	2-gang Wall Plate SO-MIX-PLATE, AC adapter required AD-246

»» 2-gang Wall Plate

SO-MIX-PLATE

»» AC Adapter

AD-246

Digital Stereo Mixer

Digital Stereo Mixer

M-633D

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

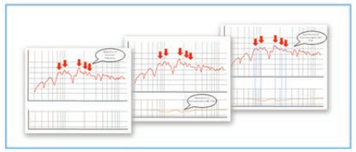
Model	M-633D
Input	6 monaural input channels, switchable LINE, MIC or PHANTOM LINE: -10dB*, 2.4k Ω MIC:-46 dB*, 2.4k Ω PHANTOM:-46 dB*, 2.4k Ω, +24V DC, electronically balanced Removable terminal block (3 pins), phone jack 3 stereo inputs (L, R) -10 dB* / 10k Ω, RCA jack, stereo mini jack
Bus Line	Monaural channel x 2, stereo channel x 1
Frequency Response	20 Hz - 20kHz
Sampling Frequency	48 kHz / 24 bits
Dynamic Range	90 dB or more (IHF-A weighted)
Output	3 monaural outputs 0 dB*, electronically balanced, removable terminal block (3 pins) 1 stereo output (L, R) 0 dB*, electronically balanced, removable terminal block (3 pins) 1 stereo recording output (L, R) -10 dB*, RCA jack
Signal Processing	Automatic Resonance Control (ARC) Feedback Suppressor (FBS) Automatic Clipguard (ACG) Automatic Mute
Dimensions	420 (W) x 44 (H) x 341.1 (D) mm (16.54" x 1.73" x 13.44"
Weight	8.82lbs (4kg)

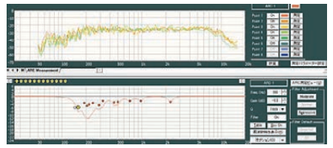
*0 dB = 1V

ARC: Automatic Resonance Control

ARC, Automatic Resonance Control, is a TOA proprietary method to automatically generate an optimum filter curve to improve sound clarity after measuring the acoustic characteristics in architectural spaces. ARC solves sound deterioration caused by acoustic Feedback and Resonance. Look for TOA ARC enabled products to help solve your acoustically challenging spaces.

Products Using ARC:
- M-633D - Digital Stereo Mixer
- M-864D - Digital Stereo Mixer





Stereo Mixer

6-Channel Stereo Mixer

M-243

- Two mono mic/line inputs, each with compressor and high pass filter
- Four stereo inputs with RCA and 1/4" phone plug connectors
- Stereo output with separate paralleled record outputs
- Two mono outputs, switchable to stereo sum
- Inputs independently assignable to any combination of stereo and mono outputs
- Stereo and mono sub-inputs for direct access to individual mixing buses
- Auto-priority of mono over stereo inputs for paging/BGM applications
- Low and high frequency EQ for stereo output (with clipping indicators)
- Security cover and rack-mount kit included (1 RU)

Model	M-243
Power Source	120 V AC, 50/60 Hz
Power Consumption	10 W
Monaural Input	Line: -10 dB*, 10 kΩ, unbalanced, phone jack Mic: -60 dB*, 1 kΩ, balanced, XLR3-pin connector Mic (Pad): -40 dB*, 1 kΩ, balanced, XLR3-pin connector
Stereo Input (L, R)	-10 dB*, 10 kΩ, unbalanced, RCA jack
Auxiliary Stereo Input	+4 dB*, 50 kΩ, unbalanced, phone jack
Stereo Output (L, R)	+4 dB*, 1 kΩ, unbalanced, phone jack
Monaural Output (1, 2)	+4 dB*, 1 kΩ, unbalanced, RCA jack
REC Output (L, R)	-10 dB*, 1 kΩ, unbalanced, RCA jack
Frequency Response	20 - 20,000 Hz (+1, -2 dB)
T.H.D.	0.01 % or less (1,000 Hz, rated input/output)
Noise Level (IHF-A)	When all volume controls are in minimum position Stereo Output (L, R): -105 dB* or less Monaural Output (1, 2): -98 dB* or less When the stereo, monaural (1, 2) are in maximum position. Stereo Output (L, R): -94 dB* or less Monaural Output (1, 2): -95 dB* or less
Finish	Front Panel: Alumite, black Case: Steel, black
Dimensions	483 (W) × 46 (H) × 301.8 (D) mm (19.02" × 1.81" × 11.88")
Weight	8.38lbs (3.8kg)
Accessory	Rack mounting screw x 4, Rubber foot x 4, Knob (blue, small) x 2, Knob (red, small) x 2, Knob (blue, large) x 1, Knob (red, large) x 1

*0 dB = 0.775 V

Digital Modular Mixer

TOA's D-901 is a 19" wide rack-mounted (3U high) digital mixer configured with 12 inputs, 8 buses, and 8 outputs. It features signal processing functions necessary for sound systems such as feedback suppression and auto-mixing. Modular construction permits flexible configuration of inputs and outputs, from 2-IN/4-OUT to 12-IN/8-OUT systems. All functional parameters can be set at the unit. Settings can be stored in the unit's internal memory a "preset memory" and can be recalled using the front panel-mounted operation keys.

Digital Modular Mixer

D-901

- Modular design allows versatile configurations of up to 12 inputs and 8 outputs
- Auto-Mixing allows "set-and-forget" operation
- Feedback Suppression automatically attenuates up to 12 problem frequencies
- Eight bus matrix with crosspoint gain control allows flexible input-to-output signal routing for zoning or room-combining
- Delay, high/low pass and notch filters, parametric equalizers, compressor/auto leveler, gate, crossovers and crosspoint gain
- PC software for off site programming and archiving settings
- 16 internal memories for storage and recall of different signal routing and parameter configurations
- AMX* and Crestron* software modules available - connects via RS-232

**Note: AMX is a registered trademark of AMX corporation. Crestron is a registered trademark of Crestron Electronics Inc.*

* 0 dB = 0.775 V

Model	D-901
Power Source	100-120 V AC, 50/60 Hz
Power Consumption	40 W
Frequency Response	20 Hz - 20 kHz, ± 1 dB (+4 dB* input)
Input	Max. 12 channels, modular construction (modules optional)
Output	Max. 8 channels, modular construction (modules optional)
SIGNAL PROCESSING	
Feedback Suppression Function	12 filters (auto/dynamic)
Auto-Mixing Function	Ducker (automatic muting), NOM attenuation
Auto-Mixing Group	4 groups
Equaliz r/Filter	Parametric equalizer: 20 Hz - 20 kHz, ±15 dB, Q: 0.267-69.249; Filtering: High-pass filter 20 Hz - 20 kHz, 6 dB/oct, 12 dB/oct; Low-pass filter 20 Hz - 20 kHz, 6 dB/oct, 12 dB/oct; Notch filter 20 Hz - 20 kHz, Q: 8.651-69.249 ; All-pass filter 20 Hz - 20 KHz, Q: 0.267 - 69.249; High shelving filter 6 - 20 kHz, ±15 dB; Low shelving filter 20 - 500 Hz, ±15 dB; Horn equalizer 20 kHz, 0 to +18 dB (1 dB steps); Crossover filter: 20 Hz - 20 kHz, 6 dB/oct, 12 dB/oct, 18 dB/oct, 24 dB/oct
Compressor/Auto-Leveler	(Compressor mode) Threshold: -20 to +20 dB (1 dB steps); Ratio: 1:1, 2:1, 3:1, 4:1, 8:1, 12:1, 20:1, ∞:1; Attack time: 0.2 ms - 5s; Release time: 10 ms to 5s; Gain: -∞ to +10 dB (Auto-leveler mode) Target level: -20 to +10 dB (1 dB steps); maximum gain: 0 to +20 dB (1 dB steps); Attack time: 10 ms - 10 s; Release time: 100 ms to 10 s
Delay	Delay time: 0 - 682.6 ms (0.021 ms steps)
Matrix	12 x 8
Crosspoint Gain	-∞ to 0 dB (1 dB steps)
Preset Memory	16
Auxiliary Function	System locking function
Control	RS-232C, D-sub connector (9 pins), Remote control module (option)
Front Panel Section	Preset memory recall key: 8; LCD screen, screen shift key (up/down/left/right), setting knob; Input level indicator: dual colour LED; Output level indicator: dual colour LED; Channel selector key: 12 (input channel selection), 8 (output channel selection); Channel volume control: 1 (input channel selection) 1 (output channel selection)
Rear Panel	Input module slot: 6 (input/output module slot: 2); Output module slot: 2; Remote control module slot: 1
Operating Temperature	+5 °C to +40 °C (41 °F to 104°F)
Finish	Panel: Aluminum, hairline, black, Others: Pre-coated steel plate, black 30% gloss
Dimensions	482.6 (W) x 132.6 (H) x 320 (D) mm (19" x 5.22" x 12.6")
Weight	6.9 kg (15.21 lb)
Accessory	Power cord (2 m (6.5 ft)) x 1, rack mounting screw x 4, rack mounting bracket (preinstalled on the unit) x 2, module mounting screw (spare) x 4, blank panel (preinstalled on the module slot) x 9

Software

TOA's D-901 Control Software can be downloaded at www.TOAcanada.com

Please refer to the Digital Mixer Modules - D-901, and D-2000 on page 58
Note: The M-9000M2 is also a Digital Mixer. Refer to 9000 Series to learn more on page 30

Signal Processing Equipment

The DP-SP3 Digital Speaker Processor enables you to enhance your sound system easily and inexpensively. Designed specifically to work with speakers, the processor taps into characteristics of individual speakers and draws out their best possible performance, to help realize richer, more expressive sound in a variety of venues. The DP-SP3 has a built-in library of presets for the most popular TOA speakers, which enables you to enjoy well-balanced sound immediately, without going to the trouble of inputting complex parameter settings. In addition, a preset memory of up to 16 setting patterns allows you to instantly recall the setting you need for a particular venue. The processor is also packed with such essential audio processing functions as Equalizer, Crossover, Matrix, Compressor and Delay.

Digital Speaker Processor

DP-SP3

- 24-bit, 96 kHz sampling for clear, high-quality and realistic sound, with a full sense of presence
- 10 filters on each input and 12 filters on each output
- 2 inputs & 6 outputs, and processor can work with a 3-way multi-amp system
- Setting and operation via a LAN connected PC with installation of the supplied intuitive control/ operation software
- Preset memory for up to 16 different setting patterns, for instant recall of patterns best suited to a particular venue

Model	DP-SP3
Power Source	100 - 120 V AC, 60 Hz
Power Consumption	25 W
Frequency Response	20 Hz - 20 kHz ±1 dB
Sampling Frequency	96 kHz
Dynamic Range	110 dB or more
Distortion	0.03% or less, 1 kHz +4 dB* input/output, 20 Hz - 20 kHz BPF
Cross Talk	-80 dB or less, 1 kHz
Input	2 channels, +4 dB* (max. +24 dB*), 10 kΩ, electronically-balanced, removable terminal block (3P)
Output	6 channels, +4 dB* (max. +24 dB*), applicable load 600 Ω or more, electronically-balanced, removable terminal block (3P)
AD Converter	24 bits
DA Converter	24 bits
Equaliæ r/Filter	Parametric equaliæ r: 20 Hz - 20 kHz ±15 dB, Q: 0.267 - 69.249; Filter: High-pass filter: 20 Hz - 20 kHz 6 dB/oct, 12 dB/oct; Low-pass filter: 20 Hz - 20 kHz 6 dB/oct, 12 dB/oct; Notch filter: 20 Hz - 20 kHz Q: 8.651 - 69.249; All-pass filter: 20 Hz - 20 kHz Q: 0.267 - 69.249; High shelving filter: 5 - 20 kHz ±15 dB; Low shelving filter: 20 - 500 kHz ±15 dB; Horn equaliæ r: 20 kHz 0-18 dB in 0.5 dB steps
Crossover	2 ways, 3 ways, 4 ways; Crossover filter: 20 Hz - 20 kHz 6 dB/oct, 12 dB/oct, 18 dB/oct, 24 dB/oct, -15 to +12 dB, polarity switchable; Delay: 0 - 170.656 ms in 0.01 ms steps
Compressor	Threshold: -20 to +20 dB* in 1 dB 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: 0.2 ms - 5s; Release time: 10 ms - 5s
Delay	Delay time: 0 - 682.656 ms in 0.01 ms steps
Matrix	2 x 6
Contact Input	4 channels, open voltage: 5 DC, short-circuit current: 5 mA, removable terminal block (5 P), control function: preset memory selection, volume control, and mute
Network	Network I/F: 1 channel of 10BASE-T/100BASE-TX (auto-negotiation) Rd 5 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: 100 m (109.36 yd) (between DP-SP3 and switching hub)
Dimensions	482 (W) x 44 (H) x 289 (D) mm (18.98" x 1.73" x 11.38")
Accessory	Power supply cord (2 m (6.5 ft)) x 1, removable terminal plug (3P) x 8, Removable terminal plug (5P) x 1, CD-ROM (containing setup software) x 1

* 0 dB = 0.775 V

Digital Ambient Noise Controller

Digital Ambient Noise Controller

DP-L2

- Digital ambient noise control (ANC) function with 4-LED metering automatically adjusts output gain to match changes in ambient noise levels
- Exclusive TOA algorithm distinguishes unit output sound level from ambient noise levels, for more accurate control
- Monitor output for sound picked up by the ambient noise sensor microphone
- Automatic level control feature with 4-LED metering maintains input signal at a constant level by adjusting input signals to appropriate levels when the sound level is too low
- Requires ambient noise microphone

Digital Ambient Noise Controller

* 0 dB = 0.775 V

Model	DP-L2
Power Source	100 - 120 V AC, 60 Hz
Power Consumption	20 W (300 mA)
Frequency Response	20 Hz - 20 kHz ±1 dB
Sampling Frequency	48 kHz
Dynamic Range	Over 108 dB (IHF-A weighted)
Distortion	Under 0.006%, 1 kHz +4 dB* input/output (20 - 20 kHz BPF)
Input	Sensor input (Ambient noise sensor microphone input): +4/-48 dB* changeable, 10 kΩ, electronically-balanced, removable terminal block (4 pins), phantom power (+15 V DC, can be turned on or off with Phantom switch) with +15 V DC terminal; Input 1,2: +4/-8/-20 dB* changeable, 15 kΩ, electronically-balanced, removable terminal block (3 pins)
Output	Monitor output: +4 dB*, 600 Ω, electronically-balanced, removable terminal block (3 pins); Output 1,2: +4 dB*, 600 Ω, electronically-balanced, removable terminal block (3 pins)
AD Converter	24 bits
DA Converter	24 bits
Automatic Level Control Function	Level meter (4 LED meters), Automatic input signal level control function; Automatic input sensitivity setting function: +4/-8/-20 dB*; Noise gate level setting: -99 to -3 dB
Ambient Noise Control Function	Level meter (4 LED meters), BGM/Announce level control function; Automatic sensor input reference level measuring function; Sensor input reference level fine adjustment function; Maximum output signal level control: -15 to 0 dB; Maximum output signal level control: -18 to -3 dB, Sample time setting: 10 s, 20 s, 30 s, 1 min, 5 min; Gain ratio setting: (Ambient noise: Output signal level) 6:3, 5:3, 4:3, 3:3, 3:4, 3:5, 3:6; Ambient noise measuring frequency setting: 20 - 20 kHz, 3 points
Maximum Output Signal Level Control Function	-12, -6, 0, +4, +6, +12, +18, +24 *dB
Input Level Indicator	8 LEDs indicator
Output Level Indicator	8 LEDs indicator
Other Feature	Phantom power switch (sensor input), key lock function, Ground lift switch (INPUT 1, INPUT 2), Input/Output bypass function in power off
Dimensions	482 (W) x 44 (H) x 303 (D) mm (18.98" x 1.73" x 11.93")
Accessory	Power supply cord (2 m (6.5 ft)) x 1, removable terminal plug (4P) x 1, Removable terminal plug (3P) x 5

Optional Accessories: DP-L2

Ceiling Mount Microphone

AN-9001

For specifications and complete details see page 34

D-2000 Series Digital Mixing System

TOA's D-2000 Series integrates high-performance mixing, matrixing and processing functions to meet a wide scope of sound reinforcement applications.

Expandable to a maximum system configuration of 128 combined inputs and/or outputs, the D-2000 Series included various modules and peripherals that can be combined to create the best possible sound in small to medium sized venues.

Digital Mixing Processor Unit

D-2008SP

- Ideal for applications including; hotel banquet and function rooms, indoor sports facilities, multi-purpose halls, houses of worship, and more
- NOM (Number of Open Microphones) - automatically adjusts output levels based on the total number of open microphones
- Ducker function (auto-mute function) - automatically worked to attenuate outputs of channels with low priority
- Highly effective feedback suppression: providing feedback elimination for up to 4 channels. In addition, each channel can control 12 problem frequencies, making it convenient for feedback suppression in different areas of the same hall.
- 4 bus assignable feedback suppressions with 2 versatile suppression modes: Auto mode or real-time dynamic mode
- Delay, high-pass, low-pass and notch filters, parametric equalizers, compressor/auto leveler, gate, crossovers and crosspoint gain
- 32 preset memories for user convenience
- Intuitive GUI helps streamline settings and adjustments
- D-2000 Series units can be used in conjunction with the optional D-911 VCA Fader Unit providing analog mixer user interface
- RS-232C port allows external control when connected to external devices such as AMX and Crestron control units
- User-specific configurations
- 24-bus matrix: flexible input-to-output signal routing for zoning or room-combining
- A 128 combined input and/or output system can be constructed by connecting four D-2008SP units using the CobraNet module. LAN-connected D-2008SP units can be remotely operated from TOA's PC software
- Works with optional Q-D-2012C fader controller using LAN connection

D-2000 Series Digital Mixing System

* 0 dB = 0.775 V

Model	D-2008SP
Power Source	120 V AC, 60 Hz
Power Consumption	78 W
Frequency Response	20 Hz - 20 kHz ±1 dB (+4 dB* input)
Sampling Frequency	48 kHz
Input and Output	Input: Max. 32 channels, modular construction (module optional); Output: Max. 32 channels, modular construction (module optional); Headphone: 1 stereo
Signal Processing	Feedback suppression function; Auto mixing function; Auto mixing group; Parametric equalizer; High-pass filter; Low-pass filter; Notch filter; All-pass filter; High shelving filter; low shelving filter; horn equalizer; crossover filter; compressor/auto-leveler; Output delay; BUS delay; Matrix; CobraNet* Matrix; Crosspoint gain
Preset Memory	32
Auxiliary Function	Key locking function
LAN	Network I/F: 10 BASE-T/100BASE-TX (Automatic-Negotiation) Connected cia a switching hub; Network protocol: TCP/IP; Connection cable: Shielded Category 5 or higher twisted pair LAN cable (CAT5-STP); Maximum cable distance: 100 m (between D-2008DP and switching hub)
Control	RS-232C: D-sub connector (9 pins) Used for external control; Module: Remote control module slot: 2
Operating Temperature	+5 °C to +40 °C (41 °F to 104°F)
Dimensions	482 (W) x 132.6 (H) x 343.4 (D) mm (18.98" x 5.22" x 13.52")
Weight	6.3 kg (13.89 lb)
Accessory	Power cord (2 m (6.5 ft)) x 1, Module mounting screw (spare) x 4, Blank panel (preinstalled on the module slot) x 8, CD (set-up software) x 1
Option	Mic/line input module: D-2000AS1, D-921E, D-921F, D-922E, D-922F; Stereo select input module: D-936R; Digital input module: D-923AE; Line output module: D-971E, D-971M, D-971R, D-2000DA1; Digital output module: D-972AE; CobraNet interface module: D-2000CB; Remote control module: D-981, D-983; VCA control module: D-984VC

Software

TOA's D-2008 Control Software can be downloaded at www.TOAcanada.com

Please refer to the Digital Mixer Modules - D-901 and D-2000 on page 58

D-2000 Series Digital Mixing System

Remote Console Unit

Q-D-2012C

The Q-D-2012C is a 6U rack mountable Remote Console Unit designed for exclusive use with the D-2008SP Digital Mixing Processor Unit. Assigned to any desired channels inside the D-2008SP by the dedicated software, the Q-D-2012C's 12 motorized faders and 8 rotary encoders can remotely adjust their volumes. Desired preset memories can be recalled using 8 function keys. It is equipped with 1 channel line input (stereo), which allows the audio signal to be transmitted to the D-2008SP via monitor bus. Audio signals inside the D-2008SP can be monitored via monitor bus through headphones connected to a stereo headphone output. The Q-D-2012C can be installed on a desk with the additional use of an optional Q-D-2012AS Console Case.

Console Case for Q-D-2012C

Q-D-2012AS

* 0 dB = 0.775 V

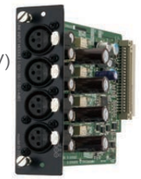
Model	Q-D-2012C
Power Source	100 - 120 V AC, 60 Hz
Power Consumption	18 W
Volume Adjustment	100 mm motorized fader x 12; Rotary encoder x 8
Line Input	1 channel (stereo), +10 to -20 dB*, 10 kΩ, unbalanced, RCA Pin-jack
Headphone Output	Stereo 100 mW + 100 mW (32 Ω load), standard stereo phone-jack
Monitor Bus	1 stereo input, 1 stereo output; Connector: RJ45 connector; Connection cable: Shielded twisted pair (STP) CAT-5 or higher LAN cable (2 pairs of data lines); Maximum cable distance: 100 m (109.36 yd) (between D-2012C and D-2008SP)
LAN	Network I/F: 10 BASE-T/100BASE-TX (Automatic-Negotiation) RJ45 connector, connected via a switching hub; Network protocol: TCP/IP; Connection cable: Shielded twisted pair (STP) CAT-5 or higher LAN cable; Maximum cable distance: 100 M (109.36 yd) (between D-20008SP and switching hub)
Control	RS-232C: D-sub connector (9 pins) for maintenance use
Dimensions	482 (W) x 266 (H) x 138 (D) mm (18.98" x 10.47" x 5.43")
Weight	6.6 kg (14.55 lb)
Accessory	Power cord (2 m (6.5 ft)) x 1, Rack mounting screw x 4, Fader knob (yellow) x 3, Fader knob (red) x 3, Cord clamp (fitting screw) x 1
Option	Console case: Q-D-2012AS

D-2000 Series Modules

Mic/Line Input Module

D-2000AD1

- 4-channel, XLR connectors
- A/D converter: 24 bit
- Phantom power supply (48V)
- THD: 0.008% or less



Model	D-2000AD1
Input	4 channels, Mic/Line selectable Mic: -50/-36dB, 2.6kΩ, electronically-balanced Line: -10dB, 2.6kΩ/+4dB, 7kΩ, electronically-balanced Connector: XLR-3-31 equivalent Phantom power supply (48V DC can be used when set for the Mic) Ground lift switch
A/D Converter	24 bit
THD	0.008% or less (+4dB input)

Line Output Module

D-2000DA1

- 4-channel, XLR connectors
- D/A converter: 24 bit
- THD: 0.008% or less

Model	D-2000DA1
Output	4 channels, +4dB*1/-10dB*1 (changeable), adaptable load of 600Ω or more, balanced (electronically-balanced)/ unbalanced (changeable), XLR-3-32 equivalent
D/A Converter	24 bit
THD	0.008% or less

CobraNet Interface Module

D-2000CB

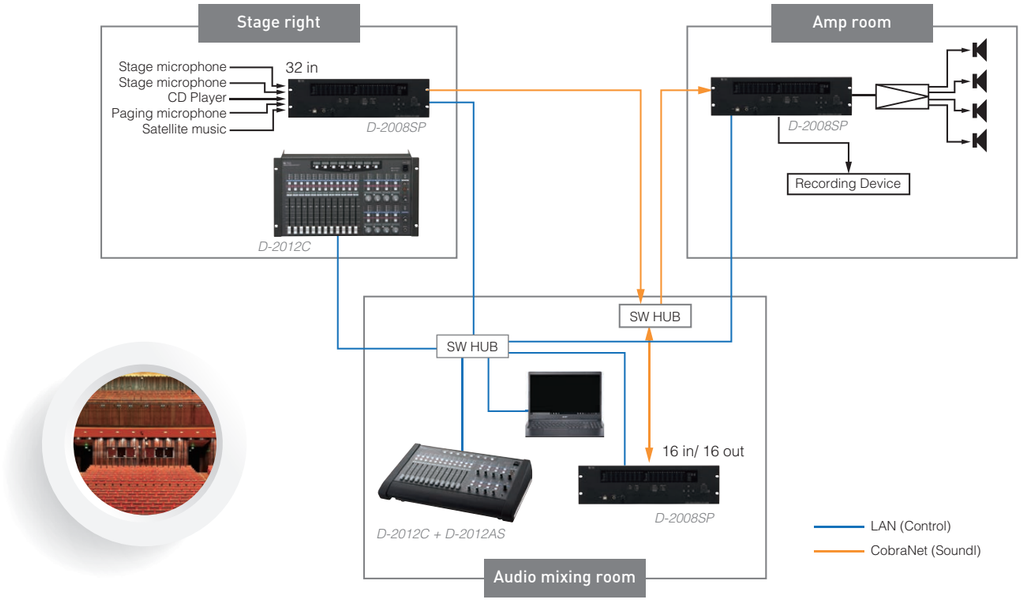
- Allows audio transmission among D-2008SP's.

Model	D-2000CB
Network I/F	CobraNet*: 100BASE-TX, PRIMARY/SECONDARY 2 system, RJ45 connector, enables decentralized installation. (audio transmission only) Connection Cable: shielded twisted pair (STP) CAT-5 or higher LAN cable (note: this network should be completely independent of other LAN.) Number of D-2008SP Connection: Max. 4 Switching Sub Stage: Max 7 Max Extend Distance: 100m (328.1ft) (connected via a switching hub)
Input	16 channels, 20/24 bit
Output	16 channels, 20/24 bit

*1 0 dB = 0.775V

** CobraNet* was developed by Cirrus Logic, a US company, and is network protocol utilizing Ethernet networks to perform high-quality multi-channel digital transmission. It allows using existing Ethernet equipment such as CAT-5 switching hubs.*
** AMX is a registered trademark of AMX corporation. Crestron is a registered trademark of Crestron Electronics Inc.*
CobraNet is a registered trademark of Cirrus Logic Corporation

Municipal Hall Example



Digital Mixers Modules - D-901 and D-2000

VCA Fader Unit

D-911

- Remote control of up to twelve inputs and eight outputs
- Eight programmable control switches and LED's
- Connects to D-984VC module via CAT-5 cables (maximum distance 100m / 328ft using CAT-5)

VCA Control Module

D-984VC

- Interface to D-911 Remote Controller via CAT-5 cables or configure custom interface
- Eight RJ 45 connectors
- Control up to 12 inputs, eight outputs
- Eight programmable switch closure inputs for activation of memory, volume up/down, channel on/off and stereo input selection
- Eight programmable relay outputs of memory, channel on/off, contact input status and stereo input selection

Mic/Line Input Module (24 bits Monaural Type)

D-921F

- Two balanced mic or line level inputs
- 24-bit A/D converters
- Adjustable input gain
- Phantom power
- XLR-F connectors

Mic/Line Input Module (24 bits Monaural Type)

D-921E

- Two balanced mic or line level inputs
- 24-bit A/D converters
- Adjustable input gain
- Phantom power
- Phoenix-style terminal block

Mic/Line Input Module (20 bits Monaural Type)

D-922F

- Two balanced mic or line level inputs
- 20-bit A/D converters
- Adjustable input gain
- Phantom power
- XLR-F connectors

Mic/Line Input Module (20 bits Monaural Type)

D-922E

- Two balanced mic or line level inputs
- 20-bit A/D converters
- Adjustable input gain
- Phantom power
- Phoenix-style terminal block connectors

Stereo Select Input Module

D-936R

- Four stereo connector pairs
- Unbalanced line level
- Individual input gain
- Programmable switching between connector pairs or summing mode
- Occupies two input channels
- RCA pin jack connectors

AES/EBU Digital Input Module

D-972AE**

- Four digital outputs
- AES/EBU format
- XLR-M connectors
- Maximum distance: 328ft (100m)

AES/EBU Digital Input Module

D-923AE**

- Two digital inputs
- AES/EBU format
- XLR-F connector
- Maximum distance: 328ft (100m)

Line Output Module

D-971M

- Four balanced line level outputs
- XLR-M connectors

Line Output Module

D-971E

- Four balanced line level outputs
- Phoenix-style terminal block connectors

Line Output Module

D-971R

- Four stereo or mono sum line level outputs
- RCA pin jack connectors

Remote Control Module

D-981

- Permits preset memory recall
- Stereo input selection and channel ON/OFF
- Input/Output channel volume control

Remote Control Module

D-983

- Twenty-four programmable switch closure inputs for activation of memory, volume up/down, channel on/off and stereo input selection
- Sixteen programmable relay outputs of memory, channel on/off, contact input status and stereo input selection

VM-3000 Series Integrated Voice Evacuation System

The VM-3000 Series is an Emergency Voice Paging System ideal for small and medium-sized applications. When installed per the manual, it is fully compliant with NFPA72 requirements and listed to UL2572, ULC-S576 and UL864 for Mass Notification and Fire Voice applications (VM-3240VA, VM-3240E, VX-2000DS and RM-200M). It incorporates such emergency functions as continuous speaker line monitoring and a built-in voice alarm. This easy-to-install system also offers PA broadcasting, paging and BGM functions that ensure consistently high intelligibility. The VM-3000 Series is digitally audio processed and controlled, and may be set up and operated directly by using the controls and LCD display on the front panel. A dedicated PC software configuration capability is also provided for establishing settings via LAN. The incorporation of wide-ranging functional capabilities, superb reliability and versatility make the VM-3000 a highly cost-effective emergency broadcast system.

»» Voice Alarm System Amplifier

VM-3240VA AMQ

- Multifunction amplifier that comes with audio inputs including a background music input, and a speaker output section which has an internal attenuator and a 6-output selector.
- Permits not only general-purpose broadcast, but also Emergency broadcast which gives pre-recorded instructions in an emergency situation
- Features a surveillance function which automatically checks the system for failures.
- Emergency broadcasts can be made from an optional RM-300MF First Responder Microphone as well as from the amplifier, and can be remotely controlled from external equipment

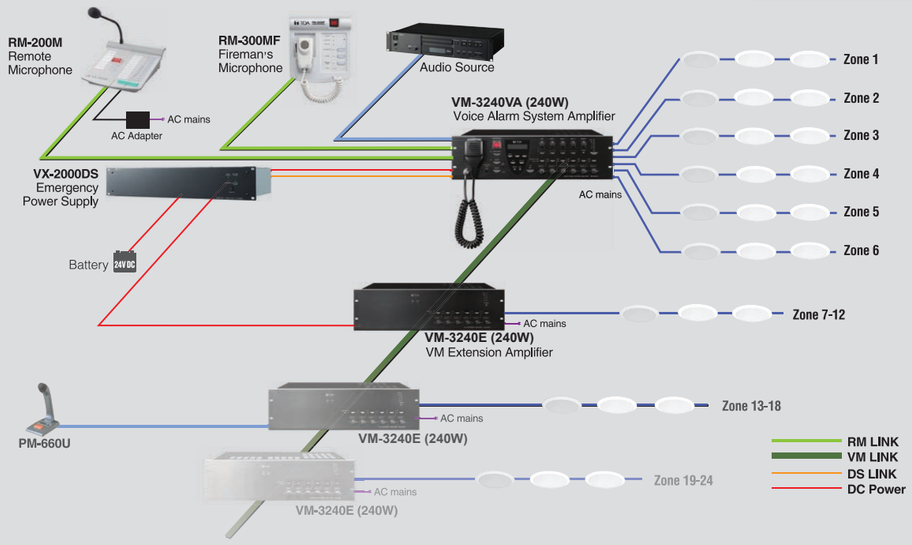
»» VM Extension Amplifier

VM-3240E AMQ

- Adds additional zones to the VA system
- Local all-call paging

SYSTEM EXAMPLE

First Responder Microphones & Accessories on page 107



VM-3000 Series Integrated Voice Evacuation System

*0 dB = 1V

Model	VM-3240VA	VM-3240E
Power Source	120V AC, 60Hz	
Power Consumption	690 VA (at rated output), 260 W (According to UL60065), 63 W (at no signal)	
Rated Output	240 W, 21 Ω (according to UL60065); 200 W, 25 Ω (according to UL2572); 200 W, 25 Ω (according to CAN/ULC-S576 with separate UPS); 100 W, 50 Ω (according to CAN/ULC-S576); (All total of Speaker output 1 – 6 and Direct Output)	
Input	Input 1 – 3: –50 dB* (MIC) / –10 dB* (LINE) (changeable), 600Ω, electronically balanced, combined XLR connector (female) / phone jack Input 4: –50 dB* (MIC) / –10 dB* (LINE) (changeable), 600Ω, electronically balanced, removable terminal block (14 pins) BGM 1 – 2: –10 dB*, 10 kΩ, unbalanced, RCA pin jack External AMP Input: 70 V line, removable terminal block (14 pins)	External amplifier Input: 70 V line, removable terminal block (14 pins) Local Input: –50 dB* (MIC) / –10 dB* (LINE) (changeable), 600 Ω, electronically balanced, removable terminal block (14 pins)
Output	Speaker output 1 – 2: Max. (240 W) per output Speaker output 3 – 6: Max. (100 W) per output Speaker output 1 – 6: Total within rated output, removable terminal block (14 pins) Allowable minimum load: 245 Ω (20 W) at 70 V line for speaker line failure detection Direct output: Direct output from internal or external amplifier, removable terminal block (16 pins) Recording output BGM/Paging: 0 dB*, 10 kΩ, unbalanced, RCA pin jack Ground faults detection: 0 Ω Wire to wire faults detection: 0 Ω	Speaker output 1 – 2: Max. (240 W) per output Speaker output 3 – 6: Max. (100 W) per output Speaker output 2 – 6: Total within rated output, removable terminal block (14 pins) Allowable minimum load: 245 Ω (20 W) at 70 V line for speaker line failure detection Direct output: Direct output from internal or external amplifier, removable terminal block (16 pins)
RM Link	Input 1 – 2: Connecting the RM-300MF/200M Remote Microphone, RJ45 female connector, Maximum distance: Total 800 m between this unit and remote microphones, Link cable: Category 5 Shielded Twisted-Pair straight cable (CAT5-STP)	--
Network I/F	10BASE-T/100BASE-TX (selectable by automatic negotiation), RJ45 female connector; Maximum distance: 100 m between this unit and a switching hub; 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: under 2mA, removable terminal block (14 pins) Output 1 – 8: Isolated open collector output, withstand voltage: 30V DC, operating current: under 10mA, removable terminal block (14 pins)	
Emergency Control	Input 1 – 5: No-Voltage make contact input, open voltage : 24V DC, short-circuit current: under 2mA, 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	
Dimensions	482 (W) x 132.6 (H) x 431.2 (D) mm (18.98" x 5.22" x 16.98")	482 (W) x 132.6 (H) x 407 (D) mm (18.98" x 5.22" x 16.02")
Weight	16.5 kg (36.38 lbs)	
UL Code	UL2572, ULC-S576 and UL864 for Mass Notification and Fire Voice Applications	
Accessory	AC power cord (2m) × 1, Emergency microphone × 1, Plastic foot × 4, Plastic foot mounting screw × 4, Removable terminal plug (14 pins) × 3, Removable terminal plug (16 pins) × 1, Link cable (3m) × 2, Setting software (CD) × 1	AC 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
Option	Input transformer: IT-450	--

VM-3000 Series First Responder Microphones & Optional Accessories

»» First Responder Microphone

RM-300MF

- Equipped with an emergency activation button, permitting pre-recorded evacuation and alert announcements to be activated, and microphone announcements to be made in emergency situations

»» Remote Microphone

RM-200M

- Up to four remote microphones can be connected but the maximum connection length for all cables is approximately 800 meters
- Emergency activation button is equipped with a cover in case of accidental selection
- An external microphone input terminal is provided to allow using a headset microphone, along with built-in internal compressor circuitry
- TALK button may be a PTT or lock-type

»» First Responder Microphone Extension

RM-320F

- By connecting the RM-320F Fireman's Microphone Extension to the RM-300MF, the number of function buttons can be expanded
- Zone selection or failure acknowledgement function can be assigned to such function keys.

»» Remote Microphone Extension Unit

RM-210

- Up to four can be connected to a remote microphone for up to 50 zone selection buttons
- Emergency activation button is equipped with a cover

»» Emergency Power Supply Unit

VX-2000DS

- Manages DC power to equipment
- Supports 2 x 12 V sealed lead batteries fully charged
- DC distribution for up to 6 units
- *See page 104 for specs.*

»» Input Transformer

IT-450**

- Used for electrical isolation of the audio inputs

»» Software

- Used to configure settings, not required for daily operation.
- Software can be downloaded from www.TOAcanada.com

VM-3000 Series Integrated Voice Evacuation System

Model	RM-300MF	RM-320F
Power Source	24V DC (operating range: 15 – 40V DC, supplied from the VM-3000 system or VX-2000DS.)	--
Current Consumption	120mA (RM-300MF), 660mA (with 3 RM-320F connected)	180mA max. (RM-320F)
Frequency Response	200 – 15,000 Hz	--
Distortion	Under 1%	--
S/N Ratio	Over 55 dB	--
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 cable for LAN (CAT5-STP), M3 screw terminal	--
No. of Connectable RM-320F	Max. 3 units	--
No. of Function Keys	--	20
Operation	Emergency key, Evacuate key, Alert key, Emergency reset key, CPU switch, Reset switch	--
Finish	ABS resin, blueish gray	ABS resin, blueish gray
Dimensions	200 (W) x 215 (H) x 82.5(D) mm (7.87" x 8.46" x 3.25")	175(W) x 215(H) x 70(D)mm (6.89"x8.46"x 2.76")
Weight	1.1 kg (2.43 lbs)	700 g (1.54 lbs)
Accessory	Wall mounting bracket unit x 1, Wall mounting screw x 2, Electrical box mounting screw x 2	Wall mounting bracket x 1, Wall mounting screw x 2

Model	RM-200M	RM-210
Power Source	24V DC Power input jack: Non-polarity type Usable power input plug*2: Outer diameter ø5.5mm, inner diameter: ø2.1mm, length: 9.5mm	--
Current Consumption	Under 100mA	20mA max. (in terms of RM-2000M's DC power input)
Audio Output	0dB*: 600Ω, balanced	--
Frequency Response	100 – 20,000 Hz	--
Distortion	Under 1%	--
S/N Ratio	Over 60 dB	--
Microphone	Unidirectional electret condenser microphone	--
Volume Control	Microphone volume control	--
Connection Cable and Connection	Category 5 Shielded Twisted-Pair cable, RJ45 connector	--
No. of Function Keys	Number of keys: 10 Function: "Broadcast zone selector" or "Automatic general broadcast Announcement Start" (Either function is assigned to individual keys by the dedicated software.)	10
Finish	ABS resin, blueish gray	ABS resin, blueish gray
Dimensions	190 (W) x 76.5 (H) x 215 (D) mm (7.48" x 3.01" x 8.46") (Gooseneck microphone excluded)	175(W) x 215(H) x 70(D)mm (6.89"x8.46"x 2.76")
Weight	750 g (1.65 lbs)	350 g (0.77 lbs)
Accessory	Link cable (3 m) x 1	CATS cable x 1
UL Code	UL2572, ULC-S576 and UL864 for Mass Notification and Fire Voice Applications	--
Option	Wall mounting bracket: WB-RM200	Wall mounting bracket: WB-RM200

Integrated Voice Evacuation System

The VM-2000 Series represents a highly cost-effective solution for building management and owners. Designed specifically for effective communications in a building, VM-2000 Series units are not conventional power amplifiers with just a few added features. They are optimized to deal with emergency situations to alert building occupants as well as routine announcements and BGM. An indispensable part of building and design management today, communications infrastructures can effectively reach various audiences through paging, calls routed to selected areas and priority emergency announcements for the entire building.

System Management Amplifier

VM-2240 L

- The unit comes with 4 audio inputs including the background music input, and the speaker output section which has an internal attenuator and 5-zone selector.
- It permits not only general-purpose broadcast, but also Emergency Broadcast based on the EN60849 Standard which gives pre-recorded voice instructions(*1) in the emergency situation.
- Broadcast can be made from an optional RM-200M Remote Microphone as well as from the amplifier, and can be remotely controlled from external equipment.
- The unit features the surveillance function(*2) which automatically checks the system for failures.

*(*1) An optional EV-200M Voice Announcement Board is required.*
*(*2) An optional SV-200MA Surveillance Board is required.*

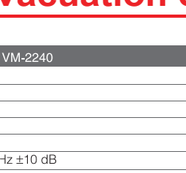
Integrated Voice Evacuation System

Model No.	VM-2240
Power Requirement	AC: mains, 50/60 Hz
Rated Output	240 W
Frequency Response	50 – 16,000 Hz
Distortion	Under 1%
Signal-to-Noise Ratio	Over 60 dB
Tone Control	Bass:100 Hz ±10 dB, Treble: 10 kHz ±10 dB
Input	Inputs 1 – 3 Telephone paging input BGM 1 - 2 Power amplifier input External speaker line input
Output	Speaker output Direct speaker line output Line output Recording output Preamplifier output
Control Input and Output	(1) External control input •Activation of messages •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, relay, no-voltage make contact output, transfer type, withstand voltage: 30 V DC, 125 V AC, contact current: under 7 A (DC), under 7 A (AC)
Surveillance Input and Output	Input: No-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA Output: Open collector output, withstand voltage: 30 V DC, control current: under 10 mA
Chime Tone	Built-in chime
Function	Two units stacking (VM-2120 or VM-2240) Emergency broadcast (sequential control) Broadcast priority control Surveillance (failure detection) function Power supply to only one Remote Microphone (RM-200M) Line resistance: Under 24 Ω (one way)
Dimensions	419 (W) ×143.3 (H) × 355.7 (D) mm **[16.5" (W) x 5.7" (H) x 14" (D)]**

VM-2000 Series Microphones and Optional Accessories

Remote Microphone

RM-200M



- Up to four remote microphones can be connected but the maximum connection length for all cables is approximately 800 meters
- Emergency activation button is equipped with a cover in case of accidental selection

Remote Microphone Extension Unit

RM-210

- Up to four can be connected to a remote microphone for up to 50 zone selection buttons
- Emergency activation button is equipped with a cover
- *See spec chart on page 68*

Voice Announcement Board

EV-200M

- Single source playback
- 8 playback programs

Surveillance Board

SV-200MA

- Permits monitoring of individual speake line or power amplifier failures for status indication

Mounting Bracket

MB-36

Input Transformer

IT-450**

Speakers for Voice Evacuation and Mass Notification

SC-630TU Paging Horns

70V/100V line weatherproof (IP65) paging horn speaker.
Certified to UL 1480 UEAY standards.
** Special order product

Product details and specs on page 5

CS-64U, CS-154U, CS-304U Paging Horns**

CS-64U CS-154U, CS-304U

70V/100V line weatherproof (IP65) paging horn speaker.
Certified to UL 1480 UUMW and CAN/ULC S541-07 standards.

Product details and specs on page 3

PC-580RU, PC-580RVU Series Ceiling Mount Speaker

HY-BC580U

High-performance ceiling speaker for use in mass notification, voice evacuation, emergency paging and everyday paging and background music. Meets CAN/ULC S541-07, UL 1480 UUMW (Fire alarm signaling), and UL 2043 (use in air handling spaces) when using the HY-BC580U back can. 25V and 70V transformer taps up to 5W. 8" in-ceiling speaker for high quality applications.

Product details and specs on page 2

PE-304BU/WU, PE-604BU/WU Pendant Speakers

World's first Mass Notification Pendant Speaker. 8Ω and 25V/70V/100V operation,changeable with a rotary switch. Certified to UL 1480 UUMW and CAN/ULC S541-07standards.

Product details and specs on page 8

F-122CU2, F-2852CU2, F-2322CU2, F-2352CU Ceiling Mount Speaker

Wide Dispersion ceiling speaker for use in mass notification, voice evacuation, emergency paging and everyday paging and background music. Certified to UL 1480 (UUMW), UL2043, CAN/CSA C222.2 No. 205 (UEAY7).

Product details and specs on page 11

BS-680U Box Speaker

70V/25V line, wall or in-wall mounting box speaker.
Certified to UL 1480 UUMW and CAN/ULC S541-07 standards. Ideally suited for voice alarm applications.

Product details and specs on page 7

Voice Evacuation Systems

Introducing a scalable new system for configuring versatile and highly effective PA applications. The SX-2000 Series is in compliance with the EN 54 Standard, and features new matrixing capabilities, so a single system can have its components distributed in different locations, yet under centralized control. Ideal for large-scale installations ranging over multiple buildings as well as local systems, the versatile SX-2000 Series is particularly well-suited for airports and railway stations, factories, shopping malls and large offices. Versatility is ensured by such features as a dual power source and redundant backups for fail-safe operation, making it a cost-effective solution for virtually any installation, and without long lead times or the expense of a custom system. A first responders microphone feature is also included, for enhanced effectiveness in an emergency. SX-2000 Series components enable creation of an ideal system for all sorts of application requirements. *(VX-2000DS required with SX-2000SM/AO/CI/CO, SX-2100AI/AO, VP-2064/2122/2241/2421)*

SX-2000 Series Audio Management System

System Manager

SX-2000SM

- Used in combination with an optional audio input unit audio output unit and remote microphone
- Performs audio signal routing and priority control for the entire system
- Equipped with 8 control inputs, 8 control outputs, failure status outputs, failure data inputs/switches, access indicators, mode indicators and failure indicators
- Memory storage for 32 message files

Audio Input Unit

SX-2100AI

- It features modular construction that allows it to handle from two to eight inputs per unit
- Audio signals are transmitted digitally to the audio output unit, but an analog audio output function (1 channel) enables simultaneous all-zone calls for use in emergency situations.

Audio Output Unit

SX-2100AO

- 8 outputs, 600 ohms balanced
- Two channels of local audio inputs
- Includes an amplifier switching function that automatically switches the power amplifier to the standby amplifier if the power amplifier fails, and a surveillance function that self-diagnoses the speaker lines.

Audio Output Unit

SX-2000AO

- One control IN/OUT interface allows the number of control inputs and outputs to be increased.
- It is equipped with an emergency audio input and a 24 V emergency cutoff input
- Has two power inputs and can support a dual-redundant power supply system.

Control Input Unit

SX-2000CI

- Equipped with 32 control input channels.
- Control input line failure can be detected by connecting resistors to its line.
- Has a function to supply a stabilized 24 V DC.

Control Output Unit

SX-2000CO

- Equipped with 32 control output channels.
- The indicators on the front panel monitor the control output line status.
- Control output status when the CPU turns off can be set.

Power Amplifier

VP-2064
VP-2122
VP-2241
VP-2421

- Features a 240 W-by-1 channels configuration
- Uses the VM-3000 Series Power Amplifier Module per channel
- Requires VP-200VX - VP amplifier input module

First Responder Microphones & Accessories on page 68, Modules on page 69

SX-2000 Series Audio Management System

Model No.		SX-2000SM System Manager
Power Source		24V DC, 2 power inputs construction enables dual- redundant power supply. (Operational range: 20V - 40V DC)
Current Consumption		Under 0.8A (when operated on 24V DC)
SX Link	Network I/F Matrix System Specification	2 × 100BASE-TX circuits, RJ45 connector Bus: 16 Audio input: Max. 64 ch, Audio output: Max. 256 zones Contact input: Max. 1416, Contact output: Max. 1416 Priority control: 512 steps Event log: Max. 1,000 events × 32 files Failure log: Max. 100 events × 32 files
	Matrix System Configuration (Maximum connectable units)	SX-2000AI/2100AI: Max. 8 units, SX-2000AO/2100AO: Max. 32 units, SX-2000CI: Max. 32 units, SX-2000CO: Max. 32 units, RM-200SA: Max. 64 units (up to 8 RM-200SA per SX-2100AI)
LAN	Connection Cable/Device	Shielded Category 5 twisted pair cable (CAT5-STP)
	Network I/F	1 × 10 BASE-T/100 BASE-TX circuit, RJ45 connector for maintenance use
	Network Protocol	TCP/IP
	Connection Cable	Shielded Category 5 twisted pair cable for LAN (CAT5-STP)
Analog Link	Input/Output Connector	Output: 2, RJ45 connector
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)
DS Link	Usable Unit	VX-2000DS
	Connector/Cable	2 interface, RJ45 connector, Shielded Category 5 twisted pair cable (CAT5-STP)
Failure Data Input		3 inputs (ACK/RESET/LAMP TEST)
Failure Data Output		4 outputs (CPU FAULT/GENERAL FAULT/CPU OFF/BUZZER)
Control Input		8 inputs
Surveillance Section for The Control Input Lines		Connection resistance to make the function inactive: 20kΩ ±5% Connection resistance to make the function active: 10kΩ ±5% Connector cable: Twisted pair cable (shielded type is recommended) Maximum cable distance: 10m
Control Output		8 outputs
24V DC Output	Maximum Feeding Current	100mA
	Output Voltage	24V DC ±10% or less
Memory Card		Insertion slot: 1 (supplied CF card 128MB)

Model No.		SX-2100AI Audio Input Unit
Power Source		24V DC, 2 power inputs construction enables dual- redundant power supply. (Operational range: 20V - 40V DC)
Current Consumption		Under 1.5A (when operated on 24V DC)
Audio Input		8 inputs, module construction (max. 4 modules)
Control Input		16 inputs
Control Output		16 outputs
Audio Input Characteristic		Sampling frequency: 48kHz
SX Link	Network I/F	2 × 100BASE-TX circuits, RJ45 connector
	Connection Cable/Device	Shielded Category 5 twisted pair cable (CAT5-STP).
Analog Link	Input/Output Connector	Input: 1 input, RJ45 connector Output: 1 output, RJ45 connector
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)

Model No.		SX-2100AO Audio Output Unit
Power Source		24V DC, 2 power inputs construction enables dual- redundant power supply. (Operational range: 20V - 40V DC)
Current Consumption		Under 1.2A (when operated on 24V DC)
PA Link	Audio Output	8 outputs and standby AMP, 0dB*, suitable load: 600Ω or above, electronically-balanced, RJ45 connector
	Audio Output Characteristic	Frequency response: 20 – 20kHz Sampling frequency: 48kHz D/A converter: 24 bit
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)
Local Audio Input		
	Audio Input	2 inputs, 0dB*, 10kΩ, electronically-balanced, RJ45 connector
	Audio Input Characteristic	Frequency response: 20 – 20kHz Sampling frequency: 48kHz D/A converter: 24 bit
	Control Input	2 inputs
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)
SX Link	Network I/F	2 × 100 BASE-TX circuits, RJ45 connector
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)
Analog Link	Input/Output Connector	Input: 1 input, RJ45 connector/Output: 1 output, RJ45 connector
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)
DS Link	Usable Unit	VX-2000DS
	Connector/Cable	2 interface, RJ45 connector, Shielded Category 5 twisted pair cable (CAT5-STP)
CI/CO Link	Usable Unit	SX-2000CI or SX-2000CO
	Connector/Cable	1 interface, RJ45 connector, Shielded Category 5 twisted pair cable (CAT5-STP)
Speaker Line Failure Detection Section		
	Connection Cable	Removable terminal block, SP/AMP: 8 pins, STANDBY AMP: 2 pins, AWG 24 – AWG 16
	Maximum Input	100Vrms, 5Arms
	Fault Detection System	Short circuit, open circuit, ground fault
	Method	Impedance or End of line
	End of Line	In case of normal: Terminated by 470kΩ between the speaker line and the shielded In case of open: Opened between the speaker line and the shield
	Impedance	Minimum load: 2kΩ (5W) at 100V line
Control Input		8 inputs
Control Output		8 outputs

*0dB = 1V

First Responder Microphones & Accessories on page 68, Modules on page 69

SX-2000 Series

Model No.		SX-2000AO Audio Output Unit
Power Source		24V DC, 2 power inputs construction enables dual- redundant power supply. (Operational range: 20V - 40V DC)
Current Consumption		Under 0.79A (when operated on 24V DC)
Audio Output		8 outputs, 0dB*, suitable load: 600Ω or above, electronically-balanced output changeable into transformer-balanced output (optional)
Audio Output Characteristic		Frequency response: 20 – 20kHz Sampling frequency: 48kHz D/A converter: 24 bit
Emergency Line Input		Emergency signals switched and sent to Input 1 (H, C, E) by relay
Emergency-Cutoff 24V Input		1 input, input current: under 5mA
SX Link	Network I/F	2 × 100 BASE-TX circuits, RJ45 connector
	Connection Cable/Device	Shielded Category 5 twisted pair cable (CAT5-STP)
Analog Link	Input/Output Connector	Input: 1 input, RJ45 connector/Output: 1 output, RJ45 connector
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)
CI/CO Link	Usable Unit	SX-2000CI or SX-2000CO
	Connection Cable	1 interface, RJ45 connector, Shielded Category 5 twisted pair cable (CAT5-STP)
Control Input		8 inputs
Control Output		8 outputs

*0dB = 1V

Model No.		SX-2000CI Control Input Unit
Power Source		24V DC (operational range: 20V – 40V DC) (Operational range: 20V - 40V DC)
Current Consumption		0.7A or less (maximum value in the power operating range) 0.55A or less (when operated on 24V DC)
Control Input		32 inputs, no-voltage make contact input, open voltage: 24V DC, short-circuit current: 2mA, photo coupler input, removable terminal block (16 pins)
Surveillance Section for The Control Input Lines		Connection resistance to make the function inactive: 20kΩ ±5% Connection resistance to make the function active: 10kΩ ±5% Connector cable: Twisted pair cable (shielded type is recommended) Maximum cable distance: 10m (32.81 ft)
CI/CO Link	Input/Output Connector	Input: 1 input, Output: 1 output RJ45 connector
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP) (1 pair of data wire + 1 pair of control wire)
24V DC Output	Output Voltage	24V DC ±10% or less
	Maximum Feeding Current	100mA
	Connector	Removable terminal block (2 pins)
When operating in stand-alone mode with SX-2000CO		
Priority Control		No priority control, Terminal number-based priority, Last-in-first-out priority and First-in-first-out priority
Connection Cable	Main cable	Shielded CPEV cable* or STP Category 5 straight cable * When connecting the power supply to each unit: 1 pair for data line When connecting the power supply only to the SX-2000CI: 1 pair data line and 2 pairs power line for a redundant power supply system, or 1 pair data line and 1 pair power line for a non-redundant power supply system
	Brach cable	STP Category 5 straight cable (with RJ45 connectors)
Maximum Cable Distance		800m
Maximum Delay Time		300ms

Model No.		SX-2000CO Control Output Unit
Power Source		24V DC, 2 power inputs construction enables dual- redundant power supply. (Operational range: 20V - 40V DC)
Current Consumption		Under 0.29A (when operated on 24V DC)
Control Input		32 outputs
CI/CO Link	Input/Output Connector	Input: 1 input, Output: 1 output RJ45 connector
	Connection Cable	Shielded Category 5 twisted pair cable (CAT5-STP)
When operating in stand-alone mode with SX-2000CI		
Connection Cable	Main cable	Shielded CPEV cable* or STP Category 5 straight cable * When connecting the power supply to each unit: 1 pair for data line When connecting the power supply only to the SX-2000CI: 1 pair data line and 2 pairs power line for a redundant power supply system, or 1 pair data line and 1 pair power line for a non-redundant power supply system
	Brach cable	STP Category 5 straight cable (with RJ45 connectors)
Maximum Cable Distance		800m
Maximum Delay Time		300ms

Model	VP-2064 / VP-2122 / VP-2241 / VP-2421
Power Source	28V DC (Operational range: 20V - 40V DC)
Current Consumption (at 1/8 rated output)	VP-2064/VP-2122: 4.8A in total, VP-2241: 4.8A, VP-2421: 7.6A
Impedance	VP-2064: 167Ω (100V), 83Ω (70V), 41Ω (50V) VP-2122: 83Ω (100V), 41Ω (70V), 21Ω (50V) VP-2241: 41Ω (100V), 21Ω (70V), 10Ω (50V) VP-2421: 24Ω (100V), 12Ω (70V), 6Ω (50V)
Rated Output	VP-2064:60W × 4, VP-2122:120W × 2, VP-2241: 240W × 1, VP-2421: 420W × 1
Number of Module Slot	VP-2064: 4, VP-2122: 2, VP-2241/VP-2421: 1
Frequency Response	40 – 16kHz
Distortion	Under 1%
S/N Ratio	Over 80dB

First Responder Microphones & Accessories on page 68, Modules on page 69

SX-2000 Series

SX-2000 Series First Responder Microphones & Optional Accessories

First Responder Microphone

RM-200SF

- Equipped with an Emergency key, permitting it to be used as a remote microphone for emergency broadcast.
- Zone selection and microphone announcement can be made at the time of emergency broadcast.
- Offers a surveillance function to detect failures including microphone element failure.

Remote Microphone

RM-200SA

- Equipped with 13 function switches
- Can be used to select individual zones or zone groups a covered switch and corresponding indicators
- An external microphone input terminal is provided to allow using a headset microphone, along with built-in internal compressor circuitry
- TALK button may be a PTT or lock-type
- Emergency activation button is equipped with a cover

Terminal Unit

RM-200RJ

- Designed to convert the RJ45 connector into a screw terminal block
- Used to connect between a trunk cable and a feeder cable in wiring a remote microphone
- Built-in indicator shows the voltage status of DC power cable

Remote Microphone Extension Unit

RM-210

- Up to four remote microphones can be connected to a remote microphone

Emergency Power Supply Unit

VX-2000DS

- Supplies DC power to equipment
- Supports 2x/2v battery units for backup supply
- Distribution for 6 DC units
- Requires RCP-1000-24

External Power Supply

RCP-1000-24

- SX-2000 power supply for VX-2000DS
- Optional rack kit available: RCP-1UI

External Power Supply Rack Kit

RCP-1UI

- SX-2000 power supply rack kit

Model No.	RM-200SF First Responder Microphone
Power Source	24V DC (supplied from the SX-2100AI audio input unit)
Current Consumption	Under 240mA
Audio Output	0dB*, transformer-balanced
Distortion	Under 1%
Frequency Response	200 – 15kHz
S/N Ratio	Over 55dB
Microphone	Unidirectional dynamic microphone with talk key, AGC (ON/OFF selectable), microphone element failure detectable by using a built-in small oscillator
Connection Cable	Shielded CPEV cable or Shielded Category 5 twisted pair cable (CAT5-STP)
No. of Connectable Expansion	Max. 5 units
Monitor Speaker	Built inside
Operation	Emergency key, Function keys, CPU switch, Reset switch
Indicator	Status indicators, Power indicator, Failure indicator, CPU indicator, Selection indicators, Microphone indicator, Broadcast status indicator
Dimensions	200 (W) × 215 (H) × 95 (D)mm

*0dB = 1V

Model No.	RM-200SA Remote Microphone
Power Source	24V DC (supplied from the SX-2100AI audio input unit) or DC input power supply connector (when the optional AD-246 power supply unit used)
Current Consumption	Under 240mA
Audio Output	0dB*, 600Ω, balanced
External Microphone Input	–40dB*, 2.2kΩ, unbalanced, mini jack
Distortion	Under 1%
Frequency Response	100 – 20kHz
S/N Ratio	Under 60dB
Microphone	Unidirectional electret condenser microphone with AGC (ON/OFF selectable)
Chime	Built inside, monitoring possible using built-in speaker
Level Control	Microphone sensitivity control, Monitor speaker volume control, Chime (adjustable using the software)
Connection Cable	Main line: Shielded CPEV cable or Shielded Category 5 twisted pair cable (CAT5-STP) Branch line: Shielded Category 5 twisted pair cable (CAT5-STP)
No. of Connectable Expansion	Max. 4 units
Monitor Speaker	Built inside
Indicator	Power indicator, Failure indicator, Function switch indicator, Covered switch indicator, Broadcast switch indicator
Dimensions	190 (W) × 76.5 (H) × 215 (D)mm (excluding microphone)

*0dB = 1V

Model No.	RM-210 Remote Microphone Extension
Current Consumption	20mA max. (in terms of RM-200SF/200SA's DC power input)
Connection	Connection by way of dedicated cable
Number of Function Keys	10
Dimensions	110 (W) × 76.5 (H) × 215 (D)mm

Model	VX-2000DS
Power Source	120 V AC, 60 HZ
Power Consumption	240 W max.
Charging Method	Trickle charging
Charging Current	5 A max.
Charging Output Voltage	27.3 V ±0.3 V (at 25 °C) Temperature correction coefficient: -40 mV/°C)
Power Supply Input	6, M4 screw terminal, distance between barriers: 11mm
DC Power Output	No. of connectable equipment: Up to 3 VM-3240 AMQ, M4 screw terminal, distance between barriers: 11mm

SX-2000 Series Audio Management System

SX-2000 Series Modules

Remote Microphone Interface Module

SX-200RM

- Dedicated remote microphone module for the audio input unit
- Can be used to connect two remote microphones
- Input sensitivity can be adjusted using the knobs located near the RJ45 connector

Stereo Select Input Module

D-936R

- Four stereo connector pairs
- Unbalanced line level
- Individual input gain
- Programmable switching between connector pairs or summing mode
- Occupies two input channels
- RCA pin jack connectors

Mic/Line Input Modules (24 bits Monaural Type)

D-921F

- Two balanced mic or line level inputs
- 24-bit A/D converters
- Adjustable input gain
- Phantom power
- XLR-F connectors

Mic/Line Input Module (24 bits Monaural Type)

D-921E

- Two balanced mic or line level inputs
- 24-bit A/D converters
- Adjustable input gain
- Phantom power
- Phoenix-style terminal block

Mic/Line Input Module (20 bits Monaural Type)

D-922F

- Two balanced mic or line level inputs
- 20-bit A/D converters
- Adjustable input gain
- Phantom power
- XLR-F connectors

Mic/Line Input Module (20 bits Monaural Type)

D-922E

- Two balanced mic or line level inputs
- 20-bit A/D converters
- Adjustable input gain
- Phantom power
- Phoenix-style terminal block connectors

IP Interface Module

SX-200IP

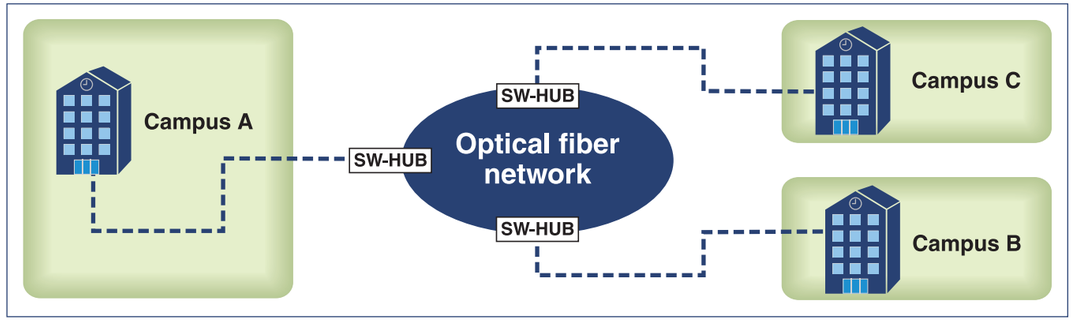
- 10BASE-T/100BASE-TX (Automatic-Negotiation)
- Voice sampling frequency of 16 kHz, 8 kHz (controllable on the software); 48 kHz, sample rate is used for SX-2000 system only
- Voice encoding method - Sub-band ADPCM, Cryptosystem
- Voice Packet Loss Recovery - Silence insertion
- Allows for a page to be made from the N-8000 Series Stations (N-8600MS, N-8610MS only) to the SX-2000 Series
- *See page 92 for spec chart.*

Power Amplifier Input Module

VP-200VX

- Designed to be used in conjunction with the VP-2064, VP-2122, VP-2241, VP-2421 power amplifier

Distributed Control System Example (University)



Rack Mount Equipment Network Audio & Others

Digital Message Repeaters

Spotlight

Adding the TOA EV-700 Digital Announcer to your existing PA system provides numerous benefits for large facilities including retail stores, shopping malls, schools, factories and railway lines. The EV-700 permits easy manual distribution or automatic activation by external device of timed and repeat announcements, BGM and other audio programs with excellent sound quality.

Digital Announcer

EV-700

- Recording in high-quality WAV format (44.1 kMz/32 kMz, 16 bit)
- Supplied a memory card (1 GB)*
- Automatic gain control (AGC) function for adjusting the playback volume to a reference level
- Creation/editing/storage on a memory card (storage capacity 32,768 sound source files and 256 audio programs)
- 35 preinstalled sound source files
- Pre-recorded emergency announcements are stored for immediate broadcast when needed
- R.E.M. (Recording Endless Message) function enables operators to create/initiate repeated play back of emergency announcements quickly and evacuate occupants
- The EV-700 can be operated in conjunction with a variety of external devices
- On-screen GUI facilitating intuitive remote storage of sound source files and activation of broadcasts
- Full-Function Mode for management of detailed settings by equipment administrators or Simple Mode for basic operation

Model	EV-700
Power Source	Supplied from an external 24 V DC (21.6-26.4V)/400 mA power supply, removable terminal black (2 pins), or from an optional AD-246 AC Adapter
Power Consumption	10 W
Wave Format	44.1 kHz 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: −55 dB*1 (microphone input volume control in maximum position), 600 Ω, unbalanced, ø6.3 phone jack (2P) LINE(rear): −20 dB*1 (line input volume control in maximum position), 10 kΩ, unbalanced, Removable terminal block (12 pins) LINE(front): −29 dB*1 (line input volume control in maximum position), 10 kΩ, unbalanced, RCA pin jack
Audio Output	LINE 1, 2: 0 dB*1, 600 Ω, unbalanced, Removable terminal block (12 pins) Headphones: 0 dB*1, 100 Ω, monaural, ø3.5 mini jack (3P)
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 44.1 kHz sampling rate) or about 4 hours (at 32 kHz sampling rate)
Dimensions	420 (W) x 44 (H) x 222 (D) mm (16.54" x 1.73" x 8.74")
Accessory	Memory card (Containing prerecorded audio files) x 1, Rubber foot x 4, Removable terminal plug (2 pins) x 1, Removable terminal plug (8 pins) x 2, Removable terminal plug (16 pins) x 2, Removable terminal plug (12 pins) x 2, Front cover fixing screw x 2, CD (setting software) x 1
Option	AC adapter: AD-246, Rack mounting bracket: MB-15B

*1 0 dB = 1 V; *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.

Note:
Line input and line output can be converted to balanced type using an optional IT-450 transformer.
CompactFlash is a trademark of SanDisk Corporation.

Optional Accessories

Rack-mounting Bracket

MB-15B

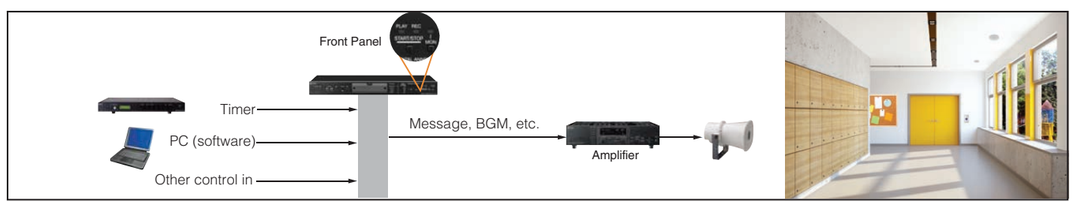
AC Adapter

AD-246

Accessory Reference on page 155

Interactive operation with external devices

The EV-700 can be operated in conjunction with a variety of external devices.



Digital Message Repeaters

Sound Repeater

EV-20R

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

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	10 W (rated output)
Wave Format	44.1 kHz sampling frequency, 16-bit PCM (monaural)
Frequency Response	20 Hz - 20 kHz ±3 dB (1 kHz) 50 Hz - 14 kHz ±3 dB (IT-450 mounted, 1 kHz)
Distortion	1% or less (1 kHz, rated output)
Recording System	USB data transfer or analog recording
Control Input	Play 1-4, stop: No-voltage make contact input, pulse make length: 200 ms, open voltage: 30 V DC, short-circuit current: 10 mA removable terminal block (22 pins)
Control Output	Busy: Contact capacity: 30 V DC/0.5 A, removable terminal block (22 pins)
Input	Input/Recording input: Mic: -60 dB*, 2.2 kΩ/Line: -20 dB*, 10 kΩ, (Mic/Line changeable), unbalanced, phone jack Line input: 0 dB*, 10 kΩ, unbalanced, removable terminal block (22 pins)
Output	Line output: 0 dB*, 600 Ω, unbalanced, removable terminal block (22 pins) Headphone output: 0 dB*, 100 Ω, unbalanced, phone jack Speaker output: 3 W, 8 Ω, removable terminal block (22 pins)
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 on the supplied CD-ROM.)
Max. Recording Time	6 min
Message Delay Time	0, 2 s or 4 s (selectable)
Playback Interval Time	∞, 0, 5 s, 10 s, 30 s, 1 min, 5 min, 10 min, 30 min, or 1 hr (selectable)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	90% RH or less (no condensation)
Finish	Case: ABS resin, black
Dimensions	210 (W) x 44.2 (H) x 181 (D) mm (8.27" x 1.74" x 7.13") (excluding projection)
Weight	730 g (1.61 lbs)
Accessory	CD-ROM (USB data transfer software and sample chimes recorded) x1, Unbalanced-phone plus x 1, USB cable (1 m) x 1, Removable terminal plug (22 pins) x 1, Rubber foot x 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
USB Data Transfer Software Operation Environment	
Personal Computer	Windows PC (equipped with the USB terminal)
Main Specifications	CPU: Pentium compatible CPU of 300 MHz or faster Memory: 128 MB or more Free disk space: 10 MB or more (space for message storage excluded) Optional Drive: CD-ROM drive
OS	Windows XP (32-bit edition) / Vista (32-bit edition) / 7 (32-bit edition)

*0 dB = 1 V

Note: Line input and line output can be converted to balanced type using an optional IT-450 transmitter.
Pentium is a trademark of Intel Corporation. Windows is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries. Other company names and products are also trademarks of individual companies.

Optional Accessories

Rack-mounting Bracket
MB-WT3

Rack-mounting Bracket
MB-WT4

AC Adapter
AD-246

Accessory Reference on page 155

Optional Accessory: Rack Equipment for Mixers/Amplifiers

Perforated Vent Panel
PF-013B**

- The PF-013B is a perforated panel of one unit size for use in an equipment rack. It can be mounted in any EIA Standard rack.

Accessory Reference on page 155

Remote Mixer

Remote Mixer
SO-MIX-T-24V

- Microphone and line level input
- Two inputs, one balanced output
- Individual volume control with joint bass and treble control
- Automatic mix with selectable Talkover function, 30dB, Talkover time: 3 seconds.
- Accessory 2-gang wall plate: SO-MIX-PLATE

Model	SO-MIX-T-24V
Power Source	24 V DC
Output	p dBV
Power/Current Consumption	40 mA
Input	Microphone XLR balanced input, Sensitivity -20/-40 dBV
Output	Euroblock connector line level 0 dBV
Phantom Power	24 V selectable
Tone Control	Bass: ±10 dB at 100 Hz, Treble: ±10 dB at 10 kHz
Dimensions	85 (W) x 86 (H) x 36 (D) mm (3.35" x 3.39" x 1.42")
Finish	White
Accessory	2-gang Wall Plate SO-MIX-PLATE, AC adapter required AD-246

2-gang Wall Plate
SO-MIX-PLATE

AC Adapter
AD-246

AM/FM Tuner

Synthesized AM/FM Tuner

DT-940

- Presets for any combination of 20 AM (monaural) and 20 FM (capable of receiving stereo broadcast) stations
- Automatic station scanning and manual tuning
- Automatic station storage to memory using auto-scan mode
- Frequency synthesized digital tuning with multi-function digital display
- Stereo output is available
- FM wire antenna and AM loop antenna included
- Front panel lockout feature prevents unauthorized operation

Model	DT-940
Power Source	120V AC, 60 Hz (supplied from the AC adapter (accessory))
Rated Consumption	60 mA (when AC adapter is used)
Receiving Frequency	FM: 87.9 - 107.9 MHz (100 kHz step) AM: 520 - 1710 kHz (10 kHz step)
Antenna Input	FM: 75 Ω (unbalanced), F type connector AM: Loop antenna (balanced), external antenna (unbalanced) push type terminal
Audio Output	Stereo: -15 dB*, 10 kΩ, unbalanced, RCA jack Monaural: -10 dB*, 10 kΩ, unbalanced, M3 screw terminal, distance between barriers: 6.4 mm, RCA jack
Channels of Memory	20 channels for AM, 20 channels for FM
Operating Temperature	0 ºC to + 40 ºC (32 ºF to 104 ºF)
Operating Humidity	90 % RH or less (no condensation)
Finish	Panel: Aluminum (hair-line finish), black Case: Pre-coated steel plate, black
Dimensions (W x H x D)	420 (W) x 50.8 (H) x 294.2 (D) mm (16.54" x 2" x 11.58")
Weight	2.9 kg (6.39 lbs)
Accessory	AC adapter (1.5 m (4.92 ft)) ... 1, RCA stereo cord (1 m (3.28 ft)) ... 1, loop antenna (For indoor use only, 135 x 125 mm (5.31" x 4.92"), leadwire: 1.2 m (3.94 ft) ...1, FM wire antenna (For indoor use only, element length: 2.2 m (7.22 ft)) …1
Option	Mounting bracket kit: MB-15B

*0 dB = 1 V

Optional Accessories

Rack-mounting Bracket
MB-15B

Accessory Reference on page 155

VoIP Paging Module

Combination of module and chassis creates a standalone component

SIP Module
SP-11N AM

- VOIP phone paging module supported by SIP (Session Initiation Protocol)
- Auto-answer function
- Can be connected to IP network and directly registered as one SIP phone station on various SIP server management software
- VOX and mute functions
- Designed for use with TOA's 9000M2, 900, 700, and BG-2000 series amplifiers

SIP Interface Chassis for SP-11N AM
SP-11NRB

- Stand-alone chassis for TOA's SP-11N AM SIP interface module
- Interface allows systems that do not support TOA's 900 series modules to work with SP-11N AM
- One module slot

Multi-Channel Monitors

Multi-Channel Monitor

MP-1216

- Sixteen transformer-isolated, bridging inputs for monitoring line level or low and high impedance speaker line signals
- Separate bar graph meter for each input
- Internal speaker with selector switch for individual channel monitoring
- Built-in rack-mount brackets (2 RU)

Model	MP-1216
Power Requirement	AC mains, 50/60 Hz
Power Consumption	21 W (120 V version), 25 W (220 - 240 V version)
Max. Display Level	Speaker: High impedance: 100V; Low Impedance: 1200W / 8Ω Line: +10 dB (2.45 V)
Level Meter	12-point display, -30 dB ~ +6 dB (0.3W ~ 1200W / 8Ω
Speaker Output	Max. 3 W
Headphone Output	8 Ω
Finish	Front panel: Alumite, black
Dimensions	482.6 (w) x 88.4 (H) x 312.7 (D) mm (19" x 3.48" x 12.31")
Weight	5.3 kg (11.68 lbs)
Accessory	AC fuse, 250 V 1 A (120 V version) x 1 AC fuse, 250 V T250 mA (220 - 240 V version) x 1 Rack mounting screw x 4

MP-1216 Optional Accessories

Cable Linking two MP-1216 together

Monitor Panel

MP-032B

- Ten input channels for monitoring high impedance speaker lines
- VU meter
- Internal speaker with selector switch for individual channel monitoring
- Built-in rack-mount brackets (3 RU)

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 12 cm speaker
Input Lines	25 V (625 Ω), 50 V (2.5 Ω), 70 V, (5k Ω), 100 V (10 kΩ) switchable
Terminals	M4 screw terminals, distance between barriers: 8.8 mm
Finish	Surface-treated steel plate, black
Dimensions	483 (w) x 133 (H) x 87 (D) mm (19.01" x 5.24" x 3.43")
Weight	2.2 kg (4.85 lbs)
Accessory	Rack mounting screw (with washer) x 4

Program Timer

Program Timer

TT-104B

- For timed control of external equipment and events
- Four independent outputs with 30 programmable steps per output
- Outputs features 0.5A (24V DC) five second dry contact closures
- Weekly program with pause mode for vacations/holidays
- -/+5 second per month clock accuracy with four day backup battery if power fails

Model	TT-104B
Power Source	110 - 120 V AC, 50/60 Hz
Power Consumption	3W
Display Contents	Day of the week, hour and minute
Programmable Item	Day of the week, hour, minute, output channel
Number of Channels	4 channel (A,B,C,D)
Output System	No-voltage (DRY) make contact (5-second pulse make output)
Output Capacity	24 V DC, 0.5 A
Output Terminal	M4 screw terminal, distance between barriers: 9 mm
Program Capacity	30 steps per channel
Clock Accuracy	±5 seconds per month (25ºC)
Power Outage Protection Period	100 hours
Operating Temperature	0ºC to +50ºC (32 ºF to 122 ºF)
Finish	Panel: Aluminum, black, 30% gloss, paint Case: Pre-coated steel plate, black
Dimensions	420 (W) x 47.5 (H) x 246.5 (D) mm (16.54" x 1.87" x 9.7")
Weight	2.5 kg (5.51 lbs)
Option	Rack-mounting bracket: MB-15B

TT-104B Optional Accessories

Rack-mounting Bracket

MB-15B

Accessory Reference on page 155

Network Audio Adapters

Network Audio Adapter

NX-100

Applications

- Airports
- Auditoriums / Theatres
- Broadcast
- Business Music Distribution
- Corporate Messaging
- Hotels
- Industrial / Warehouses
- Museums
- Performing Arts Centers
- Railway Stations
- Sports Facilities
- Theaters
- Transit Stations
- Audio Distribution to Multiple Remote Locations
- Business Music
- Convention Centers
- Educational Facilities
- Houses of Worship
- Remote Monitoring
- Paging Distribution
- Public Address
- Retail Chain Stores
- Stadiums
- Theme Parks
- Wide Area Paging

- Converts analog audio (mic or line) to packet audio IP format for transmission over existing local or wide area networks (LAN/WAN) including the Internet
- Bi-directional audio transport plus contact closures and serial RS-232
- Reduces installation and operational costs when distributing audio signals to remote locations
- Balanced mic/line input with adjustable volume control
- Balanced line output
- Built-in Ethernet port (10/100BaseT)
- Point-to-point transmission (Unicast) of audio signals to up to 4 locations (LAN/WAN/Internet)
- Simultaneous transmission (Multicast) of audio signals to up to 64 locations (LAN/WAN)
- Control inputs can initiate and terminate audio transmissions without the need for dedicated PC-based or other control equipment
- 8 control inputs with adjustable contact off delay time
- 8 control outputs: open collector output
- Adjustable sample rate and audio bandwidth allows efficient use of network resources
- Minimum delay: 20 ms
- Multiple error correction modes
- Intuitive Configuration, Operating and Management software
- Browser-based software allows control and monitoring from any network-based PC
- Convenient End User features including customizable Operation software, Operation logs and password protection
- Front panel indication: Link/Active, Full-Duplex/Collision, Status, Error, Run
- Front panel reset button
- External 24 VDC input for battery backup operation
- Easy to upgrade flash memory firmware
- Compact, half-rack size unit (1 RU)
- Requires AC power supply, model AD-246
- Optional rack-mount kits (1 RU), model MB-15B-BK (for 1 NX-100), model MB-15B-J (for 2 NX-100)

Optional Accessories

Rack-mounting Bracket

MB-15B-BK

Rack-mounting Bracket

MB-15B-J

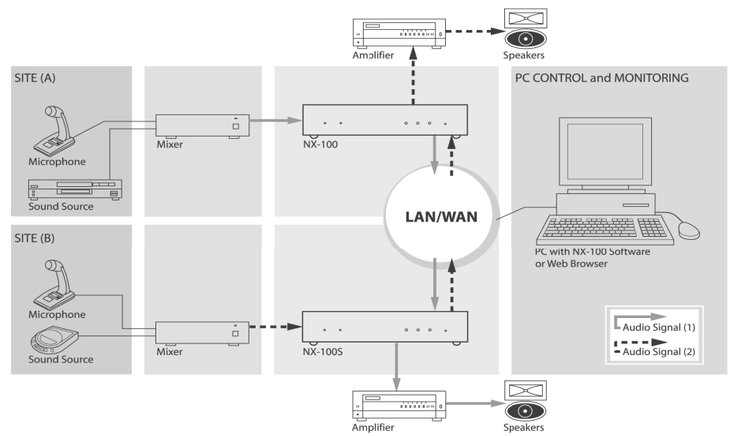
AC Adapter

AD-246

Accessory Reference on page 155

Model	NX-100
Power Source	24 V DC (removable terminal block (3 pins) or AC adapter AD-246 (optional), or the equivalent
Current Consumption	200 mA (DC operation)
Audio Input	1 channel (transformer-isolated), -58 dB* to 0 dB*, balanced (MIC/LINE changeable, volume adjustable with volume control), 2 kΩ, removable terminal block (3 pins)
Audio Output	1 channel (transformer-isolated), balanced, 600 Ω, removable terminal block (3 pins)
Frequency Response	50 - 14,000 Hz (when frequency sampling is 32 kHz)
Distortion	Under 0.3% (1 kHz, when sampling frequency is 32 kHz)
Control Input	8 channels, no-voltage make contact input, open voltage: 12 V DC, short-circuit current: 10 mA, removable terminal block (9 pins)
Control Output	8 channels, open collector output (polarized), withstand voltage: 30 V DC, control current: 50 mA 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 (32 °F to 122 °F) (0 °C to +40 °C (32 °F to 104 °F) when AC adapter is in use)
Operating Humidity	90% RH or less (no dew condensation should be produced)
Finish	Steel plate, black, 30% gloss
Dimensions	210 (W) x 44.7 (H) x 188 (D) mm (8.27" x 1.76" x 7.4")
Weight	1.2 kg (2.64 lbs)
Accessory	CD (PC Installation & Operation software programs, Instruction manuals) x 1, Power supply removable terminal plug (3 pins) x 1, Audio I/O removable terminal plug (3 pins) x 2, Control I/O removable terminal plus (9 pins) x 2, RS-232C connector cover x 1, Bracket mounting screw x 8
Option	Rack mounting bracket: MB-15B-BK (for rack mounting one NX-100 unit); MB-15B-J (for rack mounting two NX-100 units); AC adapter: AD-246 (required)

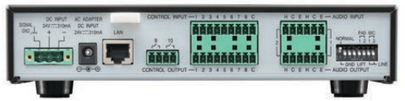
*0 dB = 1 V



Network Audio Adapters

Network Audio Adapter

NX-300



- Dual-channels create Bi-directional (full duplex) transmission of mono signals
- Up to 500 NX-300s can be connected to each other via LAN and WAN
- Up to 1,000 links can be established
- 1 input audio signal can be streamed to max. 16 outputs (unicast) or max. 64 outputs (multicast)
- Balanced inputs & outputs with isolated transformer
- The rear panel features 8 contact inputs and 10 contact outputs
- Requires AC power supply, model AD-246
- Optional rack-mount kits (1 RU), model MB-15B-BK (for 1 NX-300), model MB-15B-J (for 2 NX-300)

Network Audio Adapters

Storable audio files for message playback

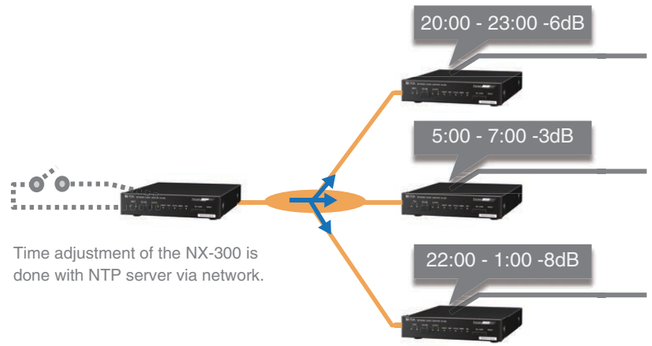
Up to 8 WAV-files 2-minutes in length can be stored in the built-in memory and used for broadcasting, such as announcements and chime playback. The files can also be remotely updated via the NX-300 setting software or web browser. Adjustable output volume of a broadcast can be set based on a programmed scheduler, where the device time is automatically adjusted by the NTP server via the network.

Assignable broadcast priorities

Broadcast patterns can be programmed by using the provided NX-300 setting software and can be activated by the NX-300 operation software or the regular contact closures. Broadcast priority can be set with 8 levels and allow paging which overrides the alert tones or announcements.

Network with other TOA network control inputs

The control output has the ability to network with other NX Control Inputs, including NX-100.



Model	NX-300
Power Source	Supplied from an external 24 V DC (21.6 - 26.4V) power supply or AC adapter AD-246 (optional), or the equivalent
Current Consumption	10 W (AC operation), 310 mA (DC operation)
Audio Input	2 channels, balanced (transformer-isolated)/unbalanced changeable, 2 k ohms, LINE/MIC changeable, volume adjust, 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	50 Hz - 18 kHz (48 kHz sampling frequency, PCM, 0 to -6 dB deviation referred to 1 kHz)
Distortion	Under 0.2% (1 kHz, LINE signal level, at rated output)
Audio Format	WAV file
No. 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 Output	8 channels, open collector output (polarized), withstand voltage: 30 V DC, control current: 50 mA max., removable terminal block (9 pins), 2 channels, relay output (non-polar), withstand voltage: 30 V DC, control current: 500 mA max., removable terminal block (4 pins)
NETWORK SECTION Network I/F	10BASE-T/100BASE-TX, Full-duplex/half-duplex Auto-negotiation
Connector	RJ45 connector
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)
Voice sampling frequency	8 kHz, 16 kHz, 32 kHz, 48 kHz (controllable by the software)
Qualifying bit number	16 bits
Voice encoding Method	PCM, sub-band ADPCM (controllable by the software)
Voice packet loss recovery	Silence insertion
Audio delay time	Min. 20 ms
SD Section	For log storage (Max. 10,000), Media: SD/SDHC card (Max. 32 GB*2), File system: FAT 16. FAT 32 *Use only SD memory cards rated at 100 mA current consumption or less; *SD card not provided
Operating Temperature	-10 °C to +50 °C (14 °F to 122 °F) (0 °C to +40 °C (32 °F to 104 °F) 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 (8.27" x 1.74" x 10.16")
Weight	1.7 kg (3.75 lbs)
Accessory	Removable terminal block (3 pins) x 1, Removable terminal block (6 pins) x 2, Removable terminal block (9 pins) x 2, Removable terminal block (4 pins) x 1, Plastic foot x 4, Screw for fitting plastic foot x 4
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 (required)

*1 0 dB = 1 V
*2 Not compatible with SDXC memory cards

Optional Accessories

Rack-mounting Bracket
MB-15B-BK

Rack-mounting Bracket
MB-15B-J

AC Adapter
AD-246

Wall Mounting Bracket
YC-850

Accessory Reference on page 155

CONFERENCE

COMMUNICATION

INFRARED

SECURE

SCALABLE

WIRELESS/WIRED

CHAIRPERSON

DELEGATE

MEETINGS

QUALITY

Next Generation IR Conference System

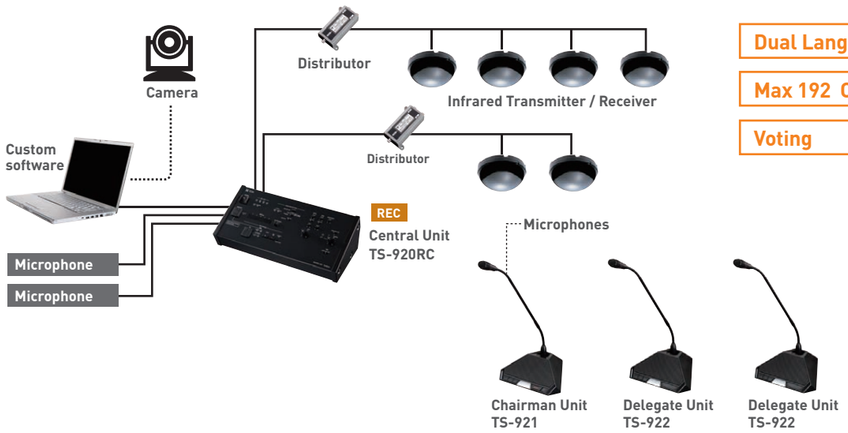
TS-820 / 920 Series Infrared Wireless Conference System

Spotlight

Infrared Conference System TS-820/TS-920 Series

- Carefully designed audio processing and hardware for enhanced audio performance.
- Advanced feedback suppressor minimizes acoustic feedback.
- Safe and secure infrared wireless technology
- Conference recording available with TS-920RC
- Up to 192 conference unit controllable
- No cabling for Infrared system makes installation easy
- Chairman unit features a priority speech key
- Delegate unit Equipped with voting function TS-921/922
- Speaker restriction function
- Auto Mic-Off function
- The solid design creates a formal and impressive atmosphere for conferences.

TS-920 Series System Example



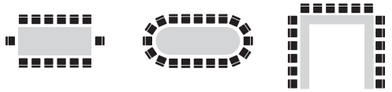
Dual Language

Max 192 Conference units

Voting

Wireless Units for System Flexibility

Wireless feature makes the system ideal for any conference apt to change the number of participants or layout.



Selectable Microphones

Long or short microphones can be used depending on requirements.

Infrared Conference System TS-820/TS-920 Series

Central Unit

TS-920RC

- Up to 192 conference unit controllable
- 2 x Mic In (Main/Sub), 3 x AUX In (Main/Sub/Main and Sub) Line Out, Rec Out, Headphone monitor out, EQ in/out
- Recording capability to USB and internal memory
- Voting result indicator

Central Unit

TS-820

- Up to 64 conference units controllable
- Mic In, AUX In, Line Out, Rec Out, Headphone monitor out, EQ in/out
- Function setting – Number of open microphones, Auto Mic-off function, Speech priority selector, Feedback suppressor

Model	TS-920RC Central Unit	TS-820 Central Unit
Carrier Frequency	Reception: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Transmission: Base language channel: 1.95 MHz Translation language channel: 2.25 MHz	Reception: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Transmission: Base language channel: 1.95 MHz
Input	MIC 1 (Base Language): -60 dB (*2) , 600 Ω, unbalanced, ϕ6.3 mm phone jack (2P) MIC 2 (Translation Language): -60 dB (*2) , 600 Ω, unbalanced, ϕ6.3 mm phone jack (2P) AUX 1 (Base Language I: -20 dB (*2) , 10 kΩ unbalanced, ϕ6.3 mm phone jack (2P) AUX 2 (Translation Language): -20 dB (*2) , 10 kΩ, unbalanced, ϕ6.3 mm phone jack (2P) AUX 3 (Base and Translation Language): -20 dB (*2) , 10 kΩ, unbalanced, ø6.3 mm phone jack (2P)	MIC: -60 dB (*2), 600 Ω, unbalanced, ϕ6.3 mm phone jack (2P) AUX: -20 dB (*2) 10 kΩ, unbalanced, ϕ6.3 mm phone jack (2P)
Output	LINE: -10 dB (*2), 10 kΩ, unbalanced, ø6.3 mm phone jack (2P) REC: -10 dB (*2), 10 kΩ, unbalanced, RCA pic jack HEADPHONES: ø3.5 mm Mini jack (3P: monaural)	LINE: -10 dB (*2), 10 kΩ, unbalanced, ø6.3 mm phone jack (2P) REC: -10 dB (*2), 10 kΩ, unbalanced, RCA pic jack HEADPHONES: ø3.5 mm Mini jack (3P: monaural)
Equaliæ r Input/Output	Input: -20 dB (*2), 10 kΩ, unbalanced, RCA pin jack Output: -20 dB (*2), 10 kΩ, unbalanced, RCA pin jack	Input: -20 dB (*2), 10 kΩ, unbalanced, RCA pin jack Output: -20 dB (*2), 10 kΩ, unbalanced, RCA pin jack
No. of Connectable Chairman/Delegate Unit	192 units	64 units
External Control Terminal	D-sub connector (9P, male)/USB-B selectable	D-sub connector (9P, male)
Record Swtich	Recording start button, Recording stop button, Format button	—
Recording Ports	USB-A (for USB memory devices) and USB Mini-B (for PCs)	—
Recording Function	Recordings can be made to a USB memory device (*4) or the internal memory. Recording format: MP3 (MPEG-1 Audio Layer-3), monaural Samplinq frequency: 32 kHz, Bit rate: 128 kbps	—
Function Switch	Number of open microphones setting switch: 1 /2/3/4 Mic-off setting switch: TI ME 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 the first unit, and last-in-first-out priority for all other subsequent units.	Number of open microphones setting switch: 1 /2/3/4 Mic-off setting switch: TI ME 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 the first unit, and last-in-first-out priority for all other subsequent units.)
Applicable Unit	TS-920RC/921/922; TS-820/821/822	TS-820/821/822
Weight	2.8kg (6.17 lbs)	2.7kg (6 lbs)
Accessory	AC adapter (cord length: 1.8 m (5.91 ft) DC cord, and 2 m (6.56 ft) detachable AC cord) x1 (*3)	
Option	Rack mounting bracket: MB-TS920	Rack mounting bracket: MB-TS900

(*2) 0 dB = 1 V

(*3) Not supplied with the TS-920RC(-CN). For the usable power supply cord and AC adapter, contact your nearest TOA dealer

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

Infrared Conference System TS-820/TS-920 Series

Chairman Unit

TS-921

- Priority button
- Equipped with voting function
- Audio monitoring switch (Main or Sub)
- 2 headphone jacks with individual volume control

Chairman Unit

TS-821

- Priority button
- 2 headphone jacks with individual volume control

Model	TS-921 Chairman Unit	TS-821 Chairman Unit
Infrared Emitter /Detector		
Wavelength	870 nm (AM: Brightness modulation)	
Carrier Frequency	Reception: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Base language channel: 1.95 MHz Translation language channel: 2.25 MHz	Reception: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Audio channel: 1.95 MHz
Covering Range	7 m (22.97 ft) (radius)	
Input	Microphone terminal: XLR-4-31 type	
Output	Monitor speaker: 8 Ω, 0.2 W Headphone: ¢3.5 mm mini á ck (3P: monaural) x 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, Priority speech function
Finish	Case: PC resin, black Speaker net: black, mat finish, paint	
Dimension	205.7 (W) x 70.3 (H) x 164.2 (D) mm (8.1" x 2.77" x 6.46")	
Weight	525 g (1.16 lb)	
Option (not included)	Microphone: TS-923, TS-903, TS-924, TS-904 (Select either one) Lithium-ion battery: BP-900A AC adapter: AD-0910	

Delegate Unit

TS-922

- Equipped with voting function
- 0.2W monitor speaker
- Audio monitoring switch (Main or Sub)
- 2 headphone jacks with individual volume control

Delegate Unit

TS-822

- 0.2W monitor speaker
- 2 headphone jacks with individual volume control

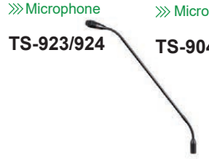
Model	TS-921 Chairman Unit	TS-821 Chairman Unit
Infrared Emitter /Detector		
Wavelength	870 nm (AM: Brightness modulation)	
Carrier Frequency	Reception: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Base language channel: 1.95 MHz Translation language channel: 2.25 MHz	Reception: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Audio channel: 1.95 MHz
Covering Range	7 m (22.97 ft) (radius)	
Input	Microphone terminal: XLR-4-31 type	
Output	Monitor speaker: 8 Ω, 0.2 W Headphone: ¢3.5 mm mini á ck (3P: monaural) x 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, Priority speech function
Finish	Case: PC resin, black Speaker net: black, mat finish, paint	
Dimension	205.7 (W) x 70.3 (H) x 164.2 (D) mm (8.1" x 2.77" x 6.46")	
Weight	525 g (1.16 lb)	
Option (not included)	Microphone: TS-923, TS-903, TS-924, TS-904 (Select either one) Lithium-ion battery: BP-900A AC adapter: AD-0910	

Infrared Conference System TS-820/TS-920 Series

TS-820/920 Series Optional Accessories

Microphone
TS-903/904

Microphone
TS-923/924



Microphone
TS-904SL-AS

Rechargeable Lithium-Ion Battery
BP-900A -CEB01

Battery Charger
BC-900

AC Adapter
AD-0910

Infrared Transmitter/ Receiver
TS-905

Infrared Transmitter/ Receiver
TS-907

Distributor
YW-1022

Distributor
YW-1024

Rack Mount Bracket
MB-TS920

Bridge Unit
TS-919 B1

Bridge Unit
TS-919 B4

Expansion Unit
TS-918

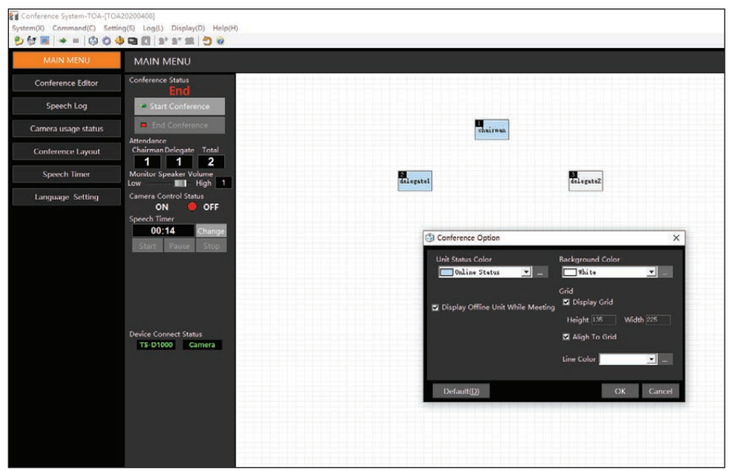
Accessory Reference on page 154

TS-820/920 Series Software - TS-SOFT QV

The new generation conference system, manufactured by TOA, comes with the same functionality of our TS-810-900 system and new exciting features. Along with the system advancements, the new TS-820/920 is delivered with a software component to allow access to the equipment through a computer interface.
Within the software, individuals will have the ability to modify, control and monitor many of the key features that make this dynamic conference system the first choice of many corporations.

- Selectable number of open microphones
- 3-choice voting function for quick voting and vote counting (TS-920 series only)
- Mic auto-off function, automatically turns off mic after 30 second of silence
- Built-in audio recording in mp3 format on USB memory or internal memory (TS-920RC)
- Max 192 conference units
- Dual Language conference capabilities (TS-920 only)

and many more.
Please contact TOA's Technical Support Department for more information.



Infrared Conference System TS Series

TS Series Optional Microphones

Chairperson and Delegate Station Microphone

TS-903, TS-904

- For TS-801, TS-802, TS-901, TS-902
- TS-903 - Standard Gooseneck Microphone (14.5")
- TS-904 - Long Gooseneck Microphone (20.4")

TS-904SL-AS - Extended Gooseneck Microphone (28.4")

- Electret condenser microphone element
- Distinctive red LED "in-use" indicator also flashes to show low battery status

Model	TS-903	TS-904	TS-904SL-AS
Type	Electret condenser microphone		
Directivity	Unidirectional		
Rated Impedance	1.8 kΩ		
Rated Sensitivity	-37 dB (1 kHz 0 dB = 1 V/Pa)		
LED Indicator	Speech indicator (ring type)		
Frequency Response	100 - 13,000 Hz		
Output Connector	Combined type of XLR-4-32		
Finish	Gooseneck: Stainless steel, black; Other: ABS resin, black		
Weight	90g (0.2 lbs)	105g (0.23 lbs)	130g (0.29 lbs)
Applicable Unit (Option)	Chairman/Delegate units: TS-801, TS-802, TS-901, TS-902	Chairman/Delegate units: TS-801, TS-802, TS-811, TS-812 TS-901, TS-902, TS-911, TS-912	

Infrared Transceiver

TS-905, TS-907

- Installs in ceiling or wall
- TS-905: up to 16 ft ceiling height
- TS-907: 16 to 23 ft. ceiling height
- Connect up to sixteen TS-905 or twelve TS-907 using optional Antenna Distributors: YW-1022Y (1x2) or YW-1024Y (1x4)
- Coaxial cable with BNC connectors (supplied by others)

Model	TS-905	TS-907
Power Source	24 V DC (supplied from the optional TS-900 or TS-800)	
Infrared Emitter/Detector: Wavelength	870 nm (AM: Brightness modulation)	
Infrared Emitter/Detector: Modulation Method	Frequency modulation	
Infrared Emitter/Detector: Carrier Frequency	Transmission: Audio channel 1: 7.35 MHz Audio channel 2: 8.10 MHz Audio channel 3: 8.55 MHz Audio channel 4: 9.15 MHz Control channel: 6.45 MHz Reception: Base language channel: 1.95 MHz Translation language channel: 2.25 MHz	
Infrared Emitter/Detector: Acceptance/Emission Angle	Vertical: 150° (75° + 75°) Horizontal: 360°	Vertical: 90° (45° + 45°) Horizontal: 360°
Infrared Emitter/Detector: Communication Area	Approx. 6-7m in radius from the point underneath the unit (Ceiling height: 2.5 - 4.5 m)	Approx. 6m in radius from the point underneath the unit (Ceiling height: 5-7 m)
Connection Terminal	BNC jack	
LED Indicator	Power	
Finish	Dome: PC resin, visible light cut filter; Base: ABS resin, black	
Dimensions	ø120 x 71.3 (H) mm (ø4.72" x 2.8")	
Accessory	Mounting bracket x 1, Stand mounting bracket x1, Stand mounting bracket attaching screw x 3, Thread adapter (U5/16 - NS5/8) x1	
Option	Microphone stand (the mounting thread size must be U5/16 or NS5/8)	

Infrared Conference System TS Series

TS Series Optional Accessories

Microphone
TS-903

Microphone
TS-904

Microphone
TS-904SL-AS

Rechargeable Lithium-Ion Battery
BP-900

Battery Charger
BC-900

AC Adapter
AD-0910

Infrared Transmitter/ Receiver
TS-905

Infrared Transmitter/ Receiver
TS-907

Distributor
YW-1022

Distributor
YW-1024

Rack Mount Bracket
MB-TS900

Bridge Unit
TS-919 B1

Bridge Unit
TS-919 B4

Expansion Unit
TS-918

Accessory Reference on page 154

TS-800/910 Series Software

- Configure, control, manage and personalize/customize each conference
- Assign unit ID's and member names
- Conference equipment set-up and configuration
- Conference Main Display controls and monitors meeting functions, including start/end conference, voting and speech timer, monitor attendance and unit status (connection status, speaking, chairperson priority, battery alarm)
- Record (with an external recording device) and access the conference speech and voting for later reference/review
- Conference configuration: edit and save conference settings, including volume settings, voting settings, count down timer function, etc.
- Dual monitor viewing options (computer monitor and/or projector), allows display of voting results
- ***Software disk available by request only. Please contact TOA's Technical Support Department for more information.***

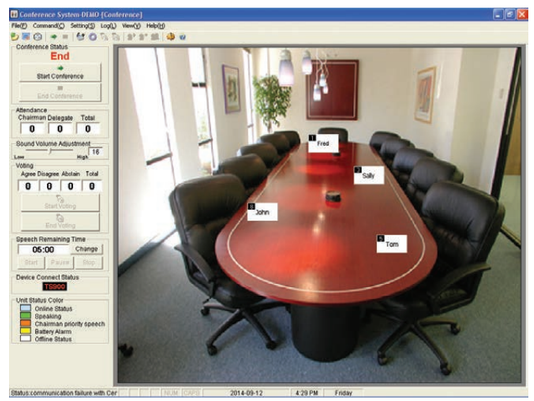
Voting Function

Control and assign voting functions including;
- Naming the vote
- Start and end voting
- Record logs of the vote
- Change voting options (i.e. agree, disagree, abstain)
- Option to log/record voting details, including date/time, conference name, vote name, content and voting results (printable logs)

Speech Function:

Control and assign speech functions including;
- Speech mode (FIFO, LIFO, 1 fixed + LIFO)
- Assign the number of speakers at one time
- Auto microphone-off after 30 seconds of inactivity
- Speech (countdown) timers
- Record conference: speech log, 9 including date/time, speaker, content, and length of speech/conference

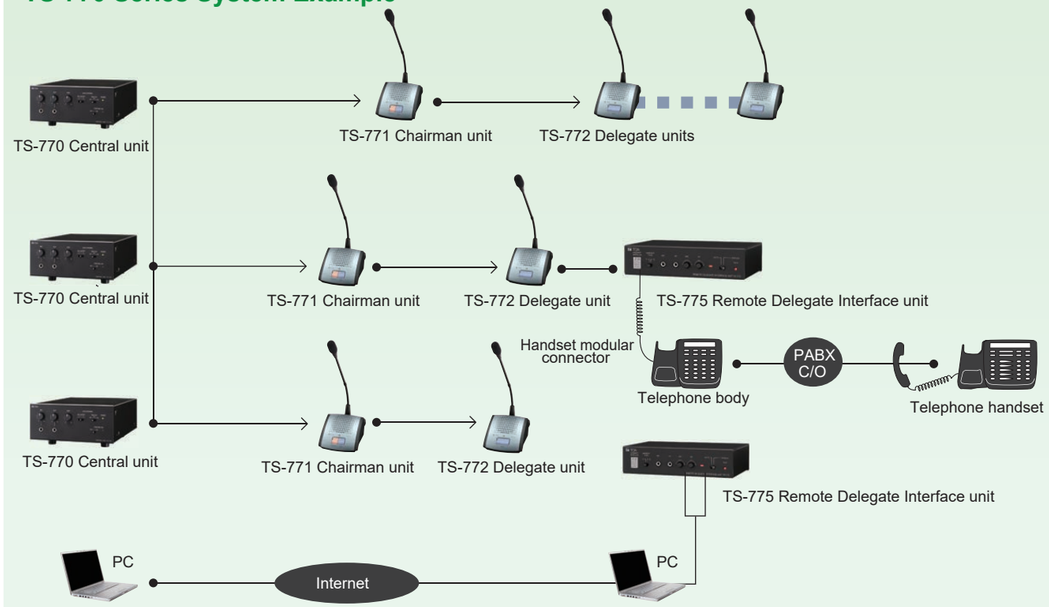
- ***Software disk available by request only. Please contact TOA's Technical Support Department for more information. technicalsupport@toacanada.com***



Wired Conference System TS-770 Series

- Maximum 70 Chairman and Delegate Units (up to 35 units* per line) are connectable to one Central Unit
  *If the TS-775 Remote Delegate Interface Unit is used, up to 35 TS-775 Remote Delegate Interface Units can be connected per line also
- Expandable to maximum 210 units by connecting 2 additional Central Units
- Equipped with an All-Mic-On function that simultaneously turns on all microphones for sound collecting and recording of all units
- Remote conferencing is possible, enabling people at a remote location to participate in the conference
- The Test Function feature enables easy checking of the connection status of all connected units
- Number of simultaneously usable delegate units can be selected
- Automatic Mic-Off function (TIME OUT)

TS-770 Series System Example



Central Unit
TS-770

- Supplies DC Power to all units, with lamp indicator
- Jack for microphone input, and AUX input
- Microphone, AUX, line (for conference unit's built-in speaker) and chime(on chairman's unit) volume controls
- Equalizer input
- Recording output

Model	TS-770
Power Source	120 V AC, 50/60 Hz
Power Consumption	Max. 60 W
Rated Output	35 V DC, 650 mA x 2
Input	MIC: -60 dB*, 600 Ω, unbalanced phone jack AUX: -20 dB*, 10 kΩ, unbalanced, phone jack
Output	Recording: -20 dB*, 10 kΩ, unbalanced, phone jack, pin jack x 2
Equalizer Insertion Input Terminal	Input: -20 dB*, 10 kΩ, pin jack Output: -20 dB*, 10 kΩ, pin jack
Expansion Input and Output Terminal	Input: -20 dB*, 10 kΩ, pin jack x2 Output: -20 dB*, 10 kΩ, pin jack x 2 Control: 10 kΩ, or more, voltage output, pin jack x 2
Control	Priority speech chime: Operation of TS-771's priority button activates a single-tone chime Speaker restriction: Number of simultaneously-usable TS-772 and TS-775 can be set to 1, 3, or 6 Automatic Mic-off: Function OFF/20 s/40 s (selectable)
Number of Connectable Conference units	70 (Max. 35 units per line) Max. 210 (when 3 expansion amplifiers used)
Finish	Panel: Aluminum, hairline, black Case: Pre-coated steel plate, black 30% gloss
Dimensions	210 (W) x 107.1 (H) x 316 (D) mm (8.27" x 4.22" x 12.44")
Weight	4 kg (8.82 lb)
Accessory	Power cord (2 m (6.56 ft)) x 1
Option	Extension cord: YR-770-2M, YR-770-10M

*0 dB = 1 V

Wired Conference System TS-770 Series

Chairman Unit
TS-771

Delegate Unit
TS-772

- To prevent feedback, the built-in speaker is turned off while the microphone is on
- Press-to-talk priority speech button activates chime and overrides delegate unit (TS-771 only)
- Headphone/recording output

Model	TS-771	TS-772
Power Source	35 V DC, under 30 mA (supplied from Central Unit)	
Output	Headphone/Recording: 32 Ω,(headphone)/10 kΩ, -20 dB* (recording), unbalanced, mini jack (with VR) Internal speaker: 130 Ω, 200 mW Contact output: 24 V DC, Max 50 mA	
Control	Speech button: Microphone, speaker on-off control by speech switch Priority button: Microphone, speaker on-off, other microphone cutoff, and single-tone chime activation	Microphone, speaker on-off control by speech switch
Finish	Case: ABS resin, black Panel: ABS resin, gray metallic, semi-gloss, paint	
Dimensions	114.5 (W) x 78.4 (H) x 152.9 (D) mm (4.51" x 3.09" x 6.02")	
Weight	780 g (1.72 lb)	
Option	Microphone: TS-773 (standard); TS-774 (long)	

Remote Delegate Interface Unit
TS-775

- For connection of external delegates via telephone, IP telephone (up to 70 PCs per TS-770) and mobile phone
- Line input for other conference units
- Speech method selectable
  Auto: Voice-activated automatic switching
  Manual: Talk-key activated

Model	TS-775
Power Source	35 V DC, under 30 mA (supplied from Central Unit)
Input	-60 dB*, 200 Ω, balanced, mini phone jack with VR control
Output	-60 dB*, 22 Ω, balanced, mini phone jack with VR control
Speech Mode	AUTO: Voice activated Automatic switching MANUAL: Talk key on-off switching
Finish	Pre-coated steel plate, black
Dimensions	160 (W) x 41.8 (H) x 100 (D) mm (6.3" x 1.65" x 3.94") (excluding projection)
Weight	700 g (1.54 lb)

*0dB = 1 V

Microphone
TS-773
TS-774

- Unidirectional - Electret condenser microphone
- Red LED ring light active speech indicator
- TS-773: 14.49" Long
- TS-774: 20.39" Long
- Use with TS-771 or TS-772

Model	TS-773	TS-774
Type	Electret condenser microphone	
Directivity	Unidirectional	
Rated Impedance	1.8 kΩ	
Rated Sensitivity	-37 dB (1 kHz 0 dB = 1 V/Pa)	
LED Indicator	Speech indicator (ring type)	
Frequency Response	100 - 13,000 Hz	
Output Connector	Combined type of XLR-4-32	
Finish	Gooseneck: Stainless steel, black; Other: ABS resin, black	
Weight	90g (0.2 lbs)	105g (0.23 lbs)
Applicable Unit (Option)	Chairman unit: TS-771; Delegate unit: TS-772	

TS-770 Series Optional Accessories

Microphone
TS-773

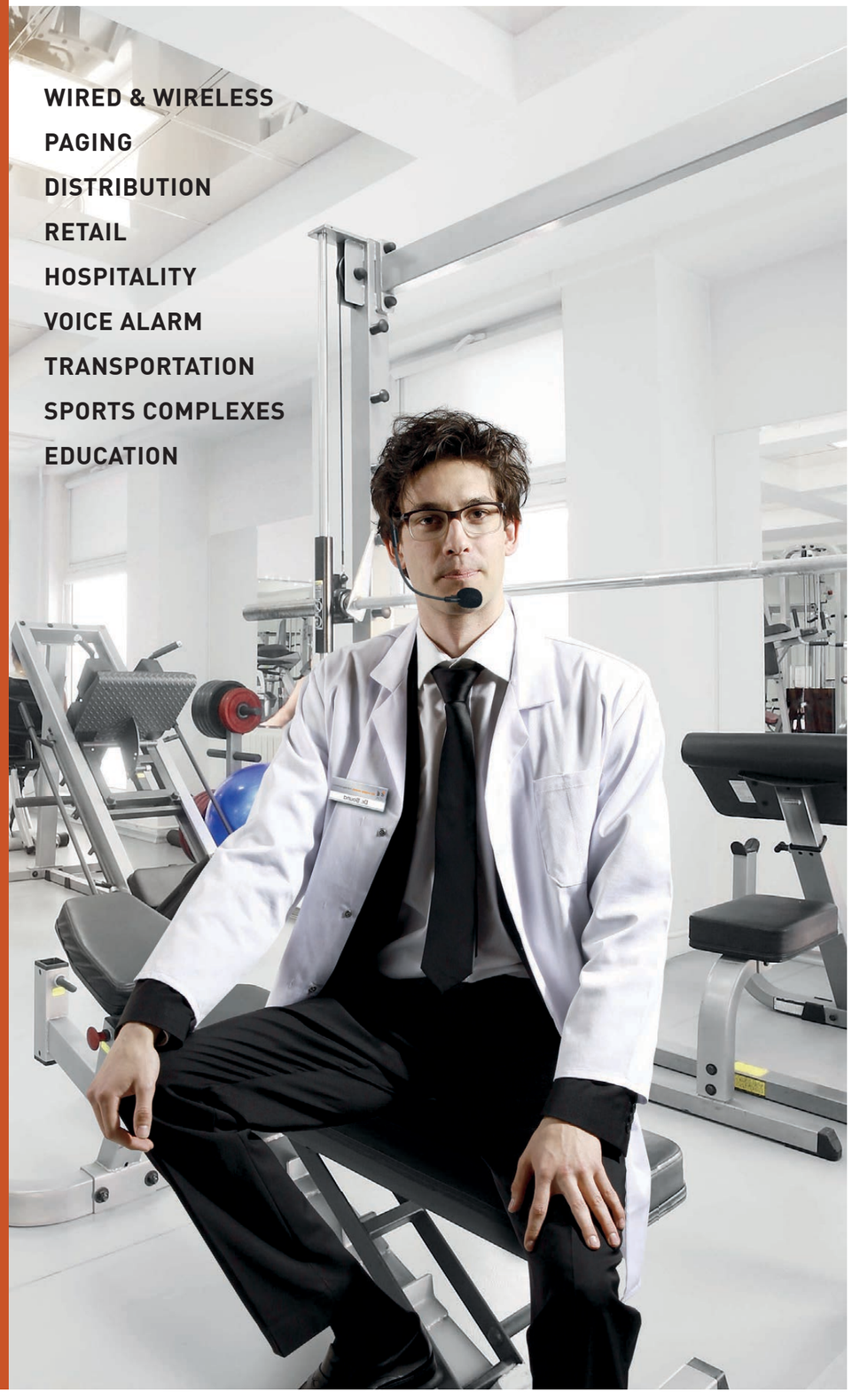
Microphone
TS-774

Extension Cord
YR-770-2M

Extension Cord
YR-770-10M

Accessory Reference on page 154

MICROPHONES



Microphones wired

The **MeetingIO Series** is an innovative lineup of conferencing solutions, including TOA's AM-1 Real-time Steering Array Microphone and the AM-CF1 all-in-one audio collaboration system.

Integrated Audio Collaboration System Spotlight

AM-CF1 is an integrated audio collaboration system for conference rooms. It incorporates TOA's proprietary array microphone technology, digital signal processing and 2-way active speakers. As a professional steerable microphone array system with integrated stereo soundbar, the AM-CF1 is the perfect all-in-one conferencing solution for small to medium size conference spaces with great return on investment. Built-in AEC (Acoustic Echo Cancellation), NC (Noise Cancellation), and EQ (Equalizer) maximize performance making collaboration between remote sites a very natural experience. Connectivity includes USB ports for direct integration with computers and webcams, Bluetooth®, both codec and audio inputs and outputs. LED indicators identify presenter location and microphone gain level.

»AM-CF1: Audio Collaboration System

AM-CF1B (Black), **AM-CF1W** (White)

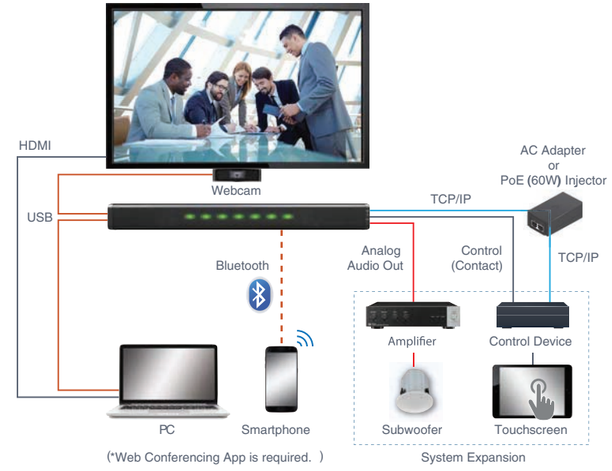
- TOA's proprietary real-time steering array microphone technology offers ideal sound collection
- High quality audio supports natural conversation at a distance
- Easily connectable via USB for a PC-based Web conference and for USB-connectable camera
- Bluetooth® interface allows attendees on the public phone line
- LED light tells your voice is now being surely collected and delivered to remote partner
- Wall-mount installation gives more free desktop space
- Black or white color selectable according to interior design
- Compatible for PoE plus and power supply
- Built-in DSP function such as Automatic Echo Cancellation and Automatic Noise Reduction

»Black Version

»White Version

Model	AM-CF1B (black) / AM-CF1W (white)
Rated Output	Rated Output 12Vx3.5A=42W
Inputs	USB Audio: 2 channels, USB 3.0/USB 2.0/USB 1.1 micro-B port, Bluetooth: 2 channels, Codec: 1 channel, RCA pin jack, −10 dB* 1, 10 kΩ, unbalanced type AUX: 2 channels, RCA pin jack, −10 dB*1, 10 kΩ, unbalanced type
Outputs	USB Audio: 2 channels, USB 3.0/USB 2.0/USB 1.1 micro-B port, Bluetooth: 2 channels Codec: 1 channel, RCA pin jack, −10 dB* 1, 600 Ω, unbalanced type AUX: 2 channels, removable terminal block (6 pins), 4 dB*2, 600 Ω, balanced (electronically-balanced) type Internal speaker: 2-way × 2 (woofer × 2, tweeter × 1)
Control Inputs	2 inputs, removable terminal block (6 pins), no-voltage make contact
Control Outputs	2 outputs, removable terminal block (6 pins), no-voltage make contact, relay contact output
Array Microphone	Unidirectional electret condenser type
Indicators	Power (blue/green/orange/red), USB connection (green), Bluetooth (blue), Multifunction (green/red)
Dimensions	799 (w) x 83.2 (h) x 85.5 (d) mm (31.46" x 3.28" x 3.37")
Weight	4.6 kg (10.14 lb)

»System Configuration



Array Microphone: AM-1

The Real-time Steering Array Microphone System, uses unique TOA technology to achieve the unique function of detecting the sound source location and steering its angle automatically in real-time to capture the targeted sound more efficiently. In addition, the special, user-friendly app and firmware allow the user to monitor the status of the sound source tracking and make changes to its setting parameters with an iPad. With this technology, the presenter would no longer need to be "microphone-conscious" to get a uniform sound level while speaking and moving.

»AM-1: Real-time Steering Array Microphone

AM-1MBQAM (Black), **AM-1MWQAM** (White)

- Detect sound source location and steer its beam angle automatically to focus on that sound source
- Improved signal to noise characteristics
- The dedicated user-friendly GUI is available as an App for iPad for monitoring and setting the following key items:
  - Real time monitoring:
    - Detection of sound source location
    - Signal level of 8 individual microphone elements
  - Parameter settings:
    - Tracking range (Horizontal angle and distance), sensitivity, speed
    - Gain compensation ON/OFF, Distance adjustment threshold
    - Duration (Time monitoring of sound source footprint)
    - Mute ON/OFF operation
    - Disabling of MUTE switch function on the microphone
    - Output gain level adjustment

»Software GUI

Black Version

»White Version

Model	AM-1MBQAM (black) / AM-1MWQAM (white)
Power Source	24DCV 200mA (supplied from Control Unit)
Frequency Response	150 Hz to 18 kHz
Directivity (Beam Width)	50°
Maximum Cable Distance	200ft / 70m (between microphone and control)
Applicable Cable	Twisted two-core, shielded cable
Mute Function	Mechanical mute switch
Dimensions	(19.1" W x 0.78" H x 2.36" D) (485 W x 19.8 H x 60 D) mm

»Control Unit

AM-1CQAM

Control at your fingertips.
iPad software now available.

Front Panel

Rear Panel

Model	AM-1CQAM
Power Source	24DCV 400mA (including microphone power / supplied by AC adapter)
S/N (Microphone)	Over 90 dB
Input	Microphone input (audio and communication), female XLR 3P x 1
Audio Output	+4dBμ/-10dBV (selectable) male XLR 3P x 2, AES/EBU 24bit 110, male XLR 3P x 1
Network Port	RJ45
Accessory	AC adapter

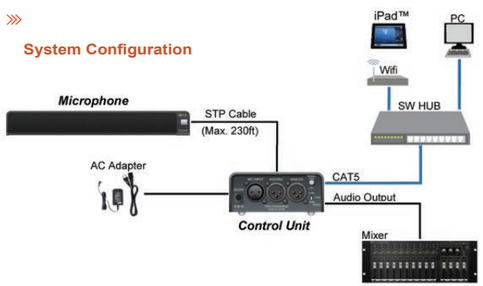
»Real-time Steering Array Microphone System Set

AM-1SET (Black), **AM-SETW** (White)

Includes; AM-1MBQAM (black) or AM-1MWQAM (white) Real-time Steering Array Microphone, AM-1CQAM - Control Unit and an AD-246 AC adapter

»

System Configuration



Optional Accessories and Demo

»Black Mounting Kit

MB-AM1B-Q

»White Mounting Kit

MB-AM1W-Q

Note:
Previous model bracket number was WB-AM1BWC / WB-AM1WWC

»Live Demonstration Kit

AM-1 Demo

Dynamic Microphones

»Unidirectional Microphone

DM-1300US

- Dynamic hand-held microphone for vocal/speech use
- Rigid die cast zinc microphone body
- Switching and handling noise suppression
- Microphone holder provided as standard accessory
- Balanced output for long distance connection

Model	DM-1300US
Type	Moving coil microphone (Dynamic microphone)
Directivity	Unidirectional: Cardioid
Rated Impedance	600 Ω, balanced
Rated Sensitivity	–54 dB (1k Hz 0 dB = 1 V/Pa)
Frequency Response	70 Hz – 15 kHz
Weight	245 g (0.54 lbs) (without connection cable)
Dimensions (W x H x D)	ø 51 x 170 mm (2" x 6.7")
Talk switch	Short-off type, slide on/off switch
Finish	Body: Die cast & zinc, painted metallic gray, paint Head: Steel, & zinc plated steel wire, painted metallic gray
Standard accessory	Microphone holder (NS5/8) x1, Thread adapter (NS5/8→U5/16 or (W3/8)) x 1

Paging Microphone

»Paging Microphone

PM-660U

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

»Noise Cancelling Paging Microphone

PM-222U

- Close talking microphone for general announcements
- Locking talk switch
- Remotely controls both amplifier power and chime operation
- Lock-on push-to-talk switch for continuous use

Model	PM-660U	PM-222U
Rated Impedance	600 Ω, balanced	600 Ω, balanced
Rated Sensitivity	–58 dB (1 kHz, 0 dB = 1 V/Pa)	–47 dB (1 kHz, 0 dB = 1 V/Pa)
Frequency Response	100 Hz to 10 kHz	100 Hz to 10 kHz
Remote Switch	Leaf spring contact (interlocked with talk switch), 30 V DC, under 500 mA	Make contact (linked with talk switch) 30 V DC, 500 mA or less
Finish	Head: Zinc plated steel wire, gray, paint Body: ABS resin, gray	ABS resin, gray
Dimensions	100 (w) x 215 (h) x 150 (d) mm (3.94" x 8.46" x 5.91")	44 (w) x 160 (h) x 38 (d) mm (1.73" x 6.30" x 1.50")
Weight	440 g (0.97 lb) (cable excluded)	200 g (0.44 lb)

Remote Microphone

» Remote Microphone

Q-RM9012

- High-sensitivity electret-condenser gooseneck mic for clear voice
- 12 zone select buttons, All Call, Clear
- 12 Contact Outs corresponding to buttons (RJ-45 connector for use with shielded Cat5 wiring)
- Connects to C-IN on 9000M2 (mainframe & equipped with C-001T)
- AD-246 AC Adapter required

For specifications and complete details see page 35

Condenser Microphones

Flush-Mount Boundary Microphone

EM-380

- Uniquely shaped and high quality Electret condenser microphone
- Optional use of using battery or phantom power
- Designed for use in lecture halls, house of worship, and paging applications
- Easy install, plug into amplifier and speak

EM-600

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

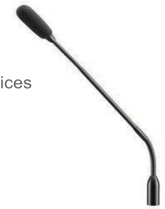
Boundary Microphone

EM-700

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

Gooseneck Microphone

EM-800



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

Model	EM-380	EM-600	EM-700	EM-800
Directivity	Cardioid	Omnidirectional	Cardioid	
Rated Impedance	750 Ω, Balance	120 Ω, balanced		
Rated Sensitivity	-41dB ±3dB 11 kHz 0dB=1V/Pa)	–36 dB (1k Hz 0 dB = 1 V/Pa)	–33 dB (1k Hz 0 dB = 1 V/Pa)	–35 dB (1kHz 0 dB = 1 V/Pa)
Phantom power	9-52V DC (required for operation)			
Frequency Response	50 Hz - 16,000 Hz	30 Hz – 20kHz	35 Hz – 20kHz	60 Hz – 20kHz
Output Connector	XLR-3-12 equivalent			
Finish	Stand Mic : ABS Resin, Black, Paint Mic shaft : Copper alloy, Black, Paint	Body: Steel, white, semi-gloss, paint Head: Zinc-plated steel wire, white, semi-gloss, paint	Body: Die-cast aluminum, black, mat finish, paint Punched net: Surface-treated steel plate, black, mat finish, paint	Body, Shaft: Copper alloy, black,semi-gloss, paint
Dimensions	14.3" X 5.7" X 20.9" 110 (W) x 145 (L) x 532 (H) mm	ø28 × 68mm (1.1" x 2.7")	(3.2" x 0.9" x 3.2") 83 (W) × 23 (H)× 83 (D)mm (cord excluded)	ø12 × 420mm (0.5" x 16.5")
Weight	550 g (exclude batteries)	85 g (0.19 lb)	290 g (0.64 lb)	135 g (0.3 lb)
Accessory	Windscreen .... 1, XLR to Phone Jack Cable 17.5m) 1	Rubber Isolation Ring × 2, M20 Nut × 1	—	Windscreen × 1
Optional Stand	—			Microphone Stand: ST-800

Optional Accessories

Microphone Stand for EM-800

ST-800

(EM-800 with microphone stand ST-800)

Accessory Reference on page 154

TRANTEC

The S2.4 Series is a 16 channel digital wireless microphone system. It has adopted ISM 2.4GHz Digital Audio Frequency, which automatically filters out radio interference. Sound is clear and natural thanks to the comprehensive application of Digital Audio Processing Technology, while the smart ID code, Identifying Synchronisation Technology, makes installation much easier.

TRANTEC
S2.4 Digital Wireless Microphone

Spotlight

16 Channels

Up to 16 selectable channels, available as single and dual channel systems

ISM 2.4GHz Digital Audio Frequency

ISM 2.4GHz digital audio frequency automatically filters out interference

Long Battery Life

Lasts up to 5 hours on two AA batteries

TRANTEC
S2.4 Digital Wireless Microphone

Spotlight

»Digital Wireless Receiver

S2.4 RX - Receiver

- 2.4GHz ISM Digital Wireless Microphone System
- Up to 2 simultaneous channels
- GFSK Modulation
- No RF noise
- Can transmit up to a distance of 30m 16 bit, 38.4kHz audio format
- Single system comes with either a handheld microphone or a beltpack transmitter
- Dual receiver system comes with both a handheld microphone and a beltpack transmitter or combination.

Model	S2.4 RX1	S2.4 RX2
Carrier Frequency	2.404 - 2.474 GHz	
Available Channels	16	
Band Range	2MHz	
Dynamic Range	85dB	
Total Harmonic Distortion	<0.1%	
Power Supply	12VDC 0.5A	
Consumption Power	2W	
Signal to Noise Ratio	>95dB	
Receiving Sensitivity	-80dBm	

»Digital Wireless Receiver

S2.4 HDX Handheld Transmitter

Model	S2.4 RX1	S2.4 RX2
Carrier Frequency	2.404 - 2.474 GHz	
Available Channels	16	
Band Range	2MHz	
Dynamic Range	85dB	
Total Harmonic Distortion	<0.1%	
Power Supply	12VDC 0.5A	
Consumption Power	2W	
Signal to Noise Ratio	>95dB	
Receiving Sensitivity	-80dBm	

»Digital Wireless Receiver

S2.4 BTX Beltpack Transmitter

Model	S2.4 RX1	S2.4 RX2
Carrier Frequency	2.404 - 2.474 GHz	
Available Channels	16	
Band Range	2MHz	
Dynamic Range	85dB	
Total Harmonic Distortion	<0.1%	
Power Supply	12VDC 0.5A	
Consumption Power	2W	
Signal to Noise Ratio	>95dB	
Receiving Sensitivity	-80dBm	

*Note: Kits with beltpack include the S2.4-LMO Lavaliere Mic

TRANTEC
S2.4 Digital Wireless Microphone

S2.4 Digital Wireless Kits

S2.4BBX

- One RX2 dual receivert
- Two BTX beltpack transmitter

S2.4HHX

- One RX2 dual receiver
- Two HDX handheld transmitter

S2.4HBX

- One RX2 dual receiver
- One BTX beltpack transmitter
- One HDX handheld transmitter

S2.4BX

- One RX1 single receiver
- One BTX beltpack transmitter

S2.4HX

- One RX1 single receiver,
- One HDX Handheld transmitter

*Note: Kits with beltpack include the S2.4-LMO Lavaliere Mic

S2.4 Digital Wireless Optional Accessories

»Digital Wireless Microphones

Lavalier Microphone S2.4-LMO

- Omnidirectional electret condenser microphone (included with Beltpack)

Headworn Microphone S2.4-HMO

- Omnidirectional electret condenser microphone

Headworn Microphone S2.4-HMU

- Unidirectional electret condenser microphone

TOA Wireless Microphone Systems 5000 Series

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

TOA 5000 Series 16 Channel Wirelss Solutions

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

Frequency Band Selection: H01: 576-606MHz, M: 506-538MHz, UHF
[Note: for part numbers with frequency bands and ordering information see page 13/14.]

Receiver
WT-5800

WT-5800, WT-5805 and WT-5810
- Phase Locked Loop (PLL) synthesis operation
- 64 selectable channels
- Auto mixing input function
- Squelch function (carrier, noise, tone)
- Usable frequencies scanning and vacant channel search function
- Compact half-rack size body
- Compander circuitry for minimizing ambient noise
- Low-battery indicator (wireless microphone's battery voltage becomes low)

Receiver
WT-5805

WT-5800 and WT-5805
- True diversity technology
- Two-line LCD display
- 6 points audio level meter for microphone sensitivity adjustment

WT-5800
- Antenna distribution output

Receiver
WT-5810

WT-5810
- TOA space diversity technology
- Balanced output (XLR connector) and phone jack output

Model	WT-5800	WT-5805	WT-5810
Power Source	AC mains (supplied AC-DC adapter must be used)		
Channel Selectable	64 channel capability (Max. 16 Simultaneous channels)		16 channel
Diversity System	Space diversity (true diversity)	Space diversity	
Mixing Output	MIC: –60dB*, 600Ω, balanced, XLR-3-31 type connector LINE: –20dB*, 600Ω, unbalanced, phone jack		
Mixing Input	–20dB*, 10 kΩ, unbalanced, phone jack		
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	18 – 40dBμV variable		
Squelch System	Using together of noise SQ, carrier SQ and tone SQ		
Indicator	Audio (6 step), RF (6 step), ANT A/B, Audio (peak), battery alarm		ANT A/B, Audio (peak), battery alarm
S/N Ratio	110dB or more (A-weight, unbalanced output)		104dB or more (A-weighted, unbalanced output)
Harmonic Distortion	1% or less (typical)		
Frequency Response	100 – 15kHz, ±3 dB		
Dimensions	210(W) × 44(H) × 205.1(D) mm (8.3" x 1.7" x 8.1")		206(W) × 40.6(H) × 152.7(D) mm (8.1" x 1.6" x 6")
Weight	700 g (1.5 lbs)		590 g (1.3 lbs)

*0dB = 1 V

Receiver
WT-4820

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

Model	WT-4820
Power Source	AC mains (supplied AC adapter must be used)
Channel Selectable	16 channel
Mixing Input	–20 dB*, 10 kΩ, unbalanced, phone jack
Antenna Input	75 Ω, BNC (phantom powering for antenna) 9 V DC, 30 mA (max.)
Antenna Output	75 Ω, BNC (Gain 0dB)
Indicator	ANT A/B, Audio (peak), Power
S/N Ratio	Over 102dB (A-weight, unbalanced output)
Harmonic Distortion	Under 1%
Frequency Response	50 – 18,000 Hz, ±3 dB
Dimensions	210(W) × 44(H) × 181(D) mm (8.3" x 1.7" x 7.1")
Weight	770 g (1.7 lbs) (without receiver unit)

*0dB = 1 V

Receiver Unit
WTU-4800

For 5000 Series optional accessories see page 99. For ordering information see pages 103-104. Accessory Reference page 154

TOA 5000 Series 16 Channel Wireless Solution

Handheld Microphone
WM-5270

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

Handheld Microphone
WM-5265

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

Handheld Microphone
WM-5225

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

Beltpack Transmitter
WM-5325

- 64 selectable channels
- Maximum input level: -14 dB to -29 dB
- Built-in circuitry minimizes ambient noise effects
- WB-2000 rechargeable battery or single AA battery operation for compact and lightweight body
- Connector for ø3.5 mini-plugs
- Built-in antenna
- Microphone sold separately *(see 5000 Series Optional Mic.)*

Model	WM-5270	WM-5265	WM-5225	WM-5325
RF Carrier Power	Less than 50mW (Factory preset 10mW ERP)			
Oscillator	PLL synthesizer			
Maximum Input Level	142 dB SPL	132 dB SPL	126 dB SPL	-14dB to -29dB*1 (Audio level control: Min. to Max.)
Audio Input Connector	—	—	—	ø3.5mm (ø0.14") mini plug
Audio Frequency Response	80Hz – 15kHz	100Hz – 15kHz		
Dynamic Range (AF Circuit)	95dB or more (with WT-5800)			—
Battery	AA alkaline dry cell battery	WB-2000 (Ni-MH battery) or LR6(AA)		
Battery Life	Approx. 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			
Dimensions	ø48 × 244 mm (1.9" x 9.6")	ø50 × 229 mm (2" x 9")	ø43.6 × 231.5 mm (1.7" x 9.1")	62(W)×102.5(H)×23(D)mm (2.4"x4"x0.9")
Weight	340g (0.74 lbs) (with battery)	205g (0.45 lbs) (with battery)	180g (0.4 lbs) (with battery)	90g (0.2 lbs) (with battery)

*0dB = 1 V

TOA 5000 Series Wireless Tuner

Spotlight

The TOA Wireless Tuner Module WTU-M9800 provides a truly integrated wireless microphone solution for any TOA product that accepts a 900 series input module. This product offers an alternative when trying to reduce cost and shelf space.

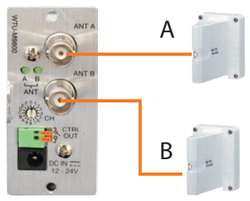
WTU-M9800

- Up to two WTU-M9800 can be powered from the mixer's internal power supply.
- Allows up to 16 different frequencies to be received by selection
- PLL synthesizer controlled double super heterodyne diversity tuner
- Use with any 5000 series handheld or Beltpack transmitter
- Single Channel, Multi-Channel and Antenna Expansion
- For use with local antennas or remote mounted antennas

Model	WTU-M9800
Power Requirement	Internal power supply mode : 24 V DC (Up to two WTU-M9800 can be powered from the mixer's internal power supply.) External power supply mode : 12 – 24 V DC
Current Consumption	100 mA
Receiving Frequency	506 – 538 MHz, UHF, M-band
Receiving System	Double super-heterodyne
Receiving Sensitivity	S/N <80dB (20 dBμV input, 40kHz deviation)
Contact Output	1 channel, no-voltage make contact output, withstand voltage: 30 V DC, control current 0.5 A max.
Antenna Input	75Ω,BNC (phantom power for YW-4500 series powered antenna 9V DC,30mA max)
Diversity System	Space diversity
Frequency Response	100 – 12000 Hz, ±3 dB
Dimensions	35 (W) X 78 (H) X 90.8 (D) mm (1.38" X 3.07" X 3.57")
Weight	Max. 92g (0.21 lb)
Optional Accessories	External power supply TOA, Antenna YW-4500 Q

Single Channel

Antenna Expansion



Multi-Channel

TOA 5000 Series Optional Microphones

Lavaliere Microphone
YP-M5300

- Unidirectional electret condenser microphone element
- Connector for ø3.5 mini-plug

Lavaliere Microphone
YP-M5310

- Omni-directional electret condenser microphone element
- Connector for ø3.5 mini-plug

Headworn Microphone
WH-4000H

- Unidirectional electret condenser microphone
- Connector for ø3.5 mini-plug

Headworn Microphone
WH-4000A

- Unidirectional electret condenser microphone
- Ideal for sports applications
- Connector for ø3.5 mini-plug

Headworn Microphone
YP-M5000H

- Omni-directional electret condenser microphone element
- Compatible with WM-5325, IR-300M/310M
- 3.5mm connector

Single Ear Microphone
YP-M5000E

- Omni-directional electret condenser microphone element
- Compatible with WM-5325, IR-300M/310M
- 3.5mm connector

For 5000 Series optional accessories see page 99. For ordering information see pages 103-104. Accessory Reference page 154

TOA 5000 Series 16 Channel Wireless Solution

TOA 5000 Series Kits

WS-5225
WM-5225+WT-5810 Kit
[Handheld mic. (unidirectional) kit]

WS-5265
WM-5265+WT-5810 Kit
[Dynamic handheld mic. (unidirectional) kit]

WS-5325U
WM-5325+YP-M5300+WT-5810 Kit
[Lavaliere mic. (unidirectional) with beltpack kit]

WS-5325M
WM-5325+YP-M5310+WT-5810 Kit
[Lavaliere mic. (omni-directional) with beltpack kit]

WS-5325H
WM-5325+WH-4000H+WT-5810 Kit
[Headworn mic. with beltpack kit]

TOA 5000 Series Optional Accessories

Antenna Distributor
WD-5800

Wall Mount Antenna
YW-4500 Q

Rechargeable Battery
WB-2000-2

Battery Charger
BC-5000-2

Battery Charger
BC-5000-6

Battery Charger
BC-5000-12

AC Adapter
AD-5000-2
required for BC-5000-2

AC Adapter
AD-5000-6
required for BC-5000-6/12

Waist Pouch
WH-4000P

Windscreen
WH-4000S

Rack Mount Bracket
MB-15B

Rack Mount Bracket
MB-WT3

Rack Mount Bracket
MB-WT4

(Please note that the power supplies/AC Adapter (AD-5000-6, AD-5000-2) for the 5000 Series UHF Wireless Battery Chargers (BC-5000-12; BC-5000-6; BC-5000-2) are sold separately)

TOA 5000 Series Assistive Listening

Wireless Portable Receiver
WT-5100

- Commercial earphones can also be used (ø3.5 mm, impedance: over 16Ω)
- Allows up to 16 different frequencies to be received by selection
- An optimized PLL-synthesizer minimizes the oscillation frequency drift resulting from the ambient temperature or voltage fluctuation.
- WB-2000 rechargeable battery or single AA battery operation for compact and lightweight body
- Built-in antenna

Earphone
YP-E401

Earphone
YP-E5000

Model	WT-5100
Power Source	1.5 V DC (Battery)
Receiving Sensitivity	Better than 60 dB Signal to Noise ratio (20 dBμV input, ±40 kHz deviation)
Frequency Response	200 Hz – 5 kHz (Portable transmitter to Portable receiver)
Output Level	4 mW (16Ω load, 10% distortion)
Battery	WB-2000-2 rechargeable battery (option) or LR6/AA alkaline dry cell battery
Battery Life	16 h (when the WB-2000-2 rechargeable battery is used) 15 h (when the alkaline battery is used)
Dimensions	62 (W) × 163.6 (H) × 32.5 (D)mm (2.4" x 6.4" x 1.3")
Weight	125 g (0.28 lbs) (battery included)

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

For ordering information see pages 103-104 Accessory Reference page 154

TRANTEC Wireless Microphone Systems S5 and S4 Series

The Trantec S5 and S4 Series are synonymous with quality among vocalists, musicians and theatrical performers. Additionally, presenters and the like also enjoy the wide variety of accessories that Trantec has to offer, allowing them to meet their professional needs.

TRANTEC S4.10 Series: 16 Channel Wireless Solution

The Trantec S4.10 Series is designed to make multi channel wireless as simple as possible. The system is encased in a sturdy yet compact metal frame. It can be used with a wide range of microphones, or musical instruments making it the perfect solution for amateur and semi-professional musicians and theatre performers.

Frequency Band Selection: M: 506-538MHz, UHF *[Note: for part numbers with frequency bands and ordering information see page 105/106.]*

TRANTEC S4.10 Series Kits

• *Available in kits only*

Wireless Handheld Microphone Kit (Dynamic)

S4.10-HD-AM RM3QU
S4.10-RX + S4.10-HDX Kit
[Dynamic Handheld Microphone Kit]

Wireless Lavaliere Microphone Kit

S4.10-L-AM RM3QU
S4.10-RX + S4.10-BTX + Lavaliere Mic Kit
[Lavaliere Microphone Kit]

Receiver

- 16 selectable frequencies
- Up to 16 simultaneous channels
- Fully synthesized PLL quartz tuning technology
- Receiver LED's show AF Peak level, RF Level, and Diversity Channel A or B
- Diversity operation with detachable antenna
- Professional metal enclosure

Model	[S4.10-RXA]
Diversity Reception	Antenna Diversity
Sensitivity	10 µV at 45 dBA S/N
Squelch (SQ)	Tone SQ, Carrier SQ, Noise SQ
Audio Frequency Response	50 - 15,000 Hz
Audio Output Level (Max)	Balanced (XLR socket): 16 dBu Unbalanced (1/4" jack socket): +10 dB
Power Supply	11 - 18 VDC 300 mA
Total Harmonic Distortion	< 1% @ 1KHz
Function	IR sync, channel scan, battery life information
Dimensions	215(W) x 39(H) x 102(D) mm (8.5"x1.5"x4") (excluding antenna & BNC)
Weight	480g (1.06 lbs)
Accessory	MB-S4RX-5-EB - 19" Rack mount tray for 2 receivers

Handheld Microphone (Dynamic)

- Dynamic microphone with cardioid pattern
- Adjustable microphone sensitivity
- 1 AA battery provides up to 10 hours of continuous use

Beltpack Transmitter

- Locking 3.5mm jack
- Integral switch for selection between instrument and microphone
- Single AA transmitter battery life of approx. 10 hours.
- Lavaliere microphone included
- Optional Microphone sold separately *(see page 106)*

Model	[S4.10-HDX Dynamic Handheld Microphone]	[S4.10-BTX Beltpack Transmitter]
RF Carrier Power	10 mW	
Frequency Response	80 - 15,000 Hz	50 - 15,000 Hz
Input Level	140 dB SPL (maximum)	-6 dBV (maximum), mic gain 0 dB
Battery	1 AA size alkaline battery, 1.5 V	
Battery Life	Approx. 10 Hours	
Finish	Resin, coating	
Dimensions	ø50 x 250 mm (2" x 9.84")	62 (W) x 100 (H) x 25 (D) mm (2.4" x 4.02" x 1.2") (with clip)
Weight	245g (0.54 lbs) (with battery)	85g (0.19 lbs) (with battery)

For S4.10 Series optional microphones/accessories see page 102

For ordering information see pages 103-104

TRANTEC S5.3 Series: 12 Channel Wireless Solution

S5.3 UHF Professional Wireless Microphone System incorporates the latest technological advances, enabling it to satisfy the demands of a wide range of theater and broadcast applications. The high quality audio and RF dynamics combine with true diversity operation to provide a system with excellent multi-channel capability, enabling up to 24 channels to operate simultaneously without interference. Microphone size and running costs have been reduced, thanks to single AA cell battery operation, providing over 10 hours of continuous use.

Frequency Band Selection: H2: 576-606MHz, UHF *[Note: for part numbers with frequency bands and ordering information see page 105/106]*

Receiver

S5.3-RX

- True diversity operation
- Up to 640 selectable frequencies (12 Simultaneous channels)
- USB based computer monitoring
- Frequency scan function
- Integral triple tone grip/noise and signal strength mute circuit for protection against external interference
- Simple programming of transmitter with built-in Infrared data link
- Clear and intuitive LCD display
- Professional metal enclosure

Model	S5.3-RX
Diversity System	Space diversity (true diversity)
Audio Output	Line: -22 dB*/ Mic: 62 dB* Line/Mic selectable, 600 Ω, balanced, XLR-3-32 type connector Headphone: max. 100 mW 16 Ω, unbalanced, phone jack -28 dB*, 600 Ω, unbalanced, phone jack
Receiving Sensitivity	0 dBµ V or less (12 dB SINAD)
Squelch Sensitivity	6 - 36 dBµ V variable
Squelch System	Using together of noise SQ, carrier SQ and tone SQ
Indicator	LCD, Power lamp, Mute lamp, ANT A/B lamp
S/N Ratio	110 dB or more (A-weight)
Harmonic Distortion	1% or less (typical)
Frequency Response	50 Hz - 20 kHz, ±3 dB
Dimensions	210 (W) x 46 (H) x 210 (D) mm (8.3" x 1.8" x 8.3") (excluding antenna)
Weight	1.3kg (2.87lb)

Handheld Microphone

S5.3-HDX (Dynamic)
S5.3-HCX (Condenser)

- Simple programming of transmitter with built-in Infra-red data link
- Frequency & Power lock facility
- Single AA operation of transmitters with battery life of over 10 hours
- Integral antenna
- Clear and intuitive LCD display
- Color coded ID band
- Professional metal enclosure

Beltpack Transmitter

S5.3-BTX

- Credit card size beltpack
- Simple programming of transmitter with built-in Infrared data link
- Frequency & Power lock facility
- Clear and intuitive LCD display
- Single AA operation of transmitters with battery life of over 10 hours
- Detachable antenna
- Professional metal enclosure
- Microphone sold separately *(see page 106)*

Model	S5.3- HDC [Dynamic Microphone]	S5.3-HCX [Condenser Microphone]	S5.3-BTX [Beltpack Transmitter]
RF Carrier Power	Less than 50mW (Factory preset 10mW ERP)		
Modulation System	—		PLL synthesizer
Maximum Input Level	146 dB SPL (microphone sensitivity: Gain "0")	142 dB SPL (microphone sensitivity: Gain "0")	120 dB SPL (microphone sensitivity: Gain "0")
Audio Frequency Response	60 Hz - 20 kHz	90 Hz - 20 kHz	—
Dynamic Range	110 dB or more (with S5.3-RX)		—
Audio Input Connector	—		TA-4 (Mini-XLR 4 pins)
Battery	LR6 (AA)		
Battery Life	10 hours (Alkaline)		
Indicator	LCD display, Power lamp		LCD display, Power lamp
Dimensions	ø50 x 247.9 mm (2" x 9.8")	ø50 x 232.9 mm (2" x 9.2")	55 (W) x 80 (H) x 22 (D) mm (2.1" x 3.1" x 0.9")
Weight	380g (0.84 lbs) (with battery)	300g (0.66 lbs) (with battery)	140g (0.31 lbs) (with battery)

TRANTEC S5.3 Series Kits

S5.3-HD
S5.3-RX + S5.3-HDX Kit
[Dynamic Handheld Mic Kit]

S5.3-HC
S5.3-RX + S5.3-HCX Kit
[Condenser Handheld Mic Kit]

S5.3-L
S5.3-RX+S5.3-BTX+Lavaliere Mic Kit
[Lavaliere Microphone Kit]

For S5.3 Series optional microphones/accessories see page 102

For ordering information see pages 103 -105

TRANTEC

TRANTEC S5 and S4 Series Optional Microphones

Lavaliere Microphone
for S5 Series **MIC-X2** 4pin
for S4 Series **D000700370** 3.5mm

Lavaliere Microphone
for S5 Series **MIC-X55** 4pin
for S4 Series **MIC-SJ55** 3.5mm

Glasses Frame Microphone
for S5 Series **MIC-X690H** 4pin
for S4 Series **MIC-SJ690H** 3.5mm

Lavaliere Microphone
for S5 Series
MIC-X212-BE (Beige) 4pin
MIC-X212-BK (Black) 4pin
for S4 Series
MIC-SJ212-BE (Beige) 4pin
MIC-SJ212-BK (Black) 4pin

Headworn Microphone
for S5 Series **MIC-X33** 4pin
for S4 Series **MIC-SJ33** 3.5mm

Headworn Microphone
for S5 Series
MIC-X66-BK (Black) 4pin
MIC-X66-BL (Blue) 4pin
MIC-X66-YE (Yellow) 4pin
for S4 Series
MIC-SJ66-BK (Black) 3.5mm
MIC-SJ66-BL (Blue) 3.5mm
MIC-SJ66-YE (Yellow) 3.5mm

Headworn Microphone
for S5 Series
MIC-X22-B-R (Black) 4pin
MIC-X22-P-R (Beige) 4pin
for S4 Series
MIC-SJ22-B-R (Black) 3.5mm
MIC-SJ22-P-R (Beige) 3.5mm

Headworn Microphone
for S5 Series **MIC-XEM77** 4pin
for S4 Series **MIC-SJEM77** 3.5mm

TRANTEC S5 and S4 Series Optional Accessories

Antenna Distributor
S5-ADU

Antenna Booster YW-7000
YW-7000 G

Passive Antenna Splitter
ACC-SPLIT-2W

Directional Antenna
YW-7570

Omni-directional Antenna
YS-7520

Wall Mount Antenna
YW-4500 Q
(When used with WD-4800 (pg. 12)

TNC M to BNC F Connector
15-6628

Receiver Antenna for S5 Series
ANT-S5 RX-D/RX-G

Whip Antenna
ANT-54 BTX-D/BTX-G

Helical Antenna for S4 Series
ANT-54 HDX-D/HDX-G

Antenna Extension Cable for S5/S4 Series
LD-BNC-TNC

Antenna Extension Cable for S4 Series
LD-TNC ADU

Guitar Cable for S4 Series
LD-SJ-JAC

TNC Rack Mount Panel
PAN-1U19-TNC

Blank Panel
MW-1U-BLANK

Rack Mount Kit for S5 Series
ACC-S5RX-MBI
ACC-S5RX-MB3
ACC-S5RX-MB2

Wireless Microphone Ordering Information

Model / Description	2.4 GHz band
TRANTEC S2.4 Digital Wireless Microphone Systems	
KITS	
S2.4HBX KIT	Digital Wireless HDX handheld Microphone and BTX Beltpack and RX2 receiver
S2.4BBX QV KIT	Digital Wireless 2 x BTX Beltpacks and RX2 Receiver
S2.4BX KIT	Digital Wireless BTX Beltpack and RX1 receiver
S2.4HX KIT	Digital Wireless HDX Handheld Microphone and RX1 receiver
S2.4HHX QV KIT	Digital Wireless 2 x HDX Handheld Microphone and RX2 receiver
INDIVIDUAL UNITS	
S2.4-RX1-G3	1 Ch. Receiver with LCD (Half size)
S2.4-RX2-G3	2 Ch. Receiver with LCD (1 Unit size)
S2.4-BTX-G3	Digital Wireless Beltpack with LCD and Lapel Mic
S2.4-HDX-G3	Digital Wireless Handheld Microphone

Model / Description	H Band: 576 - 606 MHz Part Number	M Band: 506 - 538 MHz Part Number
TRANTEC S4.10 Series 16 Channel Wireless Solution		
KITS		
S4.10HD - Handheld Dynamic Kit		S4.10H-HD-AM RM3QU
S4.10L - Lavaliere Kit		S4.10L-AM RM3QU
INDIVIDUAL UNITS		
S4.10-HDX-Handheld Mic		S4.10-HDX-AMWM3QU
S4.10-LTX- Lavaliere Mic		S4.10-LTX-AMWM3QU
S4.10-RXA- Receiver		S4.10-RXA-AMRM3QU
TOA 5000 Series 16 Channel Wireless Solution		
KITS		
WS-5225 - Handheld Condenser Kit	WS-5225 H01US	WS-5225-AM RM1D00
WS-5265 - Handheld Dynamic Kit	WS-5265 H01US	WS-5265-AM RM1D00
WS-5325U - Lavaliere (unit) Kit	WS-5325U H01US	WS-5325U-AM RM1D00
WS-5325M - Lavaliere (omni) Kit	WS-5325M H01US	WS-5325M-AM RM1D00
WS-5325H - Headworn (uni) Kit	WS-5325H H01US	WS-5325H-AM RM1D00
INDIVIDUAL UNITS		
WT-5800 - Receiver	WT-5800 H01US	WT-5800-AM RM1D00
WT-5805 - Receiver	WT-5805 H01US	WT-5805-AM RM1D00
WT-5810 - Receiver	WT-5810 H01US	WT-5810-AM RM1D00
WT-4820 US - Receiver (add WTU-4800)		
WTU-4800 - Receiver Unit	WTU-4800 H01	WTU-4800-AM -M1D00
WM-5270 - Handheld Dynamic Mic	WM-5270 H01	WM-5270-AM -M1D00
WM-5265 - Handheld Dynamic Mic	WM-5265 H01	WM-5265-AM -M1D00
WM-5225 - Handheld Electret Mic	WM-5225 H01	WM-5225-AM -M1D00
WM-5325 - Beltpack	WM-5325 H01	WM-5325-AM -M1D00

Model / Description	H Band: 576 - 606 MHz
TRANTEC S5.3 Series 12 Channel Wireless Solution	**Part Number**
KITS	
S5.3-HD - Handheld Dynamic Kit	S5.3-HD-H2USQ
S5.3-HC - Handheld Condenser Kit	S5.3-HC-H2USQ
S5.3-L - Lavaliere Kit	S5.3-L-H2US Q
INDIVIDUAL UNITS	
S5.3-RX - Receiver	S5.3-RX-H2 Q
S5.3-HDX - Handheld Dynamic Mic	S5.3-HDX-H2 Q
S5.3-HCX - Handheld Condenser Mic	S5.3-HCX-H2 Q
S5.3-BTX - Beltpack	S5.3-BTX-H2 Q

TOA 5000 Series Selection Guide

TOA 5000 Series Wireless Microphone Selection Guide

Description	Model	Compatible With
Handheld Wireless Microphones		
Handheld microphone, condenser, unidirectional	WM-5225	Receiver: WT-5800; WT-5805; WT-5810; WT-4820
Handheld microphone, dynamic, unidirectional	WM-5265	
Handheld microphone, dynamic, unidirectional	WM-5270	
Beltpack Transmitter (microphone sold separately)		
Wireless beltpack transmitter	WM-5325	Microphones: Q-EM-22; Q-HM-22; WH-4000A; WH-4000H; YP-M5300; YP-M5310; Battery: WB-2000-2, Battery Charger: BC- 5000-2; BC-5000-6; BC-5000-12
Wireless Microphones		
Lavaliere microphone, condenser, unidirectional	YP-M5300	Transmitter: WM-5325, Receiver: WT-5800; WT-5805; WT-5810; WT-4820
Lavaliere microphone, condenser, omni-directional	YP-M5310	
Headset microphone, condenser, unidirectional	WH-4000H	
Aerobic headset microphone, condenser, unidirectional	WH-4000A	
Headworn microphone, condenser, omni-directional	Q-HM-22	
Single ear microphone, condenser, omni-directional	YP-M5000E Q	
Optional Accessories - Microphones		
Battery charger for 2 microphones *(AC adapter sold separately)*	BC-5000-2	Microphone/Beltpack: WM-5225; WM-5265; WM-5325, AC Adapter: AD-5000-2
Battery charger for 6 microphones *(AC adapter sold separately)*	BC-5000-6	Microphone/Beltpack: WM-5225; WM-5265; WM-5325
Battery charger for 12 microphones *(AC adapter sold separately)*	BC-5000-12	AC Adapter: AD-5000-6
AC adapter (sold separately)	AD-5000-2	Battery charger: BC-5000-2
AC adapter (sold separately)	AD-5000-6	Battery charger: BC-5000-6; BC-5000-12
Battery	WB-2000-2	Microphone/Beltpack: WM-5225; WM-5265; WM-5325
Aerobics waist pack (belt)	WH-4000P	Headworn Microphone: WH-4000A
Replacement windscreen	WH-4000S	Headworn Microphone: WH-4000A; WH-4000H
Wireless Receivers		
True diversity receiver	WT-5800	Microphone: WM-5225; WM-5265; WM-5270; WM-5325
Space diversity receiver	WT-5805	
Space diversity receiver	WT-5810	
Wireless microphone receiver	WT-4820	
UHF wireless tuner module	WTU-4800	Module for WT-4820
Optional Accessories - Receivers		
Antenna distributor	WD-5800	Receiver: WT-5800; WT-5805; WT-4820
UHF wireless antenna	YW-4500	Receiver: WT-5800; WT-5805; WT-4820; WTU-4800
Rack mount for single receiver (1RU)	MB-WT3	Receiver: WT-5800; WT-5805; WT-4820
Rack mount for dual receiver (1RU)	MB-WT4	
Rack mount kit	MB-15B	Antenna distributor: WD-5800
Wireless Microphone Kits (includes Microphone and Receiver)		
Handheld condenser kit	WS-5225	Microphone: YP-M5000E Q; Q-HM-77; WH-4000A; WH-4000H; YP-M5300; YP-M5310
Handheld dynamic kit	WS-5265	
Lavaliere condenser (unidirectional) kit	WS-5325U	
Lavaliere condenser (omni-directional) kit	WS-5325M	
Headworn condenser (unidirectional) kit	WS-5325H	

Trantec Series Selection Guide

TRANTEC Series Wireless Microphone Selection Guide

Description	Model	Compatible with
Optional Microphones		
Lavaliere microphone	MIC-X2; MIC-X55; MIC-X212-BE; MIC-X212-BK	Beltpack: S5.3-BTX
Lavaliere microphone	MIC-LP2; MIC-SJ55; MIC-SJ212-BE; MIC-SJ212-BK	Beltpack: S4.10-BTX
Glasses frame microphone	MIC-X690H	Beltpack: S5.3-BTX
Glasses frame microphone	MIC-SJ690H	Beltpack: S4.10-BTX
Headworn microphone	MIC-X33; MIC-X66-BK; MIC-X66-BL; MIC-X66-YE; MIC-X22-B-R; MIC-X22-P-R; MIC-XEM77;	Beltpack: S5.3-BTX
Headworn microphone	MIC-SJ33; MIC-SJ66-BK; MIC-SJ66-BL; MIC-SJ66-YE; MIC-SJ22-B-R; MIC-SJ22-P-R; MIC-SJEM77	Beltpack: S4.10-BTX
Optional Accessories - Receivers		
19" Rack mount tray for 1 or 2 receivers	MB-S4RX-5-EB QV	Receiver: 2 x S4.10-RX (for 1 receiver, square on one side)
Antenna distributor	S5-ADU	Receiver: S5.3-RX; S4.10-RX;
Antenna booster	YW-7000 RF	
Passive antenna splitter	ACC-SPLIT-2W	
Directional antenna	YW-7570	
Omnidirectional antenna	YS-7520	
Wall mount antenna	YW-4500 (when used with WD-5800)	
Whip antenna	ANT-54 BTX-D/BTX-G	
Antenna extension cable	LD-BNC-TNC	
TNC rack mount panel	PAN-1U19-TNC	
Blank panel	MW-1U-BLANK	
Receiver antenna	ANT-S5 RX-D/RX-G	Receiver: S5.3-RX
Rack mount kit	ACC-S5RX-MBI; ACC-S5RX-MB3; ACC-S5RX-MB2	
Power Supply (required)	100072907A	Receiver: S4.10-RX
Helical antenna	ANT-54 HDX-D/HDX-G	
Antenna extension cable	LD-TNC ADU	
Guitar cable	LD-SJ-JAC	
Neoprene aerobic belt	ACC-AB1000	
Receiver antenna (required)	D021203010; D021202280	
TNC M to BNC F Connector	15-6628	S4.10 Series

Note: Please inquire with customer service or your Regional Sales Manager as some of the TRANTEC accessories / microphones may not be available.
The AC Adapter for the 5000 Series battery chargers are sold separately.

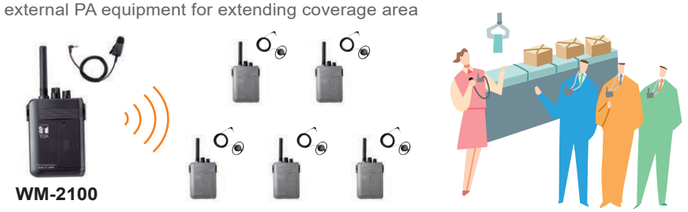
TOA Wireless Guide System

System Features

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

On-site Tours

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



WM-2100

Desk-top Transmitter

WM-2110

Model	WM-2110
Transmitting Frequencies	470 MHz band (5 ch) (470.075, 470.150, 470.375, 470.625, 470.725 MHz)
RF Carrier Power	5 mW
Oscillator	PLL synthesizer
Frequency Response	150 – 6,000 Hz (Desk-top transmitter to Portable receiver)
Input Level (selectable)	Standard input: –54 dB*/–60 dB*/–66 dB* (Mic) –12 dB*/–18 dB*/–24 dB* (Line) Maximum input: –30 dB*/–36 dB*/–42 dB* (Mic) +12 dB*/+6 dB*/0 dB* (Line) Mic/Line selection, 600 Ω, unbalanced, phone jack
Remote Input	Make contact input: Release voltage: 2 V DC short-circuit current: 0.2 mA loop resistance: under 100 Ω Remote control mode: Transmit radio signal with external equipment
Dimensions	140 (W) × 31 (H) × 119.5 (D) mm (5.5" x 1.2" x 4.7")
Weight	270 g

* 0dB = 1V

Portable Transmitter

WM-2100

Model	WM-2100
Transmitting Frequencies	470 MHz band (5 ch) (470.075, 470.150, 470.375, 470.625, 470.725 MHz)
RF Carrier Power	2 mW
Oscillator	PLL synthesizer
Frequency Response	200 – 5,000 Hz (Portable transmitter to Portable receiver)
Input Level	–50 dB* (sensitivity Hi)/–44 dB* (sensitivity Low)
Battery Life	18 hours (alkaline)
Battery	LR6 (1.5 V) × 1
Dimensions	62 (W) × 163.6 (H) × 32.5 (D) mm (2.4" x 6.4" x 1.3")
Weight	115 g (battery included)

*0 dB = 0.775 V

Portable Receiver

WT-2100

Model	WT-2100
Receiving Frequencies	470 MHz band (5 ch)(470.075, 470.150, 470.375, 470.625, 470.725 MHz)
Receiving Sensitivity	Better than 25 dB, S/N ratio (7 dBμVEMF input, ±1.7kHz deviation)
Frequency Response	200 – 5,000 Hz (Portable transmitter to Portable receiver) 150 – 6,000 Hz (Desk-top transmitter to Portable receiver)
Output Level	4 mW (16Ω load, 10% distortion)
Battery Life	18 hours (alkaline)
Battery	LR6 (1.5 V) × 1
Dimensions	62 (W) × 163.6 (H) × 32.5 (D) mm (2.4" x 6.4" x 1.3")
Weight	112 g (battery included)

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

Tie-clip Microphone

YP-M101

Close-talking Microphone

YP-M201

Earphone

YP-E401

Note: To use a wireless portable receiver with TOA's 5000 Series Microphone System see WT-5100 on page 99

Infrared Wireless Microphone system

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

Infrared Wireless Microphone

IR-200M

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

Infrared Wireless Microphone

IR-300M

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

Model	IR-200M	IR-300M
Battery	IR-200BT-2 Ni-MH battery or AA alkaline (2 pieces)	
Infrared Emitter Wavelength Modulation Method Carrier Frequency Transmission Distance	870 nm (AM: Brightness modulation) Frequency modulation Channel A: 3.100 MHz/Channel B: 3.350 MHz Approx. 20 m (Power selector switch: H; In an unobstructed space.)/Approx. 15 m (Power selector switch: N; In an unobstructed space.)	
Maximum Input Sound Pressure	120 dB SPL	
Input Sensitivity Adjustment	—	Adjustment range: -9dB to 0dB (factory-preset: 0dB)
Microphone Unit	Unidirectional electret condenser microphone	
Frequency Response	100Hz – 12kHz	
Input	—	External microphone input (ø3.5 monaural mini jack)
Battery Operation Time	Approx. 8 hours (IR-200BT-2, Power selector switch: N)	Approx. 6 hours (alkaline battery, Power selector switch: N)
Dimensions	ø37 × 241.8 mm (1.6" x 9.5")	64 (W) × 91.3 (H) × 27.3 (D) mm (2.5" x 3.6" x 1.1")
Weight	170g (with batteries)	130g (with batteries & strap)

Battery Charger

IR-200BC

Infrared Wireless Tuner

IR-702T

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

Model	IR-702T
Power Source	AC mains 50/60Hz (supplied from the accessory AC adaptor)
Receiving Frequency	Channel A: 3.100MHz/Channel B: 3.350MHz
Receiver Sensitivity	S/N ratio over 50dB (40dBμ V input, 1 kHz modulation, ±4.8 kHz deviation)
Infrared Receiver Input	75 Ω, BNC jack × 2 (Infrared wireless receiver's power source: 24V DC, max. 220 mA in total of 2 terminals)
Output	Channel A and B: –10 dB* (±4.8kHz deviation, at volume level max.), 600 Ω, electronically balanced, 3 pole phone jack Note: Channel A switchable to mixer output
Frequency Response	100Hz – 12kHz
Dimensions	210 (W) × 44 (H) × 210.9 (D) mm (8.2" x 1.7" x 8.3")
Weight	630g (1.4 lbs) (unit only)

Infrared Wireless Distributor

IR-700D

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

Model	IR-700D
Power Source	AC mains 50/60Hz (use of the supplied AC adaptor)
Power Consumption	25 W or less
Input/Output	4 mixing inputs, 2 distribution outputs
Infrared Receiver Input	75 Ω, BNC jack × 4 (Infrared wireless receiver's power source: 24V DC, 800 mA in total of 4 terminals)
Number of Connectable Conference Receivers	16 (YW-1024 x 4)
Distribution Output	75 Ω, BNC jack
Dimensions	210 (W) × 44 (H) × 200.9 (D) mm (8.2" x 1.7" x 7.9")
Weight	640g (1.4 lbs) (unit only)

Wall-mount Receiver

IR-500R

- Reception area approx. 15m
- Adjustable reception angle

Ceiling-mount Receiver

IR-510R

- Reception radius approx. 8m

Wall-mount Receiver

IR-520R

- Reception area approx. 15m

Model	IR-500R	IR-510R	IR-520R
Power Source	24 V DC (supplied from the IR-702T)		
Current Consumption	Max. 40 mA	Max. 60 mA	Max. 30 mA
Infrared Detector Wavelength Carrier Frequency Communication Area Reception Angle	870 nm Channel A: 3.100 MHz/Channel B: 3.350 MHz Approx. 15 m (50 ft) in a space without any obstacles Vertical: 80° (up to 30° moveable downward) Horizontal: 80° (up to 30° moveable left or right)	— —	
Connection Terminal	75Ω, BNC jack		
Operating Temperature	0 °C to +40 °C (32 °F to 104 °F)		
Operating Humidity	30% to 85% RH (no condensation)		
Finish	Filter section: Polycarbonate, optical cut filter Base: ABS resin, off-white	Filter section: Polycarbonate, optical cut filter Base: ABS resin, black	Filter section: Polycarbonate, optical cut filter
Dimensions	70 (W) x 120 (H) x 72 (D) mm (2.76" x 4.72" x 2.83")	ø120 x 71.3 (H) mm (ø4.72" x 2.81")	84.5 (W) x 63.5 (H) x 32 (D) mm (3.33"x2.5"x1.26")
Weight	220g (0.49 lbs) (unit only)	205g (0.45 lbs) (unit only)	100g (0.22 lbs) (unit only)
Accessory	—	Mounting bracket x 1	Stand mounting bracket x 1, Bracket mounting screw x 2

Accessory Reference on page 154

Infrared Wireless Classroom System

TOA's educational microphone system offers wireless convenience and clear, interference free infrared voice transmission that brings classrooms to life. Also suited for training rooms and conference rooms.

- A uniform classroom-wide sound quality with a single wide-dispersion speaker which provides ample 100 m² coverage
- Quick & easy installation requiring just one CAT-5 cable
- TOA lightweight, low fatigue infrared wireless microphones

»Infrared Speaker

IR-820SP Y 4QD00

- Possible to use with Channel A / B / 1 / 2
- Built-in infrared receiver and 20W digital amplifier
- Unique wide-dispersion acoustic structure employing innovative TOA technology to achieve uniform output over a wide radius
- Bass-reflex speaker system achieving a wide frequency range and high power-handling capability
- Easy installation with quick, optimally positioned ceiling mounting

Model	IR-820SP
Power Source	24 V DC (supplied from IR-802T)
Rated Output	20 W
Frequency Response	100 Hz – 20 kHz (-10 dB) at installation in 1/2 free sound field (Measured by installing the unit in the center of a ceiling.)
Amplification System	Class D
Speaker Component	12 cm (4.72") cone-type
Infrared Wireless Receiver	
Wavelength:	870 nm
Carrier Frequency:	Channel A : 3.100 MHz, Channel B : 3.350 MHz Channel 1 : 4.100 MHz, Channel 2 : 4.725 MHz
Reception Angle:	360° (Horizontal)
Connection Terminal	RJ-45
Connection Cable	CAT-5 UTP
Operating Temperature	-10°C to 50°C (14°F - 122°F)
Dimensions	ø320 × 205 (D) mm (12.6" x 8.1")
Weight	3.4 kg (7.5 lbs)

*0 dB = 1V

Next Generation IR-800 Plus Classroom Voice-lift System

»Infrared Wireless Tuner

IR-802T CU AQD00

- Channel A / B, with Priority Control for separate mode
- Builtin Feedback Suppresion
- 3 AUX inputs for PC, TV/DVD player and MP3 audio player
- Output muting by 25V line signal from telephone paging
- Equalizer control knobs for low-, mid- and high-frequency outputs
- Mixing output terminal for ALD (Assistive Listening Device)
- Frequency response optimized to reduce acoustic feedback in 30 ft x 30 ft classrooms

Model	IR-802T CU AQ
Power Source	120 V AC, 50/60 Hz (supplied AC adapter must be used)
Receiving Frequency	Teacher (Channel A): 3.100 MHz Student (Channel B): 3.350 MHz
Receiver Sensitivity	50 dB or more, Signal-to-noise ratio (40 dBμV input, 1 kHz modulation, ±4.8 kHz deviation)
S/N Ratio	Tuner: 60 dB or more (60 dBμV input, 1 kHz modulation, ±4.8 kHz deviation, A-weighted, Equalization: Centered) AUX: 75 dB or more (A-weighted, Equalization: Centered)
Input AUX PC: AUX DVD/TV: AUX MP3: Mute:	line, -10 dB*, 10 kΩ, unbalanced, stereo mini jack (internal mixing) line, -10 dB*, 10 kΩ, unbalanced, 2P RCA jack (internal mixing) line, -10 dB*, 10 kΩ, unbalanced, stereo mini jack (internal mixing) 25 V line signals of telephone paging from a school intercom system
Output	ALD (Assistive Listening Device): line, -10 dB*, 10 kΩ, unbalanced, monaural mini jack Speaker: RJ45 (dedicated terminal for IR-820SP connection)
Feedback Suppression	Valid for mixing out of 2 infrared wireless microphones
Equalization	High: ±10 dB at 10 kHz/Mid: ±10 dB at 1.3 kHz/Low: ±10 dB at 100 Hz
Mute Function	Muted by 25 V line signals
Dimensions	210 (W) × 46 (H) x 312 (D) mm (8.3" x 1.8" x 12.3")
Weight	1.8 kg (4 lbs)

*0 dB = 1V

»Infrared Wireless Tuner

IR-802T CU 1QD00

- Channel 1 / 2, with Priority Control for separate mode
- Builtin Feedback Suppresion
- 3 AUX inputs for PC, TV/DVD player and MP3 audio player
- Output muting by 25V line signal from telephone paging
- Equalizer control knobs for low-, mid- and high-frequency outputs
- Mixing output terminal for ALD (Assistive Listening Device)
- Frequency response optimized to reduce acoustic feedback in 30 ft x 30 ft classrooms

Model	IR-802T CU 1Q
Power Source	120 V AC, 50/60 Hz (supplied AC adapter must be used)
Receiving Frequency	Teacher (Channel 1): 4.100 MHz Student (Channel 2): 4.725 MHz
Receiver Sensitivity	50 dB or more, Signal-to-noise ratio (40 dBμV input, 1 kHz modulation, ±4.8 kHz deviation)
S/N Ratio	Tuner: 60 dB or more (60 dBμV input, 1 kHz modulation, ±4.8 kHz deviation, A-weighted, Equalization: Centered) AUX: 75 dB or more (A-weighted, Equalization: Centered)
Input AUX PC: AUX DVD/TV: AUX MP3: Mute:	line, -10 dB*, 10 kΩ, unbalanced, stereo mini jack (internal mixing) line, -10 dB*, 10 kΩ, unbalanced, 2P RCA jack (internal mixing) line, -10 dB*, 10 kΩ, unbalanced, stereo mini jack (internal mixing) 25 V line signals of telephone paging from a school intercom system
Output	ALD (Assistive Listening Device): line, -10 dB*, 10 kΩ, unbalanced, monaural mini jack Speaker: RJ45 (dedicated terminal for IR-820SP connection)
Feedback Suppression	Valid for mixing out of 2 infrared wireless microphones
Equalization	High: ±10 dB at 10 kHz/Mid: ±10 dB at 1.3 kHz/Low: ±10 dB at 100 Hz
Mute Function	Muted by 25 V line signals
Dimensions	210 (W) × 46 (H) x 312 (D) mm (8.3" x 1.8" x 12.3")
Weight	1.8 kg (4 lbs)

*0 dB = 1V

Rear of 802T Tuner

Infrared Wireless Classroom System

»Infrared Wireless Microphone

IR-310M Y PQ

IR-310M

- Usable as hands-free or hand-held microphone
- Lightweight body with unobtrusive styling
- 8-hour operation with single AA battery
- Microphone sensitivity adjustable to suit application
- Sturdy clothing clip to prevent wobbling or rotation during hands-free use

Model	IR-310M Y PQ	IR-310M
Carrier Frequency	Channel A: 3.100 MHz (The indication of channel selector is "A") Channel 1: 4.100 MHz (The indication of channel selector is "B")	Channel A: 3.100 MHz Channel B: 3.350 MHz
Function	Priority function switch to mute Channel B or Channel 2	———
Batteries	One piece of IR-200BT-2 rechargeable battery for the infrared wireless microphone (option)	
Current Consumption	typ.250 mA (1.2 V)	
Infrared Emitter Transmission Distance	Approx.15m (50 ft) (In an unobstructed space)	
Input Sensitivity Adjustment	Adjustment range: 2 levels (High, Low)	
Microphone Unit	Unidirectional electret condenser microphone	
Frequency Response	100 Hz – 12 kHz	
Preemphasis	300 μs	
Input	External microphone input (ø3.5 monaural mini jack)	
Battery Operation Time	Approx. 8 hours (one piece of IR-200BT-2)	
Finish	Control Section: ABS resin, white/ Filter Section: Polycarbonate, optical cut filter	
Dimensions	54 (W) x 109 (H) x 27 (D) mm (2.1" x 4.3" x 1.1")	
Weight	95g (0.21 lb) (with battery and strap)	
Accessories	Neck strap x 1	

»Battery Charger

IR-310BC

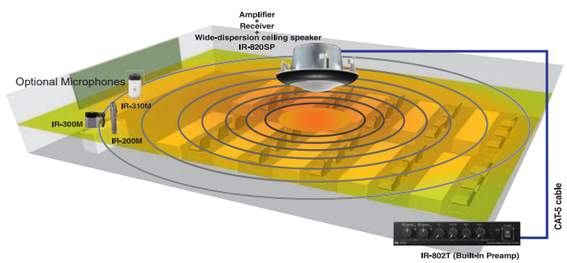
»Interface Unit

IR-801AF

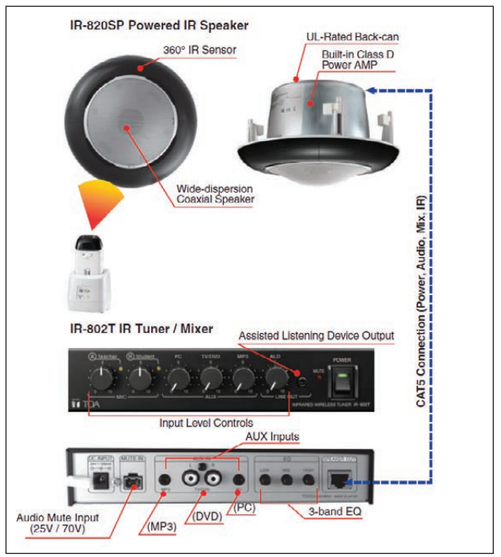
Use only with Plus System

- Interface unit enabling paging and control of external devices with IR-310M's function button
- Installation between IR-820T with CAT-5 cable

Model	IR-801AF
Power Source	24 V DC (supplied from IR-802T)
IR Frequency Channel	Channel A: 3.100 MHz
Contact Output	Relay contact output, contact capacity: 30 V DC / 2-500 mA, removable terminal block
Audio Output	-20dB, Electrical balanced, removable terminal block
Operating Temperature	32°F to 104° F (-10°C to + 50°C)
Operating Humidity	Less than 90% RH
Finish	Control section: ABS resin, black
Dimensions	8.27" (W) x 2.73" (H) x 7.13" (D) (8.27" x 1.73" x 7.13")
Accessories	Removable terminal block (2 pins) x 1, (3 pins) x 1



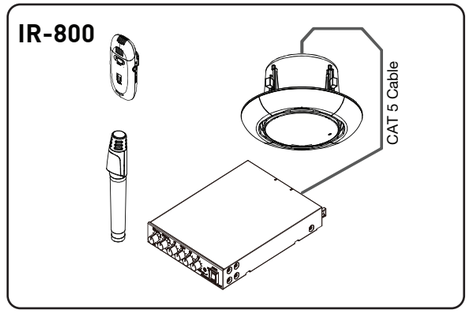
One Classroom Example



Infrared Wireless Classroom System

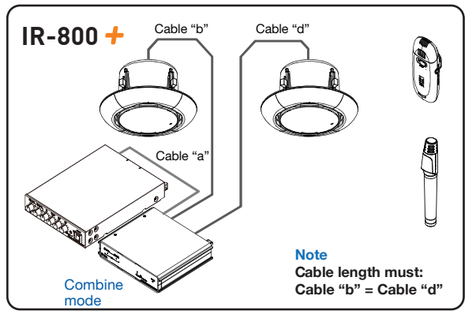
IR-800 & IR-800 Plus Configuration Examples

Ask for more configuration options



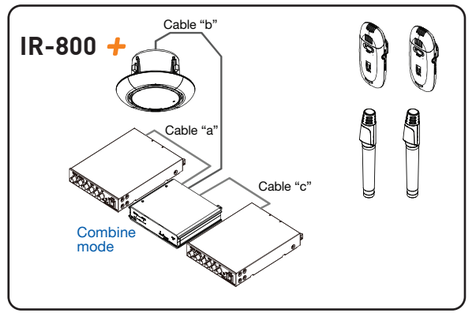
2 channel system for typical class room

- Typical for average size classroom
- 1 or 2 microphones
- Wide dispersion speaker
- 360° IR sensor has extremely wide pickup

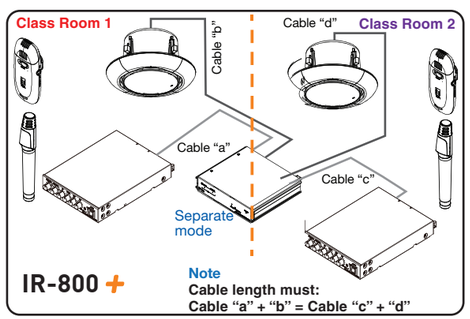


2 channel system for large class room

- Designed for larger rooms, in combine mode
- 1 or 2 microphones
- 2 Wide dispersion speaker for full vocal coverage
- 360° IR sensor has extremely wide pickup



- Typical for average size classroom, in combine mode
- Up to 4 micorphones with AF interface unit
- Wide dispersion speaker
- 360° IR sensor has extremely wide pickup



2 channel system for dual zone class rooms

- Flexible for large rooms that can be divided into two smaller rooms
- Up to 2 microphones in each room when using Separate mode
- When using in larger full room, Up to 4 micorphones using combine mode with AF interface unit
- 2 Wide dispersion speakers
- 360° IR sensor has extremely wide pickup

Infrared Wireless Classroom System

IR Wireless Microphone Series Accessories

Battery Charger
IR-200BC
- for IR-200M & IR-300M

Battery Charger
IR-310BC
- for IR-310M

Ni-HM Battery
IR-200BT-2

Surface mount back can
BC-820
- for IR-820SP

Wall mount bracket
WB-802
- for IR-802T

Tie-clip microphone
YP-M101

Headworn Microphone
YP-M5000H

Single Ear Microphone
YP-M5000E

Support rails
HY-TB1
- for IR-820SP

Distributor
YW-1022
- 1 into 2 outputs

Distributor
YW-1024
- 2 into 4 outputs

Rack mount brackets
MB-WT3
- for IR-702T & IR-700D

Rack mount brackets
MB-WT4
- for IR-702T & IR-700D

Power cable connector
A-DC-Y
- Connects 2 IR-310BC to 1 AC power Adapter

IR Wireless Classroom System Kit Ordering Information

Infrared Wireless Classroom System Kits

• *Order product separately or as a k t.*

NEW

	IR-800KIT1	IR-800KIT2	IR-800KIT3	IR-800KIT4	IR-800KitP1	IR-800KitP2
[IR-801AF US DQ]					✓	✓
[IR-802T CU AQ]	✓	✓	✓	✓	✓	✓
[IR-802T CU 1Q]					✓	
[IR-820SP Y 4Q]	✓	✓	✓	✓	✓	✓ X 2
[HY-TB1]	✓	✓	✓	✓	✓	✓ X 2
[IR-310M Y PQ]					✓	✓
[IR-310M]			✓	✓ X 2		
[IR-310BC]			✓	✓ X 2	✓	✓
[IR-300M]	✓	✓				
[IR-200M Y 4Q]		✓			✓ X 2	
[IR-200BC]	✓	✓			✓	
[IR-200BT-2]	✓	✓ X 2	✓	✓ X 2	✓ X 3	✓
[ACG36]	✓	✓	✓	✓	✓	✓
[CAT-5E] *(FT 6) / (FT 15') / (FT 50')*	✓ *(FT 6)*	✓ *(FT 6)*	✓ *(FT 6)*	✓ *(FT 6)*	✓ *(FT 15') (FT 50')* X 2	✓ *(FT 15') (FT 50')* X 2
[CSTEREO-03]	✓	✓	✓	✓	✓	✓
[WB-802]	✓	✓	✓	✓	✓ X 2	✓

MEGAPHONES

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

Splash proof Hand Grip Type Megaphones

ER-1203
- 4W max.
- IPX5*

ER-1206
- 10W max.
- IPX5*

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

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

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

Hand Grip Type Megaphones

ER-520
- 10W max.

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

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

ER-1215
- 23W max.

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

ER-3215
- 23W max.

Shoulder Type Megaphones

ER-2215
- 23W max.

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

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

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

Hands-Free Type Megaphones

⋙Compact Power Megaphone

ER-604W

- Compact and lightweight body
- Maximum output power of 10 W
- Supplied hand-held type microphone equipped with press-to-talk switch and volume control
- Built-in electronic whistle
- 2 mic inputs and 1 aux input
- Battery status indicator
- Approx. 10 hours of operation with 8 R6P manganese dioxide batteries (without use of whistle)
- Optional headset microphone: WH-4000H

⋙Personal PA System

ER-1000A-BT

- Bluetooth Communication Method v. 4.2
- Ideal for school teachers, sports instructors, tour guides, trade show personnel, and police officers, all of whom can benefit from the system's hands free convenience
- Ultra-light body of only about 480 g, yet with a maximum output of 10W and a maximum audible range of 100 meters
- Supplied headset microphone
- 55 cm long elastic waist belt extendable to up to 120 cm
- Large rotating volume control and the independent power on/off switch for easy knob and switch operation even with a gloved hand
- AUX input terminal
- 8 hours operation with 6 alkaline AA batteries

Accessory Reference on page 162

Megaphones

Model	ER-1203	ER-1206	ER-1206W	ER-1206S
Power Source	R6P (AA) x 4 (6 V DC)	R6P (AA) x 6 (6 V DC) or R6P (AA) x 4 (6 V DC)		
Rated Output	3 W	6 W (when using 6 R6P batteries)		
Maximum Output	4 W	10 W (when using 6 R6P batteries)		
Battery Life	Approx. 8 hours (JEITA)[1]	When using 6 R6P batteries: Approx. 8 hours (JEITA)[1] When using 4 R6P batteries[2]: Approx. 5 hours (JEITA)[1]	When using 6 R6P batteries: (JEITA)[1] Voice: Approx. 8 hours, Whistle: Approx. 20 minutes When using 4 R6P batteries[2]: (JEITA)[1] Voice: Approx. 5 hours, Whistle: Approx. 10 minutes	When using 6 R6P batteries: (JEITA)[1] Voice: Approx. 8 hours, Siren: Approx. 20 minutes When using 4 R6P batteries[2]: (JEITA)[1] Voice: Approx. 5 hours, Siren: Approx. 10 minutes
Audible Range	Approx. 125 m (JEITA)[1]	Approx. 250 m (JEITA)[1]	Approx. 250 m (JEITA)[1] Whistle: Approx. 315 m (JEITA)[1]	Approx. 250 m (JEITA)[1] Siren: Approx. 315 m (JEITA)[1]
Signal Sound	--		Whistle	Siren (sounds at 5 second intervals)
Magnetic Circuit	Neodymium magnet, inner magnet type			
Diaphragm	Polyimide film (voice coil, bobbin)			
Water Protection	IPX5			
Finish Horn: Other: Strap:	ASA resin, clear dark gray ASA resin, dark gray Nylon, black		ASA resin, clear dark gray ASA resin, yellow Nylon, black	ASA resin, clear red ASA resin, red Nylon, black
Dimensions	137 (W) x 257.8 (H) x 210 (D) mm (5.4" x 10.2" x 8.3")	154 (W) x 266 (H) x 250 (D) mm (6.1" x 10.5" x 9.8")		
Weight	610 g (1.34 lb) (without batteries)	660 g (1.45 lb) (without batteries)		680 g (1.49 lb) (without batteries)
Accessory	--	Battery spacer x 1		
Option	Wall mounting bracket for megaphone: SP-1100			

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

Model	ER-520	ER-520W	ER-520S	ER-1215	ER-1215S
Power Source	R6P (AA) x 8 (12 V DC)			R14P (C) x 6 (9 V DC)	
Rated Output	6 W			15 W	
Maximum Output	10 W			23 W	
Battery Life	Approx. 10 hours (JEITA)[1]	Voice: Approx. 10 hours (JEITA)[1] Whistle: Approx. 30 minutes (JEITA)[1]	Voice: Approx. 10 hours (JEITA)[1] Siren: Approx. 40 minutes (JEITA)[1]	Approx. 14 hours (JEITA)[1]	Voice: Approx. 14 hours (JEITA)[1] Whistle: Approx. 20 minutes (JEITA)[1]
Audible Range	Approx. 250 m (JEITA)[1]			Approx. 315 m (JEITA)[1]	Voice: Approx. 315 m (JEITA)[1] Whistle: Approx. 500 m (JEITA)[1]
Signal Sound	--	Whistle	Siren	--	Siren (sounds at 5 second intervals)
Diaphragm	Polyimide film			Polyimide film (voice coil, bobbin)	
Finish Horn: Other: Strap:	ASA resin, light gray ASA resin, gray Tetoron, black		ASA resin, red ASA resin, red Tetoron, black	ASA resin, light gray ASA resin, gray Nylon, black	ASA resin, red ASA resin, red Nylon, black
Dimensions	160 (W) x 256 (H) x 260 (D) mm (6.3" x 10.1" x 10.2")			210 (W) x 291 (H) x 346 (D) mm (8.27" x 11.5" x 13.6")	
Weight *(without batteries)*	620 g (1.37 lb)	650 g (1.43 lb)		1.1 kg (2.43 lb)	1.2 kg (2.65 lb)

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

Model	ER-3215	ER-2215	ER-2215W	ER-2230W	ER-2930W
Power Source	R14P (C) x 6 (9 V DC)			Battery: R20P (D) x 10 (15 V DC); External Power: 12 V DC Battery	
Rated Output	15 W			30 W	
Maximum Output	23 W			45 W	
Battery Life	Approx. 9 hours (JEITA)[1]	Approx. 9 hours (JEITA)[1]	Voice: Approx. 9 hours (JEITA)[1] Siren: Approx. 20 minutes (JEITA)[1]	Voice: Approx. 17 hours (JEITA)[1] Whistle: Approx. 90 minutes (JEITA)[1]	
Audible Range	Approx. 400 m (JEITA)[1]		Voice: Approx. 400 m (JEITA)[1] Whistle: Approx. 500 m (JEITA)[1]	Voice: Approx. 800 m (JEITA)[1] Whistle: Approx. 1000m (JEITA)[1]	
Signal Sound	--		Whistle (1.6 to 2.4 kHz)	Whistle (1.6 to 2.4 kHz)	
Diaphragm	Polyimide film (voice coil, bobbin)				
Remaining Battery Indication	--			LED (also serves as a power indicator) Steady ON: Normal use, Flashing: Batteries need replacement	
AUX Input Sensitivity	--			-10 dB* (300 mV), 10 kΩ, (ø6.3 mini jack, stereo plug acceptable), volume control	
EXT. Mic Input	--			600 Ω, unbalanced, ø6.3 phone jack, volume control	
Receiving Frequency	--				UHF (800 MHz Band) VHF (200 MHz band)
Antenna	--				Fold-down flexible antenna
Finish Horn: Other: Strap: Horn Ring: Case Top:	ASA resin, light gray ASA resin, gray Nylon, black -- --			Aluminum, light gray, paint ASA resin, gray Nylon, black Vinyl chloride, gray Die-cast aluminum, gray paint	
Dimensions	210(W) x 291(H) x 381(D)mm (8.27" x 11.5" x 15.0")	ø210 x 336 mm (8.27" x1 3.2")		ø351 x 512 mm (13.819" x 20.16")	
Weight *(without batteries)*	Body: 1.15 kg (2.5 lb) Microphone: 150 g (0.33 lb)		Body: 1.2 kg (2.6 lb) Microphone: 150 g (0.33 lb)	3.6 kg (7.9 lb)	3.8 kg (8.4 lb)
Accessory	--			ø3.5 mini plug (AUX input) x1, External power supply cord (1 m) x1, Splash-proof cover x1[3]	
Option	--			Microphone: DM-1300US	Microphone: DM-1300US Wireless Tuner/Receiver Module: WTU-4800

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

Megaphones Optional Accessories

»Wall Mount Bracket
SP-1100

»Headset Microphone
WH-4000H *(for ER-604W)*

» Microphone
DM-1300US

»Wireless Tuner/Receiver Module
WTU-4800 *(for ER-2930W)*

Accessory Reference on page 162

Megaphones

Model	ER-604W
Power Source	R6 battery x 8 (12 V DC), 12 V DC/0.8 A or more (AC adapter or DC power supply unit usable)
Rated Output	6 W
Maximum Output	10 W
Battery Life	Voice: Approx. 10 hours (R6P manganese dioxide battery use) Whistle: Approx. 30 minutes (continuous use)
Audible Range	Voice: 160m (under noise level of 55 dB) Whistle: 160 m (under noise level of 55 dB)
Signal	Whistle, push switch activation
Microphone	Close-talking type, press-to-talk switch, volume control. Fixed to the microphone hanger on the unit's top panel
Input	MIC 1: -40 dB*, 1.5 kΩ, ø6.3 phone jack MIC 2: -18 dB*, 3 kΩ, ø3.5 mini jack, phantom powering AUX: -12 dB*, 18 kΩ, ø3.5 mini jack External power supply: 12 V DC *Note: MIC 1, 2 and AUX inputs can be used at the same time. However, their individual volume cannot be adjusted as the unit's volume control is common to those inputs*
Other 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
Finish	Body, microphone: ABS resin, off-white Shoulder pad, belt: Black
Dimensions	102 (W) x 258 (H) x 216 (D) mm (4.02" x 10.26" x 8.50")
Weight	1.6 kg (3.8 lb) (without batteries)
Accessory	ø3.5 mini plug x 1, External power supply cord (1 m) x 1
Option	Headset microphone: WH-4000A, WH-4000H, Dynamic microphone DM series

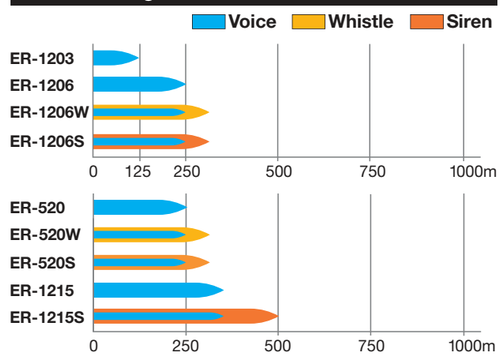
* 0 dB = 1V
Note: Batteries are optional.

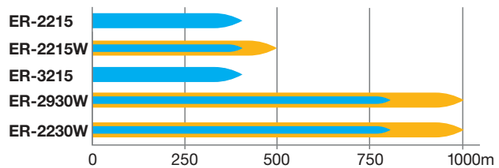
* 0 dB = 1V

Model	ER-1000A-BT
Power Source	Alkaline battery (LR6): 6 pieces (9 V DC) or 4 pieces[1] (6 V DC) Rechargeable nickel metal hydride (Ni-MH) battery (HR15/51): 6 pieces (7.2 V DC) or 4 pieces[1] (4.8 V DC)
Output	6 W (rated) and 10 W (max) when 6 AA batteries (9 V DC) are used. 3 W (rated) and 4 W (max) when 4 AA batteries[2] (6 V DC) are used
Maximum Output	10 W
Battery Life	Voice operation*3: Approx. 8 hours (when 6 or 4*1 alkaline batteries are used) Approx. 7 hours (when 6 or 4*1 NiMH batteries are used) AUX stereo input operation (music reproduction)*4 : Approx. 9 hours (when 6 or 4*1 alkaline batteries are used), Approx. 9 hours (when 6 or 4*1 NiMH batteries are used)
Audible Range[2]	Voice operation: Approx. 100 m (328.08 ft) (when 6 alkaline batteries or NiMH batteries are used) Approx. 80 m (262.47 ft) (when 4*1 alkaline batteries or NiMH batteries are used)
Frequency Response	300 Hz - 14 kHz (deviation: -26 dB)
Headset Microphone	Ear-on type, electret condenser microphone, sensitivity: -47 dB (0 dB = 1 V/1 Pa, 1 kHz), cord length: 1.3m (4.27ft), 3.5mm (1/8") mini-plug (monaural), with headband and windscreen
Input	MIC : –30 dB*5, 3 kΩ, 3.5mm (1/8") monaural mini-jack, phantom power supply. AUX*6 : –10 dB*5 , 2 kΩ, 3.5mm (1/8") stereo mini-jack (supporting monaural applications*7)
Communication Method	Bluetooth Ver.4.2
Output Power	Bluetooth Class 2
Bluetooth Operatinq Range	30 feet (10 meters)
Protocol / Codec	A2DP / SBC
Belt Length	55 – 120 cm (1.8 – 3.94 ft)*8 90 - 160 cm (2.95 - 5.25 ft) (when wearing an extension belt (accessory))*8
Finish	Front case: ABS resin, black Rear case: ABS resin, gray Grille: Surface-treated steel plate, black, paint Belt: Elastic rubber, black
Dimensions	133 (W) x 96 (H) x 222 (D) mm (5.24" x 3.78" x 8.74") (belt excluded)
Weight	Main PA unit 480 g (1.06 lb) (belt included, batteries excluded), Headset microphone: 50 g (0.11 lb), Extension belt: 40 g (1.41 oz)
Accessory	Headset microphone (with headband and wind screen) x 1, Belt (attached to the main PA unit) x 1, Extension belt x 1, Battery spacer x 2

*1 When the supplied battery spacers are used.
*2 Transmission range is measured on a quiet street with the Personal PA loaded with fresh batteries. Range varies depending on surrounding environmental conditions, such as battery consumption, ambient noise levels, wind direction and obstacles. Reference standard: JEITA (Japan Electronics and Information Technology Industries Association) TT-4501D
*3 Battery life during voice output usage represents the period of time when the Personal PA is continuously used with the volume control set to a position that does not cause feedback. Reference standard: JEITA (Japan Electronics and Information Technology Industries Association) TT-4501D
*4 Battery life during AUX stereo input represents a value actually measured when music is continuously reproduced with a commercial audio player connected to the auxiliary (AUX) input terminal. It varies depending on the connected external equipment's volume output or the type of music source.
*5 0 dB = 1 V
*6 Adjust the volume of the auxiliary (AUX) input at the connected external device.
*7 Volume during monaural operation is smaller than during stereo operation.
*8 The 120 cm (3.94 ft) length is when the Belt is stretched out to its maximum extent. When worn, consider a Belt length of 100 cm (3.28 ft) (of waist size when clothes are worn) as a rule-of-thumb standard.
Note: Prepare batteries separately, as they are not supplied with the product.

Audible Range





Accessory Reference on page 162

Megaphones Optional Accessories

INTERCOM

SIP Video & Audio Intercom System

TOA's N-SP80 Series SIP Intercom System offers flexible audio and video communications using standard SIP and Onvif protocols. It is compatible with a variety of SIP servers (including Cisco, Avaya, Asterisk, and Genetec*). The N-SP80 Series can work as a stand-alone system, or it can be integrated with TOA's N-8000 IP Intercom system via N-8000SG SIP Gateway.

** All company names mentioned above are trademarks or registered trademarks of their respective owners.*

SIP Multimedia Station

N-SP80MS1

- 7-inch 16x9 touch screen
- Intuitive operation with dial keys
- Compatible with major video codecs
- Android-based for easy customization
- PoE or local power

SIP Video Door Station

N-SP80VS1

- Compatible with major audio codecs
- Built-in AEC (Acoustic Echo Canceller) enables full-duplex communication
- Photo Sensitive Sensor detects brightness
- IR LEDs help to capture video even in dark environments
- Resolution up to 1080p

SIP Audio Door

N-SP80AS1

- Compatible with major audio codecs
- High-quality audio transmission
- Built-in AEC (Acoustic Echo Canceller)
- Full-duplex communication
- Less cabling thanks to PoE

4 Gang Back Box (optional accessory)

YC-400

- Optional accessory for N-SP80VS1 or N-SP80AS1

YC-831HSW AM

- Custom Back Box w/ Heater and Tamper Switch for N-SP80AS/VS1

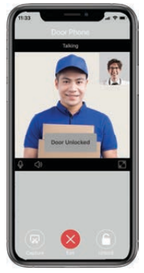
Model	N-SP80MS1
Graphic Display	7-inch capacitive touch screen TFT LCD, 800 x 480 pixels, 16:9 wide screen aspect ratio
Camera	2 mega pixels CMOS camera, free rotation
Network Protocol	SIP RFC3261, TCP/UDP/IP, PPPOE, RTP/RTCP
Operation System	Android 4.2
Voice Codec	G.711A/U, G.723, G.729a/b, G.722, iLBC, AMR-NB, AMR-WB, OPUS
Video Codec	H.263, H.264
DTMF Modes	Inband, RFC2833, SIP INFO
Audio Features	VAD, CNG, AEC, G.165/G.168
Network Interface	Dual switched 10/100Mbps port, optional PoE
Wi-Fi	IEEE802.11 b/g/n
External Interface	USB 2.0, 3.5mm headset jack, HDMI
IP Assignment	Static IP, DHCP, PPPoE
Management	LCD Menu Configuration,TR069, WebUI
Dimensions	230 (W) × 218 (H) x 93.7 (D) mm (9.06" x 8.58" x 3.69")

Model	N-SP80VS1	N-SP80AS1
Camera	2 mega pixels	--
Resolution	Up to 1080p	--
Button	panic button; 1 reset button (on board)	
Microphone	1 integrated microphone, IP67	
Speaker	2 Watt, IP66	
Input Relay	2 input relays for alarm	
Output Relay	2 output relays for door opener	
Call Indication	1 RGB LED (colors: red, green, blue)	
Power Input	12V DC input	
Power Consumption	Less than 12W	
Dust/Water Protection	IP54	
Operating Temperature	-30°C to +40°C (-22°F to 104°F) with YC-831HSW-AM -20°C to +55°C (-4 'F to 131 'F) with no backbox	
Installation	Flush-mounted, Fit in Clipsal 164/4 back box	
Finish	316 grade stainless steel	
Dimensions	PCB: 74 x 140 mm (2.91" x 5.51") With flush-mount kit (W x H x D) : 120 x 210 x 61 mm (4.72" x 8.27" x 2.4")	
Option	4 gang back box YC-400	

Softphone Application

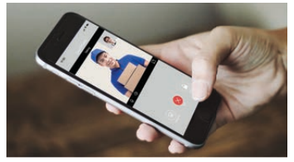
Spotlight

Available
iOS & Android



Video
Calling

Live Viewing



Door Unlocking

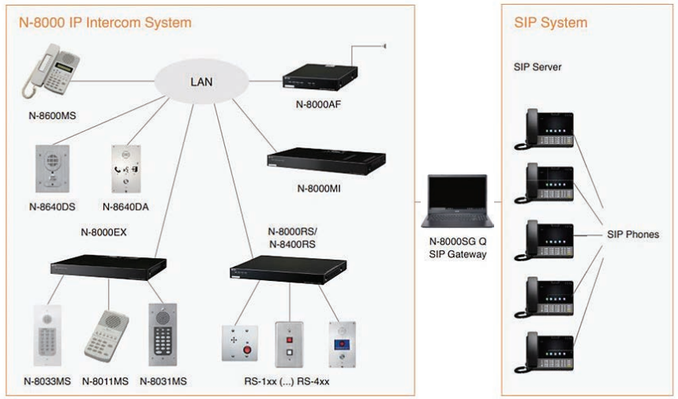
N-SP80 Series Optional Accessories

Wall-Mount Bracket
N-SP80WB

The N-SP80WP is a simple and robust wall mount bracket for TOA's N-SP80MS1 SIP Multi Media Master Station. This Bracket allows the N-SP-80MS1 to be mounted on any vertical wall with ease and security.

N-SP80 integration with N-8000 IP Intercom

TOA's N-SP80 Series integrares with TOA's N-8000 IP Intercom system via N-8000SG SIP Gateway. The N-8000SG SIP Gateway installs on a dedicated PC with provided dongle. The connection allows up to 5 conversations between SIP phone and N-8000 stations. The Gateway also allows the N-SP80 to access the N-8000 paging groups and functions.



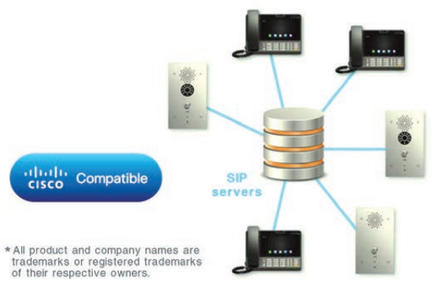
SIP Video & Audio Intercom System

Supports peer-to-peer communication

Build a system with stations only—no need for an SIP server.

Compatible with variety of SIP servers

Where an SIP server is already in place, adding an N-SP80 station is easy. It's compatible with Cisco CUCM, Asterisk and Genetec Sipelia.*



* All product and company names are trademarks or registered trademarks of their respective owners.

Doors unlockable from master station keypad

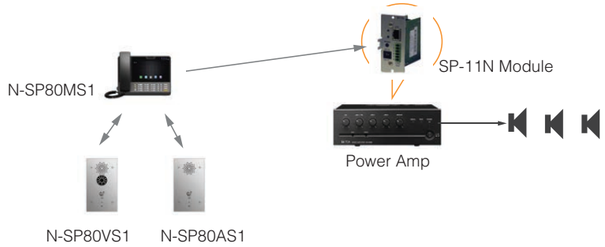
System Features

- Can be part of a scalable system
- Unlimited number of stations are connectable in one system using peer-to-peer mode
- System configuration and setting via web browser
- Secondary SIP server for server redundancy
- Detects server disconnection
- Flexible ringtone setting

N-SP80 Examples

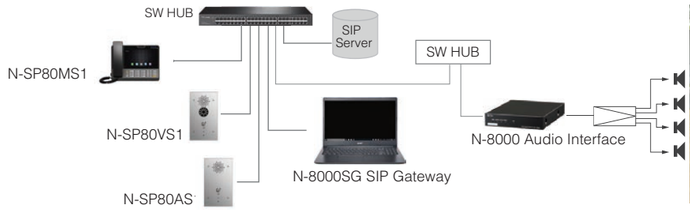
» Peer-to-Peer application - Supermarket

By using SP-11N VoIP phone paging module with a compatible amplifier, paging system can be configured without SIP server.

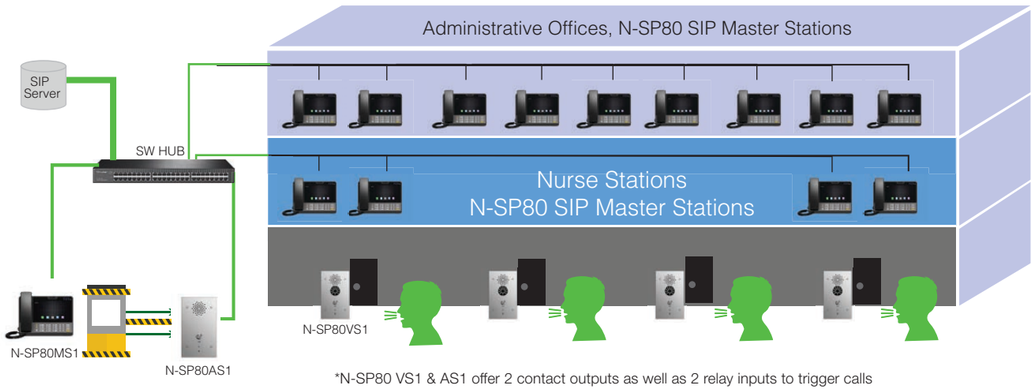


» Applications with SIP Server - School

Collaboration with TOA's N-8000 Series allows N-SP80MS1 to do 2-way communication, general paging, and relay output control.

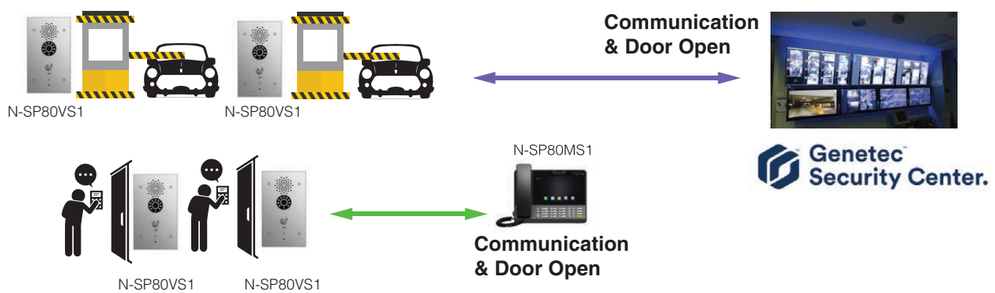


» SIP Server applications - Medical Building

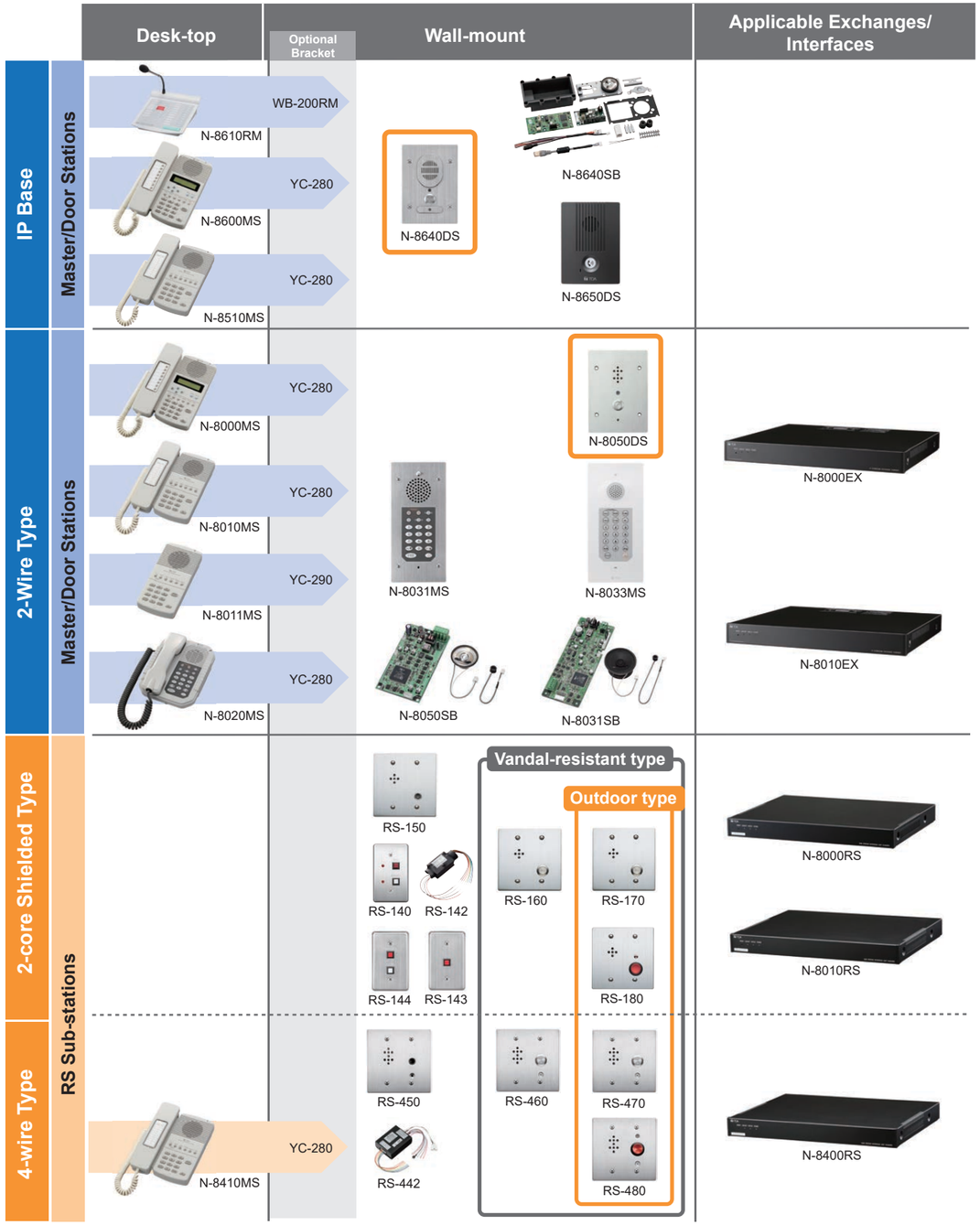


*N-SP80 VS1 & AS1 offer 2 contact outputs as well as 2 relay inputs to trigger calls

» Applications for Commerical Building and using Genetec Security Center



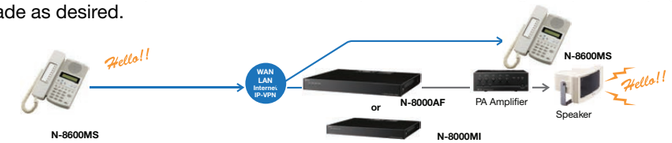
N-8000 Series Station Selection Chart



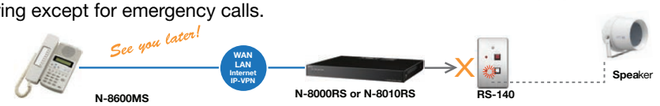
Key Functions

Remote Control of External System Makes it possible to execute door lock control easily through a contact output when the master station is engaged in ongoing conversation with the N-8640DS or N-8050DS Door Station.

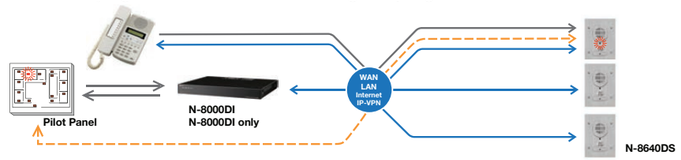
Paging Function Allows the master station as well as external input equipment to initiate paging by PA equipment or the speakers of individual stations. Operators can use the setup software to configure up to 192 paging zones to which paging calls can be made as desired.



Privacy Mode Activated by a control on the RS-140 Switch Panel, blocks paging calls to connected speakers and prevents scan monitoring except for emergency calls.

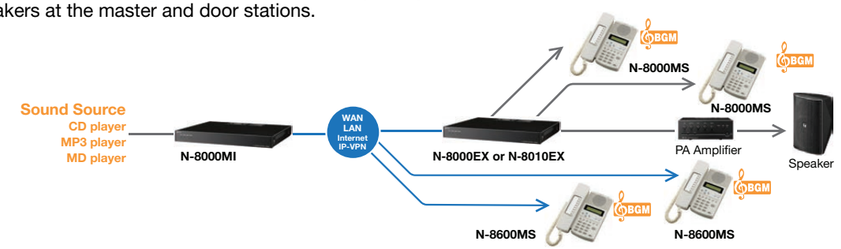


Direct Select Configures an operation panel equipped with indicator lamps and control buttons for the master station. Compatible with other stations, the panel assigns the various contact input and output channels to the master station and substations for purposes of identifying which substation is calling the programmed master station.

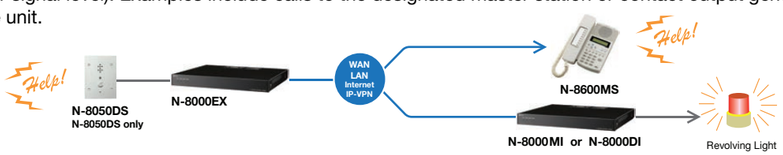


Scan Monitor Enables remote security monitoring by allowing the master station as well as analog telephones and external telephones to audio monitor two or more pre-programmed stations.

BGM Broadcasting Enables music from any of eight BGM sources connected to the N-8000MI to be distributed through speakers at the master and door stations.

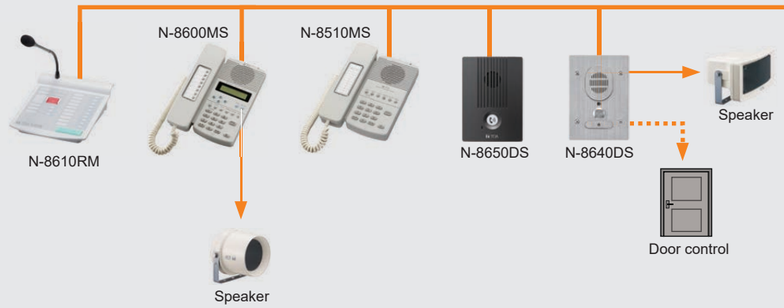


Audio Trigger Sets off an alarm if audio input to a pre-programmed station's microphone fulfils pre-set conditions (detection time or signal level). Examples include calls to the designated master station or contact output generated by another interface unit.

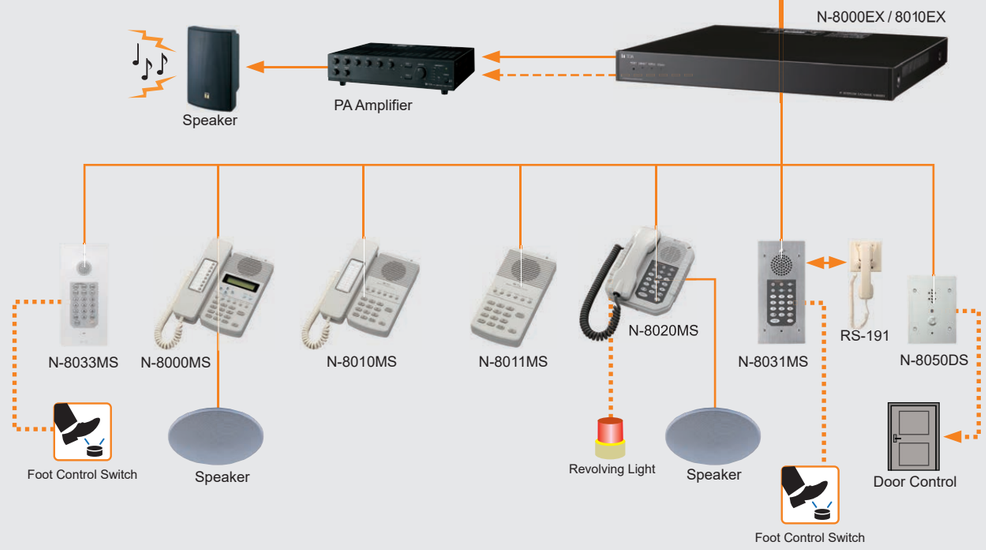


N-8000 Series System

Direct Network Connection



2-Wire Connection



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

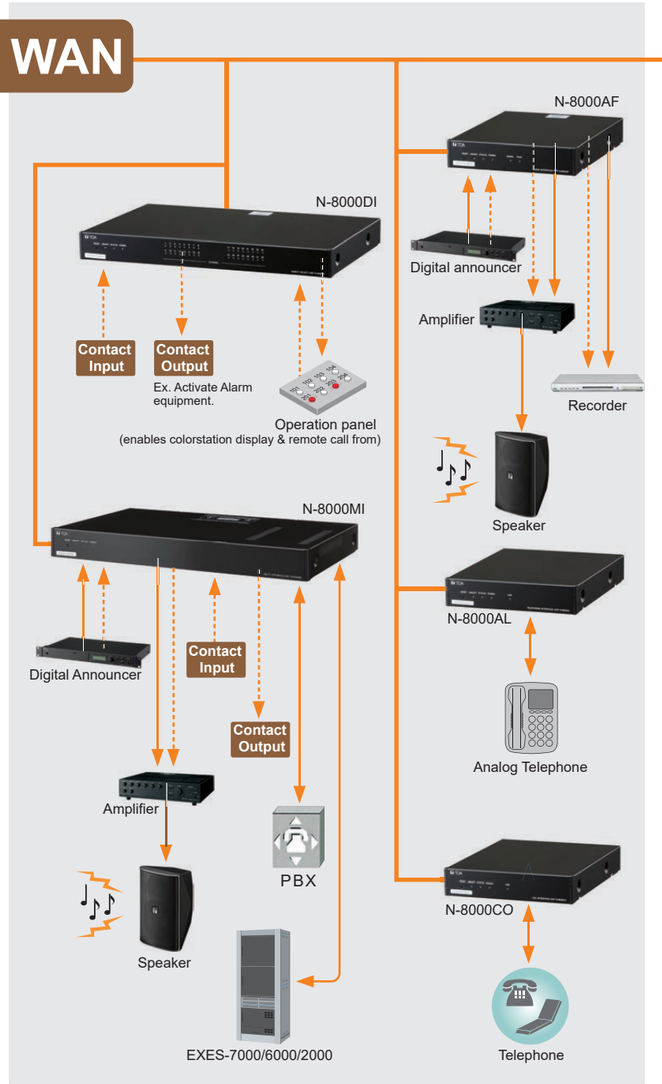
Connection Delay Time
Max. 1 second (when 191 multicast paging destinations are set)

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

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

N-8000 Series System

LAN WAN



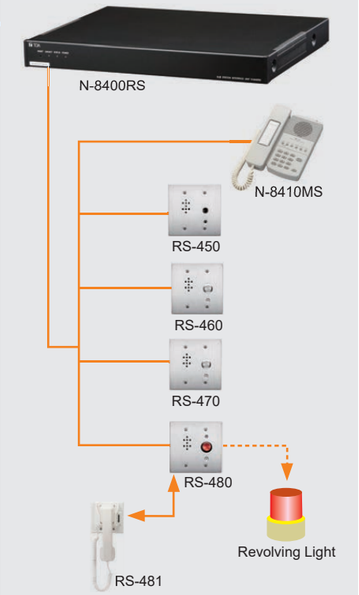
Permits the creation of a wide variety of system configurations through the free combination of individual interface units

• 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

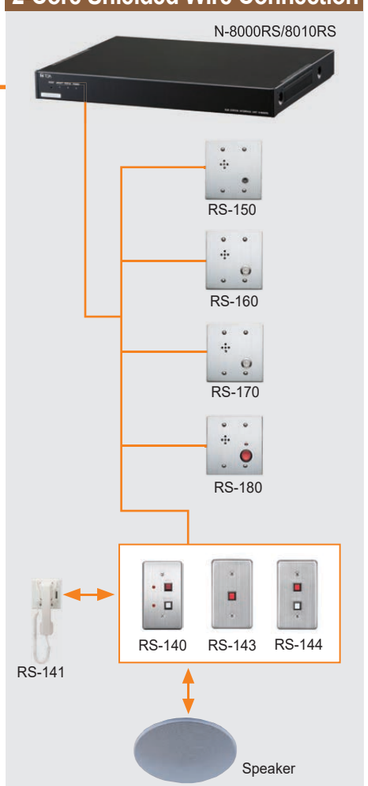
A variety of convenient functions

• 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

4-Wire Connection



2-Core Shielded Wire Connection



IP Network Intercom

The N-8000 Series IP Network Intercom Series offers flexible communications for up to 3,072 stations on existing corporate local and wide area data networks. It is a network-compatible intercom system using packet audio technology. Built on TOA's proven NX-100 network audio technology, the IP Intercom products occupy minimal network bandwidth (130 kbps maximum) for station-to-station calls and can be controlled and monitored through software or web browser. Programmable system functions include 192 paging zones, time-based call forwarding and scan monitoring. Monitoring can be real-time over the internet as the system is not server based. System frequency response extends to 7 kHz, allowing even PA-delivered announcements to be extremely clear and easily intelligible. Communications can be selected by the user as needed -- the "Master-to-Master" system optimized for full duplex conversation at such venues as factories and hospitals, or the "Master-to-Sub" (half duplex) system which is particularly suited for schools, prisons, and similar locations.

N-8000 Series IP Base Station

IP Multifunctional Master Station

N-8600MS

- System Allows Full-duplex conversation in Hands-free mode with new stations
- External mic and headset connections for hands free operation
- LCD, speed-dial, Power-over-Ethernet
- Requires AD-1215P AC Adapter

IP Remote Microphone Station

N-8610RM

- Employs packet audio technology
- Connect to a LAN or WAN network
- Power can supplied to the microphone using a PoE-compatible switching hub
- Requires AD-1215P AC Adapter

Model	N-8600MS	N-8610RM
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 (12 V DC): 2.5 W (station only) Use of the PoW (48 V DC): 3W	Use of the AC adapter (12 V DC): 4W (microphone only), 8.5W (when connecting 4 RM-210 Extension units) Use of the PoE (48 V DC): 5.2W (microphone only), 7.5W (when connecting 4 RM-210 Extension units)
Speech Method	Hands-free or handset conversation	Hands-free or handset conversation (Use of goose-neck microphone)
Audio Frequency Range	300 Hz - 7 kHz	
External Speaker Terminal	Maximum output 0.5W, 8Ω, screwless connector (2P)	--
No. of Connectable Expansion	--	Max. 4 units (max. 2 units at PoE power supply)
NETWORK SECTION Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)	
Network Protocol	TCP/IP, UDP, ARP, ICMP, TTTP, RTP, IGMP	
Audio Packet Transmission System	Unicast, Multicast	
Voice Packet Loss Recovery	Silence insertion	
Audio Delay Time	80 ms, 320 ms (controllable by the software)	
Finish	Body, handset: ABS resin, gray	ABS resin, blueish-gray
Dimensions	148 (W) x 208 (H) x 70.5 (D) mm (5.8" x 8.2" x 2.8") (excluding a curl cord section)	190 (W) x 76.5 (H) x 215 (D) mm (7.5" x 3" x 8.5") (excluding microphone)
Weight	770 g (1.7 lb)	700 g (1.5 lb)
Accessory	CD (for PC setting, maintenance use) x 1	CD (for PC setting, maintenance use) x 1
Option	Wall mounting bracket: YC-280, AC adapter: AD-1215P	Remote Microphone extension: RM-210, AC adapter: AD-1215P

*0 dB = 1 V

Intercom Dealer Certified Training

We believe that success comes through education. That's why we have developed our N-8000 IP Intercom Dealer Certified Training Program.

Visit our Training Section on our Website www.TOAcanada.com

This two day program is an intensive in-class course that leads you through the technical parameters of TOA's N-8000 IP Intercom's System which includes;

• Selection • Design • Program • Installation

Contact your TOA Regional Sales Manager to learn more - sales@toacanada.com

N-8000 Series IP Base Station

IP Door Station

N-8640DS

- Chemical resistant for use in industrial/harsh environments.
- 4 contact outputs/one input for use with access control systems and remote dialers.
- External speaker connection 0.5W @ 8 ohms.
- Allows Full-duplex conversation with master stations.
- Q-N8640DS has a rubber booth over call button
- Requires AD-1215P AC Adapter

IP Outdoor Station Weather-resistant

Q-N8640DS

IP Indoor Station

N-8650DS

- Indoor use IP door station employing packet audio technology
- Connected to an IP network (LAN or WAN) permits hands-free conversation
- Equipped with 1 channel of control input, 5 channels of control outputs (including 1 channel of relay control output), and 1 speaker output
- Requires AD-1215P AC Adapter

IP Door Station Board Unit

N-8640SB

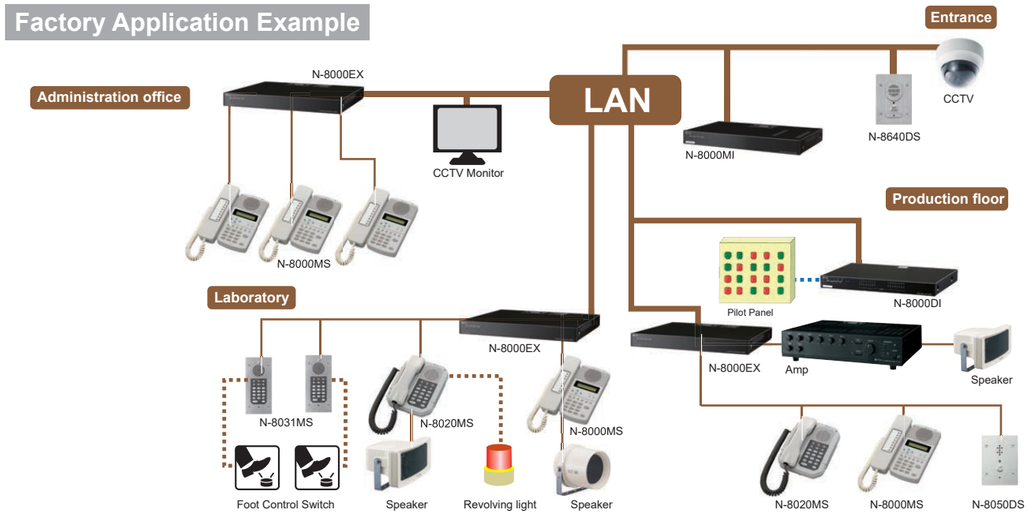
- Chemical resistant for use in industrial/harsh environments.
- 4 contact outputs/one input for use with access control systems and remote dialers.
- External speaker connection 0.5W @ 8 ohms.
- Allows Full-duplex conversation with master stations.
- Requires AD-1215P AC Adapter

Model	N-8640DS	Q-N8640DS	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 (12 V DC): 3.5 W (station only), Use of the PoW (48 V DC): 5W			
Speech Method	Hands-free conversation			
Audio Frequency Range	300 Hz - 7 kHz			
Control Input	1 channel, no-voltage make contact input, open circuit voltage: 5 V DC, short circuit current: 10 mA or less, unterminated ends			
Control Output	Open collector output, 4 channels, withstand voltage: 30 V DC, control current: Max. 50 mA (4 output 1COMMON), unterminated ends Relay contact output, 1 channel, withstand voltage: 30 V DC, control current: Max. 500 mA, unterminated ends			
External Speaker Terminal	Maximum output 0.5 W, 8 Ω, unterminated ends			
NETWORK SECTION Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)			
Network Protocol	TCP/IP, UDP, ARP, ICMP, TTTP, RTP, IGMP			
Audio Packet Transmission System	Unicast, Multicast			
Voice Packet Loss Recovery	Silence insertion			
Audio Delay Time	80 ms, 320 ms (controllable by the software)			
Dust/Water Protection	IP 65 (note that panel edges must be sealed at installation)		--	
Finish	Plate: Stainless steel, hairline, Call button: Metal			--
Dimensions	115 (W) x 162 (H) x 58.5 (D) mm (4.5" x 6.4" x 2.3")		117.2 (W) x 162 (H) x 60 (D) mm (4.6" x 6.4" x 2.3")	79 (W) x 134 (H) x 53 (D) mm (3.1" x 5.3" x 2.1")
Weight	780 g (1.7 lb)		400 g (0.8 lb)	350 g (0.8 lb)
Accessory	Box mounting screw (No.6-32UNC x 20) x 4, Box mounting screw (M4 x 20) x 4, Waterproof washer x 4, LAN coupler x 1	--	Box mounting screw (No.6-32UNC x 20) x 4, Box mounting screw (M4 x 20) x 4, LAN coupler x 1	--
Option	AC adapter: AD-1215P; Applicable Box: Wall mount: Wall-mount box YS-13A, Flush Mount: 3-gang electrical box or Back box YC-150			AC adapter: AD-1215P

*0 dB = 1 V

Optional accessories on page 136

Factory Application Example



N-8000 Series 2-Wire Type Station

Multifunctional Master Station

N-8000MS

- Full-Duplex (aka: Duplex) communication is supported by this station
- Two-wire connection to N-8000EX or N-8010EX Exchange
- Handset or hands-free duplex communication

Standard Master Station

N-8010MS

- Full-Duplex (aka: Duplex) communication is supported by this station
- Two-wire connection to N-8000EX or N-8010EX Exchange
- Handset or hands-free duplex communication

Industrial-Use Master Station

N-8020MS

- Full-Duplex (aka: Duplex) communication is supported by this station
- Heavy duty dust proof and waterproof construction (IP54 rating)
- External speaker terminal (0.6 W / 8 ohms)

Standard Hands-Free Master Station

N-8011MS

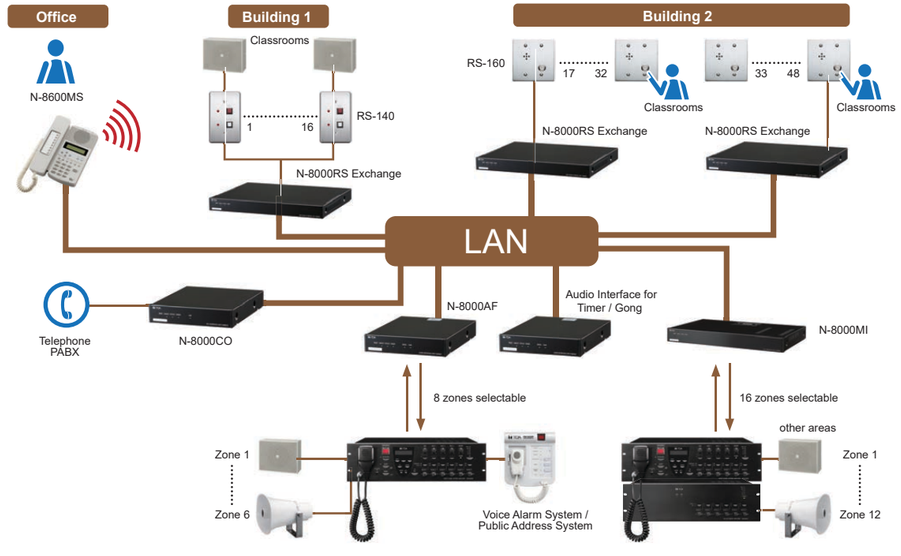
- Full-Duplex (aka: Duplex) communication is supported by this station (handset mode only)
- Two-wire connection to N-8000EX or N-8010EX Exchange
- Hands-free duplex communication

Model	N-8000MS	N-8010MS	N-8011MS	N-8020MS
Power Source	48V DC (supplied from the IP network intercom exchange (option))			
Power Consumption	1.8 W (at rated), 2.4W (max.)			
Wiring Method	1 set of twisted pair cable			
Speech Method	Hands-free or handset conversation		Hands-free conversation	Hands-free or handset conversation
Audio Frequency Range	300 Hz – 7 kHz			
Transmission Range	Max. 1500 m (ø0.65 mm, Loop resistance 170 Ω)			
Dial-in Contact Output	--			Open collector output (polarized), Withstand voltage: Max. 30V DC, Control current: Max. 50 mA, screwless connector (2P)
External Speaker Terminal	0.6W, 8Ω, screwless connector (2P)	--		0.6W, 8Ω, screwless connector (2P)
Dust/Water Protection	--			IP54
Finish	Body, Handset: ABS resin, gray		Body: ABS resin, gray	Body, Handset: ABS resin, gray
Dimensions	148 (W) x 208 (H) x 70.5 (D) mm (5.2" x 8.2" x 2.8") (excluding a curl cord section)		92 (W) x 195 (H) x 56.1 (D) mm (3.6" x 7.7" x 2.2")	170 (W) x 220 (H) x 97.8 (D) mm (6.7" x 8.7" x 3.9") (excluding a curl cord section)
Weight	800 g (1.8 lbs)	700 g (1.5 lbs)	400 g (0.9 lbs)	1 kg (2.2 lbs)
Accessory	Connection cord (3m) x 1			Rubber cap x 2
Option	Wall mounting bracket: YC-280		Wall mounting bracket: YC-290	Wall mounting bracket: YC-280

*0 dB = 1V

Optional accessories on page 136

School Application Example



N-8000 Series 2-Wire Type Station

Flush-Mount Master Station

N-8033MS

- Especially for hospitals
- IP-65 rated outdoor in-wall Master Station.
- Chemical resistant for use in industrial/harsh environments.
- One input for use with foot switch dialing.

Flush-Mount Hands-Free Master Station

N-8031MS

- Full-Duplex (aka: Duplex) communication is supported by this station (handset mode only)
- Two-wire connection to N-8000EX or N-8010EX Exchange
- Hands-free duplex communication
- External dial inputs (7, 8, 9 and C keys)
- Optional Handset, model RS-191

Hands-Free Master Station Board Unit

N-8031SB

- Full-Duplex (aka: Duplex) communication is supported by this station
- N-8031 PCB for custom station applications
- Speaker and microphone included
- External dial inputs (7, 8, 9 and C keys) plus switch matrix connection
- LED Status Indicator output

Door Station

N-8050DS Indoor

Q-N8050WPB51800 Outdoor**

- Full-Duplex (aka: Duplex) communication is supported by this station
- Hands-free duplex communication
- Separate mic and speaker
- Control output (open collector)
- IP-54 rated
- Q-N8050WPB51800** is weather-resistant and has a rubber boot covering the call button

Q-N8050WPB51800**

Hands-Free Substation Board Unit

N-8050SB

- Full-Duplex (aka: Duplex) communication is supported by this station
- N-8050DS PCB for custom station applications
- Speaker and microphone included
- Control output (open collector)
- Call switch input
- LED Status Indicator output

Optional Handset

RS-191

Model	N-8033MS	N-8031MS	N-8031SB	N-8050DS	Q-N8050WPB51800**	N-8050SB
Power Source	48V DC (supplied from the IP network intercom exchange (option))					
Power Consumption	1.8 W (at rated), 2.4 W (max.)					
Wiring Method	1 set of twisted pair cable		Non-polar 1 pair stranded wire system	1 set of twisted pair cable	Non-polar 1 pair stranded wire system	
Speech Method	Hands-free conversation	Hands-free conversation (Handset conversation can be established in conjunction with the RS-191 (option))		Hands-free conversation		
Audio Frequency Range	300 Hz – 7 kHz					
Transmission Range	Max. 1500 m (ø0.65 mm, Loop resistance 170 Ω)					
Contact Output	--			Open collector output, withstand voltage: Max. 30V DC, Control current: Max. 50 mA, one shot: can be set from 1 to 9 s, screw terminal (polarized)		
External Dial Input	No-voltage make contact input, open voltage: 5 V DC, short-circuit current: 1 mA, screwless connector (5 p)			--		
Dust/Water Protection	IP65*	--		IP54*		--
Housing Protection	--			BS EN62262: 2002 IK02 equivalent		--
Resistance to Environment	Chemical Resistant	--			Passed our gas corrosion test and neutral salt spray test	--
Finish	Body, Handset: ABS resin, gray	Panel: Stainless steel, hairline	--	Plate: Stainless steel, hairline, Call button: Metal	Plate: Stainless steel, hairline, Call button: Metal; Circuit board: Silicone sealing agent-coated board	--
Dimensions	115 (W) x 254 (H) x 51 (D) mm (4.5" x 10" x 2.1")		70 (W) x 185 (H) x 20.6 (D) mm (2.6"x7.3"x0.8")	115 (W) x 162 (H) x 54 (D) mm (4.5" x 6.4" x 2.1")		67 (W) x 128.3 (H) x 26 (D) mm (2.6"x5"x1")
Weight	850 g (1.9 lbs)		205 g (0.6 lbs)	680 g (1.5 lbs)		100 g (0.2 lbs) (including accessories)
Accessory	Box mounting screw (M4 x 35) x 4, Acoustic absorbent x 1, Removable terminal plug (2P, preinstalled on the unit) x 1	Box mounting screw (M..6-32UNC x 18) x4, Box mounting screw (M4 x 25) x 4, Acoustic absorbent x 1, Removable terminal plug (2P, preinstalled on the unit) x 1, Handset jumper (8P, preinstalled on the unit) x 1, Ferrite clamp x 1	Removable terminal plug (2P, preinstalled on the unit) x 1, Handset jumper (8P, preinstalled on the unit) x 1, Ferrite clamp x 1, Hands-free speaker (with connection cord) x 1, Hands-free microphone (with connection cord) x 1	Box mounting screw (No.6-32UNC x 18) x 4, Box mounting screw (M4 x 25) x 4, Acoustic absorbent (made of felt) x 1	Box mounting screw (No.6-32UNC x 18) x 4, Box mounting screw (M4 x 25) x 4	Hands-free speaker (with connection cord) x 1, Hands-free microphone (with connection cord) x 1
Option	Back Box: YC-841	Flush mount: Back Box: YC-241, Surface mount: Wall-mount box: YC-251, Handset: RS-191	Handset: RS-191	Flush mount: 3-gang electrical box or Back Box: YC-150, Wall mount: Wall-mount box: YS-13A		--

* Note that panel edges must be sealed at installation

** Special Order Product

Optional accessories on page 134

N-8000 Series Exchanges and Interface Units

IP Network Intercom Exchange

N-8000EX

- 10/100BaseTX Ethernet network connection
- Occupies one network node (192 max.)
- Sixteen (16) station capacity
- Speech links: 4 internal / 8 external
- Two (2) audio paging outputs (0 dBV)
- Two (2) relay outputs

IP Network Intercom Exchange

N-8010EX

- Stations connect to exchange via two-wire twisted pair
- Provides 48 VDC to each station
- Speech links: 1 internal / 2 external
- 10/100BaseTX Ethernet network connection
- Occupies one network node (192 max.)
- Includes rack-mount and wall-mount brackets

Model	N-8000EX	N-8010EX
Power Source	120V AC, 50/60Hz	
Power Consumption	50W (at rated), 75W (max.)	
Interface Section or Station		
Speech Link	Internal: 4/External: 8	Internal: 1/External: 2
Line Capacity	Up to 16 stations	
Wiring Method	1 set of twisted pair cables	
Transmission Range	Max. 1500 m (ø0.65 mm, Loop resistance 170 Ω)	
Paging Output	Audio: 2 channels Max. 0dB*, 600Ω, balanced Control: 2 channels, no-voltage make contact output (24V DC/0.5A), Connector: removable terminal block	Station paging only
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	
Audio Packet Omission	Silence insertion	
Audio Delay Time	80 ms, 320 ms (Controllable by the software)	
Finish	Pre-coated steel plate, black, 30% gloss	
Dimensions	420 (W) x 44.3 (H) x 356 (D) mm (16.5" x 1.7" x 14")	
Weight	4.1 kg (9 lbs)	4.2 kg (9.3 lbs)
Accessory	AC power cord (2m (6.56 ft)) x 1, CD (for PC setting, maintenance use) x 1, Removable terminal plug (4 pins) x 2, Mini-clamp plug (2 pins) x 20, Plastic foot x 4, Screw for fitting plastic foot x 4, Rack mounting bracket x 2, Screw for rack mounting x 4, Wall mounting bracket x 2, Screw for mounting bracket x 8, Screw for wall mounting x 4	

*0 dB = 1V

Telephone Interface Unit

N-8000AL

- 10/100BaseTX Ethernet network connection
- Occupies one network node (192 max.)
- Single telephone line allowing an analog telephone to be connected.
- Allows any analog telephone to function as a master station.

C/O Interface Unit

N-8000CO

- 10/100BaseTX Ethernet network connection
- Occupies one network node (191 max - at least one node must be a master station or N-8000/8010EX exchange)
- Analog central office line circuit allowing the stations to make and receive calls to and from the telephone line.

Model	N-8000AL	N-8000CO
Power Source	120V AC, 50/60Hz	
Power Consumption	8W (Max.)	7W (Max.)
Interface (Telephone or C/O)		
Number of Lines	1 line	
Selective Signal Type	DTMF Signal	
Signal System	--	Compatible with loop start signaling
Monitor Function	Line loop detection	--
Control Function	Caller ID Function	--
Wiring Method	1 pair of twisted pair cable	
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	
Audio Packet Omission	Silence insertion	
Audio Delay Time	80 ms, 320 ms (Controllable by the software)	
Finish	Pre-coated steel plate, black, 30% gloss	
Dimensions	420 (W) x 44.3 (H) x 356 (D) mm (16.5" x 1.7" x 14")	
Weight	4.1 kg (9 lbs)	4.2 kg (9.3 lbs)
Accessory	Power cord (2m (6.56 ft)) x 1, CD (for PC setting, maintenance use) x 1, Mini-clamp plug (2 pins) x 2, Plastic foot x 4, Screw for fitting plastic foot x 4	
Option	Rack mounting bracket: MB-15B-BK, MB-15B-J; Wall mounting bracket: YC-850	

*0 dB = 1V

Optional accessories on page 134

N-8000 Series Interface Units

Multi Interface Unit

N-8000MI

- 10/100BaseTX Ethernet network connection
- Occupies one network node (192 max.)
- Contact Bridge
- Sixteen contact inputs
- Sixteen relay outputs
- Telephone Interface (E&M type), two channels

Direct Select Unit

N-8000DI

- 10/100BaseTX Ethernet network connection
- Occupies one network node (192 max.)
- 32 contact inputs
- 32 contact outputs
- Events may be activated by contact closures or master station dialing commands.
- Provides control interface to CCTV, door access and other external systems.

Audio Interface Unit

N-8000AF

- 10/100BaseTX Ethernet network connection
- Occupies one network node (192 max.)
- One MIC/LINE audio line input
- One audio line output
- Eight contact inputs
- Time Synchronization input
- Built-in timer and chime

IP Interface Module

SX-200IP

- 10BASE-T/100BASE-TX (Automatic-Negotiation)
- Voice sampling frequency of 16 kHz, 8 kHz (controllable on the software); 48 kHz, sample rate is used for SX-2000 system only
- Voice encoding method - Sub-band ADPCM, Cryptosystem
- Voice Packet Loss Recovery - Silence insertion
- Allows for a page to be made from the N-8000 Series Stations (N-8600MS, N-8610RM only) to the SX-2000 Series.

Model	N-8000MI	N-8000DI	N-8000AF
Power Source	120V AC, 50/60Hz		
Power Consumption	21W (330 mA) (Max.)	16W (Max.)	7W (Max.)
Audio Input	Input: 2 inputs (2P/input), Max. 0dB*, under 600Ω, 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)	--	1 input (transformer isolated), -58dB* to 0dB*, 2kΩ, balanced (MIC/LINE input, controllable by the software) with input volume control knob, removable terminal block (3 pins)
Audio Output	Output: 2 outputs (2P/output), Max. 0dB*, under 600Ω, balanced Control: 2 outputs (2P/output), relay contact output, contact capacity: 24V DC/0.5A, Removable terminal block (8 pins)	--	1 output (transformer isolated), 0dB*, 600Ω, balanced, removable terminal block (3 pins)
Contact Input	16 inputs, no-voltage make contact input, open voltage; 12V DC, short-circuit current: 10mA, removable terminal block (18 pins)	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	16 outputs, relay contact output, contact capacity: 24V DC/0.5A, removable terminal block (18 pins)	32 outputs, relay contact output, contact capacity: 24V DC/2 – 500mA, removable terminal block (32 pins)	8 outputs, relay contact output, contact capacity: 24V DC/2 – 500mA, removable terminal block (16 pins)
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	--	Unicast, Multicast
Audio Packet Omission	Silence insertion	--	Silence insertion
Audio Delay Time	80 ms, 320 ms (Controllable by the software)	--	80 ms, 320 ms (Controllable by the software)
Finish	Pre-coated steel plate, black, 30% gloss		
Dimensions	420 (W) x 44.3 (H) x 239.5 (D) mm (16.5" x 1.7" x 9.4")	420 (W) x 44.3 (H) x 267 (D) mm (16.5" x 1.7" x 10.5")	210 (W) x 44.3 (H) x 267 (D) mm (8.3" x 1.7" x 10.5")
Weight	2.8 kg (6.2 lbs)		1.7 kg (3.7 lbs)
Accessory	Power cord (2m (6.56 ft)) x 1, CD (for PC setting, maintenance use) x 1, Mini-clamp plug (2 pins) x 10, Removable terminal plug (8 pins) x 2, Removable terminal plug (3 pins) x 2, Removable terminal plug (9 pins) x 4, Plastic foot x 4, Screw for fitting plastic foot x 4, Rack mounting bracket x 2, Screw for rack mounting bracket x 8, Screw for rack mounting x 4	Power cord (2m (6.56 ft)) x 1, CD (for PC setting, maintenance use) x 1, Removable terminal plug (10 pins) x 4, Removable terminal plug (16 pins) x 4, Plastic foot x 4, Screw for fitting plastic foot x 4, Rack mounting bracket x 2, Screw for rack mounting bracket x8, Screw for rack mounting x4	Power cord (2m (6.56 ft)) x 1, CD (for PC setting, maintenance use) x 1, Removable terminal plug (2 pins) x 1, Removable terminal plug (3 pins) x 2, Removable terminal plug (5 pins) x 2, Removable terminal plug (8 pins) x 2, Plastic foot x 4, Screw for fitting plastic foot x 4,
Option	--	Wall mounting bracket: YC-850	Rack mounting bracket: MB-15B-BK, MB-15B-J; Wall mounting bracket: YC-850

*0 dB = 1V

Model	SX-200IP
Network Section	
Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)
Network Protocol	TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP
Audio Packet Omission	Silence insertion
Audio Delay Time	80 ms, 320 ms (Controllable by the software)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	35 (W) x 119.5 (H) x 117.4 (D) mm (1.38" x 4.7" x 7.02")
Weight	150 g (0.33 lbs)

Optional accessories on page 134

N-8000 Series 2-Core Shielded Cable Type

Sub-station Interface Unit

N-8000RS

- 10/100BaseTX Ethernet network connection
- Occupies one network node (191 max - at least one node must be a master station or N-8000/8010EX exchange)
- Up to 16 substations connectable using twisted pair shielded cable
- Speech links: 2

Sub-station Interface Unit

N-8010RS

- 10/100BaseTX Ethernet network connection
- Occupies one network node (191 max - at least one node must be a master station or N-8000/8010EX exchange)
- Up to 16 substations connectable using twisted pair shielded cable
- Speech links: 1

Sub-station (Emergency Use)

RS-180

- Heavy-duty brushed stainless steel faceplate, #11 Gauge.
- Vandal resistant call button and speaker plate.
- Red Call Assurance LED for ADA-compliance.
- Weather resistant conformal printed circuit board coating.

Sub-station (Outdoor Vandal-Resistant Type)

RS-170

- Provides half-duplex communication.
- Heavy-duty brushed stainless steel faceplate, #11 Gauge.
- Vandal resistant call button and speaker plate.
- May be programmed to communicate with a single master station.
- Weather resistant conformal printed circuit board coating.

Sub-station (Indoor Vandal-Resistant Type)

RS-160

- Provides half-duplex communication.
- Heavy-duty brushed stainless steel faceplate, #11 Gauge.
- Vandal resistant call button and speaker plate.
- May be programmed to communicate with a single master station.

Sub-station (Indoor Type)

RS-150

- Provides half-duplex communication.
- Hairline brushed stainless steel faceplate, #14 Gauge.
- Connects to N-8000RS/N-8010RS.
- May be programmed to communicate with a single master station.

Substation (ADA-Compliant Emergency Outdoor type)

Q-RS180BZ

- ADA compliant with Braille labeling
- Large easy-access mushroom button
- Contact output for use with emergency lighting or access control systems.
- Works with N-8000RS & N-8010RS exchanges using shielded twisted pair connection.

8” In-wall Speaker with Call Button

PC-580SBT

- 8” square in-wall speaker for intercom applications (requires RS series station boards RS-142, RS-442, N-8640SB, etc.)
- Push-button for calling master station (Push Button momentary N/O dome head rated at 125V 4A)
- Unique “monocoque” design provides better structural integrity
- Hole drilled in speaker for mounting of microphone *(supplied separately)*
- *PC-580S Ceiling Speaker specifications and Optional Back Boxes (Q-BB-580S or Q-BB580W) found on page 54 (or back box 112).*

Model	N-8000RS	N-8010RS
Power Source	120 V AC, 50/60 Hz	
Power Consumption	35 W (at rated), 45 W (Max.)	26 W (at rated), 32 W (Max.)
INTERFACE SECTION FOR SUB-STATION Number of Lines	16 lines	
Number of Speech Link	2 links	1 link
Transmission Range	500 m (546.81 yd)/ø0.5 mm (AWG24, 800 m (874.89 yd)/ø0.65 mm (AWG21), 1300 m (1421.7 yd) ø0.9 mm (AWG19)	
Wiring Method	Two-core shielded cable	
NETWORK SECTION Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)	
Network Protocol	TCP/IP, UDP, ARP, ICMP, TTTP, RTP, IGMP	
Audio Packet Transmission System	Unicast, Multicast	
Voice Packet Loss Recovery	Silence insertion	
Audio Delay Time	80 ms, 320 ms (controllable by the software)	
Finish	Pre-coated steel plate, black, 30% gloss	
Dimensions	420 (W) x 44.3 (H) x 325.5 (D) mm (16.54” x 1.74” x 12.81”)	117.2 (W) x 162 (H) x 60 (D) mm (4.6” x 6.4” x 2.3”)
Weight	3.9 kg (8.6 lb)	400 g (0.8 lb)
Accessory	Power cord (2 m (6.56 ft)) x1, CD (for PC setting, maintenance use) x1, Removable terminal plug (3P) x16, Plastic foot x4, Screw for fitting plastic foot x4, Rack mounting bracket x2, Screw for mounting bracket x8, Screw for rack mounting x4	
Option	Wall mounting bracket: YC-850	

Optional accessories on page 134

N-8000 Series 2-Core Shielded Cable Type

IP Intercom Switch Panel

RS-144

- May be programmed for dual-priority call or call into two different master stations.
- Connects to N-8000RS & N-8010RS exchanges via shielded twisted pair wire and 25V speaker for half-duplex communication with assigned master station.
- Optional RS-141 handset may also be used.

IP Intercom Switch Panel

RS-143

- Connects to N-8000RS & N-8010RS exchanges via shielded twisted pair wire and 25V speaker for half-duplex communication with assigned master station.
- Optional RS-141 handset may also be used.

Switch Panel

RS-140

- Call button and privacy button with LED Indicators.
- Supports two-way (half-duplex) communication.
- Prevents incoming calls, pages & scans by pushing the privacy switch.
- Private, handset conversation is available using the RS-141.
- Connects to N-8000RS/8010RS using twisted two-core, shielded cable.

IP Intercom Switch Board

RS-142

- Allows configuration with custom housing and switch.
- May be programmed for dual-priority call or call into two different master stations.
- Connects to N-8000RS & N-8010RS exchanges via shielded twisted pair wire and 25V speaker for half-duplex communication with assigned master station.
- Optional RS-141 handset may also be used

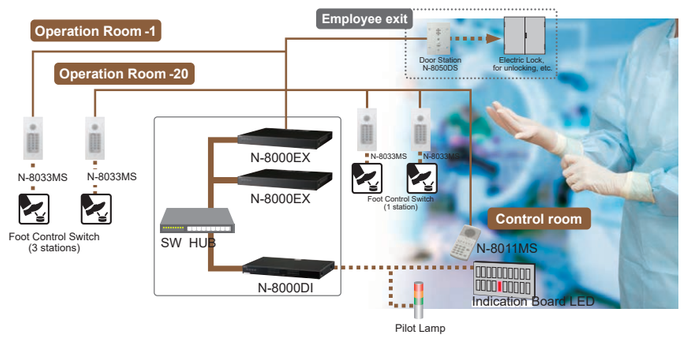
Optional Handset

RS-141

Model	RS-144	RS-143	RS-140	RS-142
Call Button	Momentary (EMERGENCY, NORMAL)	Momentary		Wiring: 4 cables (for 2 momentary switches)
Privacy Switch	--		Latching	--
Wiring	Two-core shielded cable			
Transmission Range	0.5 km (546 yd)/ø0.5 mm (AWG24); 0.8 km (874 yd)/ø0.65 mm (AWG22); 1.3 km (1421 yd)/ø0.9 mm (AWG19)			
Finish	Plate: Stainless steel, hairline Call button (emergency): resin, red Call button (normal): resin, white	Plate: Stainless steel, hairline Call button (normal): resin, red	Plate: Stainless steel, hairline; Call button: resin, red Privacy button (normal): resin, white	--
Dimensions	70.1 (W) x 115.1 (H) x 28.6 (D) mm (2.76" × 4.53" × 1.13")			--
Weight	80 g (0.18 lb)			30 g (0.07 lb)
Accessory	Mounting bracket x 1, bracket mounting screw (No.6-32UNC x 18) x 2, Box mounting screw (M4 x 30) x 2, Box mounting screw (No.6-32UNC x 30) x2			--
Option	RS-141			--

Model	RS-180	Q-RS180BZ	RS-170	RS-160	RS-150
Rated Impedance	625 Ω (1 W/25 V)				
Internal Speaker	4 cm cone-type				
Wiring	Two-core shielded cable				
Transmission Range	0.5 km (546 yd)/ø0.5 mm (AWG24); 0.8 km (874 yd)/ø0.65 mm (AWG22); 1.3 km (1421 yd)/ø0.9 mm (AWG19)				
Control Output	Open collector output: 30 V DC, 30 mA (The open collector output is kept turned on till the conversation is finished after the call button was pressed.)		--		
Finish	Panel: Stainless steel, hairline, Call button: Metal, Printed circuit board: Weather-resistant coating	Panel: Stainless steel, hairline Braille: “EMERGENCY PUSH FOR HELP” “FLASHING: CALL PLACED STEADY: CALL ANSWERED” Call button: Metal (RED mushroom); Printed circuit board: Weather-resistant coating	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)x120(H)x58.5(D) mm (4.72" × 4.72" × 2.3")	115(W)x162(H)x66.8(D) mm (4.53" × 6.38" × 2.63")	120 (W) x 120 (H) x 57.5 (D) mm (4.72" × 4.72" × 2.26")		120(W)x120(H)x48.5(D) mm (4.72" × 4.72" × 1.91")
Weight	570 g (1.26 lb)	700 g (1.54 lb)	540 g (1.19 lb)		410 g (0.90 lb)
Accessory	Box mounting screw (No.6-32UNC x 8) x 4, Box mounting screw (M4 x 25) x 4				
Option	For flush mount: 2-gang electrical box: YC-302 For surface mount: Indoor wall-mount box: YC-822 Outdoor wall-mount box: YC-823	3-gang electrical box: YC-150 or YS-13A	For flush mount: 2-gang electrical box: YC-302 For surface mount: Indoor wall-mount box: YC-822 Outdoor wall-mount box: YC-823	For flush mount: 2-gang electrical box: YC-302 For surface mount: Indoor wall-mount box: YC-822	

Hospital Application Example



Optional accessories on page 134

N-8000 Series 4-Wire Type

Sub-station Interface Unit

N-8400RS

- 10/100BaseTX Ethernet network connection
- Occupies one network node (191 max - at least one node must be a master station or N-8000/8010EX exchange)
- Up to 16 substations connectable using 2 sets of twisted pair cables
- Speech links: Internal 1, External 2

Model	N-8400RS
Power Source	120 V AC, 50/60 Hz
Power Consumption	35 W (at rated), 45 W (Max.)
INTERFACE SECTION FOR SUB-STATION	
Number of Lines	16 lines
Number of Speech Links	Internal 1, External 2
Transmission Range	1000 m (1093.61 yd)/ø0.5 mm (AWG24, 1500 m (1640.42 yd)/ ø0.65 mm (AWG21), 2000 m (2187.23 yd) ø0.9 mm (AWG19)
Wiring Method	2 sets of twisted pair cables
NETWORK SECTION	
Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)
Network Protocol	TCP/IP, UDP, ARP, ICMP, TTTP, RTP, IGMP
Audio Packet Transmission System	Unicast, Multicast
Voice Packet Loss Recovery	Silence insertion
Audio Delay Time	80 ms, 320 ms (controllable by the software)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	420 (W) x 44.3 (H) x 325.5 (D) mm (16.54" x 1.74" x 12.81")
Weight	4 kg (8.82 lb)
Accessory	Power cord (2 m (6.56 ft)) x1, CD (for PC setting, maintenance use) x1, Removable terminal plug (4P) x16, Plastic foot x4, Screw for fitting plastic foot x4,Rack mounting bracket x2, Screw for mounting bracket x8, Screw for rack mounting x4
Option	Wall mounting bracket: YC-850

Analog Standard Master Station

N-8410MS

- Low-cost analog Master Station operates on 4-wire connection with N-8400RS.
- Complete system can be configured on one exchange with RS-4xx substations.

Model	N-8410MS
Power Source	24 V DC (supplied form the sub station interface unit N-8400RS)
Current Consumption	Max 30 mA
Wiring Method	2 sets of twisted pair cable
Speech Method	Hands-free or handset conversation
Audio Frequency Range	300 Hz - 7 kHz
Transmission Range	1 km (1093 yd)/ø0.5mm (AWG24); 1.5 km (1640 yd)/ø0.65mm (AWG22); 2 km (2187 yd)/ø0.9 mm (AWG19)
Finish	Body, Handset: ABS resin, gray
Dimensions	148 (W) x 208 (H) x 70.5 (D) mm (5.83" × 8.19" × 2.78")
Weight	720 g (1.59 lb)
Accessory	Connection cord (3 m (9.84 ft)) x 1
Option	Wall mounting bracket: YC-280

RS Series Heater Surface Mount Back Box

Spotlight

RS Series Back Box

YC-531HSW AM

The YC-531HSW AM is a surface mount back box for the RS series intercom stations of the N-8000 intercom system. It is equipped with two heaters for installations in cold environments (down to -40°C), a thermostat that turns on the heaters when the temperature is below (+4°C ± 4°C) and turns them off when the temperature is above (+15°C ± 4°C).
Requires 24 V AC or DC power adapter (not included)

Model	YC-531HSW AM	
Heaters	Number of Units	2 x 10 W
	Power Source	24V AC or DC (supplied from optional AD-246 power supply unit or equivalent)
	Power Consumption	Max. 20 W
	Wiring Terminal	2 pin screw terminal
Thermostat	Series	1/2" Disc
	Type	Automatic Reset
	Function	Open On Rise (Normally Closed)
	Open Temperature	+15°C ± 4°C (60°F ± 7°F)
	Close Temperature	+4°C ± 4°C (40°F ± 9°F)
Tamper Switch	Normally open switch, pre-attached one pair cable with no termination	
Operating Temperature	-40°C (-40°F to +50°C (+122°F)	
Finish	Steel, painted in gray (RAL 9006 or equivalent)	
Weight	2.40 lbs. (1.09 Kg)	
Dimensions	4.89"(w) x 4.89"(h) x 4.65"(d) (124 x 124 x 118mm)	
Compatibility	RS-150, RS-450, RS-160, RS-460, RS-170, RS-470, RS-180, RS-480	
Accessory	Requires 24 V AC or DC power adapter (not included)	

Optional accessories on page 134

N-8000 Series 4-Wire Type

Sub-station (Emergency Use)

RS-480

- Provides half-duplex communication.
- Dust proof and waterproof construction (IP54 rating).
- Heavy-duty brushed stainless steel faceplate.
- Red vandal resistant call button.
- Control output - open collector type for external relay control.
- Weather resistant conformal printed circuit board coating.
- Built-in electret condenser microphone.

Sub-station (Outdoor Vandal-Resistant Type)

RS-470

- Provides half-duplex communication.
- Dust proof and waterproof construction (IP54 rating).
- Heavy-duty brushed stainless steel faceplate.
- Vandal resistant call button.
- Weather resistant conformal printed circuit board coating.
- Built-in electret condenser microphone.
- Connects to N-8400RS using two twisted pair cable.

Sub-station (Indoor Vandal-Resistant Type)

RS-460

- Provides half-duplex communication.
- Heavy-duty brushed stainless steel faceplate.
- Vandal resistant call button and speaker plate.
- Built-in electret condenser microphone.
- Connects to N-8400RS using two twisted pair cable.

Sub-station (Indoor Type)

RS-450

- Provides half-duplex communication.
- Hairline brushed stainless steel faceplate.
- Built-in electret condenser microphone.
- Connects to N-8400RS using two twisted pair cable.

IP Intercom Switch Board

RS-442

- Allows configuration with custom housing and switch.
- May be programmed for dual-priority call or call into two different master stations.
- Switch board to make custom sub-station interface
- Allows for three call in switches
- Connects to N-8400RS Sub-station interface unit via twisted pair wire and 25V speaker for half-duplex communication with assigned master station.
- Optional RS-481 handset may also be used

Optional Handset

RS-481

- Two-way, half-duplex communication using any 25V wall/ceiling speaker
- Prevents incoming calls by pushing a privacy switch

Model	RS-480	RS-470	RS-460	RS-450	RS-442
Call Button	Momentary (Emergency call: Press twice within 400 ms)				Call Button Wiring: 6 cables (for 3 momentary switches)
Rated Input	1W				
Internal Speaker	Cone-type				--
Internal Microphone	Electret condenser type				
Wiring	Twisted pair cables (2 pairs)				
Transmission Range	1 km (1093 yd)/ø0.5 mm (AWG24); 1.5 km (1640 yd)/ø0.65 mm (AWG22); 2 km (2187 yd)/ø0.9 mm (AWG19)				
Control Output	Open collector, Maximum controlled voltage: 30 V DC; Control current: 30 mA	--			Open collector, Maximum controlled voltage: 30 V DC; Control current: 30 mA
Dust/Water Protection	IP54		--		
Finish	Panel: Stainless steel, hairline Call button: Metal, silver Printed circuit board: Weather-resistant coating		Panel: Stainless steel, hairline Call button: Metal, silver	Panel: Stainless steel, hairline Call button: Resin, black	--
Dimensions	120(W) x 120(H) x 50.5(D)mm (4.72" × 4.72" × 1.9")	120 (W) x 120 (H) x 49.5 (D) mm (4.72" × 4.72" × 1.9")		120(W) x 120(H) x 41.5(D)mm (4.72" × 4.72" × 1.6")	--
Weight	575 g (1.27 lb)	550 g (1.21 lb)	540 g (1.19 lb)	510 g (1.12 lb)	140 g (0.31 lb)
Accessory	Box mounting screw (No.6-32UNC x 8) x 4, Box mounting screw (M4 x 25) x 4				--
Option	For flush mount: 2-gang electrical box: YC-302 For surface-mount: Indoor wall-mount box: YC-822 Outdoor wall-mount box: YC-823		For flush mount: 2-gang electrical box: YC-302 For surface-mount: Indoor wall-mount box: YC-822		--

Optional accessories on page 134

N-8000 Series

N-8000 Series Optional Accessories

Wall-Mount Bracket
YC-850
- Designed to mount N-8000RS, N-8010RS, N-8400RS, N-8000DI, N-8000AF, N-8000AL and N-8000CO on a wall.

Wall-Mount Bracket
YC-280
- Designed to mount N-8000MS, N-8010MS, N-8020MS, N-8410MS, N-8510MS and N-8600MS on a wall.

Wall-Mount Bracket
YC-290
- Designed to mount N-8011MS on a wall.

Surface-Mount Back Box
YC-251
- Designed to mount N-8031MS on a wall.

Flush-Mount Back Box
YC-241
- Designed to surface-mount N-8031MS on a wall.

Flush-Mount Back Box
YC-150
- Designed to flush-mount N-8050DS and N-8640DS on a wall.

Back Box
YC-841
- Designed to flush-mount N-8033MS on a wall.

Surface-Mount Back Box
YS-13A
- Designed to surface-mount N-8050DS and N-8640DS on a wall.

Indoor Wall-Mount Box
YC-822
- Designed to mount RS-150, RS-160, RS-170, RS-180, RS-450, RS-460, RS-470 and RS-480 on a wall.

2-Gang Electrical Box
YC-302
- Designed to mount RS-150, RS-160, RS-170, RS-180, RS-450, RS-460, RS-470 and RS-480 on a wall.

Outdoor Wall-Mount Box
YC-823
- Designed to mount RS-170, RS-180, RS-470 and RS-480 on a wall.

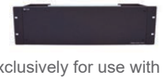
AC Adapter
AD-1215P
- The AD-1215P is an AC adapter to operate the IP Station on AC.

Rack Mounting Bracket
MB-15B-BK
- Rack mounting bracket kit for one N-8000/AG/AL/CO (1 RU)

Rack Mounting Bracket
MB-15B-J
- Rack mounting bracket kit for two N-8000/AG/AL/CO (1 RU)

N-8000RS Adapter
Q-N8000LC
- Conversion adapter for N-8000RS or N-8010RS.
- Select between speaker, RS station or line level

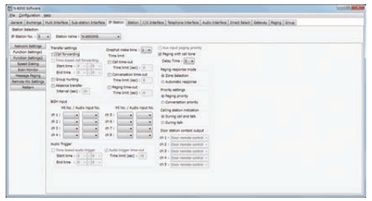
Terminal Board Unit
E-7000TB
- Rack mountable terminal board designed exclusively for use with the N-8000 Packet Intercom System (IP network compatible intercom). Up to 40 stations can be connected to the E-7000TB.



N-8000 System Software

Setting software

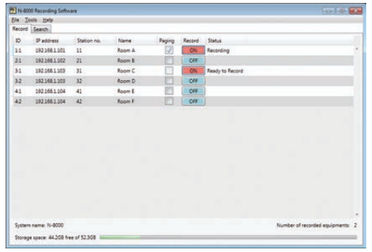
The network settings and the detection of the equipment connected to the local network can be set. The paging system settings, advanced settings of functions for each individual equipment and settings for the whole system can also be adjusted.



[System Requirements]
OS: Windows 7 Pro/Windows 10 Pro
CPU: Pentium® 4 2 GHz or faster
Memory: 1 GB or more
Required component: Microsoft® .NET Framework 3.5 SP1 or later, and Microsoft® SQL Server 2005 Express Edition

Recording software

Telephone calls, paging, and 3-Party Conference on the N-8000 system and recording of the voice during the Scan Monitor can be managed as a .wav format. After selecting the recording subjected equipment, recording related settings can be adjusted. It is possible to easily search the recorded audio files and also to export the audio files to an external storage.

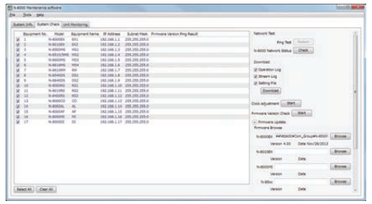


[System Requirements]
OS: Windows 7 Pro/Windows 10 Pro
Screen resolution: Over 1024 × 768 pixels
Required component: Microsoft® .NET Framework 4

[Recommended Specifications]
CPU: Intel® Core® i5-2400 CPU @3.10GHz or faster
Memory: 4 GB or more
Free Hard Disk Space: 100GB or more
(About 2.7 GB is used per sound source at 24-hour continuous recording)

Maintenance software

This software displays the equipment name, station number, station name, etc. of individual equipment components within the system in the form of an at-a-glance list. System check function is used to confirm equipment firmware versions, update firmware, check connections between a PC and equipment components and between components, download various equipment log and setting files, and perform equipment clock settings. Although the above functions can be done on the browser, use of the N-8000 Maintenance Software permits such functions to be performed simultaneously for multiple components. Moreover, it displays the operation status of individual components in real time. Equipment operation logs can also be automatically saved to a designated file on the PC.



[System Requirements]
OS: Windows 7 Pro/Windows 10 Pro
Required component: Microsoft® .NET Framework 3.5 SP1 or later
Screen resolution: Over 800 x 600 pixels

[Recommended Specifications]
OS: Windows® Vista Business/7 Professional
CPU: Pentium® 4, 2 GHz or faster
Memory: 2 GB or more
Screen resolution: Over 1024 x 768 pixels

*Microsoft, Windows XP, Windows Vista, Windows 7 and .NET Framework are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
*Intel, Pentium and Intel Core are either trademarks of Intel Corporation in the United States and/or other countries.
*By use of different software, it is possible to configure for a large amount of telephone calls. For more information, please contact your nearest dealer.

SDK

TOA Canada is now offering software developers a software development tool for the N-8000 Intercom in the form of an SDK. With the SDK, a software developer will be able to create and/or interface the N-8000 platform into existing or newly developed software. Also supplied with the SDK will be an SDK application example, SDK user manual and the N-8000 protocol.

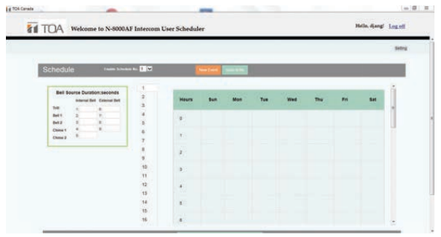
Please contact TOA Canada to obtain the SDK and support files. technicalsupport@toacanada.com or 1-800-263-7639.

N-8000 System Software

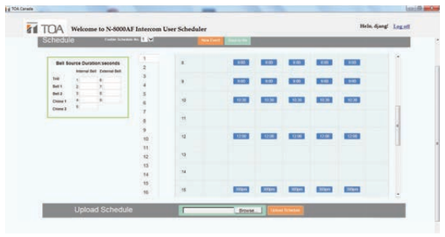
Software Application to Control N-8000AF Scheduler

N-8000SCHED is a software application to control the N-8000AF Audio Interface Unit. This software gives access to the schedule and bell configuration portion of the existing N-8000 scheduling software. With this software multiple users can be granted access to make changes to the schedule.

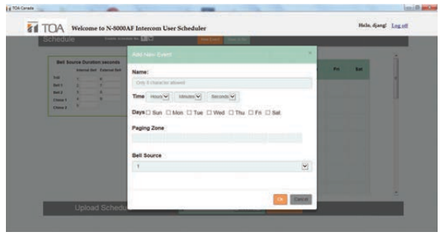
Main Page - Top Section



Main Page - Bottom Section



Add and Event



Login Screen

SIP Gateway

The N-8000SG Q SIP Gateway allows you to connect the N-8000 intercom system to a SIP phone system.

Communication can be established from the N-8000 to the SIP phone system and vice versa. This also allows up to 5 conversations at one time with the ability to initiate a page and access the door remote control features.

Interconnection between N-8000 system and SIP system
- Call and transfer from N-8000 to SIP, and vice versa

Digital domain connection
- Audio conversion from N-8000 to SIP and vice versa
- N-8000 uses G.722, fs=16kHz 8kHz 16bit; SIP uses G.711 u-law

5 speech paths at the same time
- 5 conversations with SIP and N-8000 at the same time
- 5 paging ø nes from SIP telephone at the same time
- e.g., 2 conversations and 3 paging ø nes in total at the same time

Additional functions from SIP system
- Paging function from SIP telephone to N-8000 system
- “Door remote control” from SIP telephone to N-8050DS, N-8640/50DS

[System Requirements]
OS: Windows 7 Pro/Windows 10 Pro

License: “USB Dongle” required

Ask for other compatible software options

TOA partners with:

CISCO Onvif PACOM Honeywell Genetec

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NEW

Mini Pc with SIP Gateway Software

The N-8000SG KIT is a combination of our N-8000SG license dongle with a Fanless Mini PC, which comes with an internal USB adaptor that secures the dongle inside the PC and prevent it from being lost or stolen. The PC has Windows 10 IoT Enterprise installed and comes with a standard 1 year warranty.

N-XC65-W IP Audio Window Intercom Kit

Spotlight

IP Audio Window Intercom Kit

N-XC65-W

- Duplex Class D amplifier
- Three possible listeningmodes (quiet / standard / noisy)
- Analog output on the interface to record conversation
- Full Duplex High Definition Sound
- Analog recording supported

Model	N-XC65-W
Power Supply	DC 12V 1.5A
Consumption	≤5W
Network Protocol	TCP/IP, UDP, ARP, ICMP, IGMP, FTP
Audio Code	PCM/AAC
Audio Sampling	8 KHz - 32 KHz
S/N	> 90 dB
Frequency Response	20 Hz - 16 KHz
Interface	1x RJ45, 1x Power Supply port, 1x External Unit, 1x Rec out
Working Temperature	-10°C + 55°C
Humidity	≤ 90% RH (Not condensing)
Dimensions	Internal unit 160 x 95 x 46.5mm External unit 83 x 24mm
Weight	Internal Unit 0.44 kg External Unit 0.20 kg
Optional*	Optional 25' Extension Cable for N-XC65-W

*

N-XC65-25PS2 QV

follow us

SOUND CHECK

Here at TOA we pride ourselves in providing technical knowledge and acoustic principles to expand our customers ability to work faster and more effective.

The next few pages offer information on popular questions we see everyday. check it out!

Yours, Dr. Sound

Maximum length of speaker wire for a 70 Volt line

Speaker Cable Transmission Distance as a Function of Conductor Size vs. Loss									
	Power Loss in Cable (%Loss & dB Loss)								
	4 Ohm Speaker			8 Ohm Speaker			70V Speaker*		
	11%	21%	50%	11%	21%	50%	11%	21%	50%
AWG	0.5	1.0	3.0	0.5	1.0	3.0	0.5	1.0	3.0
6	277 ft	571 ft	1930 ft	554 ft	1141 ft	3859 ft	13580 ft	27965 ft	94548 ft
8	174 ft	359 ft	1214 ft	349 ft	718 ft	2428 ft	8546 ft	17598 ft	59498 ft
10	110 ft	226 ft	764 ft	219 ft	452 ft	1528 ft	5377 ft	11072 ft	37434 ft
12	69 ft	142 ft	480 ft	138 ft	284 ft	959 ft	3376 ft	6952 ft	23505 ft
14	43 ft	89 ft	302 ft	87 ft	179 ft	604 ft	2127 ft	4380 ft	14809 ft
16	27 ft	55 ft	185 ft	53 ft	110 ft	371 ft	1305 ft	2687 ft	9085 ft
18	17 ft	35 ft	117 ft	34 ft	69 ft	234 ft	823 ft	1694 ft	5726 ft
20	11 ft	22 ft	74 ft	21 ft	44 ft	147 ft	518 ft	1068 ft	3610 ft
22	7 ft	13 ft	46 ft	13 ft	27 ft	91 ft	321 ft	661 ft	2234 ft
24	4 ft	9 ft	29 ft	8 ft	17 ft	57 ft	202 ft	417 ft	1409 ft

*The maximum length of speaker wire for a 70V line depends on the gauge of wire being used. Below you will find a chart with different gauges and their maximum length for use in a 70V system.

70V Amplifier Power and Speaker Taps

- A 70V high impedance speaker will only deliver its rated tap setting (power level) if the amplifiers master level control is set to 100%, full output.
- When setting up high impedance speaker systems, adjust the final required volume level using the tap settings of the speaker.
- Do not use the amplifiers master control as a volume control, instead use the taps of the speaker for this function. A small minor adjustment of the amplifier is OK.
- With MNS (Mass Notification Systems) being installed now to meet changing PA standards, it is important to have the required power levels during an emergency broadcast.
- MNS systems will have attenuation built in for normal general announcements and this attenuation will be by-passed during an emergency page.

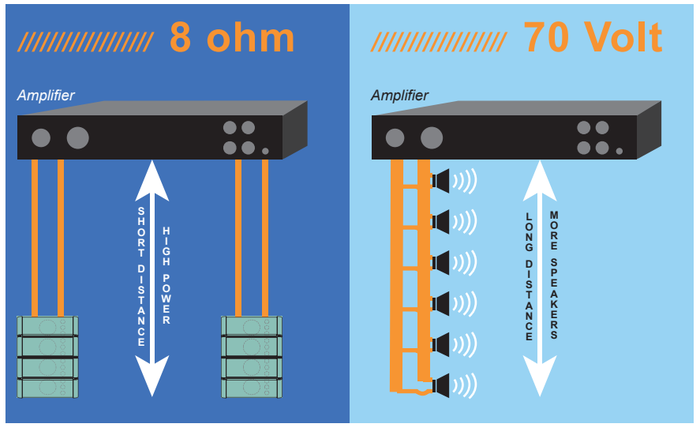
Therefore, it is imperative that the final levels are dictated by the tap settings of the speaker during such an emergency.

Using this guideline will help to ensure that correct power levels are obtained when an emergency evacuation message is delivered

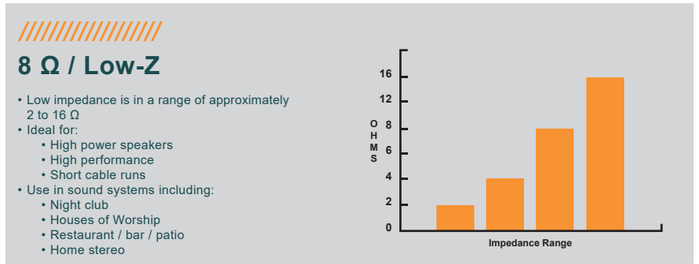
Low vs High Impedance

IMPEDANCE

Impedance is the resistance to a flow of alternating current. Represented by the symbol Z, it is measured in units called ohms (Ω). Speakers are either low-Z (8 Ω) or high-Z (100V, 70V, or 25V). Both have a specific job to perform.

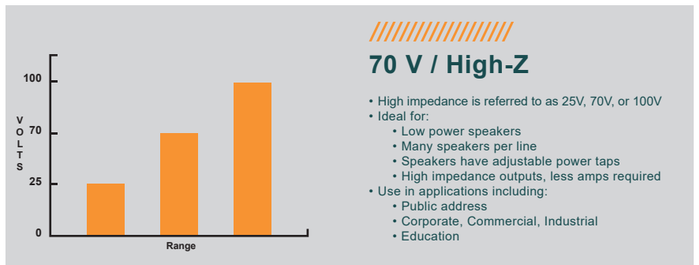


LOW IMPEDANCE



Low impedance is in a range of approximately 2 to 16 Ω (often referred to as 8Ω). Low Impedance is ideal for high performance applications, high powered speakers and short cable runs. Low impedance sound systems are often found in nightclubs, restaurants and patios, Houses of Worship, or your home or car stereo.

HIGH IMPEDANCE



Learn more about impedance on our YouTube channel

High impedance is referred to as 25V, 70V, or 100V (often referred to as 70V). High impedance is ideal for longer cable runs, with more speakers per line. Speakers are low powered with adjustable power taps. It has high impedance outputs with fewer amplifiers required. High impedance sound systems are ideal for public address, in corporate, commercial, industrial, retail or educational applications.

Planning guide for electroacoustic systems.

Whether it's a shopping centre, sports stadium or office building: besides the visual impression, it is above all the acoustics of a space that determine how the visitor perceives that space. A room's practical usability is also determined by its acoustic parameters.

There are numerous of aspects to consider when planning and installing PA systems. One is frequently confronted by a barrage of different parameters. Caution should be exercised in particular when looking at the power rating. Technical loudspeaker specifications are burdened by a great deal of impractical information. For instance, clever marketers try to make loudspeakers seem like they have a higher power rating than they really do.

To bring clarity to these matters, the following pages provide an introduction to electroacoustics. They should help you when planning PA systems. At TOA, we have made it our mission not only to provide you with high-quality equipment, but above all to deliver superior sound. So we will also serve as your guide to acoustic principles, measuring units and formulas. If you have questions about acoustics: give us a call!

Sound and electroacoustics

Sound is a mechanical oscillation that propagates through solid bodies, water or gas (air). Technically speaking, these oscillations are periodic pressure variations caused by a sound source (e.g. a loudspeaker). We use the term acoustics for sound waves in the frequency range audible to the human ear. If the sound is transformed into electrical signals or vice versa, or if it is amplified, stored or transmitted, we use the term electroacoustics.

Sound pressure level

The magnitude of the pressure variations is referred to as sound pressure. The unit of pressure used to measure this magnitude is the pascal. In practice, however, it is more advantageous to deal with sound levels using decibels, which is why we use the sound pressure level, which has an auditory threshold of 20 µPa (micropascals) as its reference point. As a result, decibel levels (dB SPL) are unambiguous and can be compared to each other.

Frequency

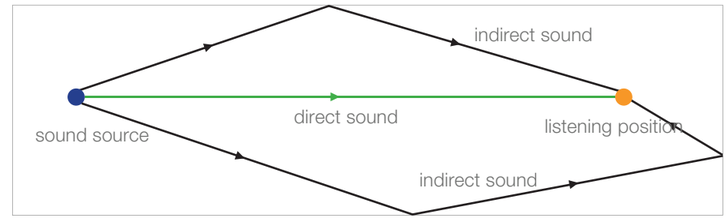
The frequency is the number of oscillations per second, and determines the pitch. It is measured in hertz [Hz]. 1000 Hz is also referred to as 1 kHz (kilohertz). Electroacoustics deals with the audible frequency range of 20 Hz to 20 kHz.

Room acoustics

Room acoustics relate to the effects of a room's structural conditions on the acoustics. Room acoustics have a major impact on how the visitor perceives a room therefore, also play an essential role in electroacoustic systems.

Sound propagation

Sound spreads out radially from a sound source. Some of the sound waves reach the listener directly, while some are reflected by the walls, ceiling and floor, and still others are absorbed, depending on how the room is appointed.



Direct and indirect sound, ambient noise

The human ear can locate sound sources through direct sound, as this is the sound that reaches the ear first (law of the first wavefront). Thanks to indirect sound, which is also referred to as reverberation, the human ear can perceive the size of a room and its characteristics. This is also referred to as diffuse sound, as it is generally distributed evenly throughout the room, statistically speaking. Ambient noise, in turn, refers to all sound events that have an interference effect on the ability to clearly hear the sound.

Reverberation time and speech intelligibility

What is characteristic of direct sound is that it dies down abruptly when the sound source is switched off, whereas indirect sound remains in the room for a short time as reverberation. The reverberation time is defined as the time that elapses until the sound pressure level has dropped by 60 dB.

Reverberation time is closely linked to speech intelligibility. When reflected sound dominates direct sound and dies down quickly enough, this can be perceived as something enjoyable during musical performances. But in a voice transmission, reverberation causes a drop in speech intelligibility. Therefore, the basic rule is that speech intelligibility deteriorates as reverberation time increases. For this reason, with a long reverberation time, it is critical to convey as much direct sound from the loudspeakers to the listeners as possible and to avoid stimulating reverberation as much as possible.

User standards prescribe that an announcement made over a voice alarm system must be at least 10 dB above the ambient noise level. If the ambient noise level is 70 dB, the loudspeaker must produce at least 80 dB in the zone in which you want to make the public announcement.

STI value
0.00 – 0.30 poor
0.30 – 0.45 weak
0.45 – 0.60 fair
0.60 – 0.75 good
0.75 – 1.00 excellent

The most common way of expressing speech intelligibility is the 'Speech Transmission Index' (STI), which uses a scale from 0 to 1. Under the Canadian standards applicable in many countries, **ULC S541** the minimum value prescribed for electroacoustic emergency notification systems is an STI of 0.5.

Loudspeakers and their specifications

Loudspeaker types

Loudspeakers (including sound transducers) convert electrical audio signals into sound waves. They are designed for both general and specific applications, and therefore have different executions. Loudspeakers for voice alarm must be certified according to the **ULC S541** product standard.

Broadband loudspeakers

A loudspeaker that can reproduce at least the main portion of the audible range and therefore also a large frequency range (250 Hz to 6 kHz or higher).

Multiway loudspeakers

Two or more loudspeakers are combined. Each individual loudspeaker is designed for a specific frequency range. The result is that a larger frequency range is covered. Depending on the number of combined frequency ranges, these loudspeakers are referred to as 2-way loudspeakers, 3-way loudspeakers, etc.

Enclosure types

- Closed loudspeakers
- Bass reflex loudspeakers
- Open loudspeakers

Using a closed loudspeaker box is not problematic. The loudspeaker diaphragm is protected against extreme movements by the back-pressure of the air in the enclosure. A bass reflex loudspeaker can reproduce low frequencies somewhat louder than the closed loudspeaker can. Using a high-pass filter is recommended. Such a filter is installed at the lower end of the loudspeaker's stated frequency response. This protects the loudspeaker diaphragm against excessive movement at very low frequencies, which can damage the loudspeaker. Some loudspeakers, such as ceiling-mounted loudspeakers, do not have an enclosure. A loudspeaker of this type is designed in such a way that the movement of the diaphragm is restricted in order to protect the loudspeaker against damage.

Horn loudspeakers

A horn loudspeaker consists of a driver that converts audio signals into acoustic waves, and a horn that focuses and amplifies the sound waves. Horn loudspeakers are highly efficient and can achieve very high characteristic sound pressure levels.

Line array loudspeakers

Line array loudspeakers operate as what is referred to as a line source. The drop-off in the characteristic sound pressure level as a function of distance is less than is the case with ordinary loudspeakers. Line array systems generally have a wide horizontal coverage angle, and a narrow vertical coverage angle. When oriented properly with respect to the audience, only a small portion of the sound will strike reflecting walls and ceilings, meaning that the system generates little reverberation. Line array systems are therefore ideal for reverberant environments.

Rated power

The rated power, measured in watts, indicates the electrical power that the loudspeaker is able to draw in continuous operation without distortions and without being damaged. The signals that typically require processing cause the instantaneous power to fluctuate significantly at times. This is why for low-impedance loudspeakers (without transformers, 4, 8 or 16 ohms) we state a programmatic rating, which should be understood as the recommended power output of the driving amplifier. As a result, amplifiers can accurately reproduce transient signal peaks without damaging the loudspeaker. However, if you need to reproduce sounds at constant amplitude and high power (e.g. alarms), the rated output of the amplifiers in low-impedance systems should not be greater than that of the loudspeaker.

Power tapping

70-volt loudspeakers often allow for the power to be adjusted to values lower than the rated power (tapping). It is frequently possible to tap the power to one-half, one-quarter or one-eighth of the rated power (corresponding to -3, -6 and -9 dB). This is always specified in the technical loudspeaker data. This makes it possible to adapt the volume of the loudspeakers to their surroundings when installing the loudspeakers. In this case, 70-volt loudspeakers draw the power to which they have been adjusted from an amplifier. This makes it possible to connect 70-volt loudspeakers to a 70-volt amplifier until the sum of the powers to which they have been adjusted equals the rated power of the amplifier.

Loudspeakers and their specifications

Impedance

The impedance is the **AC** resistance of the loudspeaker. There are two different kinds of impedance systems: low-impedance and high-impedance loudspeakers. Low-impedance loudspeakers have impedance ratings of 4, 8 and 16 ohms typically. In high-impedance loudspeakers, the impedance depends on the rated input and may vary between a few tens of ohms and a few thousands of ohms.

Sensitivity

The characteristic sound pressure level of a loudspeaker is stated in dB, measured at one watt of supplied power at a distance of one metre and is called sensitivity. No uniform notation has been defined, but the general convention is something like 96 dB (1 W/1 m). Unless otherwise stated, TOA uses the average and not the maximum characteristic sound pressure level.

Frequency range

The transmission range (also referred to as the frequency range or frequency response) is the range that the loudspeaker can reproduce. This information may be provided in writing (e.g. 50 Hz - 20 kHz) or in the form of a graphical representation.

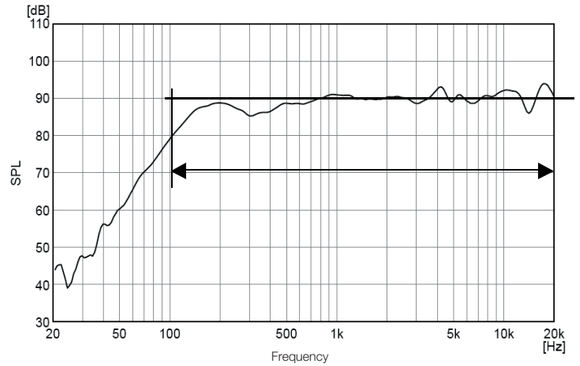


Figure: Frequency response of a loudspeaker

It is apparent from the figure that the sound pressure level varies at the various frequencies. For this reason, the aforementioned frequency response only takes into account the range in which the sound pressure level has not dropped by more than 10 dB relative to the average value, in the example above: 100 Hz – 20 kHz.

Coverage angle

The coverage angle defines the angle at which the sound pressure level has dropped by 6 dB relative to the sound pressure on the main axis of the loudspeaker. Because this angle is frequency-dependent, it is only meaningful when stated together with the frequency to which it refers. A sufficiently high level of speech intelligibility is insured within the angle of radiation at 4 kHz. Some loudspeakers have asymmetric radiation. For these types of loudspeakers, the angle of radiation is stated horizontally and vertically relative to the main axis of the loudspeaker. Most ceiling-mounted loudspeakers have symmetric radiation. In this case, only one value is stated.

THD

Total harmonic distortion (THD) is defined as the percentage ratio of the sum of the powers of harmonic components to the power of the fundamental frequency. This ratio allows for a rapid assessment of signal transmission quality with regard to non-linear distortions of the transmission path. A harmonic distortion of up to 1% is practically imperceptible to the human ear. Only starting at around 3% is total harmonic distortion perceived as unpleasant.

Calculations with loudspeakers

Meaning of and computations using decibels

A decibel (dB) represents the ratio of two variables on a logarithmic scale, and has no base unit (e.g. metres). Using a logarithmic scale is a much better approximation of human hearing than the linear variables. As well, the gigantic ratio of barely perceptible sound pressure (the auditory threshold) to the loudest tolerable sound pressure (pain threshold) of 1: 3,000,000 is compressed into a much more manageable scale of 0 to 130 dB. The general calculation is as follows: **log (value/reference value).** We use the logarithm to base 10, which is generally given as 'log' on calculator keypads. The result is the Bel, one-tenth of which is one decibel, i.e. a decibel. These are power ratios. For sound pressures, voltages and currents, the factor is 20.

Power ratio in dB: **10 x log10 (power/reference power) or 10 x $\log_{10}$ (P/P_0)**
sound pressure, voltage or current ratios in dB: **20 x $\log_{10}$ (value/reference value)**

In the case of sound pressure ratios, the auditory threshold is used, having a value of 20 µPa. Because there is a defined reference value, in this case 'SPL' is appended to the unit 'dB'. Nowadays, however, it has become common to omit the 'SPL' when discussing sound pressure levels. Other references:

Reference value	1 µV	1 mV	0.775 V	1 V	20 µPa
Decibels	dB µV	dB mV	dBu	dBV	dB SPL

The following table shows a few relationships governing the calculation of physical values and decibel values, and the conversion between these types of values:

Physical	Multiplication	Division	< 1	1	> 1	Negative
	↓	↓	↓	↓	↓	↓
Decibels	Addition	Subtraction	Negative	0	Positive	Not possible

Example 1: An amplifier amplifies an input signal of 1 mV (millivolts) to an output signal of 1,000 mV. The gain is thus 1000-fold (1000: 1), or 20 x log (1,000 / 1) = +60 dB.
Example 2: An attenuator attenuates a voltage to one-tenth. The ratio between output and input is 0.1/1 = 0.1. Expressed in dB: 20 x log (0.1 / 1) = -20 dB.
Example 3: The attenuator (example 2) is connected to the output of the amplifier (example 1). The gain is thus: 1,000 x 0.1 = 100. Stated in dB: 60 dB + (-20 dB) = 60 dB – 20 dB = 40 dB.

Sound pressure level at a defined power

If the sound pressure level is stated in dB, this information can be used in calculations. For instance, a loudspeaker datasheet provides us with information for the characteristic sound pressure level (1 W/1 m): 95 dB. This means that at 1 watt of power, the loudspeaker generates a sound pressure level of 95 dB at a distance of 1 meter. The following table indicates by how many decibels the sound pressure level of the loudspeakers increases at a given power.

Each doubling of power gives us an additional 3 dB of SPL.

Power (W)	1	2	5	6	10	15	20	30	50	100
Increase in the sound pressure level (dB)	0	3	7	8	10	12	13	15	17	20

The table shows that at 6 watts, you need to add 8 dB to the 95 dB. Consequently, at 6 watts of power we obtain 103 dB SPL at a distance of 1 metre. There is also a mathematical formula for this calculation that yields the same result. **$p_1 = p_n + 10$ x log(P)**

p_1: Sound pressure level (dB) p_n: Characteristic sound pressure level (dB) P: supplied power (W)

Calculations with loudspeakers

Sound pressure level at a defined distance

With each doubling in distance, the sound pressure level drops by 6 dB SPL.

If you would like to calculate the sound pressure level produced by the loudspeaker not at a distance of 1 meter, but at e.g. 6 meters, there is a table/formula for this purpose as well.

Distance (m)	1	2	3	4	5	10	20	50	100
Drop (dB SPL)	0	6	9.5	12	14	20	26	34	40

Based on the same example, we will have to subtract an amount, corresponding to the distance, from the calculated figure of 103 dB. The reduction resulting from a distance of 5 metres from the loudspeakers is 14 dB – which corresponds to a sound pressure level of 89 dB. The formula for the calculation is as follows:

$p = p_1 - 20$ x log (d)

p: Sound pressure level at a defi ned distance (dB characteristic sound pressure)
d: Distance (m) p_1: Sound pressure level at a distance of 1 m

Sound pressure level at a given power and distance from the loudspeaker

A perceived doubling in volume requires around times the amplifier 10 power.

The formulas for sound pressure at a defined power and at a defined distance are combined. The sound pressure level at a given power and distance is calculated as follows:

$p = p_n + 10$ x log(P) - 20 x log (d)

p: Sound pressure level (dB SPL) p_n: Characteristic sound pressure level of the loudspeaker (dB)
d: Distance from the loudspeaker (m) P: supplied power (W)

Example: We want to install a loudspeaker in a room. The greatest distance to the audience is 8 m. The loudspeaker has a characteristic sound pressure level of 90 dB 1 W/1 m and an input power of 30 watts. How high is the sound pressure level at the maximum distance?

Sound pressure level = 90 dB + 10 x log(30) - 20 x log(8)
= 90 dB + 15 dB - 18 dB
= 87 dB

If you use the values from the two tables provided above (the distance is composed of 4 m x 2 m = 8 m, physical multiplication turns into addition of the decibel values) this yields:

Sound pressure level = 90 dB + 15 dB (at 30 watts) - 12 dB (at 4 m) - 6 dB (at 2 m)
= 87 dB

Public address with ceiling loudspeakers

Distance and minimum sound pressure level between TOA's standard ceiling loudspeakers at different degrees of speech intelligibility and 6 W of power:

	Ceiling height	(m)	3.00	3.50	4.00	4.50	5.00	5.50	6.00
Best intelligibility	Distance between loudspeakers	(m)	2.30	3.10	3.80	4.60	5.40	6.10	6.90
	min. Sound pressure level	(dB)	92	90	88	86	85	84	83
Good intelligibility	Distance between loudspeakers	(m)	3.60	4.80	6.00	7.20	8.30	9.50	10.70
	min. Sound pressure level	(dB)	90	88	86	84	83	82	81
Background music	Distance between loudspeakers	(m)	8.20	11.00	13.70	16.50	19.20	22.00	24.70
	min. Sound pressure level	(dB)	85	82	81	79	78	76	75

Electroacoustic systems

Public address systems (PA systems)

Public address systems are usually mono. They typically distribute one or more audio signals into different areas that we call zones. The type of audio signal can either be background music, manual or automatic announcements, or signal tones (gongs, alarm tones). The audio signals are normally not mixed. An audio signal is transmitted into one or more defined zones.

Priorities are assigned to avoid the inadvertent merging of different audio signals, e.g. if multiple announcements are to be broadcast in the same zone at the same time. Most PA systems work using high-impedance loudspeakers.

Central PA system

For a central PA system, the speakers are all installed in the same location, e.g. in the middle of a hall‘s ceiling.

Frontal PA system

If the sound is accompanying an optical event, the sound should also be originating from the direction of this event. The viewer becomes irritated if the sound comes from another direction. In most cases, such an event takes place at the front of the room, for instance on the stage. The loudspeakers are usually positioned to the left and right of the event. The loudspeakers should also be mounted high enough that the sound pressure is not too high in the vicinity of the listeners, not least to prevent the audience’s hearing from being damaged.

If the room in question is deep, loudspeakers can be installed along the wall or ceiling (‘delay line’) to support the front PA system. In order to ensure that the frontal signal remains intelligible, these speakers should reproduce sound with a delay (adjusted individually, depending on the distance from the frontal system). This gives the impression that the sound is coming directly from the stage. The delay can be calculated using the following formula: **T = d / 340 + 0.01s**

T: Time of delay (s)
d: Difference in distance from the listener front loudspeakers/delay loudspeakers (m)

Decentralized PA system

If no support is required for directional staging, or in large spaces with low ceilings (e.g. supermarkets), installing a frontal PA system is not useful. In such cases, it is better to go with a decentralized PA system in which the loudspeakers are installed where they are needed.

The ceiling loudspeakers should be distributed evenly over the PA system’s effective area, generally with the same spacing between all the loudspeakers. The required degree of intelligibility is an important parameter in planning such a PA system. This depends on several factors:

- Ceiling height
- Loudspeaker coverage angle
- Type of use (quality of sound)

The higher it is possible to mount the loudspeakers, the greater the effective range of the loudspeaker and therefore also the acoustic range at ear height (ear height ≈ 1.5 m above the floor), yet the sound pressure is lower than would be the case for a lower installation.
For good intelligibility, the frequency response of the system should be able to reproduce signals of up to 6 kHz at every point in the audience area. Acceptable intelligibility is assured at a frequency response of up to 4 kHz. This value should be ignored in the case of background music, since background music is not a matter of intelligibility.

Electroacoustic systems

Amplifier

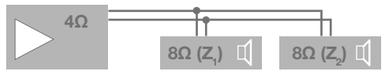
There are PA system amplifiers for low-impedance loudspeakers with impedances of between 4 and 16 ohms, for high-impedance loudspeakers (frequently 50 V, 70 V and 100 V), and some for both types. For low-impedance loudspeakers, only short cables (up to 10 m) should be used, or cables with large core cross-sections, in order to keep cable losses low and to ensure good audio quality. Only a few loudspeakers can be operated from a low-impedance amplifier. High-impedance loudspeaker systems allow long cable lengths and multiple loudspeakers on one line.

Low-impedance technology

For low-impedance systems, it is important to remember that the total impedance of the connected loudspeakers may not be less than the minimum terminating impedance of amplifier. If the total connected loudspeaker impedance is too low, this will cause malfunctions and may damage the amplifier. The cables between the amplifier and loudspeaker(s) should not be longer than around 10 m. If the cables are longer than this, line losses will be too great, which in turn should be reduced by employing large cable cross-sections in order to obtain good audio quality.

Parallel connection

Calculation of impedance: $Z = \frac{1}{\frac{1}{Z_1} + \frac{1}{Z_2} + \cdots}$



Example: Two 8-ohm loudspeakers result in 4 ohms when connected in parallel.

Serial connection
(not recommended due to quality loss)

Calculation of impedance: $Z = Z_1 + Z_2 + \ldots$

Example: Two 4-ohm loudspeakers result in 8 ohms when connected in series.

At a serial connection only identical loudspeakers should be operated from a single amplifier, as the power distribution for different loudspeakers depends on the circuit and impedance.

High impedance technology

In a PA system designed for large areas, high impedance technology is preferable in order to minimize line losses. High-impedance systems are characterized by a maximum signal line level of up to 100 V at full signal conduction. High-impedance transmission paths are also realized using 70 V or 50 V in order to provide better compatibility in terms of level adjustment and subsequent system expansions. High impedance technology offers other benefits over low-impedance systems as well:

- Easy installation, easy to expand & increase the number of loudspeakers (parallel connection)
- Possible to incorporate large number of loudspeakers
- Individual volume control possible for each loudspeaker, individual loudspeakers can be switched on and off without affecting other loudspeakers
- Different loudspeakers with different power ratings can be operated together in a single loudspeaker line
- Long cable lengths / long distances possible
- Low cable diameter of loudspeaker wire
- Low line losses
- Simple to calculate the required amplifier power by summing the powers of the individual loudspeakers, which must not exceed the rated power of the amplifier

Electroacoustic systems

Check loudspeaker lines

To avoid electrical problems after modifying existing PA systems or installing new ones, the loudspeaker lines should be checked before connecting to the amplifiers. This is done by performing a line impedance measurement.

The following formula shows the relationship between electric power, maximum signal amplitude and impedance:

$$Z = U^2 / P$$

Z: Impedance (ohms) U: Voltage (volts) P: Power (watts)

The calculation has to be performed taking into account a maximum signal amplitude of 100 V (10,000). Example: Loudspeakers with a total power of 75 W were interconnected on a single loudspeaker line. What is the impedance of the loudspeaker line? Z = 10,000 / 75 = 133 ohms

Dependency between loudspeaker wire's cross-section area and cable length

The table below shows the dependency of the necessary wire cross-section area on the length of the cable. In PA systems, the loudspeaker line is designed in such a way as to limit the losses to a maximum of 10%.

Wire cross-section area in mm²	Cable length						
Power	**50 m**	**100 m**	**200 m**	**300 m**	**500 m**	**750 m**	**1000 m**
30 W	0.05	0.09	0.19	0.28	0.47	0.71	0.95
60 W	0.09	0.19	0.38	0.57	0.95	1.42	1.89
120 W	0.19	0.38	0.76	1.13	1.89	2.84	3.78
240 W	0.38	0.76	1.51	2.27	3.78	5.67	7.56
360 W	0.57	1.13	2.27	3.40	5.67	8.51	11.34
420 W	0.66	1.32	2.65	3.97	6.62	9.92	13.23

Planning example: supermarket

Planning a MNS using the example of a supermarket

The procedure for planning a MNS requires experience in electroacoustics. The following example shall show you some aspects for such a planning. It illustrates a supermarket with the below specifications:

	Circuit	Ceiling		
Zone 1 - 6		**Size**	**Type**	**Height**
Sales area 1*	1 AB	1547 m²	Trapezoidal sheet	6 m
Sales area 2*	2 AB	1547 m²	Trapezoidal sheet	6 m
Adjoining rooms	3 AB	257 m²	Acoustic ceiling	3 m
Warehouse	4 AB	287 m²	Smooth concrete	3 m
Catering / WC	5 AB	190 m²	Acoustic ceiling	3 m
Technical rooms	6 AB	37 m²	Smooth concrete	3 m

* Sales area split into two virtual fire compartments (Sales area 1 & Sales area 2)

Required features

- Transmission of background music to selectable zones (5 areas divided into 6 zones)
- 1 remote microphone for manager's office
- 3 paging microphones for cashiers
- Emergency functions: Automatic and manual voice alarm, emergency microphone in the equipment room

Normative specification

In accordance with **ULC S541** the emergency SPL must be at least 6 – 20 dB above the ambient noise level (10 dB was chosen in the example) and the speech intelligibility must be greater than STI 0.5.

Consideration speaker selection

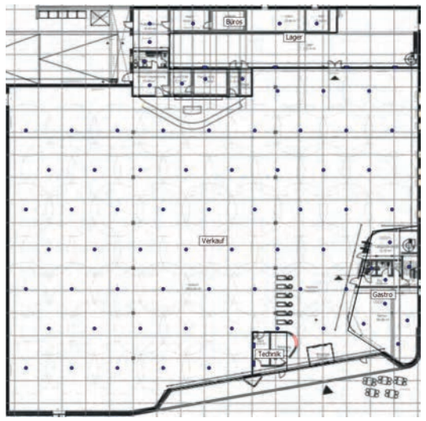
- Sales area:
  In comparison to most speaker types pendant speakers can be mounted on trapezoidal sheet ceilings. In addition these can be installed closer to the audience providing better speech intelligibility.
  Choice of **ULC S541** speaker: PE-304BU
- Adjoining rooms:
  The acoustic ceiling allows an easy installation of ceiling speakers. Since some of these rooms are to small for more than one speaker, an A/B speaker is most suitable.
  Choice of **ULC S541** speaker: PC-580RU with HY-BC580U Back can.
- Warehouse:
  Since the ambient noise in the warehouse is higher than in the sales area, loudspeakers with a higher SPL are neccessary. The fixation requires only one or two screws.
  Choice of **ULC S541** speaker: CS-154U
- Catering / WC:
  The acoustic ceiling allows an easy installation of ceiling speakers.
  Choice of **ULC S541** speaker: F-series ceiling speakers.
- Technical rooms:
  Typically the ambient noise in technical rooms can be high. Therefore a reflex horn speaker is a good solution.
  Choice of **ULC S541** speaker: SC-615TU

Planning example: supermarket

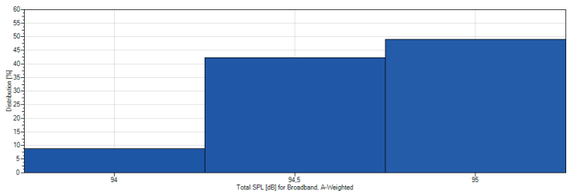
Ease Evac Simulation

Due to the size the sales area is the most critical sector according to the speech inteligibility. The application of the sound simulation Ease Evac software can support finding the final speaker locations for obtaining the required SPL and STI. Starting with a first idea of speaker distribution, the simulation result gives a hint how to improve the distribution. An repetitive process of change and resimulation leads to an optimum result.
An important value for the speech intelligibility calculation is the reverberation time. In the supermarket example it is 1.5 s in the sales area.

Distribution of the loudspeakers



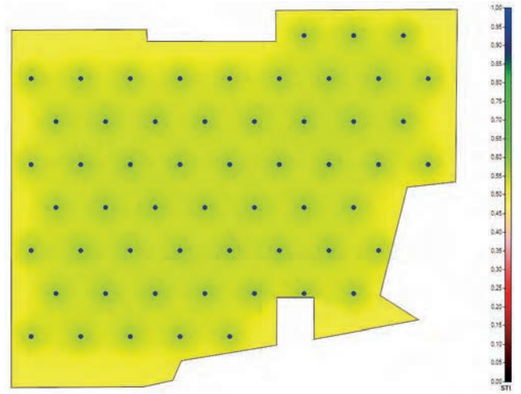
Distribution of the overall SPL in the sales area



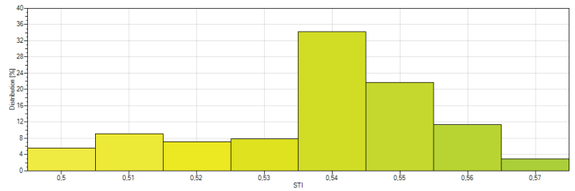
Average 94.4 dBA

Planning example: supermarket

Speech intelligibility in the sales area



Distribution of speech intelligibility



Average STI 0.56 / STI 0.52 (minus standard deviation)

Final result after simulation

	EN 54-24 loudspeakers					
	Quantity	Model	Height	Tapping	Total db SPL (A-weighted)	Total load
Sales area 1	28	PE-304BU	4.5 m	10 W	94	280 W
Sales area 2	28	PE-304BU	4.5 m	10 W	94	280 W
Adjoining rooms	11	PC-580RU	3m	2 x 3 W	88	66 W
Warehouse	4	CS-154U	2.5 m	10 W	97	40 W
Catering / WC	10	PC-580RU	3 m	3 W	95	30 W
Technical rooms	2	SC-615TU	2.5 m	3 W	108	6 W
	Total load of the 6 A/B loudspeaker circuits:					702 W

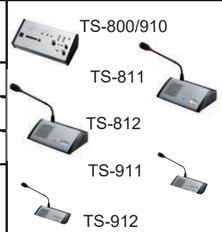
Selection of the voice alarm system

All required functions can be fulfi lled by the VM-3000 system.
Max. features:

- Up to 60 zones, can be controlled individually for background music
- 4 remote microphones
- 3 audio inputs for paging microphones, e.g. PM-660U
- Integrated voice storage function for automatic and manual voice alarm as well as integrated emergency microphone on VM-3240VA

Using System Manager VM-3240VA and Expansion Amplifier VM-3240E enables 6 A/B loudspeaker circuits with an adequate total amplifier power of 740 watts.

Optional Accessories - Microphones and Conference Systems

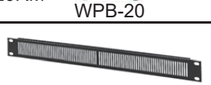
Product Series	Model	Series Picture	Optional Accessories
UHF Wireless Microphone Systems	WT-5800		MB-WT3, MB-WT4, WD-4800, YW-4500, WTU-4800 *(for WT-4820)*
	WT-5805		
	WT-4820		
	WM-5325		YP-M5000H/E, WH-4000H, WH-4000A, YP-M5300, YP-M5310, WH-4000P
	Headset Microphones	*(WM-5325H, WM-5325A)*	WH-4000S
(Series on page 98-101)	WD-5800 *(for WT-4800, WT-5805, WT-4820, S5 Series)*		MB-15B
Infrared Wireless Microphone System	IR-200M		YP-M101 *(for use with IR-300/310)*, IR-200BT-2
	IR-300M		
	IR-310M		IR-310BC *(for IR-310M only*
	IR-700D		YW-1022Y for IR-700D, YW-1024Y for IR-700D, MB-WT3, MB-WT4
	IR-702T *(MB-WT3, MB-WT4 only*		
(Series on page 109)			
Boundary Microphone *(Series on page 94)*	EM-800		ST-800
Infrared Conference Systems *(Series on page 81)* TS-820/TS-920 Series	TS-920RC TS-820		MB-TS920
	TS-921 TS-821 TS-922 TS-822		AD-0910UL, BP-900A -CEB01, TS-918, TS-903, TS-904/ TS-904AS-AL, TS-919 B1, TS-919 B4
(Series on page 82)			
Conference Systems TS-800/TS-910 Series *(Series on page 88)*	TS-770		YR-770-2M / YR-770-10M
	TS-800 UL / TS-910 UL		TS-800/910, TS-811, TS-812, TS-911, TS-912, MB-TS900, AD-0910UL, BP-900UL, TS-903, TS-904/ TS-904AS-AS, TS-918, TS-919 B1, TS-919 B4
	TS-801; TS-811		
	TS-802; TS-812		
	TS-901; TS-911		
	TS-902; TS-912		
(Series on page 84)			
TS-820/TS-920 Series TS-800/TS-910 Series *(Series on page 86)*	TS-905 / TS-907		YW-1022Y, YW-1024Y

Please see the Wireless Microphone Selection Guide on page 106. Wireless Microphone Ordering Information is on page 105)

Optional Accessories - Rack Mount Equip., Network Audio...

Product Series	Model	Series Picture	Optional Accessories
Network Audio *(Series on page 74)*	NX-100 NX-300 *(YC-850 only*		MB-15B-J, AD-246, MB-15B-BK, YC-850
Program Timer *(Series on page 74)*	TT-104B		MB-15B
Digital Message Repeater *(Series on page 72)*	EV-20R		MB-WT3, MB-WT4, AD-246
(Series on page 71)	EV-700		MB-15B, AD-246
AM/FM Synthesized Tuner *(Series on page 73)*	DT-940 UL		MB-15B

Optional Accessories - Mixers/Amplifiers

Product Series	Model	Series Picture	Optional Accessories
A-700 Series *(Series on page 47)*	A-706, A-712, A-724		MB-25B, IT-450, YA-920 *(included)*
A-800 Series *(Series on page 46)*	A-812 A-824, A-848		MB-25B, IT-450
A-900 Series *(Series on page 36)/40*	A-903MK2, A-906MK2, A-912MK2, M-900MK2		MB-25B, YA-920 *(included)*
P-900 Series *(Series on page 37)*	P-906MK2, P-912MK2		MB-25B, YA-920 *(included)*
(Series on page 37)	P-924MK2		MB-35B, YA-920 *(included)*
A-5000 Series *(Series on page 35)*	A-5006, A-5012		MB-15B-J, AD-246, MB-15B-BK
BG-2000 *(Series on page 27)*	BG-2035, BG-2060, BG-2120, BG-2240D-AM		MB-1000, YA-920 *(included)*
BA-200 / BG-200 Series *(Series on page 28-29)*	BG-220, BG-235		MB-25B-BK, YA-920 *(included)*, WB-900B *(BA-200 Series only*, MB-25B-J
	BA-235, BA-260		
DA Series *(Series on page 44)*	DA-250DH, DA-250FH, DA-500F-HL		MT-251H
Micro Amplifier *(Series on page 45)*	AV-20D AV-60S		MB-AV20RM, WPB-20, MT-S0301
All Models *(Series on page 46)*	PF-013B Perforated Vent Panel	[All Models]	

Speaker Mounting Accessories

Ceiling Speakers / Installation Configurations (Series on page 2)	PC-580RU / PC-580RVU	PC-580S PC-580SBT	PC-1860S PC-648R
Flush Mount Back Box	HY-BC580U	Q-BB-580S	
Back Box	BB-580	Q-BB580W	BB-1864
Baffle			HY-RB1860 *for PC-1860S only*
Mounting Channel	Q-HY-TB2		

Horn Speakers		
Installation Configurations	SC-615/SC-615T; SC-630/SC-630TU; SC-651 *(Series on page 5)*	TH-660 *(Series on page 6)*
Swivel Bracket	YS-151S	

Wall Mount Surface Speakers	
Installation Configurations	BS-1030B BS-1030W *(Series on page 7)*
Ceiling Mounting Bracket	SP-410
Wall Mounting Bracket	SP-420

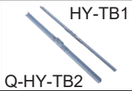
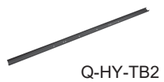
Interior Design Speakers *(Series on page 9)*				
Installation Configurations	H-1 EX	H-2 EX H-2WP EX	H-3 EX H-3 WP EX	HB-1
Ceiling Mount Bracket / Matching Transformer	Ceiling Mount Bracket HY-H1			Matching Transformer MT-S0601
Optional EQ Modules	E-04R	E-05R	E-06RB**	E-07R

Speaker Mounting Accessories

Wide-Dispersion Box Speakers *(Series on page 10)*				
Installation Configurations	F-1000BT F-1300BT	F-1000WT F-1300WT	F-1000BTWP F-1300BTWP	F-1000WTWP F-1300WTWP
Cluster Bracket / Accessories	HY-CL10B		YS-60B** Pole Mounting Band	
Ceiling Mounting Bracket	HY-CM10B	HY-CM10W	HY-CM10B	HY-CM10W
Board Hanger Bracket	HY-BH10B			

Wide-Dispersion Box Speakers *(Series on page 10)*				
Installation Configurations	F-2000BT	F-2000WT	F-2000BTWP	F-2000WTWP
Cluster Bracket / Accessories	YS-60B** Pole Mounting Band	HY-CL20B Cluster Bracket		SP-131 Speaker Mount Bracket
Ceiling Mounting Bracket	HY-CM20B	HY-CM20W	HY-CM20B	HY-CM20W

Speaker Mounting Accessories

	Ceiling Speakers - F Series *(Series on page 12-13)*					
Installation Configurations	**F-122C F-122CU2** 	**F-1522SC** 	**F-2322C F-2322CU2** 	**F-2352C** **F-2352CU2** 	**F-2352SC** 	**F-2852C F-2852CU2** 
Tile Support Rails	HY-TB1  Q-HY-TB2		HY-TB1 		Q-HY-TB2 	
Ceiling Reinforcement Ring	HY-RR2 	HY-RR1 	HY-RR2 			7020116720 
Trim Ring	HY-TR1 		HY-TR1			
Black (Suspension) Back Can	HY-BC1 		HY-BC1 			
White (Suspension) Back Can	Q-HY-BC1W 		Q-HY-BC1W 			
Back Can *(SHALLOW BACK CAN Allows the F-2352SC to be plenum rated)*					Q-HY-BC2 	Q-HY-BC28W 
Surface Mount Bracket	HY-AH1 		HY-AH1 			
C2 Version Tile Bridge *(2 pcs/pkg)*	5070723950 		5070723950 *(Supplied with CU2 e rsion)* 			5070724030 
Other Configurations	E-03R  F-DRYWALLKIT  Q-F122GRBK 		F-DRYWALLKIT  Q-F122GRBK *(for F-122C and F-2352C only* 			

***Note: F-2352SC: When using the HY-TB1 the HY-RR2 is required. Supplied with CU2 e rsions.*

***Note: F-2352SC: When using the HY-TR1 the HY-RR2 is required. Supplied with CU2 e rsions.*

***Note: F-2352SC: When using the HY-AH1 the HY-RR2 is required.*

	Ceiling Subwoofer
Installation Configurations	**FB-3862CU**  *(Series on page 12)*
Surface Pendant Mount Enclosure	HY-BC2W Subwoofer only 

Speaker Mounting Accessories

	Line Array Speakers Type C *(Series on page 16)*	
Installation Configurations	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 	

	Line Array Speakers Type D *(Series on page 17)*	
	SR-D8-M	**SR-D8-S**
Installation Configurations		
Extension Plate	SR-D8EP	
Fixing Bar	SR-D8FB	
Hoisting Bracket	SR-D8HB	
Wall Mount Adapters	SR-D8CL SR-D8CS SR-D8WB	

	Line Array Speakers Type H *(Series on page 18)*			
	SR-H2L	**SR-H2S**	**SR-H3L**	**SR-H3S**
Installation Configurations				
Extension Plate	SR-EP3		SR-EP3	
Wall Mount Bracket	SR-WB3			
Wall Tilt Mount Bracket	SR-TB3			
Flying Bracket	SR-FB8			
Speaker Stand Adapter	SR-SA3 Speaker Stand Adapter			
Matching Transformer	MT-S0301 Matching Transformer			

Speaker Mounting Accessories

(Series on page 18)	Line Array Speakers Type S			
	SR-S4L	**SR-S4LWP**	**SR-S4S**	**SR-S4SWP**
Installation Configurations				
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	 SR-WB4	 SR-WB4WP
Stand Adapter	 SR-SA4			
Flying Bracket	 SR-FB4			
Floor Stand	 SR-FS4			
Protection Pad	 SR-PP4			
Matching Transformer	 MT-S0601			

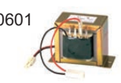
(Series on page 23)	Line Array Speakers Type T
	SR-T5
Installation Configurations	
Wall Pan Bracket	 SR-PB5
Matching Transformer	 MT-S0601

Speaker Mounting Accessories

(Series on page 21	Compact Array Speakers (HX-5 Series)					
	HX-5B	**HX-5W**	**HX-5B-WP**	**HX-5W-WP**	**FB-120B**	
Installation Configurations						
Rigging Frame	 HY-PF1B	 HY-PF1W	 HY-PF1WP		 HY-PF1B	
Ceiling Mounting Bracket	 HY-CW1B	 HY-CW1W	 HY-CW1WP		**Low-Pass Filter Module**	
Mounting 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					
Matching Transformer	MT-200				MT-S0601	

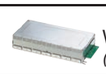
(Series on page 24)	Coaxial Array Speakers			
	HS-1200BT	**HS-1200WT**	**HS-1500BT**	**HS-1500WT**
Installation Configurations				
Wall/Ceiling Mount Bracket **Vertical Installation**	HY-1200VB	HY-1200VW	HY-1500VB	HY-1500VW
Wall/Ceiling Mount Bracket **Horizontal Installation**	HY-1200HB	HY-1200HW	HY-1500HB	HY-1500HW
Ceiling Mount Bracket	HY-C0801		HY-C0801W	
Wall Mount Bracket	HY-W0801		HY-W0801W	

Speaker Mounting Accessories

(Series on page 19)	Compact Array Speakers (HX-7 Series)					
	HX-7B	**HX-7W**	**HX-7B-WP**	**HX-7W-WP**	**FB-150B**	**FB-150W**
Installation Configurations						
Rigging Frame	 HY-PF7B	 HY-PF7W			 HY-PF7B	 HY-PF7W
Rigging Bracket	 HY-VM7B	 HY-VM7W	 HY-TM7BWP	 HY-TM7WWP	**Low-Pass Filter Module**  E-07S	
Wall Mounting Bracket	 HY-WM7B *(HY-VM7B required)*	 HY-WM7W *(HY-VM7W required)*	 HY-MS7BWP	 HY-MS7WWP		
Ceiling Mount Bracket	 HY-C0801 *(HY-VM7B required)*	 HY-C0801W *(HY-VM7W required)*				
Speaker Connection Bracket	 HY-CN7B-WP	 HY-CN7W-WP	 HY-CN7B-WP	 HY-CN7W-WP		
Angle Adjustment Bar *(3 pieces required for 60° mode adjustment)*	 HY-60DB-WP	 HY-60DW-WP	 HY-60DB-WP	 HY-60DW-WP		
Speaker Stand Adapter	 HY-ST7					
Matching Transformer	 MT-200	 Matching Transformer Adapter HY-MT7			MT-S0601 	

NOTE: for wall mounting bracket HY-WM7B/W, it requires HY-VM7B/W rigging bracket
NOTE: for ceiling mount bracket HY-C0801, it requires HY-VM7B/W rigging bracke

Optional Accessories: Megaphones

Product Series	Model	Series Picture	Optional Accessories
Megaphone	ER-604W		 WH-4000H
	ER-1203, ER-1206, ER-1206W, ER-1206S		 SP-1100
	ER-2230W, ER-2930W		 DM-1300US  WTU-4800 *(ER-2930W)*
(Series on page 115)			

Amplifier Selection Guide

Model Number	Power	Inputs				Outputs							Rack Ears	Page
		Mic	Aux	Tel	Module	70V	25V	Record/ Bridge/ Line	Pre-Amp	4 ohm	8 ohm	MOH		
A-2060 CU	60W	2	2	1		Yes	Yes	Yes		Yes			No	48
A-2120 CU	120W													
A-2240 CU	240W													
A-706	60W	6	2	1*	1(900 Series)	Yes	Yes	Yes	Yes	Yes			Optional	47
A-712	120W													
A-724	240W													
A-812D	120W	6	Optional	1	2 (900 Series)	Yes		Yes	Yes	Yes	Yes		Optional	46
A-824D	240W													
A-848D	480W													
A-903MK2	30W	8 module slots			8 (900 series)	Yes	Yes	Yes	Yes	Yes	Yes	Optional	Optional	36
A-906MK2	60W													
A-912MK2	120W													
A-9060DHM2	60W x 2	8 module slots			8 (9000 Series)	Yes	Yes	3 dual module slots	Yes	Yes	Yes	Yes	Yes	30
A-9060SM2	60W x 2													
A-9120DHM2	120W x 2													
A-9120SM2	120W						Yes			Yes	Yes			
A-9240SHM2	240W													
AV-20D	20W x 2		3					Yes		Yes				45
AV-60S	60W					Yes								
BA-235	35W		1			Yes	Yes	Yes		Yes			Optional	29
BA-260	60W													
BG-220	20W	1	2 (3)**			Yes	Yes	Yes		Yes		Yes	Optional	28
BG-235	35W													
BG-2035	35W	1		1	1(900 Series)	Yes	Yes	Yes		Yes		Yes	Optional	27
BG-2060	60W													
BG-2120	120W													
BG-2240D	240W		2											
BG-2480D	480W		2 (3)**											
CA-115	15W	2	1							Yes	Yes		No	48
CA-130	30W													
CA-160	60W x 2													
DA-250F	See DA power output chart below		4							Yes	Yes		Yes	44
DA-250FH			4			Yes								
DA-250D			2							Yes	Yes			
DA-250DH			2			Yes								
DA-500F-HL			4			Yes								
DA-550F			4							Yes	Yes			
MA-725F-AM	250W x 4	2	4			Yes		Yes	Yes			Yes	Yes	43
MM-700F-AM														
P-906MK2	60W		1		1(900 Series)	Yes	Yes			Yes	Yes	Optional	Optional	37
P-912MK2	120W													
P-924MK2	240W													
P-9060DH	60W x 2		2			Yes							Yes	32
P-9120DH	120W x 2													

*Transformer-Isolation for Telephone Paging Applications (Input #1)
** Selectable

DA AMPLIFIER POWER OUTPUT CHART	
MODEL	**POWER OUTPUT**
DA-250D	2x 250W (4 ohms) 2x 170W (8 ohms) 1x 500W bridged (8 ohms)
DA-250DH	2x 250W (70V) 1x 500W bridged (140V)
DA-250F	4x 250W (4 ohms) 4x 170W (8 ohms) 2x 500W bridged (8 ohms)
DA-250FH	4x 250W (70V) 2x 500W bridged (140V)
DA-500F-HL	4x 500W (70V) 2x 1000W bridged (140V) 4x 550W (8 ohm) 4x 100W (4 ohms) 2x 1100W (16 ohms)
DA-550F	4x 550W (4 ohms) 4x 350W (8 ohms) 2x 1100W bridged (8 ohms)

Index

Index

Reference

CANADIAN INSTALLATIONS

Hospitality & Retail

- Avalon Mall, St John's, NL
- Rook and Raven - Saskatoon, SK
- Ikea, Richmond, BC
- Four Points Hotel, Toronto, ON
- Cannabis, Moncton, NB

Corporate & Commercial

- Banff Gondola Upper Terminal, Banff, AB
- Bench Brewery, Beamsville, ON
- Jean Coutu Group, QC
- Royal Tyrrell Museum, Drumheller, AB
- Poley Mountain Ski Facility, Waterford, NB

Houses of Worship

- West Edmonton Baptist Church, AB
- Gatineau Mosque, Gatineau, QC
- Harvest City Church, Vancouver, BC
- Whapmagoostui Church, QC
- Beth Tzedec Congregation, Calgary, AB

Correctional Facilities

- Central East Correctional Centre, Lindsay, ON
- Edmonton Remand Centre, Edmonton, AB
- Maple Hurst Correctional Centre, Milton, ON
- Calgary Correctional Centre, Calgary, AB

Sports Complexes

- St. Laurent Sports Complex, Montreal, QC
- University of Northern British Columbia, Prince George, BC
- Rec-Tangle Arena, Redcliffe, AB
- Yukon College Gymnasium, Whitehorse, YK
- iPlex Arena, Swift Current, SK

Education

- Souris Regional School, PEI
- Newbridge Academy Dartmouth, NS
- Southeast Collegiate, Winnipeg, MB
- Bishop David Motiuk School, Edmonton, AB
- Ecolé Alain St-Cyr, Yellowknife, NT

Transportation

- Yellowknife Airport, NT
- Edmonton LRT System, Edmonton, AB
- Greater Fredericton Airport, NB
- Toronto International Airport, Toronto, ON
- Roméo LeBlanc International Airport, Moncton, NB

Government & Hospitals

- Stanton Hospital, Yellowknife, NT
- Chaleur Regional Hospital, Bathurst, NB
- Rosalind & Morris Goodman Cancer Research Centre, Montreal, QC
- Fire Station Number 11, Winnipeg, MB
- Baycrest Health Sciences, Toronto, ON

Intercom

- Hospital Centre-De-La-Mauricie, Shawinigan QC
- Pierre Elliott Trudeau International Airport, Montreal, QC
- Lower Canada College, Montreal, QC
- Sick Kids, 11th Floor Pharmacy, Toronto, ON
- The Cultural Centre, Fredericton, NB

Theatres & Halls

- McMaster University, Convocation Hall, Hamilton, ON
- Convention Centre, St. John's, NL
- Victoria School for the Performing Arts, Edmonton, AB
- Stratford Shakespeare Festival, Stratford, ON
- Crescent Heights, Medicine Hat, AB

Voice Evacuation & Mass Notification

- Murray Library U of S, Saskatoon, SK
- NB Community College, Saint John, NB
- Xerox Research Centre, Mississauga ON
- Les Réseidence Jodin, Edmunston, NB
- Providence Care Centre, Calgary, AB

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